



# Connectors for Aerospace, Defense and Marine



## Markets Served



*C4ISR*



*Commercial Aerospace*



*Ground Defense*



*Military Aerospace*



*Military Marine*



*Missile Defense*



*Offshore / Civil Marine*



*Space*



## Introduction

---

For 50+ years, we have been helping the aerospace, defense and marine industry reach new levels of performance with specific product solutions. Built on the foundation of AMP Incorporated, which originated in 1941 as Aircraft Marine Products, TE Connectivity is now the home of an unmatched array of quality components for the MIL-Aero market.

TE has grown to become the world's largest manufacturer of passive electronic components, as well as a world leader in fiber optic active components. We are also one of the largest RF component and subsystem manufacturers in the industry.

In addition to our broad offering of interconnection solutions for copper and fiber, cable and harness assemblies, our portfolio also includes printed circuits, touch screens, relays, high-reliability lasers, aircraft sensors, plus nano- and micro-lens connectors for free space optical interconnect applications. In short, we have the products to meet your MIL-Spec, QPL, space-qualified and COTS requirements.

We're committed to working with you to design the next generation of aerospace and defense products — and delivering cost-effective performance and innovative solutions through capabilities such as:

- Design and development engineering and analysis
- Reliability, quality assurance, testing and agency approvals
- Materials engineering expertise in metals, polymers and plating
- Technology leadership in electromagnetic and shielding analysis and high-speed circuit design
- Program management



## Table of Contents

### Printed Circuit Board Connectors

|                                                           |               |
|-----------------------------------------------------------|---------------|
| High Speed Board Level Connectors                         | 1-3 to 1-10   |
| AMP MIL-Spec PCB Connectors                               | 1-11          |
| Mini-Box .050 [1.27] Centerline Connectors                | 1-12 to 1-29  |
| AMP-HDI .075 [1.91] Staggered Centerline LRM Connectors   | 1-30 to 1-37  |
| Box .075 [1.91] Centerline Connectors                     | 1-38 to 1-44  |
| Box .100 [2.54] Centerline Connectors                     | 1-45 to 1-78  |
| Box II Connectors                                         | 1-79 to 1-90  |
| AMPMODU .100 [2.54] Centerline Connectors per MIL-C-55302 | 1-91 to 1-98  |
| AMP-BLADE Two-Piece Printed Circuit Edge Connectors       | 1-99 to 1-106 |

### RF Connectors

|                                         |                |
|-----------------------------------------|----------------|
| Military Qualified                      | 2-4 to 2-34    |
| Push-On Coaxial Connectors              | 2-35 to 2-61   |
| Threaded Connectors                     | 2-62 to 2-75   |
| Coaxial Cable Termination               | 2-76 to 2-81   |
| Application Tooling                     | 2-82 to 2-87   |
| Cross Reference                         | 2-88 to 2-92   |
| Cheminax Coaxial Cables Cross Reference | 2-92           |
| Nanonics Coaxial Connectors             | 2-93 to 2-101  |
| MICRODOT Coaxial Connectors             | 2-102 to 2-147 |
| Appendix                                | 2-148 to 2-158 |

### Ruggedized Fiber Optic Connectors

|                                                  |              |
|--------------------------------------------------|--------------|
| Introduction                                     | 3-2 to 3-3   |
| Expanded Beam Products                           | 3-4 to 3-28  |
| Physical Contact & Technology                    | 3-29 to 3-34 |
| Rugged Circular Connectors                       | 3-35 to 3-54 |
| Rugged Board Level Connectors                    | 3-55         |
| Navy CID Approved - Epoxy Applied                | 3-56, 3-57   |
| LightCrimp Plus Navy Approved                    | 3-58 to 3-60 |
| Offshore Optical Connectors and Cable Assemblies | 3-61         |

### Rack and Panel Connectors

|                                              |              |
|----------------------------------------------|--------------|
| ARINC 600 Connectors                         | 4-2 to 4-44  |
| ARINC 404 Connectors                         | 4-45 to 4-70 |
| HexaShield High-Performance EMC/EMI Adapters | 4-71 to 4-76 |

### Nanominiature and Microminiature Connectors

|                                 |               |
|---------------------------------|---------------|
| Nanominiature Connectors        | 5-4 to 5-5    |
| DUALLOBE Rectangular Connectors | 5-6 to 5-43   |
| Strip Connectors                | 5-44 to 5-50  |
| Microminiature Connectors       | 5-51          |
| Microminiature D Connectors     | 5-52 to 5-82  |
| Rectangular Connectors          | 5-83 to 5-100 |

### High Speed I/O's

|                                                                    |              |
|--------------------------------------------------------------------|--------------|
| CeeLok FAS-T Connectors, Cable Assemblies, and Associated Products | 6-2 to 6-8   |
| CeeLok FAS-T Nano Circular Connectors                              | 6-9 to 6-12  |
| Quadrax Contacts, Connectors and Cables                            | 6-13 to 6-36 |

## Table of Contents (Continued)

### Circular Connectors

|                                                     |              |
|-----------------------------------------------------|--------------|
| Circular HD Connectors                              | 7-2 to 7-18  |
| NANONICS Environmentally Sealed Circular Connectors | 7-19 to 7-40 |

### Rectangular Pin and Socket Connectors

|                                                                                |                |
|--------------------------------------------------------------------------------|----------------|
| General Purpose Rectangular (GPR) Connectors                                   | 8-3 to 8-34    |
| AMPLIMITE Subminiature Connectors                                              | 8-35 to 8-103  |
| High Density Rectangular Connectors                                            | 8-104 to 8-116 |
| MTC High-Performance Modular Rectangular Connectors<br>with Removable Contacts | 8-117 to 8-140 |
| "G" Series Modular Connectors                                                  | 8-141 to 8-158 |
| Terminal Junction System (MIL-T-81714 and Commercial)                          | 8-159 to 8-179 |

### LGH High Voltage Connectors

|                                                             |              |
|-------------------------------------------------------------|--------------|
| Introduction                                                | 9-2 to 9-4   |
| LGH Lead Assemblies and Receptacles                         | 9-4 to 9-26  |
| Commercial Single Line Connectors                           | 9-27 to 9-30 |
| Two-Position Connectors, 10 KVDC                            | 9-31 to 9-33 |
| Multi-Pin Circular Commercial Connectors, 27 KVDC           | 9-34, 9-35   |
| Multi-Line High Voltage Connectors                          | 9-36         |
| 5-Pin, Metal-Shell Circular Connectors, Military-Type       | 9-37, 9-38   |
| 7-Pin, Metal-Shell Circular Connectors, Military-Type       | 9-39, 9-40   |
| 6-Pin, Subminiature Rectangular Connectors                  | 9-41 to 9-45 |
| LGH Micro-Miniature Connectors and Cable Assemblies         | 9-46 to 9-48 |
| Medical Receptacles (Used Primarily for Patient Monitoring) | 9-49, 9-50   |
| Various Specials                                            | 9-51 to 9-62 |
| Accessories                                                 | 9-63         |
| LGH Product Worksheet for Ordering Custom Designs           | 9-64         |

### Terminals and Splices

|                                                                       |                |
|-----------------------------------------------------------------------|----------------|
| How to Compute Circular Mil Area of Various Wire Shapes               | 10-2           |
| Terminal Stud Hole Size                                               | 10-3           |
| AMP Crimp Style                                                       |                |
| SOLISTRAND Uninsulated Terminals and Splices                          | 10-4 to 10-7   |
| STRATO-THERM Terminals and Splices for High Temperature Applications  | 10-8 to 10-22  |
| COPALUM Sealed Terminals and Splices                                  | 10-23 to 10-28 |
| PIDG (Pre-Insulated DIAMOND GRIP) Terminals and Splices               | 10-29 to 10-37 |
| Radiation Resistant/302°F [150°C] Pre-Insulated Terminals and Splices | 10-38 to 10-40 |
| TERMINYL Insulated Terminals                                          | 10-41 to 10-42 |

### Data Bus (MIL-STD-1553B) Components

|                          |              |
|--------------------------|--------------|
| Discrete Connectors      | 11-2, 11-3   |
| Accessories              | 11-4 to 11-8 |
| Triaxial Size 8 Contacts | 11-9         |

### Supporting Information

|                                |            |
|--------------------------------|------------|
| Equivalents and Conversions    | 12-2, 12-3 |
| Temperature Conversion Formula | 12-4, 12-5 |

### Glossary of Terms

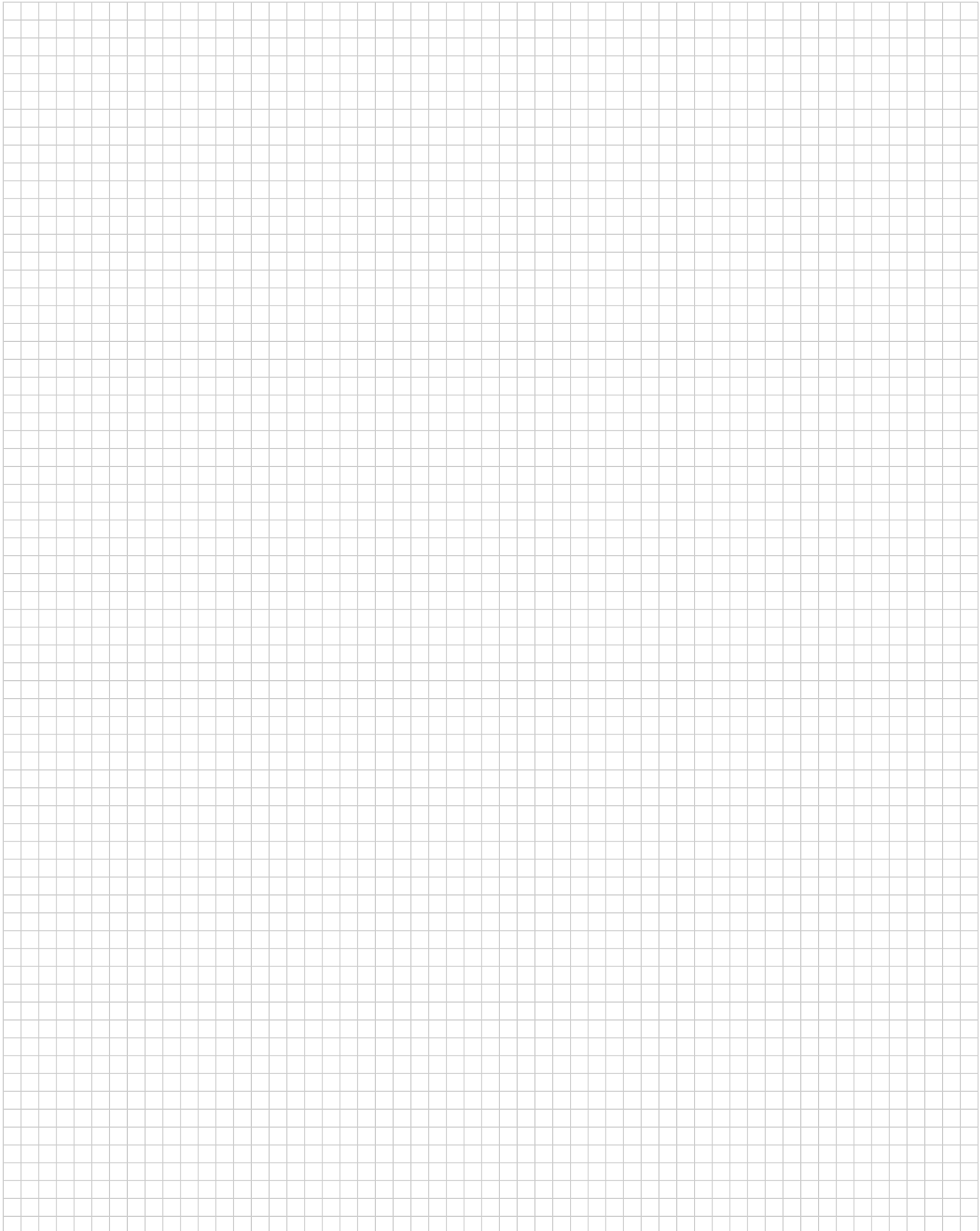
### Part Number Index



---

**Engineering Notes**

---

A large rectangular area filled with a fine grid of small squares, intended for handwritten engineering notes or calculations.

## Table of Contents

### High Speed Board Level Connectors

|                                                            |            |
|------------------------------------------------------------|------------|
| MULTIGIG RT 2-R Ruggedized Connectors for VPX Applications | 1-3 to 1-6 |
| Fortis Zd Connector                                        | 1-7, 1-8   |
| Mezlok Connector (High Reliability Mezzanine Connector)    | 1-9, 1-10  |

### AMP MIL-Spec PCB Connectors

|              |      |
|--------------|------|
| Introduction | 1-11 |
|--------------|------|

### Mini-Box .050 [1.27] Centerline Connectors

|                                                      |              |
|------------------------------------------------------|--------------|
| Introduction                                         | 1-12         |
| Mini-Box and Extended Mini-Box Assemblies            | 1-13 to 1-23 |
| Microminiature COAXICON Contacts for Hybrid Cavities | 1-24         |
| Recommended Printed Circuit Board Layouts            | 1-25 to 1-27 |
| Keying Hardware                                      | 1-27         |
| 4-Row Mini-Box Connectors                            | 1-28, 1-29   |

### AMP-HDI .075 [1.91] Staggered Centerline LRM Connectors

|                                           |              |
|-------------------------------------------|--------------|
| Introduction                              | 1-30         |
| AMP-HDI 6-Row and 8-Row Connectors        | 1-31 to 1-35 |
| AMP-HDI Accessories and Shell Accessories | 1-36, 1-37   |

### Box .075 [1.91] Centerline Connectors

|                                           |              |
|-------------------------------------------|--------------|
| Introduction                              | 1-38         |
| Assemblies, Receptacle and Pin Header     | 1-39 to 1-42 |
| Stacking Connectors                       | 1-43         |
| Recommended Printed Circuit Board Layouts | 1-44         |

### Box .100 [2.54] Centerline Connectors

|                                                                                      |              |
|--------------------------------------------------------------------------------------|--------------|
| Introduction                                                                         | 1-45         |
| Assemblies, Receptacle and Pin Header                                                | 1-46 to 1-55 |
| Pin Housing and Assemblies for Crimp Contacts                                        | 1-56, 1-57   |
| Receptacle Housing and Assemblies for Crimp Contacts                                 | 1-58 to 1-60 |
| Assemblies, 3-Row and 4-Row                                                          | 1-61 to 1-65 |
| Assemblies with Hybrid Cavities                                                      | 1-66 to 1-69 |
| Microminiature COAXICON Contacts for Hybrid Cavities                                 | 1-70         |
| Recommended Printed Circuit Board Layouts                                            | 1-71 to 1-76 |
| Keying Hardware and Replacement Contacts for .075 [1.91] and .100 [2.54] Centerlines | 1-77, 1-78   |

### Box II Connectors

|                                                                         |              |
|-------------------------------------------------------------------------|--------------|
| Vertical Receptacles with ACTION PIN Posts and Solder Post Contacts     | 1-79         |
| Horizontal Motherboard Stacking (Not Recommended for MFBL Applications) | 1-80         |
| Assemblies, 4-Row, 3-Row, and 2-Row                                     | 1-81 to 1-84 |
| Recommended Printed Circuit Board Hole Layouts                          | 1-85, 1-86   |
| ACTION PIN Press-Fit Contacts                                           | 1-87         |
| Application Tooling                                                     | 1-88         |
| Hardware and Applications                                               | 1-89, 1-90   |

### AMPMODU .100 [2.54] Centerline Connectors per MIL-C-55302

|                                                  |              |
|--------------------------------------------------|--------------|
| Introduction                                     | 1-91         |
| Receptacle Assemblies, Single Row and Double Row | 1-92 to 1-97 |
| Special Double Row Receptacles                   | 1-98         |

---

**Table of Contents** (Continued)

---

**AMP-BLADE Two-Piece Printed Circuit Edge Connectors**

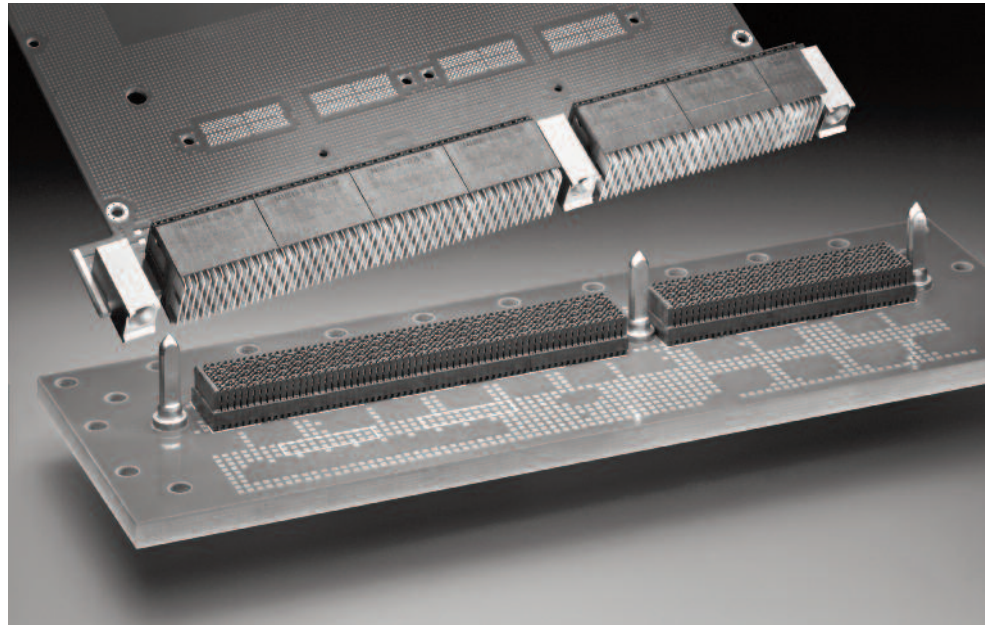
|                                                              |              |
|--------------------------------------------------------------|--------------|
| Introduction .....                                           | 1-99         |
| AMP-BLADE Connector for Snap-In Receptacle Contacts .....    | 1-100        |
| Board Half Housing Pre-loaded with Blade Type Contacts ..... | 1-101, 1-102 |
| Wire-Half Assemblies and Housings .....                      | 1-103        |
| Receptacle Housings for Crimp Snap-In Contacts .....         | 1-104        |
| AMP-BLADE Connector Keying .....                             | 1-105        |
| Application Tooling .....                                    | 1-106        |



## MULTIGIG RT 2-R Ruggedized Connectors for VPX Applications

### Product Facts

- Quad-redundant contact system supports high levels of shock/vibration
- Compliant to VITA 46 for Open VPX applications
- Supports Ethernet, Fibre Channel, InfiniBand applications, PCIe and Serial RapidIO high speed protocols
- Modular, lightweight connector system
- Robust “pinless” interface
- Differential, single-ended and power
- Ruggedized guide hardware available
- Supports 0.8 inch card slot pitches
- VITA 46 compliance enables upgrade in existing VPX applications
- Can be combined with high power modules (VITA 62), RF modules (VITA 67) and Optical modules (VITA 66)



### Description

TE's MULTIGIG RT 2-R ruggedized, light weight, high speed board-to-board interconnect is compliant to VITA 46 standard. This connector system features a quad-redundant contact structure designed for high vibration levels.

### Applications

Rugged embedded computing applications:

- Ground Defense
- Missile Defense
- Electronic Systems / C4ISR
- Space
- Commercial and Military Aerospace

### Materials

Contacts: High performance copper alloy, plated 50 µin Au over 50 µin Ni in mating area, tin-lead on compliant pin tails

Housings: High temperature thermoplastic

Rugged Guide Hardware: Aluminum and passivated stainless steel

### Mechanical

Operating Temperature: -55 to +105°C

Mating Force: 0.75 N [2.70 ozf] maximum per contact

### Standards & Specifications

Compliant to VITA 46 (VPX)

Product Specification: 108-2072

Application Specification: 114-13056

Qualification Test Report: 501-544

### Physical or other Properties

Tested to HALT (Highly accelerated life test) vibration levels (0.2G2/Hz) per VITA 72

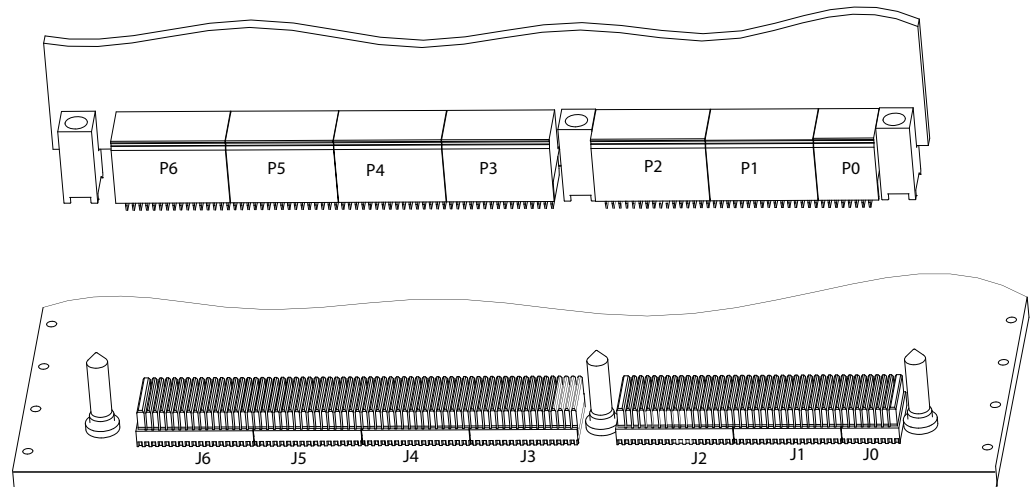
Connector modules available for 3U and 6U VPX slot profiles, including rear transition modules

Reliable press-fit termination, requiring only flat rock tooling

Lightest weight VPX connector system: mated set of connectors and guide hardware for typical module and backplane slots: 3U - 62.66g (2.21 oz); 6U - 140.26g (4.95 oz)

## MULTIGIG RT 2-R Ruggedized Connectors for VPX Applications (Continued)

### Part Configurations



### Daughtercard

| Module Position                         | Part No.                                                 |                                          |
|-----------------------------------------|----------------------------------------------------------|------------------------------------------|
|                                         | Ruggedized<br>MULTIGIG RT 2-R<br>(Extended Pad Wafers)   | MULTIGIG RT 2<br>Connectors              |
| <b>PO</b>                               | 2102772-1                                                | 1410189-3                                |
| <b>P1, P2, P3,</b><br><b>P4, P5, P6</b> | Differential<br>2102771-1                                | 1410187-3                                |
|                                         | Single-Ended<br>2102847-1                                | 1410190-3                                |
| <b>Keying Guide Modules</b>             | 2000713-X                                                | 1-1469492-X                              |
|                                         | Machined 6061<br>Aluminum Guide Socket,<br>w/ESD Contact | Standard (Zinc Die<br>Cast) Guide Socket |
|                                         |                                                          |                                          |

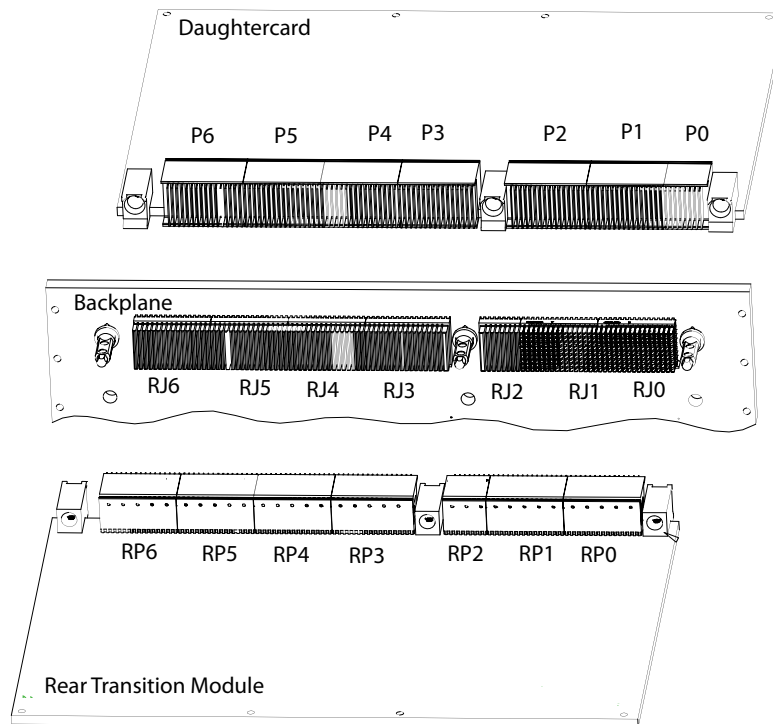
See TE drawings for guide module and pin options.

### Backplane

| Module Position         | Part No.                                                      |                                       |
|-------------------------|---------------------------------------------------------------|---------------------------------------|
|                         | Ruggedized<br>MULTIGIG RT 2-R<br>(Quad Redundant<br>Contacts) | MULTIGIG RT 2<br>Connectors           |
| <b>JO</b>               | 2102735-1                                                     | 1410186-1                             |
| <b>J1, J3, J4, J5</b>   | 2102736-1                                                     | 1410140-1                             |
| <b>J2, J6</b>           | 2102737-1                                                     | 1410142-1                             |
| <b>Keying Guide Pin</b> | 2000676-X                                                     | 1-1469491-X                           |
|                         | Stainless Steel<br>Guide Pin                                  | Standard (Zinc Die<br>Cast) Guide Pin |
|                         |                                                               |                                       |

See TE drawings for guide module and pin options.

**MULTIGIG RT 2-R Ruggedized Connectors for VPX Applications** (Continued)

**Part Configurations**

**Rear Transition Module**

| Module Position       |                             | Part No.                                              |                                          |
|-----------------------|-----------------------------|-------------------------------------------------------|------------------------------------------|
| MULTIGIG RT 2         |                             | Ruggedized MULTIGIG RT 2-R                            |                                          |
|                       |                             | (Extended Pad Wafers)                                 | Connectors                               |
| RPO                   |                             | 2102773-1                                             | 1410968-3                                |
|                       | Differential                | 2102774-1                                             | 1410975-3                                |
| RP1                   |                             | 2102849-1                                             | 1410970-3                                |
|                       | Differential & Single-Ended |                                                       |                                          |
| RP2                   |                             | 2102775-1                                             | 1410971-3                                |
|                       | Single-Ended                | 2102848-1                                             | 1410972-3                                |
| RP3, RP4,<br>RP5, RP6 |                             | 2102774-1                                             | 1410975-3                                |
|                       | Single-Ended                | 2102847-1                                             | 1410190-3                                |
| Keying Guide Modules  |                             | 2000713-X                                             | 1-1469492-X                              |
|                       |                             | Machined 6061 Aluminum<br>Guide Socket, w/ESD Contact | Standard (Zinc Die Cast)<br>Guide Socket |

See TE drawings for guide module and pin options.

**Rear Transition Backplane**

| Module Position  |            | Part No.                                                |                                       |
|------------------|------------|---------------------------------------------------------|---------------------------------------|
|                  |            | Ruggedized MULTIGIG RT 2-R<br>(Quad Redundant Contacts) | MULTIGIG RT 2<br>Connectors           |
| RJO              | See Note 1 | 2102768-1                                               | 1410964-1                             |
|                  | See Note 2 | 2102850-1                                               | 1410965-1                             |
| RJ1              | See Note 3 | 2102736-1                                               | 1410140-1                             |
|                  | See Note 4 | 2102851-1                                               | 1410966-1                             |
| RJ2              |            | 2102735-1                                               | 1410186-1                             |
| RJ3              |            | 2102737-1                                               | 1410142-1                             |
| RJ4, RJ5, RJ6    |            | 2102736-1                                               | 1410140-1                             |
| Keying Guide Pin |            | 2226127-1                                               | 1410956-1                             |
|                  |            | Stainless Steel Guide Pin                               | Standard (Zinc Die Cast)<br>Guide Pin |

**Notes (Reference VITA 46.10; Observation 3-6):**
**Note 1:** 16 column shell, 15 columns of contacts

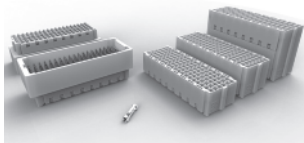
**Note 2:** 16 column shell, 7 columns of contacts present

**Note 3:** 16 column shell, 16 columns of contacts

**Note 4:** 16 column shell, 8 columns of contacts present

## MULTIGIG RT 2-R Ruggedized Connectors for VPX Applications (Continued)

### Associated VPX Solutions



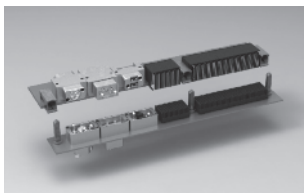
#### MEZALOK Mezzanine Connectors (Compliant to VITA 61)

- Utilizes the proven, reliable MIL-55302 Mini-Box contact interface, with four points of contact
- Backwards compatible with XMC board footprint
- Accommodates 10mm, 12mm, 15mm and 18mm stack heights
- Solder ball SMT attach in SnPb and RoHS options
- 114 (6 x 19) positions and 60 (6 x 10) positions
- Protected "stub-proof" socket contacts w/superior signal integrity
- Exceptional solder joint reliability (1000+ cycles thermal shock)



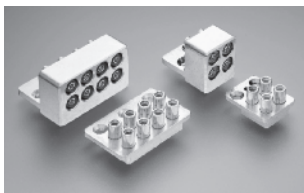
#### MULTI-BEAM XLE Power Connectors (Compliant to VITA 62)

- 20A and 50A power contacts, plus signal contacts
- 3-beam high-conductivity-copper contact design allows for a greater angular misalignment between mating connectors and offers a lower mating force
- Slim guide sockets reduce the overall PCB footprint
- Vented housing allows for better heat dissipation
- Hot-plug capable



#### Optical Modules (Compliant to VITA 66)

- Light weight
- High bandwidth
- EMI immunity
- 3 fiber optic interface types available:
  - 66.1 has two MT ribbon ferrules up to 24 fibers each
  - 66.2 four ARINC 801 termini
  - 66.3 one expanded beam lensed insert with four fibers



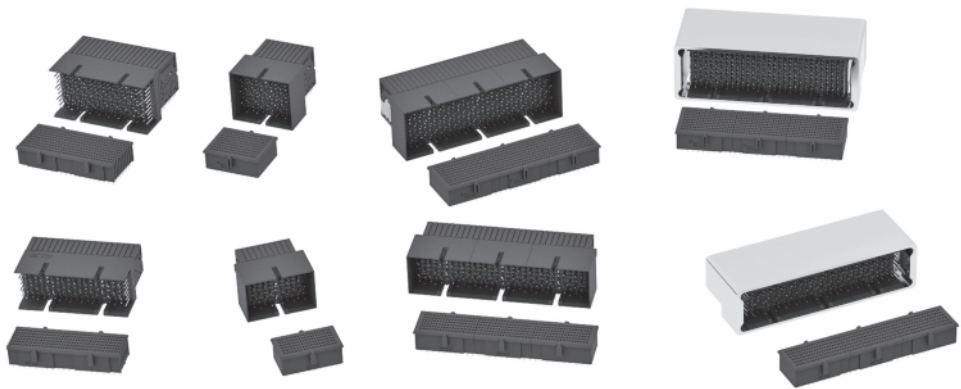
#### RF Modules (Compliant to VITA 67)

- Excellent channel-to-channel isolation and RF performance to 65 GHz
- Modular design permits application specific configuration with high RF contact count
- Float mounted jack maintains positive RF ground
- 240 center-to-center spacing
- 4 and 8 position modules are designed to meet the requirements of VITA 67.1 and VITA 67.2

## Fortis Zd Connector

### Product Facts

- Allows 10+ Gb/s data rates
- Extreme mechanical and electrical performance for the most demanding applications
- Modular design allows for user configurability and modular evolution
- M55302 heritage Mini-Box separable interface provides 4 points of contact
- Three options for application versatility, including standard, shielded and rugged metal shell
- 3-Pair and 2-Pair versions available to accommodate multiple slot pitches
- Space compatible materials
- Proven compliant pin board attach facilitates manufacturing efficiency, repairability, and superior electrical performance
- Staggered daughtercard pin field supports 2 level maintenance
- Protected pin field on backplane for reliability and durability



### Description

Modular backplane connector system combining the highest performance mil/aero and commercial technologies in a user configurable platform.

Built to be the most robust and highest performance backplane connector.

### Technical Documents

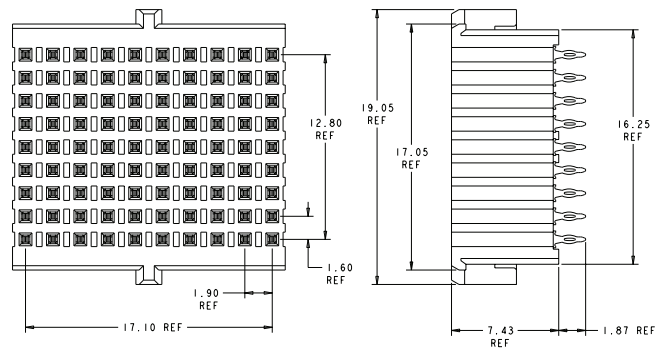
Product Specifications:  
108-2409

Qualification Test Report:  
501-752

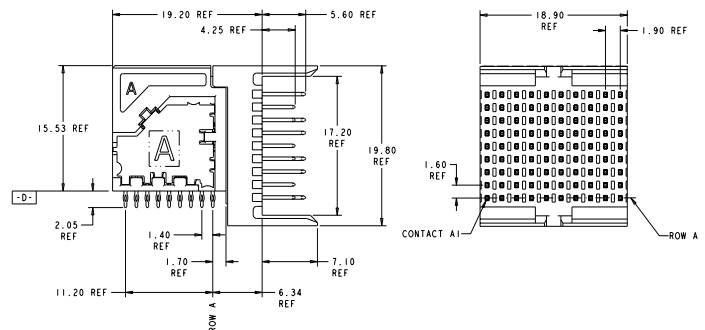
Application Specification:  
114-13267

### Product Dimensions

#### 2000896-1 (3-pair, Vertical Center Module)

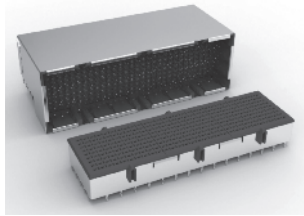


#### -1 (3-pair, Right-Angle Center Module)

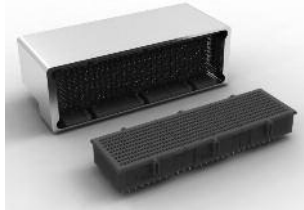




## Fortis Zd Connector (Continued)



3-Bay Shielded



3-Bay Metal Shell

### Mechanical

Durability: 500 mating cycles  
Operating Temperature:  
-55 to +125°C  
Contact Engaging &  
Separating Force: 4.0 oz. max

### Physical or Other Properties

10 and 20 column modules  
3-pair (9-row) and 2-pair (6-row) modules  
6U configuration offers 300 differential pairs  
Multi-bay shielded and rugged shell options  
6 row module enables 0.6" reduced form factor card pitch  
Modularity enables scalability for various card sizes

### Materials

Contacts: High performance copper alloy  
Plated 50µin Au over 50µin Ni in mated contact area  
Tin/lead or tin (RoHS) on compliant tails  
Housings: High temperature thermoplastic  
Shell:  
Shield: Copper alloy  
Rugged shell: 6061 Aluminum with trivalent chromate conversion coating

## Ordering Information

| Size                | Description  | Right Angle Connector Modules <sup>1</sup> |                |                |               |                     |                     | Vertical Connector Modules <sup>1</sup> |                |                |                     |                     |
|---------------------|--------------|--------------------------------------------|----------------|----------------|---------------|---------------------|---------------------|-----------------------------------------|----------------|----------------|---------------------|---------------------|
|                     |              | 10-col. left                               | 10-col. center | 20-col. center | 10-col. right | 10-col. full shroud | 20-col. full shroud | 10-col. end                             | 10-col. center | 20-col. center | 10-col. full shroud | 20-col. full shroud |
| 2-pair              | Differential | 2102086                                    | 2102087        | 2102096        | 2102088       | 2102081             | 2102232             | 2102092                                 | 2102093        | 2102098        | 2102094             | 2102234             |
| 3-pair              | Differential | 2000890                                    | 2000891        | 2000903        | 2000892       | 2102155             | 2102159             | 2000895                                 | 2000896        | 2000905        | 2102157             | 2102161             |
| 3-pair <sup>2</sup> | Single-Ended | 2102314                                    | 2102315        | 2102316        | 2102317       | 2102318             | 2102319             |                                         |                |                |                     |                     |

| Size                | Description  | Shielded Right Angle Connector Modules |           |           |           |           |           | Shielded Vertical Connector Modules |           |           |           |           |           |
|---------------------|--------------|----------------------------------------|-----------|-----------|-----------|-----------|-----------|-------------------------------------|-----------|-----------|-----------|-----------|-----------|
|                     |              | 10-col.                                | 20-col.   | 30-col.   | 40-col.   | 50-col.   | 60-col.   | 10-col.                             | 20-col.   | 30-col.   | 40-col.   | 50-col.   | 60-col.   |
| 3-pair              | Differential | 2102247-1                              | 2102247-2 | 2102247-3 | 2102247-4 | 2102247-5 | 2102247-6 | 2102248-1                           | 2102248-2 | 2102248-3 | 2102248-4 | 2102248-5 | 2102248-6 |
| 3-pair <sup>2</sup> | Single-Ended | 2102320-1                              | 2102320-3 | 2102320-4 | 2102320-4 | 2102320-5 | 2102320-6 |                                     |           |           |           |           |           |

| Size   | Description  | Rugged Shell for Right Angle Connector Modules |           |           |           |           |           |
|--------|--------------|------------------------------------------------|-----------|-----------|-----------|-----------|-----------|
|        |              | 10-col.                                        | 20-col.   | 30-col.   | 40-col.   | 50-col.   | 60-col.   |
| 2-pair | Differential | 2102114-1                                      | 2102114-2 | 2102114-3 | 2102114-4 | 2102114-5 | 2102114-6 |
| 3-pair | Differential | 2102077-1                                      | 2102077-2 | 2102077-3 | 2102077-4 | 2102077-5 | 2102077-6 |

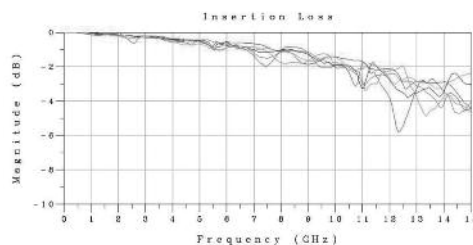
|              | VITA 46 Die Cast | VITA 46 Machined   |
|--------------|------------------|--------------------|
| Guide Pin    | 1469491          | 2000676            |
| Guide Module | 1469492          | 2000677 or 2000713 |

1. -1 SnPb Tails, -2 Sn Tails

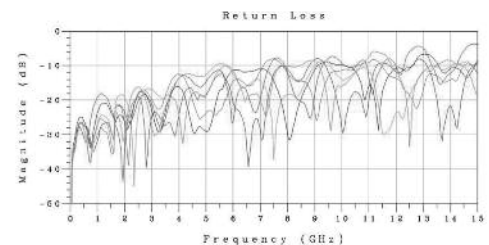
2. Single-Ended 3-pair uses the same vertical connector as differential 3-pair

See drawings for dash number options.

Differential Insertion Loss



Differential Return Loss



## Mezalo Connector (High Reliability Mezzanine Connector)

### Product Facts

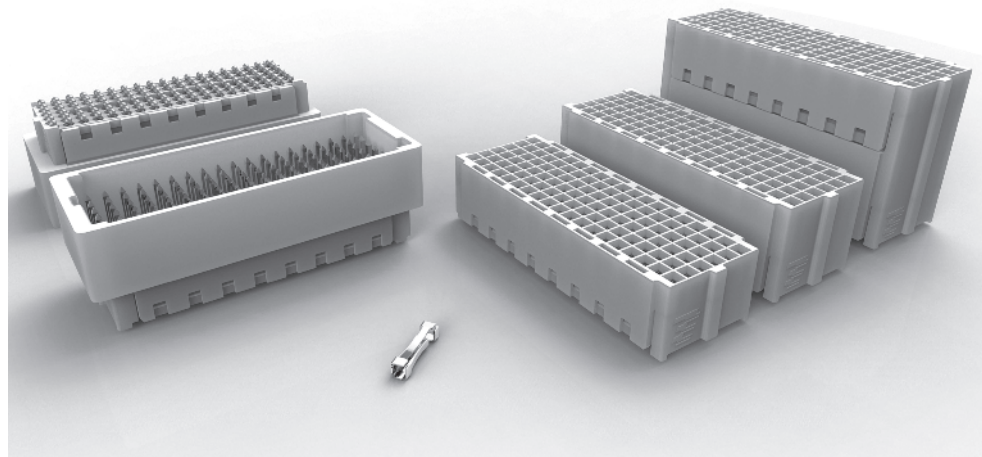
- Allows 10Gb/s and data rates
- 60, 114, and 320 positions
- Mini-Box contact system provides 4 points of contact for ultra reliability
- LCP plastic housings offer superior thermal stability and are low-outgassing
- Compliant BGA board attach supports standard surface mount processing and excellent thermal stability
- 114 position footprint compatible to XMC footprint and all dimensional constraints, VITA 61 compliant
- Stack heights from 10 mm to 18 mm

### Technical Documents

Product Specifications:  
108-2411

Qualification Test Report:  
501-735

Application Specification:  
114-13279



### Description

Rugged surface mount mezzanine connector incorporating "super-redundant" Mini-Box contact system for separable interface.

Designed for 10 mm through 18 mm stack heights.

### Applications

Stacking or mezzanine applications

114 position is designed to support VITA 61 XMC architecture as rugged alternative to VITA 42 XMC

60 and 320 position designed for custom architecture stacking applications

### Mechanical

500 mating cycles durability

Mating force: 0.30 lb. max. times number of contacts

-65°C to +125°C operating temperature

Shock and vibration per VITA 47 requirements

### Materials

Pin Assembly: LCP plastic housings, white in color

Socket Assembly: LCP plastic housings, white in color

Contacts: High Performance Copper Alloy, 50µ" Au in mating interface (Sn/Pb and SAC305 solder balls are available)

### Standards & Specs

114 position conforms to requirement of VITA 61 (VITA 42 Alternate)

VITA 42 and VITA 61 are not intermateable, but are footprint and XMCarchitecture compatible

### Application Tooling

Product is installed via standard BGA surface mount processes.

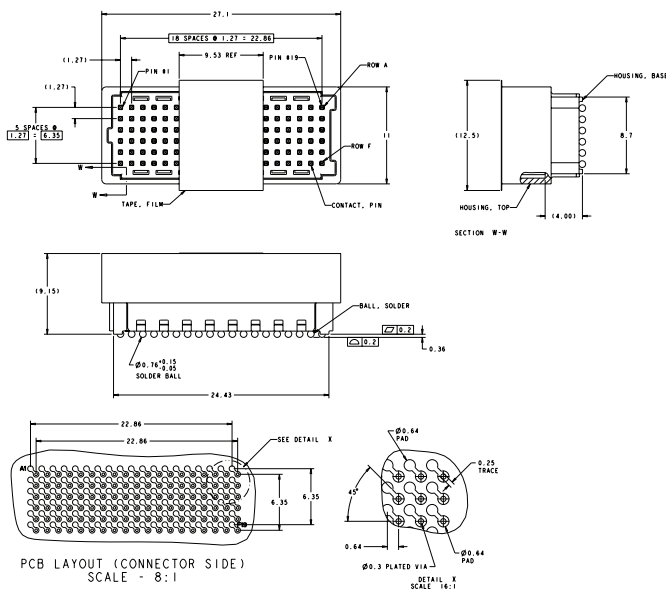
### Mezalok Connector (High Reliability Mezzanine Connector) (Continued)



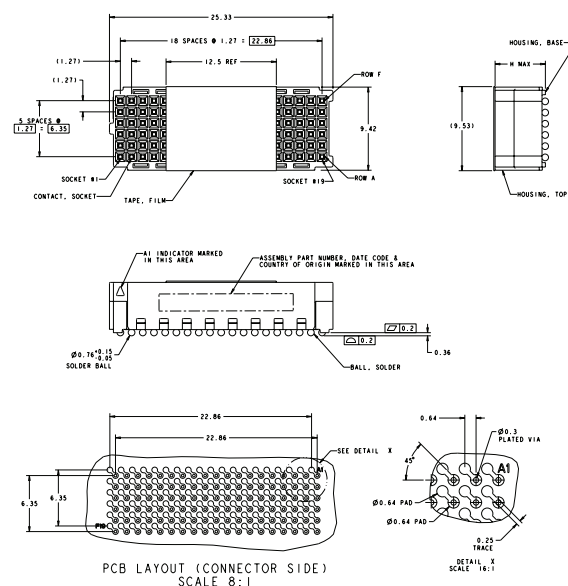
### Mini-box contact

| No. of Pos. | Interface | Mated Stack Height (mm) | Part No.    | Contact Plating | BGA Solder |
|-------------|-----------|-------------------------|-------------|-----------------|------------|
| 60          | pin       | 10                      | 2102079-1   | 1.27 um gold    | tin-lead   |
|             |           |                         | 2102079-2   | 1.27 um gold    | lead free  |
|             |           |                         | 2102079-3   | 0.76 um gold    | tin-lead   |
|             |           |                         | 2102079-4   | 0.76 um gold    | lead free  |
|             | socket    |                         | 2102080-1   | 1.27 um gold    | tin-lead   |
|             |           |                         | 2102080-2   | 1.27 um gold    | lead free  |
|             |           |                         | 2102080-5   | 0.76 um gold    | tin-lead   |
|             |           |                         | 2102080-6   | 0.76 um gold    | lead free  |
|             |           |                         | 2102080-3   | 1.27 um gold    | tin-lead   |
|             |           |                         | 2102080-4   | 1.27 um gold    | lead free  |
|             |           |                         | 2102080-7   | 0.76 um gold    | tin-lead   |
|             |           |                         | 2102080-8   | 0.76 um gold    | lead free  |
|             | 18        |                         | 2102080-9   | 1.27 um gold    | tin-lead   |
|             |           |                         | 1-2102080-0 | 1.27 um gold    | lead free  |
| 1-2102080-1 |           | 0.76 um gold            | tin-lead    |                 |            |
| 1-2102080-2 |           | 0.76 um gold            | lead free   |                 |            |
| 114         | pin       | 10                      | 2102060-1   | 1.27 um gold    | tin-lead   |
|             |           |                         | 2102060-2   | 1.27 um gold    | lead free  |
|             |           |                         | 2102060-3   | 0.76 um gold    | lead free  |
|             |           |                         | 2102060-4   | 0.76 um gold    | lead free  |
|             | socket    |                         | 2102061-1   | 1.27 um gold    | tin-lead   |
|             |           |                         | 2102061-2   | 1.27 um gold    | lead free  |
|             |           |                         | 2102061-5   | 0.76 um gold    | tin-lead   |
|             |           |                         | 2102061-6   | 0.76 um gold    | lead free  |
|             |           |                         | 2102061-3   | 1.27 um gold    | tin-lead   |
|             |           |                         | 2102061-4   | 1.27 um gold    | lead free  |
|             |           |                         | 2102061-7   | 0.76 um gold    | tin-lead   |
|             |           |                         | 2102061-8   | 0.76 um gold    | lead free  |
|             | 15        |                         | 1-2102061-3 | 1.27 um gold    | tin-lead   |
|             |           |                         | 1-2102061-4 | 1.27 um gold    | lead free  |
| 1-2102061-5 |           | 0.76 um gold            | tin-lead    |                 |            |
| 1-2102061-6 |           | 0.76 um gold            | lead free   |                 |            |
| 320         | pin       | 10                      | 2102061-9   | 1.27 um gold    | tin-lead   |
|             |           |                         | 1-2102061-0 | 1.27 um gold    | lead free  |
|             |           |                         | 1-2102061-1 | 0.76 um gold    | tin-lead   |
|             |           |                         | 1-2102061-2 | 0.76 um gold    | lead free  |
|             | socket    |                         | 2102429-1   | 1.27 um gold    | tin-lead   |
|             |           |                         | 2102429-2   | 1.27 um gold    | lead free  |
|             |           |                         | 2102429-3   | 0.76 um gold    | tin-lead   |
|             |           |                         | 2102429-4   | 0.76 um gold    | lead free  |
|             |           |                         | 2102430-1   | 1.27 um gold    | tin-lead   |
|             |           |                         | 2102430-2   | 1.27 um gold    | lead free  |
|             |           |                         | 2102430-5   | 0.76 um gold    | tin-lead   |
|             |           |                         | 2102430-6   | 0.76 um gold    | lead free  |
|             | 18        |                         | 2102430-9   | 1.27 um gold    | tin-lead   |
|             |           |                         | 1-2102430-0 | 1.27 um gold    | lead free  |
| 1-2102430-1 |           | 0.76 um gold            | tin-lead    |                 |            |
| 1-2102430-2 |           | 0.76 um gold            | lead free   |                 |            |

## Pin — 2102060

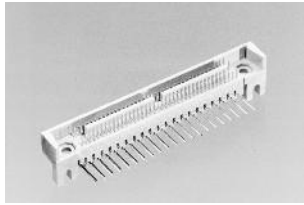


## Socket — 2102061



## Introduction

### Mini-Box .050 [1.27] Centerline Connectors



**Mini-Box Contact Connectors, per MIL-C-55302** are available in 2-row configurations with pin counts from 20 to 200 positions and uses the reliable 4-beam box contact and 4-row configurations up to 320 positions. The tighter centerline spacing, .050 x .150 [1.27 x 3.81] in 2-row, .050 x .100 [1.27 x 2.54] in 4-row, provides more pins within a specified distance and the staggered footprint allows for easier manufacturing of the pc boards.

Standard receptacles are thru-hole flow solder, surface mount, press fit tail and straddle mount. Standard pin headers are available in a choice of surface mount, straddle mount or right-angle configurations.

Extended receptacles are vertical thru-hole and pin headers are available in straddle mount or right-angle thru-hole versions.

In addition, Mini-Box 2-row connectors are available with 4 or 6 hybrid cavities which accept micro-miniature coax contacts or a choice of high voltage pin and socket contacts.

TE Connectivity Mini-Box connectors are also available in 4-row connector configurations. Vertical mount receptacle assemblies and pin headers with flexible circuit tails.

### AMP-HDI .050 [1.27] and .075 [1.91] Centerline Connectors

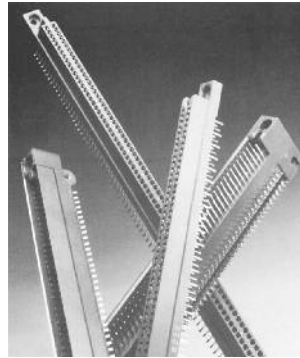


#### This family includes .050 [1.27] stacking connectors and 6 & 8 Row LRM (Line Replaceable Module) Connectors

Designed specifically to be the next generation, high density electronic packaging system, the AMP-HDI 6 Row, .075 [1.91] centerlines and 8 Row, .080 [2.03] centerlines, LRM Interconnection System meets applicable DSCC 89065 LRM specifications. This advanced system features high temperature plastic housings compatible with IR reflow solder techniques. Added advantage of the AMP-HDI LRM System is its capability of accepting MIL SPEC fiber optic contacts per MIL-T29504/5. Six-row configurations available in 306 contact positions. Eight-row configurations feature two 214 position plug halves which mate with one 428-position receptacle. This technological leader is offered with standard tin-lead plated solder tails and for those applications where maintaining a light weight system is a factor. The 8-row configuration is made available with weight saving, flexible film tails.

Equally important are Application Costs. The AMP-HDI LRM interconnection system offers advanced tooling that simplifies contact alignment to the pc board, substantially reducing overall applied labor costs.

### .075 [1.91] & .100 [2.54] Centerline Box Contact Connectors

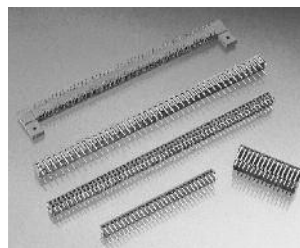


**Box Contact Connectors** with contacts on .075 [1.91] & .100 [2.54] centerline spacing are available in 2, 3 and 4-row configurations with pin counts up to 300 contact positions. Box contact connectors use this unique, reliable four-beam design which offers low applied cost while maintaining high reliability and performance.

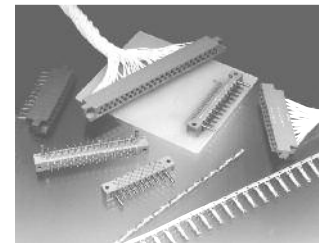
Commercial military versions are available for both pin headers and receptacles.

Box II vertical receptacles with ACTION PIN Posts and Solder Post Contacts are also available. When mated with AMP-HDI pin assemblies, these permit horizontal stacking of motherboards. 2, 3, and 4-row connector versions are available.

### .100 [2.54] Centerline Connectors



**AMPMODU Board-Mount Receptacle Assemblies** are qualified to MIL-C-55302, and provide a compact and versatile means of interconnecting today's complex electronic modules. Right-angle receptacle connectors mate with .025<sup>2</sup> [0.64<sup>2</sup>] posts, have dual cantilever spring contact design and built-in anti-overstress, duplex gold-over-nickel plating, and wide misalignment tolerances. Contacts are on .100 [2.54] centerlines, and are available in single or double row, blue diallyl phthalate housings. Assemblies will accommodate pcb .062 [1.57] or .093 [2.36] thick.



**AMP-BLADE Two-Piece PC Edge Connectors** provide high levels of conductivity and reliability to meet the performance specifications of MIL-C-21097, and the design requirements of MIL-E-5400. Blade and receptacle contacts, on .100 [2.54] centerlines provide multiple areas of contact for maximum conductivity. Blade contacts are gold plated in the contact mating area, with tin-lead on the solder tails all over nickel underplate.

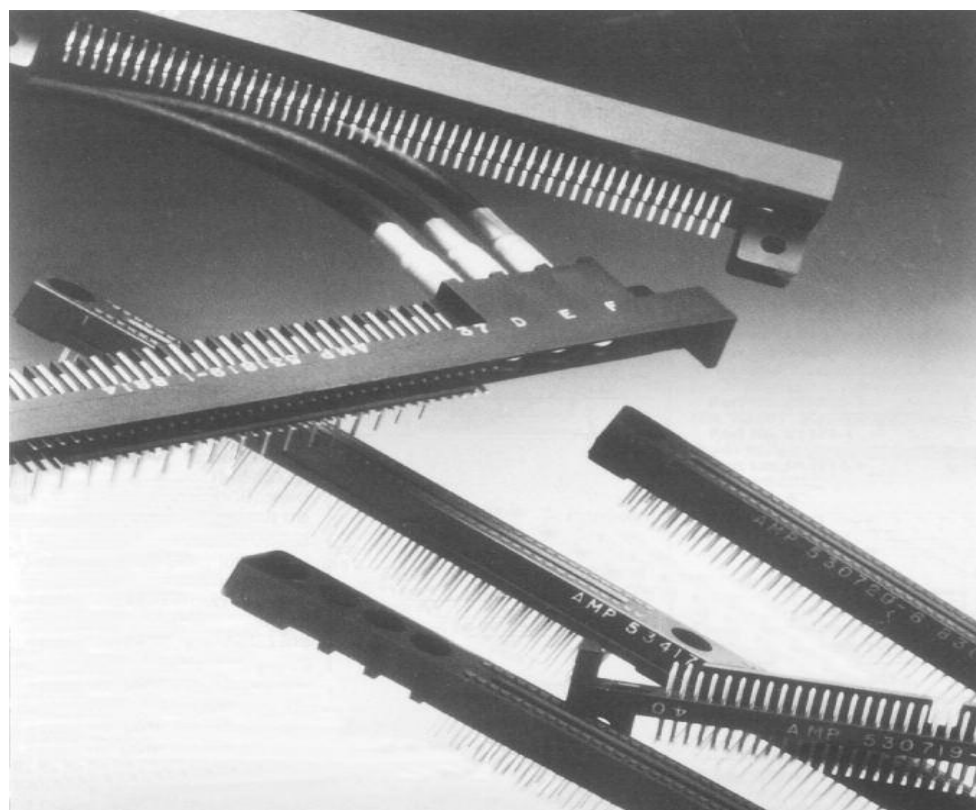
PC board housings are available with or without mounting hole while cable-mount connectors are designed for maximum versatility, and will accept a variety of receptacle contact designs.



## Introduction

### Product Facts

- Contacts are on .050 x .150 [1.27 x 3.81] centers
- Four-beam box-type receptacle contact design provides four areas of contact per connection
- Quad-beam contact redundancy makes it an excellent choice in high-vibration environments
- 2-row standard versions: 2 to 120 contact positions
- 2-row extended versions: 132 to 200 contact positions
- 4-row versions: 120 to 320 contact positions
- Sealed versions available
- Pin headers are available in straddle mount (with or without pin protectors) and right-angle versions (with pin protectors)
- Solder tails on receptacles and right-angle pin headers are staggered for easy access
- Hybrid connectors with coaxial and signal contacts available
- Qualified to MIL-C-55302/117, /118, /119
- 2 row and 4 row versions available



TE Connectivity Mini-Box .050 [1.27] centerline connectors are available in 2-row connector configurations having 20 to 128 contact positions in the standard version, and 132 to 200 contact positions in the extended version.

Standard Mini-Box receptacle assemblies are available with a choice of thru-hole, surface-mount or straddle mount solder tails. Standard Mini-Box pin headers are designed with surface-mount, straddle

mount, and thru-hole right-angle solder tails.

Extended receptacle assemblies are vertical-mount thru-hole configurations, and pin headers are in a choice of straddle mount or thru-hole versions.

A 4-row version for compact high count connections\* is offered in thru-hole receptacle and straddle mount pin header configurations.

Mini-Box connectors are also available in four or six cavity hybrid configurations with 26 to 74-Mini-Box contacts.

Coaxial Cavities in the hybrid Mini-Box connectors will also accept high voltage pin or socket contacts with operating voltage up to 5KVDC.

External keying is an added feature of the TE Mini-Box connector family. External keys are used with receptacle assemblies and pin headers. Keys used in one end of each mated pair will yield eight keying combinations. If used in both ends sixty-four keying combinations are possible.

\*up to 360 positions

### Performance Characteristics

**Rated Current** — 1.5 amps per contact

**Operating Temperature Range** — -85° to 257°F [-65° to 125° C]

**Maximum Mating Force** — .3 lb. [.08N] per contact

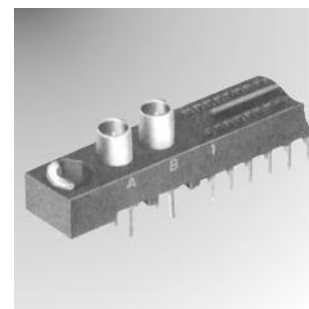
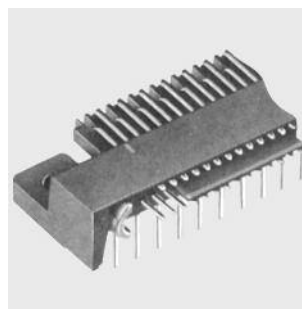
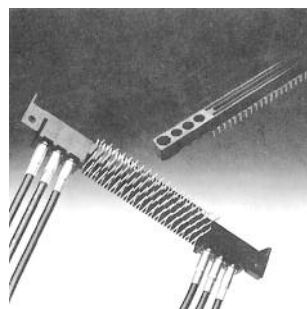
**Durability** — 500 cycles of mating and unmating

**Dielectric Withstanding Voltage** — 600 VAC at sea level, 150 VAC at 70,000 feet

### Technical Documents

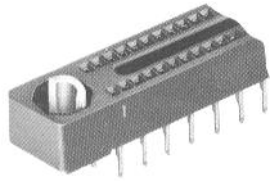
#### Product Specifications

108-9046 Connector Mini-Box Contact  
108-1663 Connector Mini-Box Contact with Compliant Printed Wiring Board Termination





## Mini-Box Receptacle Assemblies for Flow Soldering — MIL-C-55302 Qualified



**Housing Material** — In accordance with MIL-M-24519 per MIL-C-55302. GLCP-30F, liquid crystal polymer

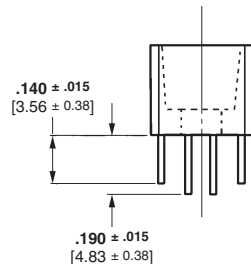
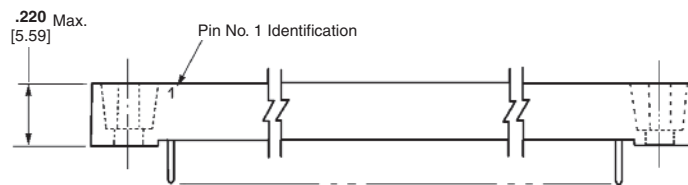
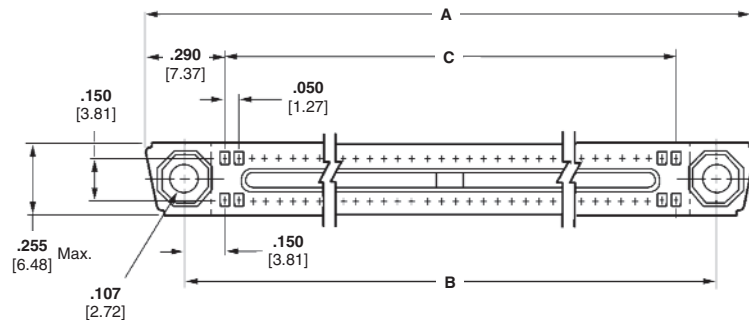
**Contact Material and Finish** — Commercial receptacle — Beryllium copper per QQ-C-533 or ASTM B768, or phosphor bronze per ASTM B103 plated .000030 [0.00076] min. gold in the mating area, .000100 [0.00254] min. tin-lead in the terminating area over .000030 [0.00076] min. nickel on the entire contact; Military receptacle — Beryllium copper per QQ-C-533 or ASTM B768, or phosphor bronze per ASTM B103 plated .000050 [0.00127] min. gold in the mating area, .000100 [0.00254] min. tin-lead in the terminating area over .000030 [0.00076] min. nickel on the entire contact

### Related Product Data

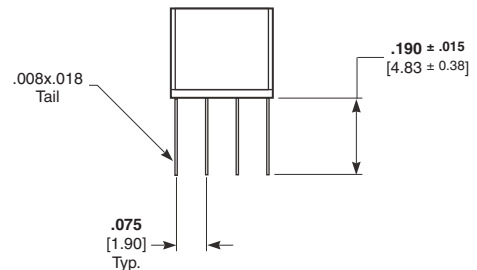
**Mates with** — Pin headers, pages 1-21 to 1-22

**External Keying** — page 1-30

**Recommended PC Board Layout** — page 1-28



530720 and 530745 Series



534175 Series

| No. of Pos. | Dimensions     |                |                | Assembly Part Nos. |               | Military Assembly Part Nos. |            |            |
|-------------|----------------|----------------|----------------|--------------------|---------------|-----------------------------|------------|------------|
|             | A              | B              | C              | Commercial         | Epoxy Sealed* | M55302/                     | Unsealed   | Sealed     |
| 128         | 3.740<br>95.00 | 3.450<br>87.63 | 3.150<br>80.01 | 530720-9           | 534175-1      | 119-11                      | 1-530745-1 | 2-530745-2 |
| 110         | 3.290<br>83.57 | 3.000<br>76.2  | 2.700<br>68.58 | 530720-8           | 534175-2      | 119-10                      | 1-530745-0 | 2-530745-1 |
| 100         | 3.040<br>77.22 | 2.750<br>69.85 | 2.450<br>62.23 | 530720-7           | 534175-3      | 119-09                      | 530745-9   | 2-530745-0 |
| 90          | 2.790<br>70.87 | 2.500<br>63.5  | 2.200<br>55.88 | 530720-6           | 534175-4      | 119-08                      | 530745-8   | 1-530745-9 |
| 80          | 2.540<br>64.52 | 2.250<br>57.15 | 1.950<br>49.53 | 530720-5           | 534175-5      | 119-07                      | 530745-7   | 1-530745-8 |
| 70          | 2.290<br>58.17 | 2.000<br>50.8  | 1.700<br>43.18 | 530720-4           | 534175-6      | 119-06                      | 530745-6   | 1-530745-7 |
| 60          | 2.040<br>51.82 | 1.750<br>44.45 | 1.450<br>36.83 | 530720-3           | 534175-7      | 119-05                      | 530745-5   | 1-530745-6 |
| 50          | 1.790<br>45.47 | 1.500<br>38.1  | 1.200<br>30.48 | 530720-2           | 534175-8      | 119-04                      | 530745-4   | 1-530745-5 |
| 40          | 1.540<br>39.12 | 1.250<br>31.75 | .950<br>24.13  | 530720-1           | 534175-9      | 119-03                      | 530745-3   | 1-530745-4 |
| 30          | 1.290<br>32.77 | 1.000<br>25.4  | .700<br>17.78  | 1-530720-0         | 1-534175-0    | 119-02                      | 530745-2   | 1-530745-3 |
| 20          | 1.040<br>26.42 | .750<br>19.05  | .450<br>11.43  | 1-530720-1         | 1-534175-1    | 119-01                      | 530745-1   | 1-530745-2 |

**Note:** Contact Align—Part Number 58107-1

\*Same contact material and finish per military receptacle

## Mini-Box Receptacle Assemblies for Flow Soldering — MIL-C-55302 Qualified (Continued)

### Vertical, Surface-Mount



#### Material and Finish

**Housing** — In accordance with MIL-M-24519 per MIL-C-55302. GLCP-30F, liquid crystal polymer, grey

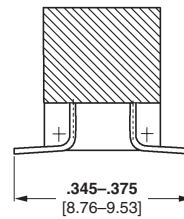
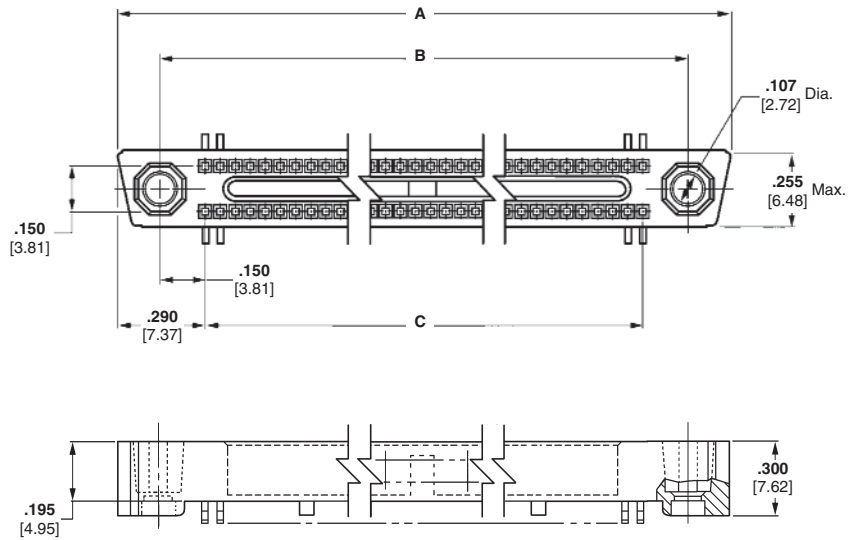
**Contacts** — Beryllium copper per QQ-C-533 or ASTM B768, or phosphor bronze per ASTM B103 plated .000050 [0.00127] min. gold in the mating area, .000100 [0.00254] min. tin-lead in the terminating area, over .000030 [0.00076] min. nickel on the entire contact

#### Related Product Data

**Mates with** — Pin headers, pages 1-21 to 1-22

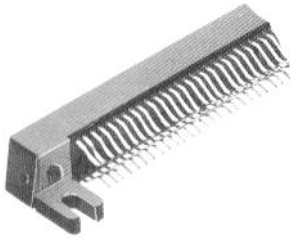
**External Keying** — page 1-30

**Recommended PC Board Layout** — page 1-28



| No. of Pos. | Dimensions     |                |                | Assembly Part No. |
|-------------|----------------|----------------|----------------|-------------------|
|             | A              | B              | C              |                   |
| 128         | 3.740<br>95.00 | 3.450<br>87.63 | 3.150<br>80.01 | 1-449599-1        |
| 110         | 3.290<br>83.57 | 3.000<br>76.20 | 2.700<br>68.58 | 1-449599-0        |
| 100         | 3.040<br>77.22 | 2.750<br>69.85 | 2.450<br>62.23 | 449599-9          |
| 90          | 2.790<br>70.87 | 2.500<br>63.50 | 2.200<br>55.88 | 449599-8          |
| 80          | 2.540<br>64.52 | 2.250<br>57.15 | 1.950<br>49.53 | 449599-7          |
| 70          | 2.290<br>58.17 | 2.000<br>50.80 | 1.700<br>43.18 | 449599-6          |
| 60          | 2.040<br>51.82 | 1.750<br>44.45 | 1.450<br>36.83 | 449599-5          |
| 50          | 1.790<br>45.47 | 1.500<br>38.10 | 1.200<br>30.48 | 449599-4          |
| 40          | 1.540<br>39.12 | 1.250<br>31.75 | .950<br>24.13  | 449599-3          |
| 30          | 1.290<br>32.77 | 1.000<br>25.40 | .700<br>17.78  | 449599-2          |
| 20          | 1.040<br>26.42 | .750<br>19.05  | .450<br>11.43  | 449599-1          |

## Mini-Box Straddle Mount Receptacle Assemblies



**Housing Material** — Liquid crystal polymer

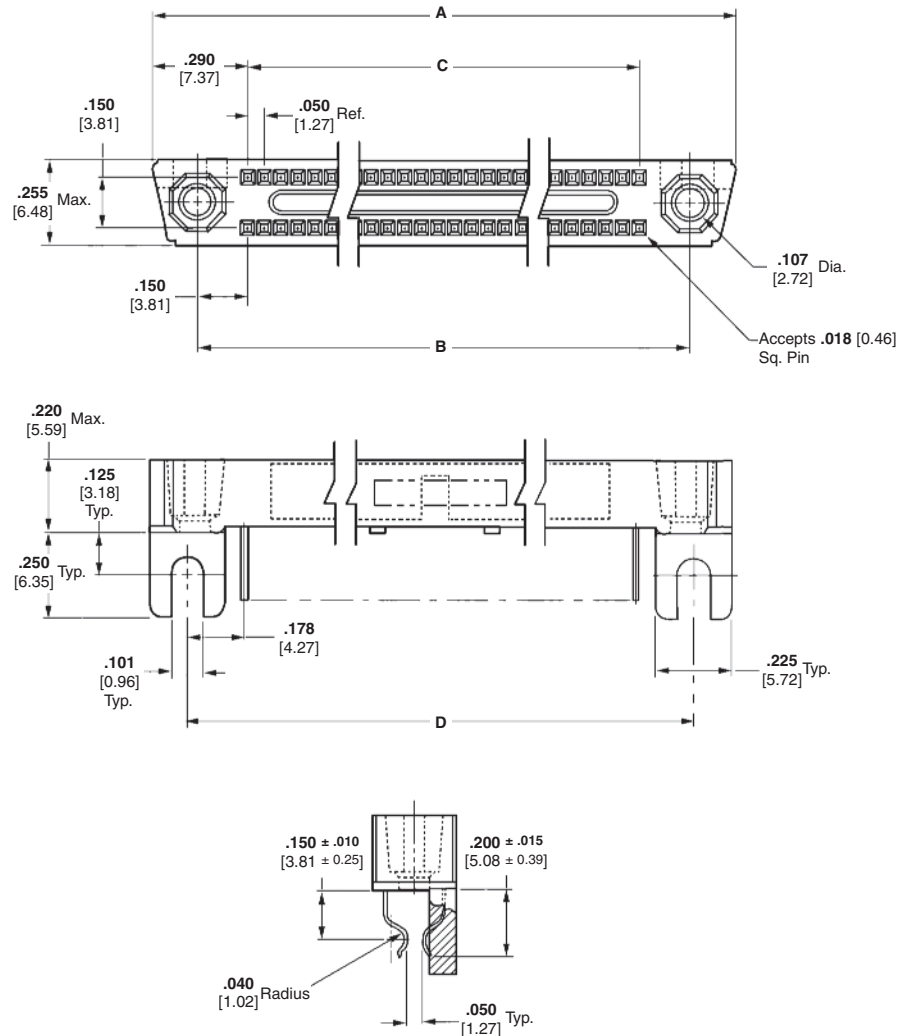
**Contact Material and Finish** — Beryllium copper per QQ-C-533 or ASTM B768, or phosphor bronze per ASTM B103 plated .000050 [0.00127] min. gold in the mating area, .000100 [0.00254] min. tin-lead in the terminating area over .000030 [0.00076] min. nickel on the entire contact

### Related Product Data

**Mates with** — Pin headers, pages 1-21 to 1-22

**External Keying** — page 1-30

**Recommended PC Board Layout** — page 1-28



| No. of Pos. | Dimensions     |                |                |                | Assembly Part No. |
|-------------|----------------|----------------|----------------|----------------|-------------------|
|             | A              | B              | C              | D              |                   |
| 128         | 3.740<br>95.00 | 3.450<br>87.63 | 3.150<br>80.01 | 3.505<br>89.03 | 445185-1          |
| 110         | 3.290<br>83.57 | 3.000<br>76.2  | 2.700<br>68.58 | 3.055<br>77.60 | 445185-2          |
| 100         | 3.040<br>77.22 | 2.750<br>69.85 | 2.450<br>62.23 | 2.805<br>71.25 | 445185-3          |
| 90          | 2.790<br>70.87 | 2.500<br>63.5  | 2.200<br>55.88 | 2.555<br>64.90 | 445185-4          |
| 80          | 2.540<br>64.52 | 2.250<br>57.15 | 1.950<br>49.53 | 2.305<br>58.55 | 445185-5          |
| 70          | 2.290<br>58.17 | 2.000<br>50.8  | 1.700<br>43.18 | 2.055<br>52.20 | 445185-6          |
| 60          | 2.040<br>51.82 | 1.750<br>44.45 | 1.450<br>36.83 | 1.805<br>45.85 | 445185-7          |
| 50          | 1.790<br>45.47 | 1.500<br>38.1  | 1.200<br>30.48 | 1.555<br>39.50 | 445185-8          |
| 40          | 1.540<br>39.12 | 1.250<br>31.75 | .950<br>24.13  | 1.305<br>33.15 | 445185-9          |
| 30          | 1.290<br>32.77 | 1.000<br>25.4  | .700<br>17.78  | 1.055<br>26.80 | 1-445185-0        |
| 20          | 1.040<br>26.42 | .750<br>19.05  | .450<br>11.43  | .805<br>20.45  | 1-445185-1        |

## Mini-Box Pin Header Assemblies

### Vertical, Surface Mount



#### Material and Finish

**Housing** — In accordance with MIL-M-24519 per MIL-C-55302. GLCP-30F, liquid crystal polymer, grey

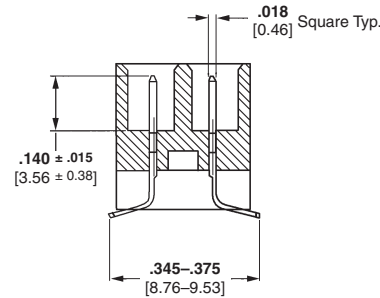
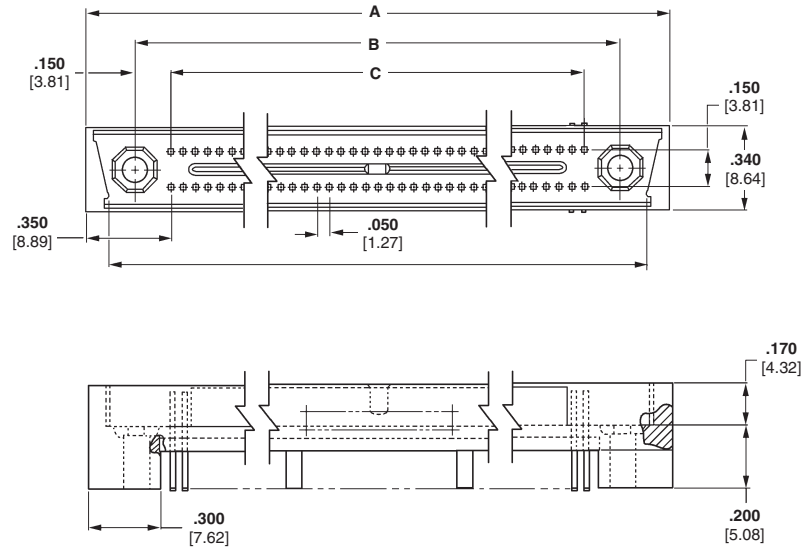
**Contacts** — Brass per QQ-B-626, plated .000050 [0.00127] min. gold in the mating area, .000100 [0.00254] min. tin-lead in the terminating area, over .000030 [0.00076] min. nickel on the entire contact

#### Related Product Data

**Mates with** — Receptacle assemblies, pages 1-18 to 1-20

**External Keying** — page 1-30

**Recommended PC Board Layout** — page 1-28



| No. of Pos. | Dimensions     |                |                | Assembly Part No. |
|-------------|----------------|----------------|----------------|-------------------|
|             | A              | B              | C              |                   |
| 128         | 3.850<br>97.79 | 3.450<br>87.63 | 3.150<br>80.01 | 447441-3          |
| 110         | 3.400<br>86.36 | 3.000<br>76.20 | 2.700<br>68.58 | 447441-1          |
| 100         | 3.150<br>80.01 | 2.750<br>69.85 | 2.450<br>62.23 | 447441-4          |
| 90          | 2.900<br>73.66 | 2.500<br>63.50 | 2.200<br>55.88 | 447441-5          |
| 80          | 2.650<br>67.31 | 2.250<br>57.15 | 1.950<br>49.53 | 447441-6          |
| 70          | 2.400<br>60.96 | 2.000<br>50.80 | 1.700<br>43.18 | 447441-2          |
| 60          | 2.150<br>54.61 | 1.750<br>44.45 | 1.450<br>36.83 | 447441-7          |
| 50          | 1.900<br>48.26 | 1.500<br>38.10 | 1.200<br>30.48 | 447441-8          |
| 40          | 1.650<br>41.91 | 1.250<br>31.75 | .950<br>24.13  | 447441-9          |
| 30          | 1.400<br>35.56 | 1.000<br>25.40 | .700<br>17.78  | 1-447441-0        |
| 20          | 1.150<br>29.21 | .750<br>19.05  | .450<br>11.43  | 1-447441-1        |

## Mini-Box Pin Header Assemblies (Continued)

### Related Product Data

**Mates with** — Receptacles,  
pages 1-21 to 1-22

**External Keying** — Page 1-30

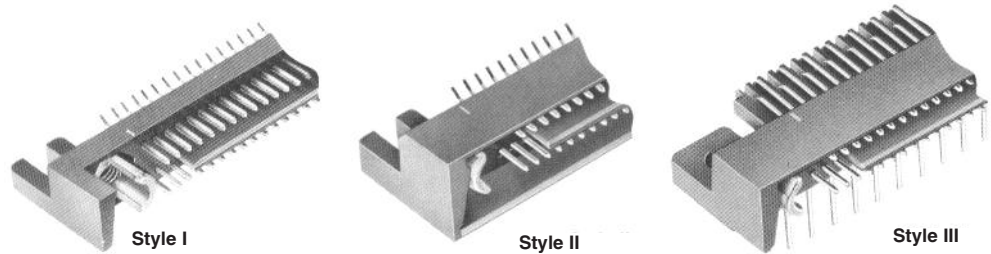
**Recommended PC Board**

**Layout** — Page 1-28

### Commercial Pin Header Assemblies

**Housing Material** — In accordance with MIL-M-24519 per MIL-C-55302 GLCP-30F, liquid crystal polymer

**Contact Material and Finish** — Brass per QQ-B-626 plated .000030 [0.00076] min. gold in the contact area,



.000100 [0.00254] min. tin-lead on the tail over .000050 [0.00127] min. nickel on the entire contact

| No. of Pos. | Dimensions     |                |                | Style I Straddle Mount Part No. | Style II Straddle Mt. w/Pin Protect. Part No. | Style III Right-Angle Mount Part No. |
|-------------|----------------|----------------|----------------|---------------------------------|-----------------------------------------------|--------------------------------------|
|             | A              | B              | C              |                                 |                                               |                                      |
| 128         | 3.850<br>97.79 | 3.600<br>91.44 | 3.150<br>80.01 | 530719-9                        | 1-531122-1                                    | 530733-9                             |
| 110         | 3.400<br>86.36 | 3.150<br>80.01 | 2.700<br>68.58 | —                               | —                                             | 530733-8                             |
| 100         | 3.150<br>80.01 | 2.900<br>73.66 | 2.450<br>62.23 | 530719-7                        | —                                             | 530733-7                             |
| 90          | 2.900<br>73.66 | 2.650<br>67.31 | 2.200<br>55.88 | 530719-6                        | —                                             | 530733-6                             |
| 80          | 2.650<br>67.31 | 2.400<br>60.96 | 1.950<br>49.53 | 530719-5                        | —                                             | 530733-5                             |
| 70          | 2.400<br>60.96 | 2.150<br>54.61 | 1.700<br>43.18 | 530719-4                        | 531122-6                                      | 530733-4                             |
| 60          | 2.150<br>54.61 | 1.900<br>48.26 | 1.450<br>36.83 | 530719-3                        | 531122-5                                      | 530733-3                             |
| 50          | 1.900<br>48.26 | 1.650<br>41.91 | 1.200<br>30.48 | 530719-2                        | —                                             | 530733-2                             |
| 40          | 1.650<br>41.91 | 1.400<br>35.56 | .950<br>24.13  | 530719-1                        | —                                             | 530733-1                             |
| 30          | 1.400<br>35.56 | 1.150<br>29.21 | .700<br>17.78  | —                               | —                                             | 1-530733-0                           |
| 20          | 1.150<br>29.21 | .900<br>22.86  | .450<br>11.43  | —                               | —                                             | 1-530733-1                           |

### Military Pin Header Assemblies — Qualified to MIL-C-55302

**Housing Material** — In accordance with MIL-C-55302

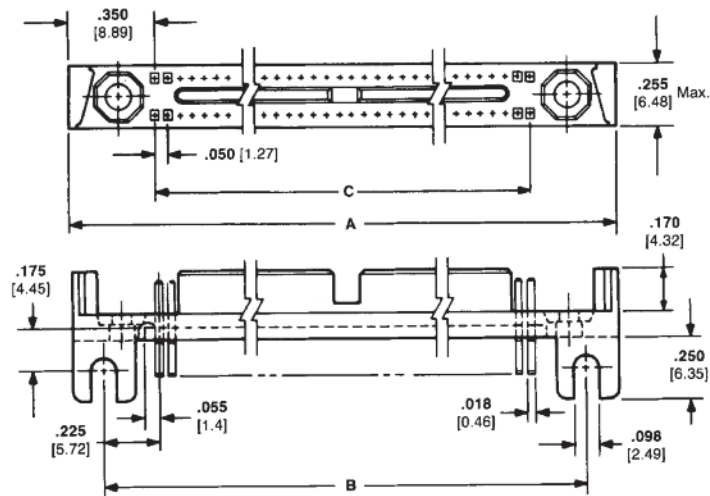
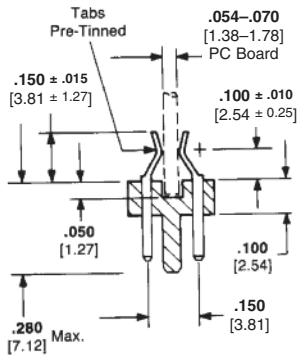
**Contact Material and Finish** — Brass per QQ-B-626 plated .000050 [0.00127] min. gold in the contact area, .000100 [0.00254] min. tin-lead on the tail over .000050 [0.00127] min. nickel on the entire contact.

| No. of Pos. | Dimensions     |                |                | Style I - Straddle Mount |            | Style II - Straddle Mt. w/ Pin Protect. |            | Style III - Right-Angle |            |
|-------------|----------------|----------------|----------------|--------------------------|------------|-----------------------------------------|------------|-------------------------|------------|
|             | A              | B              | C              | MIL-C-55302/             | Part No.   | MIL-C-55302/                            | Part No.   | MIL-C-55302/            | Part No.   |
| 128         | 3.850<br>97.79 | 3.600<br>91.44 | 3.150<br>80.01 | 118-11                   | 2-530744-2 | 118-22                                  | 2-531803-2 | 117-11                  | 2-530743-2 |
| 110         | 3.400<br>86.36 | 3.150<br>80.01 | 2.700<br>68.58 | 118-10                   | 2-530744-1 | 118-21                                  | 2-531803-1 | 117-10                  | 2-530743-1 |
| 100         | 3.150<br>80.01 | 2.900<br>73.66 | 2.450<br>62.23 | 118-09                   | 2-530744-0 | 118-20                                  | 2-531803-0 | 117-09                  | 2-530743-0 |
| 90          | 2.900<br>73.66 | 2.650<br>67.31 | 2.200<br>55.88 | 118-08                   | 1-530744-9 | 118-19                                  | 1-531803-9 | 117-08                  | 1-530743-9 |
| 80          | 2.650<br>67.31 | 2.400<br>60.96 | 1.950<br>49.53 | 118-07                   | 1-530744-8 | 118-18                                  | 1-531803-8 | 117-07                  | 1-530743-8 |
| 70          | 2.400<br>60.96 | 2.150<br>54.61 | 1.700<br>43.18 | 118-06                   | 1-530744-7 | 118-17                                  | 1-531803-7 | 117-06                  | 1-530743-7 |
| 60          | 2.150<br>54.61 | 1.900<br>48.26 | 1.450<br>36.83 | 118-05                   | 1-530744-6 | 118-16                                  | 1-531803-6 | 117-05                  | 1-530743-6 |
| 50          | 1.900<br>48.26 | 1.650<br>41.91 | 1.200<br>30.48 | 118-04                   | 1-530744-5 | 118-15                                  | 1-531803-5 | 117-04                  | 1-530743-5 |
| 40          | 1.650<br>41.91 | 1.400<br>35.56 | .950<br>24.13  | 118-03                   | 1-530744-4 | 118-14                                  | 1-531803-4 | 117-03                  | 1-530743-4 |
| 30          | 1.400<br>35.56 | 1.150<br>29.21 | .700<br>17.78  | 118-02                   | 1-530744-3 | 118-13                                  | 1-531803-3 | 117-02                  | 1-530743-3 |
| 20          | 1.150<br>29.21 | .900<br>22.86  | .450<br>11.43  | 118-01                   | 1-530744-2 | 118-12                                  | 1-531803-2 | 117-01                  | 1-530743-2 |

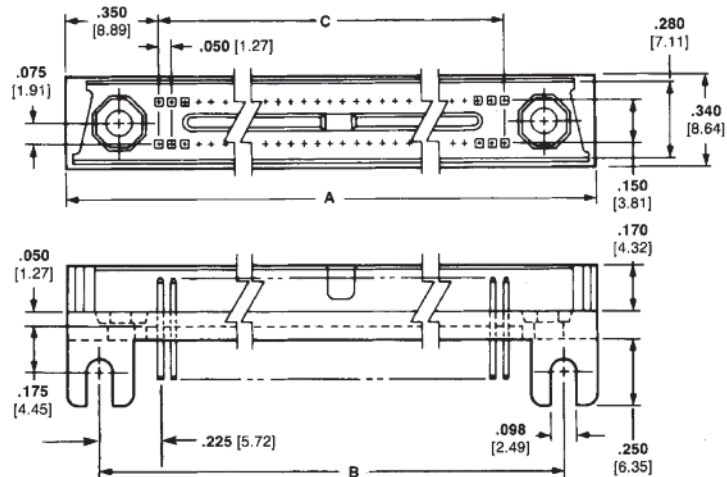
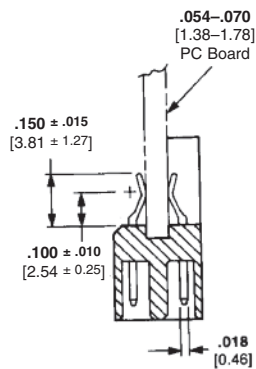


**Mini-Box Pin Header Assemblies (Continued)**

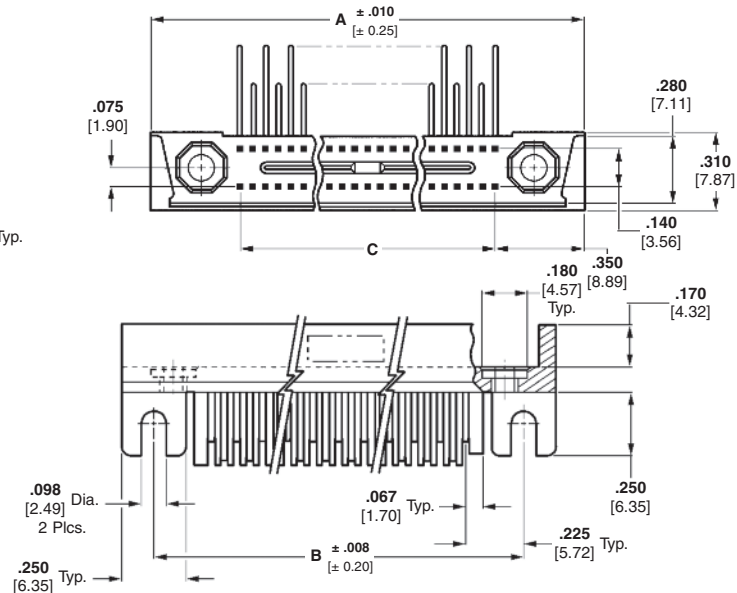
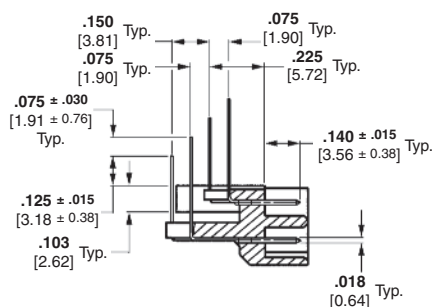
**Style I  
Straddle Mount without  
Pin Protectors**



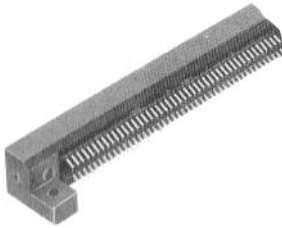
**Style II  
Straddle Mount with  
Pin Protectors**



**Style III  
Right-Angle Mount**



## Extended Mini-Box Receptacle Assemblies



**Housing Material** — Liquid crystal polymer

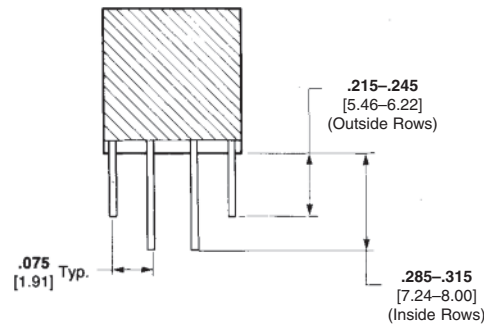
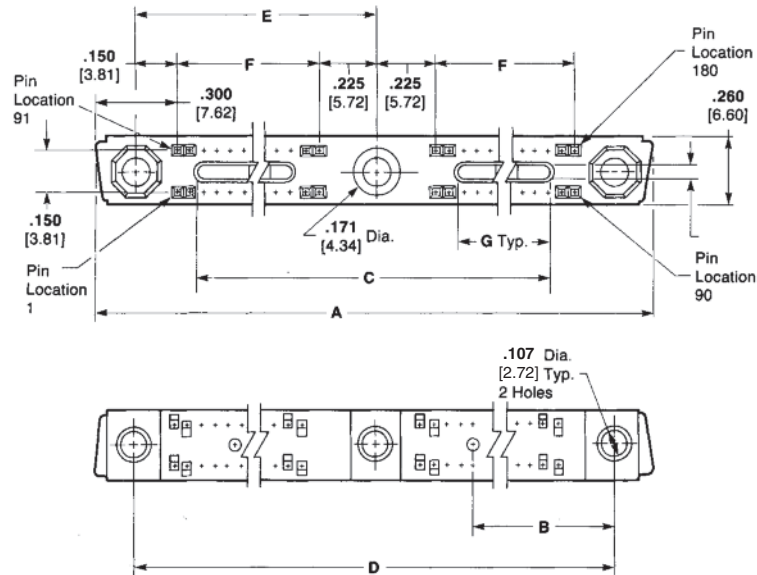
**Contact Material and Finish** — Beryllium copper per QQ-C-533 or ASTM B768, or phosphor bronze per ASTM B103 plated .000050 [0.00127] min. gold in the mating area, .000100 [0.00254] min. tin-lead in the terminating area over .000030 [0.00076] min. nickel on the entire contact

### Related Product Data

**Mates with** — Straddle mount pin header assembly, page 1-23, and right-angle pin header, page 1-24

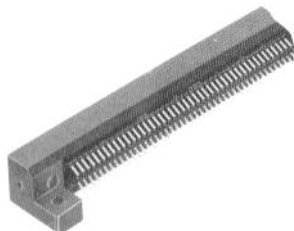
**External Keying** — page 1-30

**Recommended PC Board Layout** — page 1-28



| No. of Pos. | Dimensions      |                |                 |                 |                |                |                | Assembly Part No. |
|-------------|-----------------|----------------|-----------------|-----------------|----------------|----------------|----------------|-------------------|
|             | A               | B              | C               | D               | E              | F              | G              |                   |
| 200         | 5.950<br>151.13 | 1.413<br>35.89 | 5.200<br>132.08 | 5.650<br>143.51 | 2.825<br>71.76 | 2.450<br>62.23 | 2.300<br>58.42 | 534179-8          |
| 192         | 5.750<br>146.05 | 1.362<br>34.60 | 5.000<br>127.00 | 5.450<br>138.43 | 2.725<br>69.22 | 2.350<br>59.69 | 2.200<br>55.88 | 534179-7          |
| 180         | 5.450<br>138.43 | 1.287<br>32.69 | 4.700<br>119.38 | 5.150<br>130.81 | 2.575<br>65.41 | 2.200<br>55.88 | 2.050<br>52.07 | 534179-6          |
| 172         | 5.250<br>133.35 | 1.237<br>31.42 | 4.500<br>114.30 | 4.950<br>125.73 | 2.475<br>62.87 | 2.100<br>53.34 | 1.950<br>49.53 | 534179-5          |
| 160         | 4.950<br>125.73 | 1.162<br>29.52 | 4.200<br>106.68 | 4.650<br>118.11 | 2.325<br>59.06 | 1.950<br>49.53 | 1.800<br>45.72 | 534179-4          |
| 152         | 4.750<br>120.65 | 1.062<br>26.98 | 4.000<br>101.60 | 4.450<br>113.03 | 2.225<br>56.52 | 1.850<br>46.99 | 1.700<br>43.18 | 534179-3          |
| 140         | 4.450<br>113.03 | 1.037<br>26.34 | 3.700<br>93.98  | 4.150<br>105.41 | 2.075<br>52.71 | 1.700<br>43.18 | 1.550<br>39.37 | 534179-2          |
| 132         | 4.250<br>107.95 | .987<br>25.07  | 3.500<br>88.90  | 3.950<br>100.33 | 1.975<br>50.17 | 1.600<br>40.64 | 1.450<br>36.83 | 534179-1          |

## Extended Mini-Box Pin Header Assemblies



**Housing Material** — Liquid crystal polymer

**Contact Material and Finish** — Brass per QQ-B-626 plated .000050 [0.00127] min. gold in the contact area, .000100 [0.00254] min. tin-lead on the tails over .000050 [0.00127] min. nickel on the entire contact

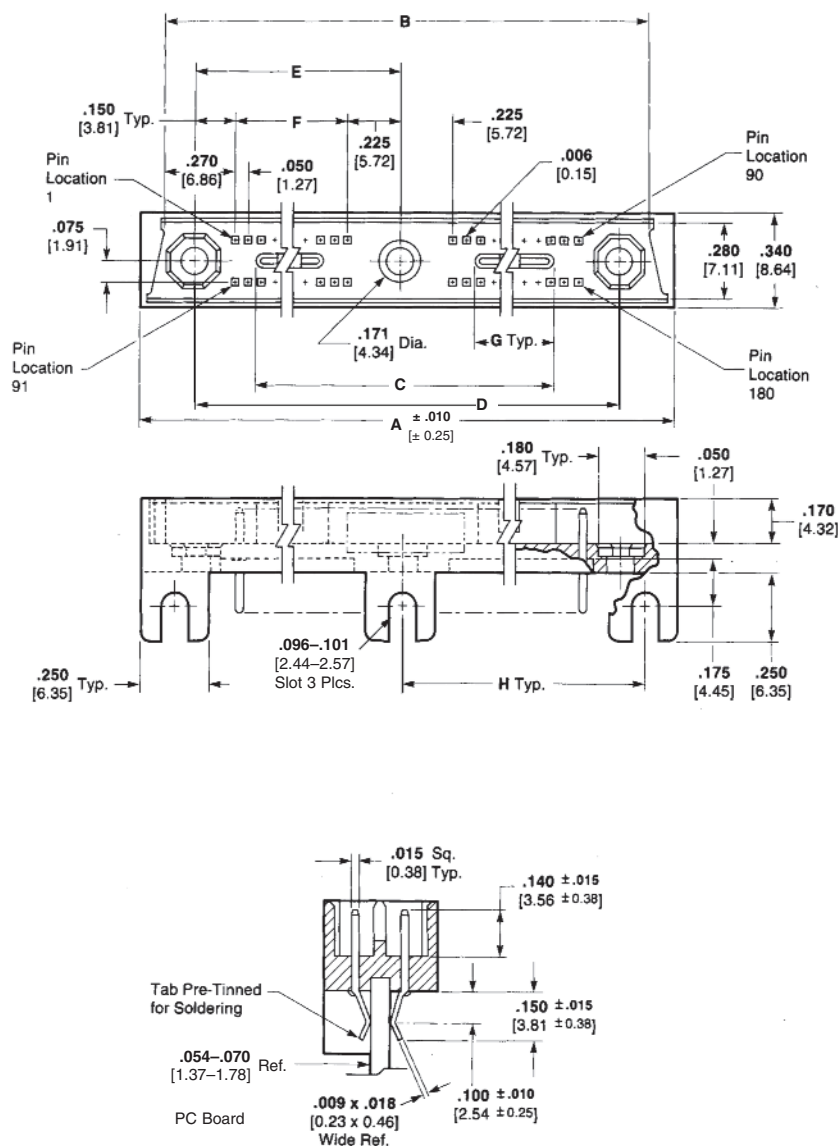
### Related Product Data

**Mates with** — Receptacle, page 1-23

**External Keying**— page 1-30

**Recommended PC Board Layout** —  
page 1-29

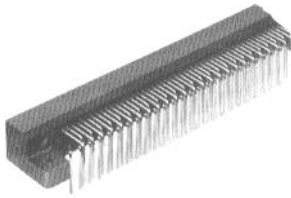
## Style I



| No. of Pos. | Dimensions |        |        |        |       |       |       |       | Assembly Part No. |
|-------------|------------|--------|--------|--------|-------|-------|-------|-------|-------------------|
|             | A          | B      | C      | D      | E     | F     | G     | H     |                   |
| 200         | 6.050      | 5.890  | 5.190  | 5.650  | 2.825 | 2.450 | 2.290 | 2.900 | 534180-8          |
|             | 153.67     | 149.61 | 131.83 | 143.51 | 71.76 | 62.23 | 58.17 | 73.66 |                   |
| 192         | 5.850      | 5.690  | 4.990  | 5.450  | 2.725 | 2.350 | 2.190 | 2.800 | 534180-7          |
|             | 148.6      | 144.53 | 126.75 | 138.43 | 69.22 | 59.69 | 55.63 | 71.12 |                   |
| 180         | 5.550      | 5.390  | 4.690  | 5.150  | 2.575 | 2.200 | 2.040 | 2.650 | 534180-6          |
|             | 140.97     | 136.91 | 119.13 | 130.81 | 65.41 | 55.88 | 51.82 | 67.31 |                   |
| 172         | 5.350      | 5.190  | 4.490  | 4.950  | 2.475 | 2.100 | 1.940 | 2.550 | 534180-5          |
|             | 135.89     | 131.83 | 114.00 | 125.73 | 62.87 | 53.34 | 49.28 | 64.77 |                   |
| 160         | 5.050      | 4.890  | 4.190  | 4.650  | 2.325 | 1.950 | 1.790 | 2.400 | 534180-4          |
|             | 128.27     | 124.21 | 106.43 | 118.11 | 59.06 | 49.53 | 45.47 | 60.96 |                   |
| 152         | 4.850      | 4.690  | 3.990  | 4.450  | 2.225 | 1.850 | 1.690 | 2.300 | 534180-3          |
|             | 123.19     | 119.13 | 101.35 | 113.03 | 56.52 | 46.99 | 42.93 | 58.42 |                   |
| 140         | 4.550      | 4.390  | 3.690  | 4.150  | 2.075 | 1.700 | 1.540 | 2.150 | 534180-2          |
|             | 115.57     | 111.51 | 93.73  | 105.41 | 52.71 | 43.18 | 38.12 | 54.60 |                   |
| 132         | 4.350      | 4.190  | 3.490  | 3.950  | 1.975 | 1.600 | 1.440 | 2.050 | 534180-1          |
|             | 110.49     | 106.43 | 88.65  | 100.33 | 50.17 | 40.64 | 36.58 | 52.07 |                   |

## Extended Mini-Box Right-Angle Pin Header Assemblies

## Style II



**Housing Material** — Liquid crystal polymer

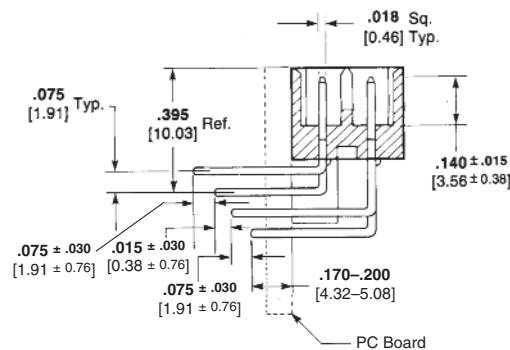
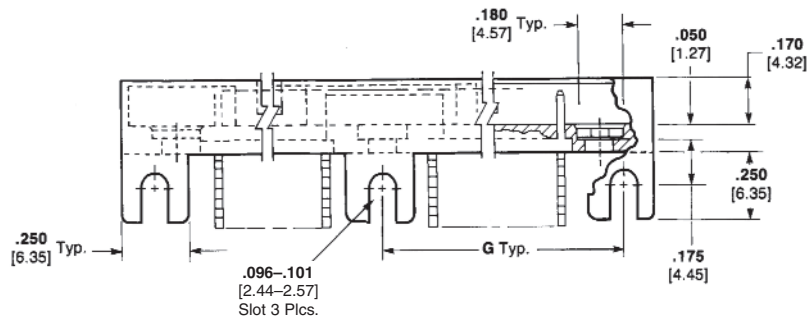
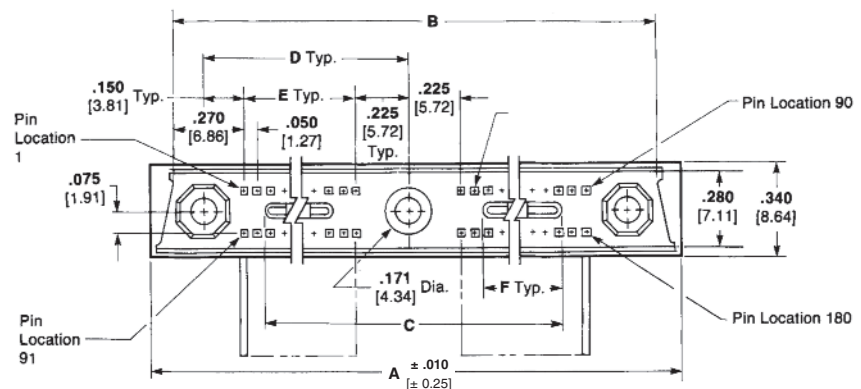
**Contact Material and Finish —**  
Brass per QQ-B-626 plated .000050  
[0.00127] min. gold in the contact area,  
.000100 [0.00254] min. tin-lead on the  
tail over .000050 [0.00127] min. nickel  
on the entire contact

### Related Product Data

**Mates with** — Receptacle assemblies,  
page 1-22

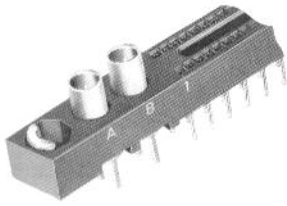
**External Keying** — page 1-30

**Recommended PC Board Layout** —  
page 1-26



| No. of Pos. | Dimensions      |                 |                 |                |                |                |                | Assembly Part No. |
|-------------|-----------------|-----------------|-----------------|----------------|----------------|----------------|----------------|-------------------|
|             | A               | B               | C               | D              | E              | F              | G              |                   |
| 200         | 6.050<br>153.67 | 5.890<br>149.61 | 5.190<br>131.83 | 2.825<br>71.76 | 2.450<br>62.23 | 2.290<br>58.17 | 2.900<br>73.66 | 534688-8          |
| 192         | 5.850<br>148.60 | 5.690<br>144.53 | 4.990<br>126.75 | 2.725<br>69.22 | 2.350<br>59.69 | 2.190<br>55.63 | 2.800<br>71.12 | 534688-7          |
| 180         | 5.550<br>140.97 | 5.390<br>136.91 | 4.690<br>119.13 | 2.575<br>65.41 | 2.200<br>55.88 | 2.040<br>51.82 | 2.650<br>67.31 | 534688-1          |
| 172         | 5.350<br>135.89 | 5.190<br>131.83 | 4.490<br>114.00 | 2.475<br>62.87 | 2.100<br>53.34 | 1.940<br>49.28 | 2.550<br>64.77 | 534688-6          |
| 160         | 5.050<br>128.27 | 4.890<br>124.21 | 4.190<br>106.43 | 2.325<br>59.06 | 1.950<br>49.53 | 1.790<br>45.47 | 2.400<br>60.96 | 534688-5          |
| 152         | 4.850<br>123.19 | 4.690<br>119.13 | 3.990<br>101.35 | 2.225<br>56.52 | 1.850<br>46.99 | 1.690<br>42.93 | 2.300<br>58.42 | 534688-4          |
| 140         | 4.550<br>115.57 | 4.390<br>111.51 | 3.690<br>93.73  | 2.075<br>52.71 | 1.700<br>43.18 | 1.540<br>38.12 | 2.150<br>54.60 | 534688-3          |
| 132         | 4.350<br>110.49 | 4.190<br>106.43 | 3.490<br>88.65  | 1.975<br>50.17 | 1.600<br>40.64 | 1.440<br>36.58 | 2.050<br>52.07 | 534688-2          |

## Mini-Box Receptacle Assemblies with 4 or 6 Hybrid Cavities



**Housing Material** — In accordance with MIL-C-55302

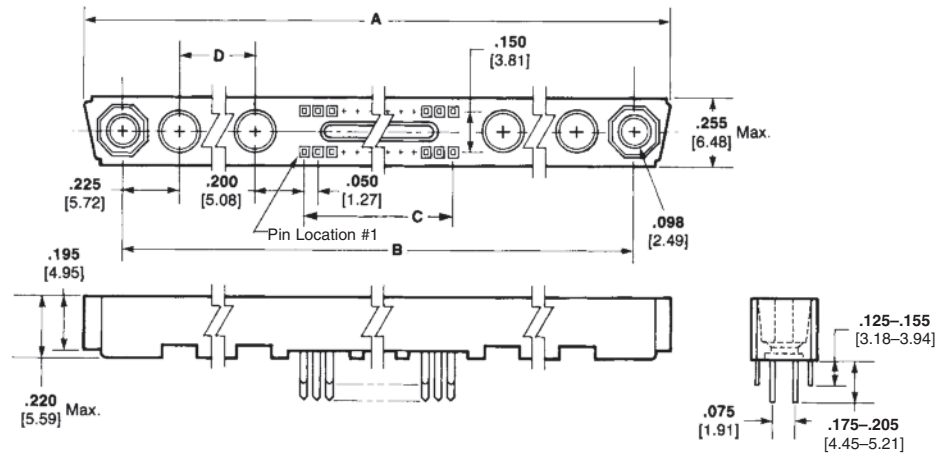
**Contact Material and Finish** — Beryllium copper per QQ-C-533 or ASTM B768, or phosphor bronze per ASTM B103 plated .000030 [0.00076] min. gold in the contact area, .000100 [0.00254] min. tin-lead in the termination area over .000030 [0.00076] min. nickel on the entire contact

### Related Product Data

**Mates with** — Pin headers, page 1-26

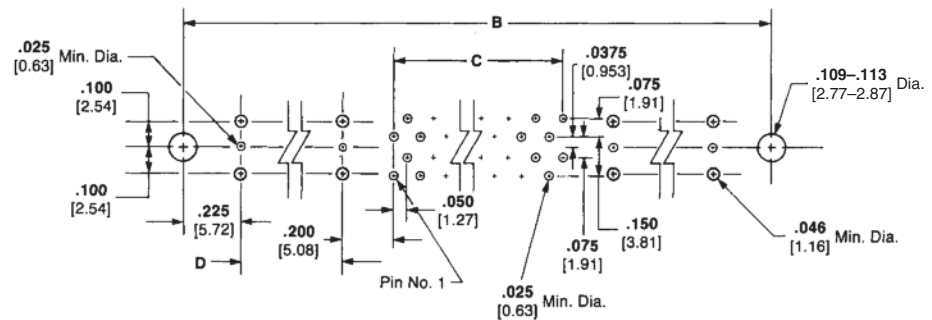
**External Keying** — page 1-30

Other sizes and configurations available. Consult TE Connectivity.



| No. of Box Contact Pos. | No. of Coaxial Cavities | Dimensions     |                |                |               | Assembly Part No. |
|-------------------------|-------------------------|----------------|----------------|----------------|---------------|-------------------|
|                         |                         | A              | B              | C              | D             |                   |
| 90                      | 4                       | 3.740<br>95.00 | 3.450<br>87.63 | 2.200<br>55.88 | .200<br>5.08  | 532797-1          |
| 74                      | 6                       | 3.740<br>95.00 | 3.450<br>87.63 | 1.800<br>45.72 | .400<br>10.16 | 531820-1          |
| 36                      | 6                       | 2.790<br>70.87 | 2.500<br>63.5  | .850<br>21.59  | .400<br>10.16 | 531820-3          |
| 26                      | 6                       | 2.540<br>65.52 | 2.250<br>57.15 | .600<br>15.24  | .400<br>10.16 | 531820-2          |

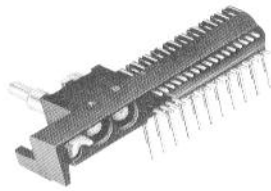
**Note:** These receptacle assemblies accept coaxial contact—Vertical PC Board Mount Socket 227603-1



**Recommended  
PC Board Layout**



## Mini-Box Right-Angle Pin Header Assemblies with 4 or 6 Hybrid Cavities



**Housing Material** — In accordance with MIL-C-55302

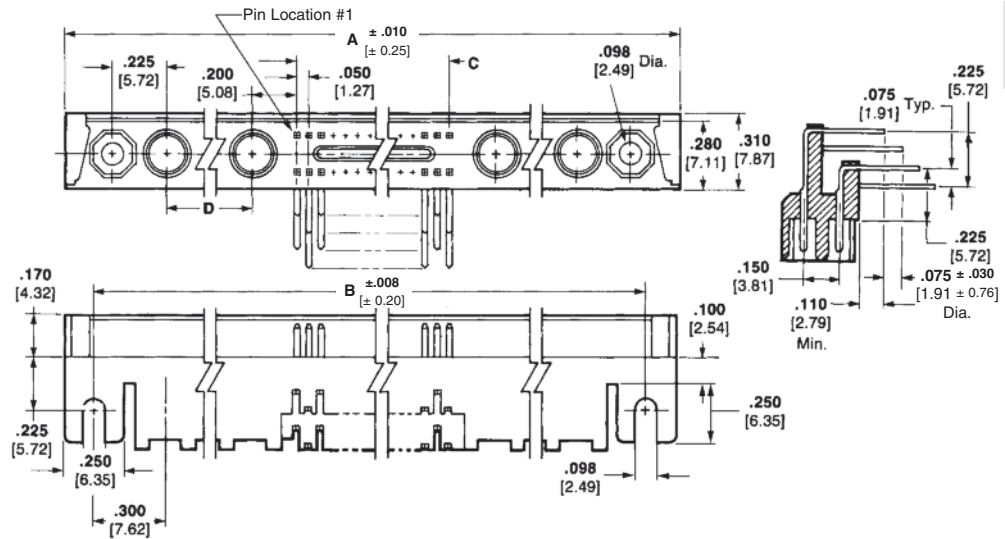
**Contact Material and Finish** — Brass per QQ-B-626 plated .000030 [0.00076] min. gold in the contact area, .000100 [0.00254] min. tin-lead on the post over .000030 [0.00076] min. nickel on the entire contact

### Related Product Data

**Mates with** — Receptacles, page 1-25

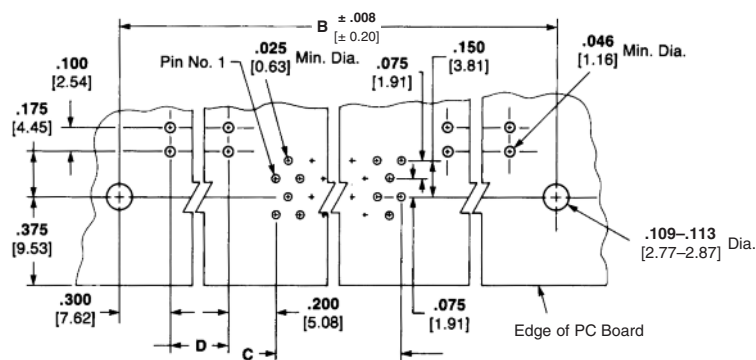
**External Keying** — page 1-30

Other sizes and configurations available. Consult TE Connectivity.



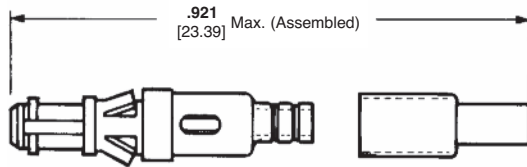
| No. of Box Contact Pos. | No. of Coaxial Cavities | Dimensions     |                |                |               | Assembly Part No. |
|-------------------------|-------------------------|----------------|----------------|----------------|---------------|-------------------|
|                         |                         | A              | B              | C              | D             |                   |
| 90                      | 4                       | 3.850<br>97.79 | 3.600<br>91.44 | 2.200<br>55.88 | .200<br>5.08  | 532796-1          |
| 74                      | 6                       | 3.850<br>97.79 | 3.600<br>91.44 | 1.800<br>45.72 | .400<br>10.16 | 531819-1          |
| 36                      | 6                       | 2.900<br>73.66 | 2.650<br>67.31 | .850<br>21.59  | .400<br>10.16 | 531819-3          |
| 26                      | 6                       | 2.650<br>67.31 | 2.400<br>60.96 | .600<br>15.24  | .400<br>10.16 | 531819-2          |

**Note:** These pin header assemblies accept coaxial contacts—Vertical Cable Pin 227604-1 and Right-Angle PC Board Mount Pin 227602-1.

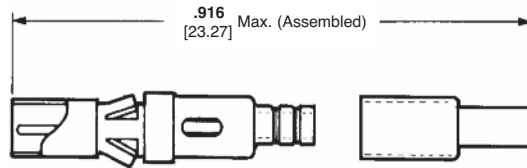


Recommended  
PC Board Layout

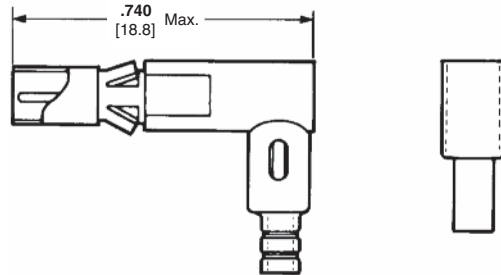
## Microminiature COAXICON Contacts for Hybrid Cavities



Cable Pin



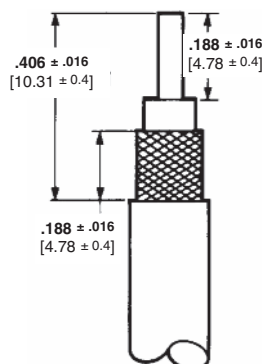
Cable Socket



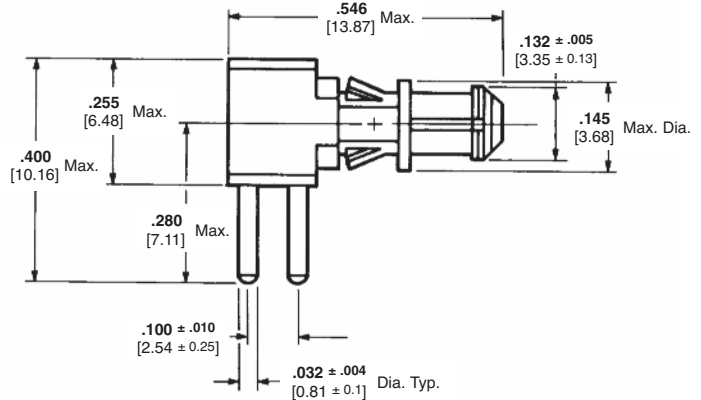
Right-Angle Cable Socket

| Cable Size                        | Contact Style            | Part No. | Application Tool Part No. |
|-----------------------------------|--------------------------|----------|---------------------------|
| RG 178/U Double Braid<br>RG 196/U | Cable Pin                | 227604-1 | 220215-1                  |
|                                   | Cable Socket             | 227605-1 |                           |
|                                   | Right-Angle Cable Socket | 227606-1 |                           |

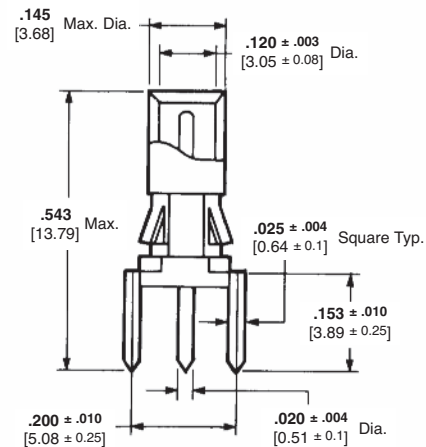
Extraction Tool Part Number 220216-1



Recommended Strip Length



Right-Angle Pin  
for PC Board Application  
Part Number 227602-1  
Plated .000030 [0.00076] gold



Vertical Socket  
for PC Board Application  
Part Number 227603-1

### Notes:

- Center contacts are plated with .000030 [0.00076] gold.
- For .125 [3.18] maximum thick pc boards.

### Electrical Characteristics

Nominal Impedance — 50 ohms

Frequency Range — 0-2 GHz

Maximum Operating Voltage (Sea Level) — 150 VAC RMS

### Mechanical Characteristics

Operating Temperature Range — -67°C to +257°F [-55°C to +125°C]

Cable Retention — 15 lb. [66.7N] min. (RG 178 type double braid)

### Contact Materials

Stainless Steel — QQ-S-766

Gold Plate — MIL-G-45204

Nickel Plate — QQ-N-290

Beryllium Copper — QQ-C-530

PTFE — MIL-P-19468A

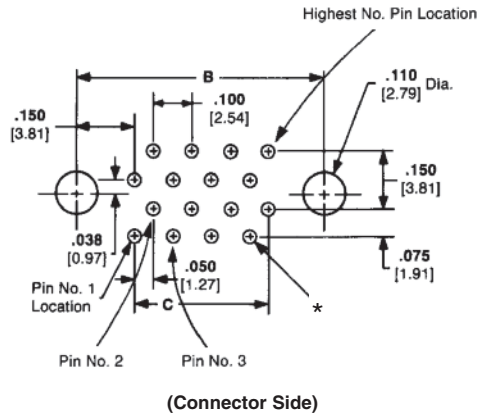
Brass — QQ-B-626

### Ferrule Material

Brass — MIL-C-50, tin plate per MIL-T-10727

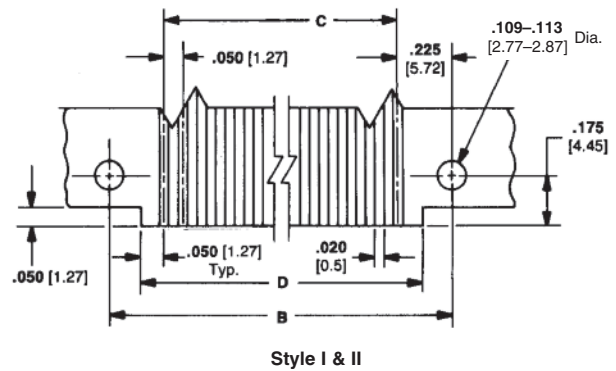
## Mini-Box Connectors Recommended Printed Circuit Board Layouts

### Receptacle Assemblies



(Connector Side)

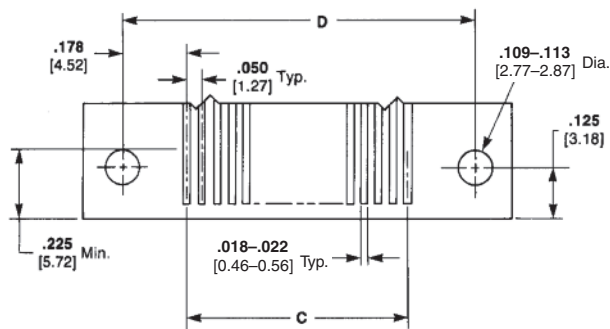
### Pin Header Assemblies



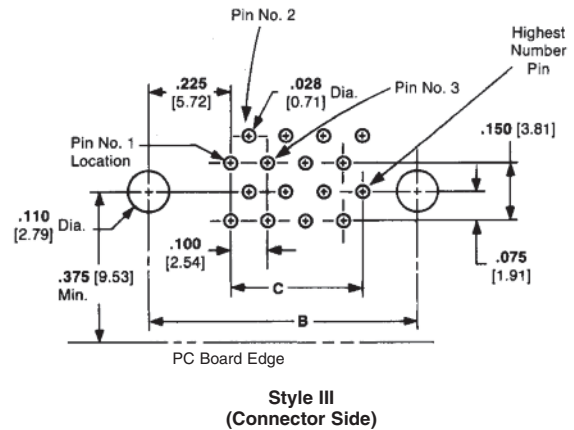
Style I &amp; II

\*Holes for solder type receptacle connectors should be .025 to .032 [0.64 to 0.81] dia. Holes for compliant tails should be manufactured as follows: .0320±.0010 [0.813±.025] drilled hole dia. (no. 67 drill), .0003 [0.008] min. tin-lead plating over .001 to .002 [0.025 to 0.051] thick copper on wall. Finished hole diameter to be .026 to .030 [0.66 to 0.76] after plating, .025 to .030 [0.64 to 0.76] after reflow.

### Straddle Mount Receptacle Assemblies



### Right-Angle Pin Header Assemblies

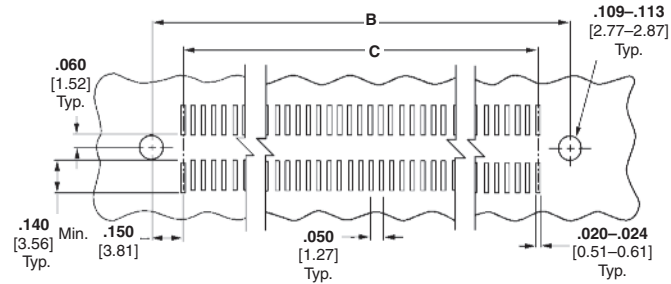

Style III  
(Connector Side)

| No. of Pos. | Dimensions     |                |                |
|-------------|----------------|----------------|----------------|
|             | B              | C              | D              |
| 128         | 3.450<br>87.63 | 3.150<br>80.01 | 3.505<br>89.03 |
| 110         | 3.000<br>76.2  | 2.700<br>68.58 | 3.055<br>77.60 |
| 100         | 2.750<br>69.85 | 2.450<br>62.23 | 2.805<br>71.25 |
| 90          | 2.500<br>63.5  | 2.200<br>55.88 | 2.555<br>64.90 |
| 80          | 2.250<br>57.15 | 1.950<br>49.53 | 2.305<br>58.55 |
| 70          | 2.000<br>50.8  | 1.700<br>43.18 | 2.055<br>52.20 |
| 60          | 1.750<br>44.45 | 1.450<br>36.83 | 1.805<br>45.85 |
| 50          | 1.500<br>38.1  | 1.200<br>30.48 | 1.555<br>39.50 |
| 40          | 1.250<br>31.75 | .950<br>24.13  | 1.305<br>33.15 |
| 30          | 1.000<br>25.4  | .700<br>17.78  | 1.055<br>26.80 |
| 20          | .750<br>19.05  | .450<br>11.43  | .805<br>20.45  |

| No. of Pos. | Dimensions     |                |                |
|-------------|----------------|----------------|----------------|
|             | B              | C              | D              |
| 128         | 3.600<br>91.44 | 3.150<br>80.01 | 3.250<br>82.55 |
| 110         | 3.150<br>80.01 | 2.700<br>68.58 | 2.800<br>71.12 |
| 100         | 2.900<br>73.66 | 2.450<br>62.23 | 2.550<br>64.77 |
| 90          | 2.650<br>67.31 | 2.200<br>55.88 | 2.300<br>58.42 |
| 80          | 2.400<br>60.96 | 1.950<br>49.53 | 2.050<br>52.07 |
| 70          | 2.150<br>54.61 | 1.700<br>43.18 | 1.800<br>45.72 |
| 60          | 1.900<br>48.26 | 1.450<br>36.83 | 1.550<br>39.37 |
| 50          | 1.650<br>41.91 | 1.200<br>30.48 | 1.300<br>33.02 |
| 40          | 1.400<br>35.56 | .950<br>24.13  | 1.050<br>26.67 |
| 30          | 1.150<br>29.21 | .700<br>17.78  | .800<br>20.32  |
| 20          | .900<br>22.86  | .450<br>11.43  | .550<br>13.97  |

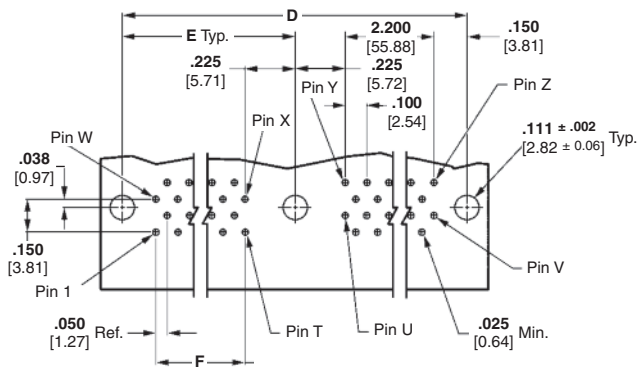
## Mini-Box Connectors Recommended Printed Circuit Board Layouts (Continued)

### Vertical Surface Mount Receptacle and Pin Header Assemblies

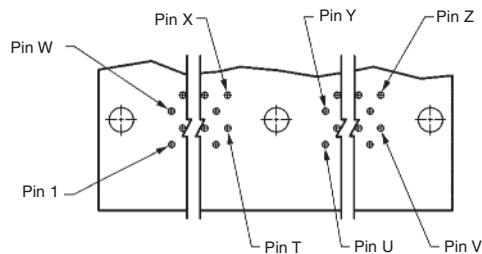


## Extended Mini-Box Connectors Recommended Printed Circuit Board Layouts (Connector Side of Board)

### Receptacle Assemblies

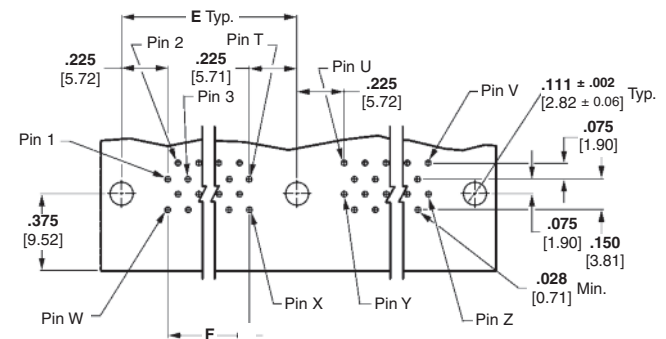


PC Layout I

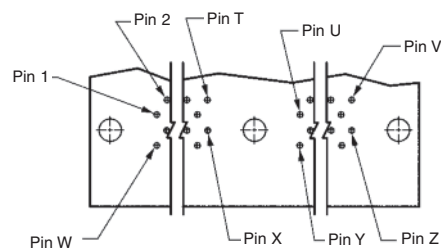


PC Layout II

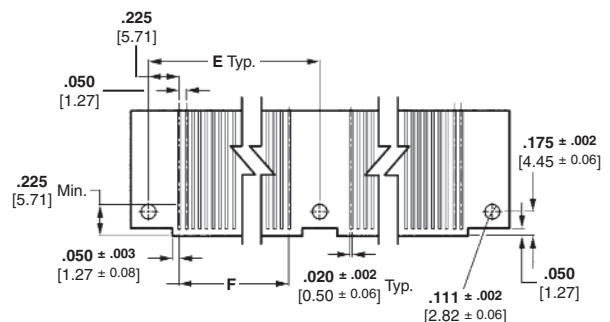
### Pin Header Assemblies



Right-Angle—PC Layout I



Right-Angle—PC Layout II



Straddle Mount

## Extended Mini-Box Connectors Recommended Printed Circuit Board Layouts (Connector Side of Board) (Continued)

### Receptacles

| PC Layout | Pin Locations |    |     |     |     |     |     |
|-----------|---------------|----|-----|-----|-----|-----|-----|
|           | T             | U  | V   | W   | X   | Y   | Z   |
| II        | 50            | 51 | 100 | 101 | 150 | 151 | 200 |
| II        | 48            | 49 | 96  | 97  | 144 | 145 | 192 |
| I         | 45            | 46 | 90  | 91  | 135 | 136 | 180 |
| I         | 43            | 44 | 86  | 87  | 129 | 130 | 172 |
| II        | 40            | 41 | 80  | 81  | 120 | 121 | 160 |
| II        | 38            | 39 | 76  | 77  | 114 | 115 | 152 |
| I         | 35            | 36 | 70  | 71  | 105 | 106 | 140 |
| I         | 33            | 34 | 66  | 67  | 99  | 100 | 132 |

| No. of Pos. | Dimensions      |                |                |
|-------------|-----------------|----------------|----------------|
|             | D               | E              | F              |
| 200         | 5.650<br>143.51 | 2.825<br>71.76 | 2.450<br>62.23 |
| 192         | 5.450<br>138.43 | 2.725<br>69.22 | 2.350<br>59.69 |
| 180         | 5.150<br>130.81 | 2.575<br>65.41 | 2.200<br>55.88 |
| 172         | 4.950<br>125.73 | 2.475<br>62.87 | 2.100<br>53.34 |
| 160         | 4.650<br>118.11 | 2.325<br>59.06 | 1.950<br>49.53 |
| 152         | 4.450<br>113.03 | 2.225<br>56.52 | 1.850<br>46.99 |
| 140         | 4.150<br>105.41 | 2.075<br>52.71 | 1.700<br>43.18 |
| 132         | 3.950<br>100.33 | 1.975<br>50.17 | 1.600<br>40.64 |

### Pin Headers

| PC Layout | Pin Locations |    |     |     |     |     |     |
|-----------|---------------|----|-----|-----|-----|-----|-----|
|           | T             | U  | V   | W   | X   | Y   | Z   |
| II        | 50            | 51 | 100 | 101 | 150 | 151 | 200 |
| II        | 48            | 49 | 96  | 97  | 144 | 145 | 192 |
| I         | 45            | 46 | 90  | 91  | 135 | 136 | 180 |
| I         | 43            | 44 | 86  | 87  | 129 | 130 | 172 |
| II        | 40            | 41 | 80  | 81  | 120 | 121 | 160 |
| II        | 38            | 39 | 76  | 77  | 114 | 115 | 152 |
| I         | 35            | 36 | 70  | 71  | 105 | 106 | 140 |
| I         | 33            | 34 | 66  | 67  | 99  | 100 | 132 |

| No. of Pos. | Dimensions     |                |
|-------------|----------------|----------------|
|             | F              | E              |
| 200         | 2.450<br>62.23 | 2.900<br>73.66 |
| 192         | 2.350<br>59.69 | 2.800<br>71.12 |
| 180         | 2.200<br>55.88 | 2.650<br>67.31 |
| 172         | 2.100<br>53.34 | 2.550<br>64.77 |
| 160         | 1.950<br>49.53 | 2.400<br>60.96 |
| 152         | 1.850<br>46.99 | 2.300<br>60.96 |
| 140         | 1.700<br>43.18 | 2.150<br>54.61 |
| 132         | 1.600<br>40.64 | 2.050<br>52.07 |

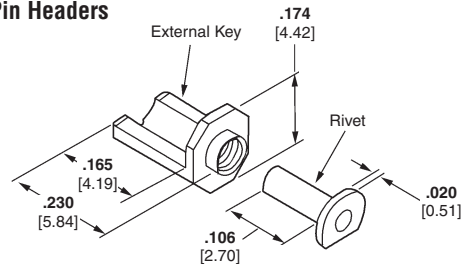
## Mini-Box and Extended Mini-Box Connector Keying Hardware

### External Keys

These external keys can be used with all the receptacle assemblies and with all the pin header assemblies. They are press fitted into position using tool number 91117-2. Keys used in one end of each mated pair will yield 8 keying combinations, and when used in both ends of the mated

pairs will yield 64 keying combinations. The No. 2-56 screws are used to mount keyed receptacles to a printed circuit board. See instruction sheet 408-7894 for details. Rivets can be used to retain keys in pin header assemblies. See instruction sheet 408-9240.

### Pin Headers



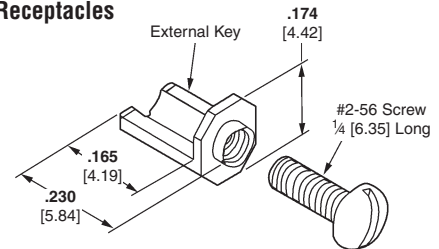
#### External Key Kit Number 530721-4

Kit includes 2 each of the following:

**Keys** — Part Number 530721-1  
Military Part Number M55302/31-06  
**Rivets** — Part Number 534164-2

**Material** — Passivated Stainless Steel

### Receptacles



#### External Key Kit Number 530721-3

Kit includes 2 each of the following:

**Keys** — Part Number 530721-1  
Military Part Number M55302/31-06  
**#2-56 Screws**, .250 [6.35] Long

**Material** — Passivated Stainless Steel



## 4-Row Mini-Box Connectors

### Receptacle Assemblies, Vertical



#### Material and Finish

**Housing** — In accordance with MIL-M-24519 per MIL-C-55302. GLCP-30F, liquid crystal polymer, grey

**Contacts** — Beryllium copper per QQ-C-533 or ASTM B760, or phosphor bronze per ASTM B103 plated .000050 [0.00127] min. gold in the mating area, .000100 [0.00254] min. tin-lead in the terminating area, over .000030 [0.00076] min. nickel on the entire contact

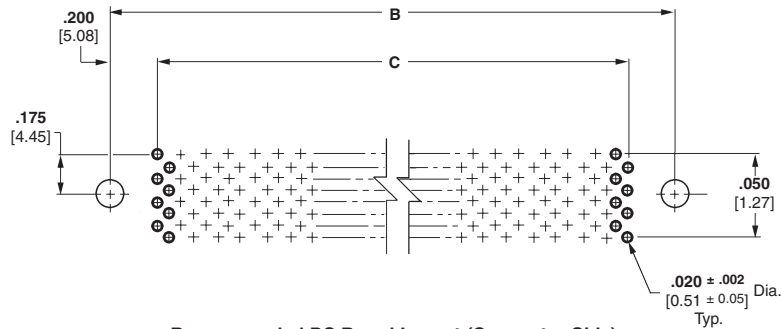
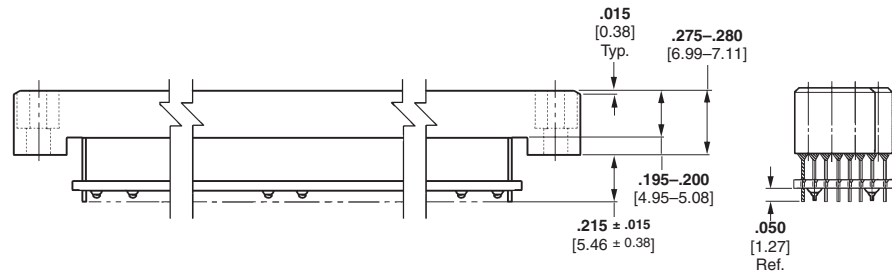
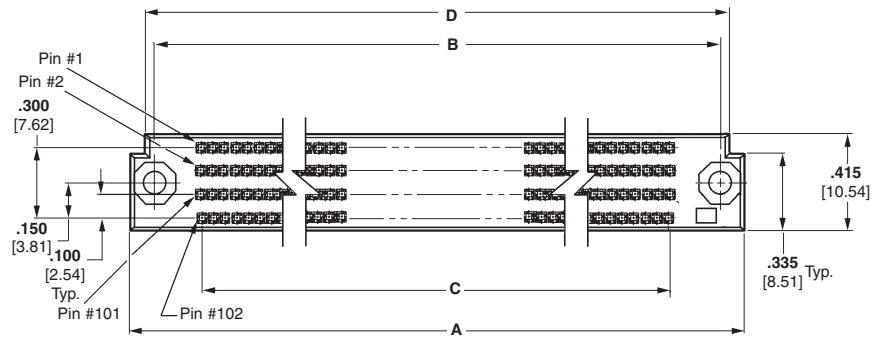
#### Related Product Data

**Mates with** — Pin headers, page 1-32

**External Keying** — page 1-30

#### Technical Documents

**Product Specifications** — 108-1551



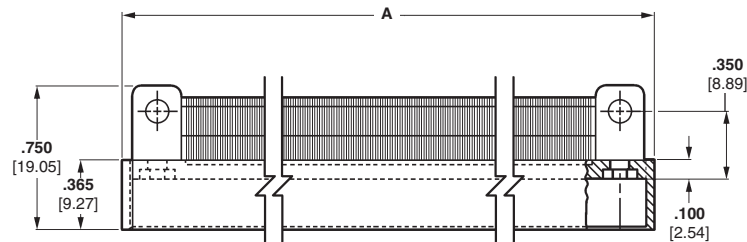
Recommended PC Board Layout (Connector Side)

| No. of Pos. | Dimensions      |                 |                 |                 | Connector w/ Hardware* | Part No. |
|-------------|-----------------|-----------------|-----------------|-----------------|------------------------|----------|
|             | A               | B               | C               | D               |                        |          |
| 120         | 2.095<br>53.21  | 1.850<br>46.99  | 1.450<br>36.83  | 1.950<br>49.53  | —                      | 448445-1 |
| 152         | 2.495<br>63.37  | 2.250<br>57.15  | 1.850<br>46.99  | 2.350<br>59.69  | 449650-2               | 448445-4 |
| 200         | 3.095<br>78.61  | 2.850<br>72.39  | 2.450<br>62.23  | 2.950<br>74.93  | —                      | 448445-2 |
| 300         | 4.345<br>110.36 | 4.100<br>104.14 | 3.700<br>93.98  | 4.200<br>106.68 | 449650-1               | 448445-5 |
| 320         | 4.595<br>116.71 | 4.350<br>110.49 | 3.950<br>100.33 | 4.450<br>113.03 | —                      | 448445-3 |

\* Hardware includes 2 each 531721-3 External Key Kit (See page 1-27)

## 4-Row Mini-Box Connectors (Continued)

### Pin Headers, with Flexible Circuit Terminations



### Material and Finish

**Housing** — In accordance with MIL-M-24519 per MIL-C-55302. GLCP-30F, liquid crystal polymer, grey

**Contacts** — Brass per ASTM B36 plated .000050 [0.00127] min. gold in the mating area, .000100 [0.00254] min. tin-lead in the terminating area, over .000030 [0.00076] min. nickel on the entire contact with flexible circuits, 3.5 oz [99.23 g] beryllium copper per QQ-C-530 conductors with polyimide dielectric and acrylic adhesive

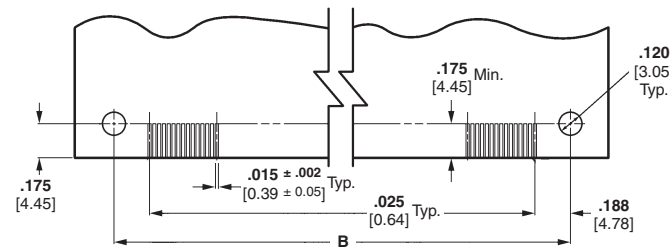
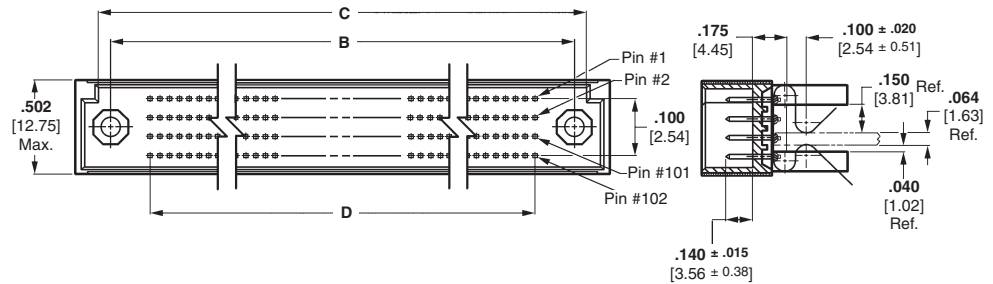
### Related Product Data

**Mates with** — Receptacle assemblies, page 1-31

**External Keying** — page 1-30

### Technical Documents

**Product Specifications** — 108-1551



Recommended PC Board Layout

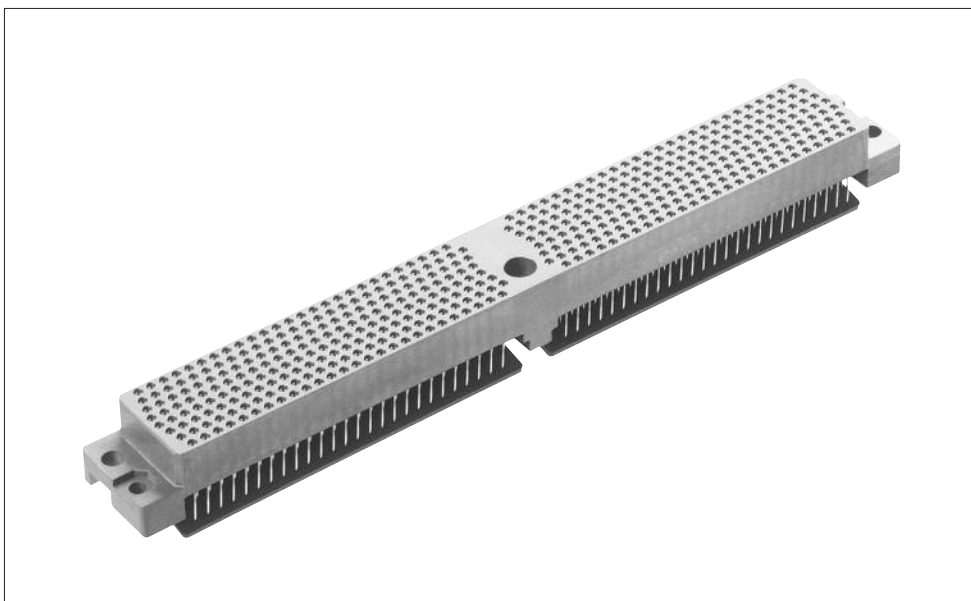
| No. of Pos. | Dimensions      |                 |                 |                 | Connector w/ Hardware* | Part No. |
|-------------|-----------------|-----------------|-----------------|-----------------|------------------------|----------|
|             | A               | B               | C               | D               |                        |          |
| 120         | 2.210<br>56.13  | 1.850<br>46.99  | 1.975<br>50.17  | 1.450<br>36.83  | —                      | 448446-1 |
| 152         | 2.610<br>63.37  | 2.250<br>57.15  | 2.375<br>46.99  | 1.850<br>59.69  | 449619-2               | 448446-4 |
| 200         | 3.210<br>78.61  | 2.850<br>72.39  | 2.975<br>62.23  | 2.450<br>74.93  | —                      | 448446-2 |
| 300         | 4.460<br>110.36 | 4.100<br>104.14 | 4.225<br>93.98  | 3.700<br>106.68 | 449619-1               | 448446-5 |
| 320         | 4.710<br>116.71 | 4.350<br>110.49 | 4.475<br>100.33 | 3.950<br>113.03 | —                      | 448446-3 |

\* Connector includes 2 each of 449601-1 Hardware Kit. Hardware Kit can also be purchased separately. Hardware Kit includes: external key, screw, spacers, e-ring and threaded spacer.

## Introduction

### Product Facts

- Two-piece high density, high performance connectors for printed circuit board use
- Four-beam box-type contact design provides four areas of contact per connection
- Available in 6-Row 306 position and 8-Row 428 position
- Receptacles designed for through-hole soldering
- Pins designed for surface mount card edge applications
- Guide posts provide proper alignment during mating
- Octagonal shape keys ensure proper mating
- Meets DSCC 89065 performance requirements



### AMP-HDI 6 and 8 Row LRM (Line Replaceable Module) Connectors

Designed specifically to be the next generation, high density electronic packaging system, the AMP-HDI 6 Row, .075 [1.91] centerlines and 8 Row, .080 [2.03] centerlines, LRM Interconnection System meets all DSCC 89065 LRM specifications. This advanced system features high temperature plastic housings compatible with IR reflow solder techniques. Added advantage of the AMP-HDI LRM Connector System is its capability of accepting MIL SPEC fiber optic contacts per MIL-T29504/5. Six-row configurations available in 306 contact positions. Eight-row configurations feature two 214 position plug halves which mate with one 428-position receptacle. This technological leader is offered with standard tin-lead plated solder tails and for those applications where maintaining a light weight system is a factor. The 8-row configuration is made available with weight saving, flexible film tails.

Equally important are Application Costs. The AMP-HDI LRM Connector interconnection system offers advanced tooling that simplifies contact alignment to the pc board, substantially reducing overall applied labor costs.

Guide posts provide alignment for the connectors when mating. Shell accessories protect the pin assemblies from physical damage. Octagonal shape keys permit eight rotational positions assuring only the proper mating assembly can be inserted.

The connectors offer 6 row and 306 positions with 4 fiber optic ports capability or 8 rows with 428 positions.

Housings are made from Polyphenylene sulfide with duplex plated .000050 [.00127] min. gold beryllium copper contacts. The contact tails are tin-lead coated for easy soldering.

### Technical Features

**Available Number of Positions** — 306 and 428

**Center Spacing** — .075 [1.91] and .080 [2.03]

**Housing Material** — Polyphenylene Sulfide per MIL-M-24519

**Contact Material** — Beryllium copper

**Contact Finish** — 50 µ in gold per MIL-G-45204

**Contact Dimension** — .008 [0.20] wide

**Current Rating** — 1 ampere

**Termination Resistance (Max.)** — 20 milliohms

**Connector Mating Force** — Less than 130 pounds

### Performance Characteristics

**Dielectric Withstanding Voltage** — 600 VRMS

**Insulation Resistance** — 100 VDC, 1000 Megaohms

**Connector Mating/Unmating** — Less than 3 oz. per contact

**Durability** — 500 cycles

**Vibration** — MIL-STD-1344 per Method 2005 Condition V

**Physical Shock** — MIL-STD-1344 per Method 2004 Condition H (15G)

**Thermal Shock** — MIL-STD-1344 method 1003 cond A

**Temperature Humidity** — MIL-STD-1344 method 1002 Type II

**Technical Documents**  
Instruction Sheet 408-4008

## AMP-HDI 6-Row, 306-Position Connector

## LRM Receptacle Connectors with Additional, 4-Position, Fiber Optic Contact Ports

## Part Number 445270-1



### Material and Finish:

**Housing** — Polyphenylene sulfide, (PPS) per MIL-M-24519

**Contacts** — Beryllium copper, duplex plated .000050 [0.00127] min. gold in the mating area, .000100 [0.00254] min. tin-lead in the termination area per 5N60 or 5N63

**Sealant** — Epoxy, all 306 positions

**Insert Key** — Stainless steel, passivated

**Fiber Optic Seats** — Fluorosilicone rubber compound, blue

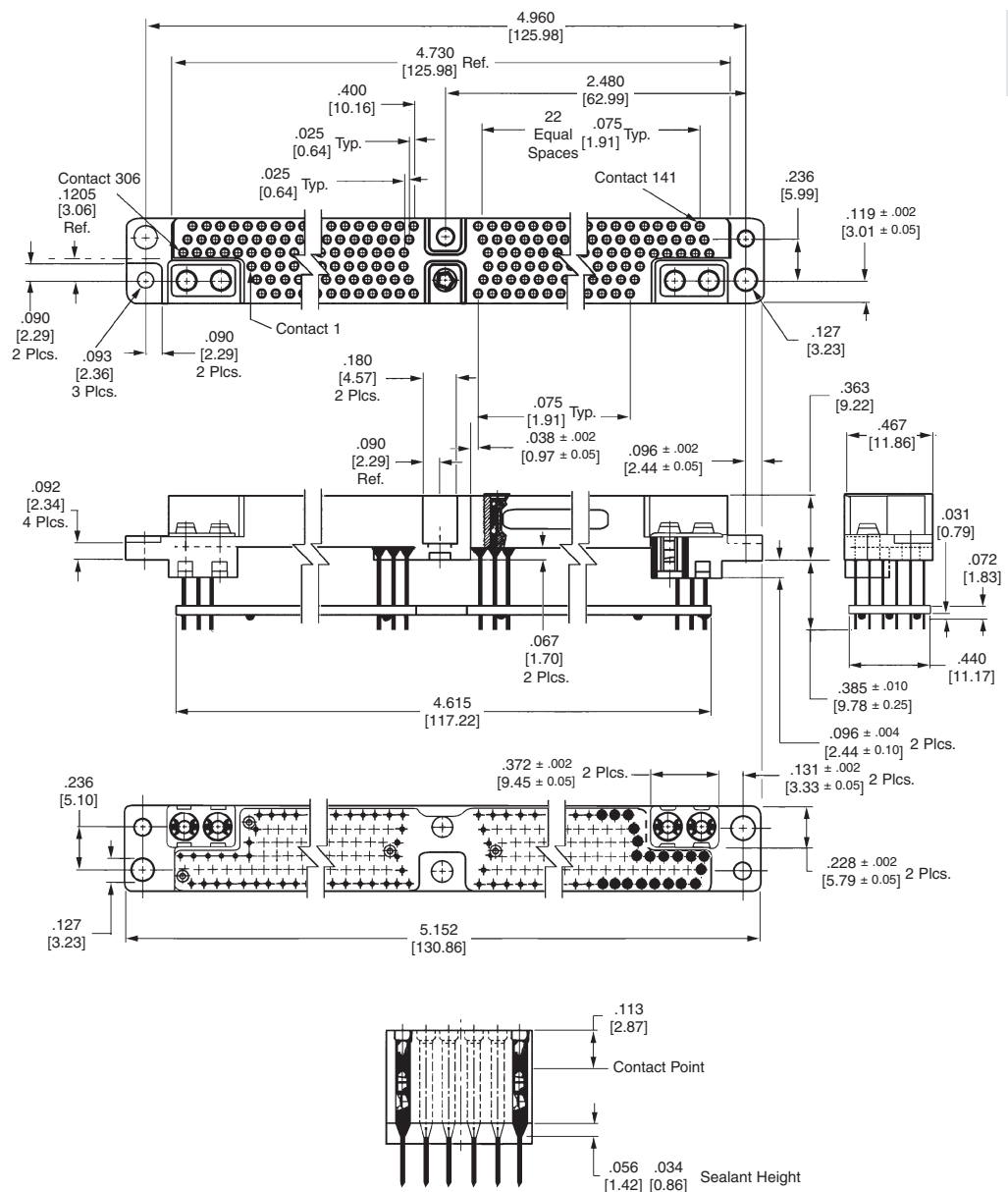
**Fiber Optic Clip** — Beryllium copper  
per QQ-C-533

**Interfacial Seal** — Fluorosilicone rubber compound, blue

**Guide Post and Ground** — Stainless steel, passivated

**Shell** — Aluminum per ASTM B 221-alloy 6061-T6, plated chromate per MIL-C-5541, Class 3 with **Captive**

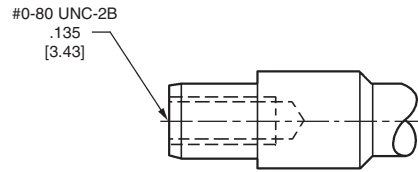
**Screws** — MS 246903-C7 modified



## AMP-HDI 6-Row, 306-Position Connector (Continued)

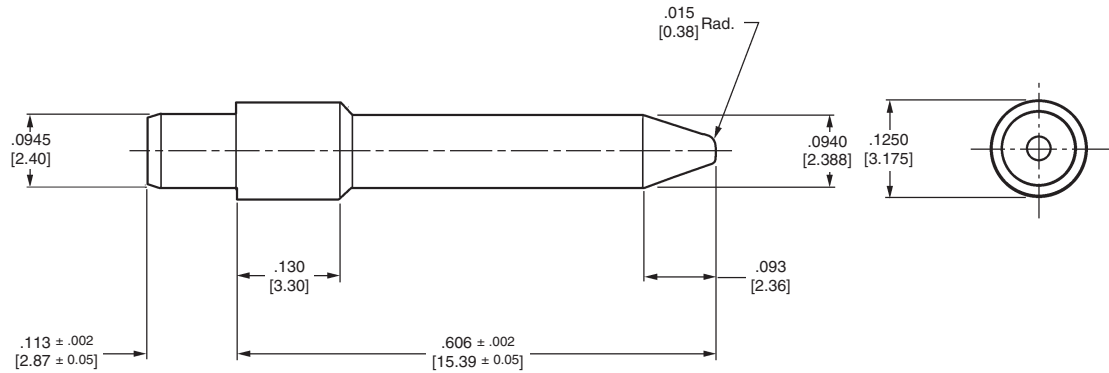
**LRM Receptacle Connectors  
with Additional, 4-Position,  
Fiber Optic Contact Ports**

(Continued)

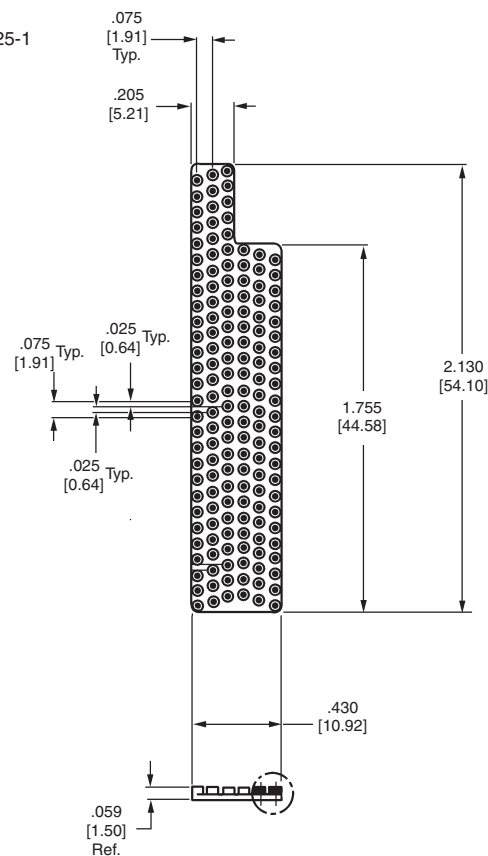
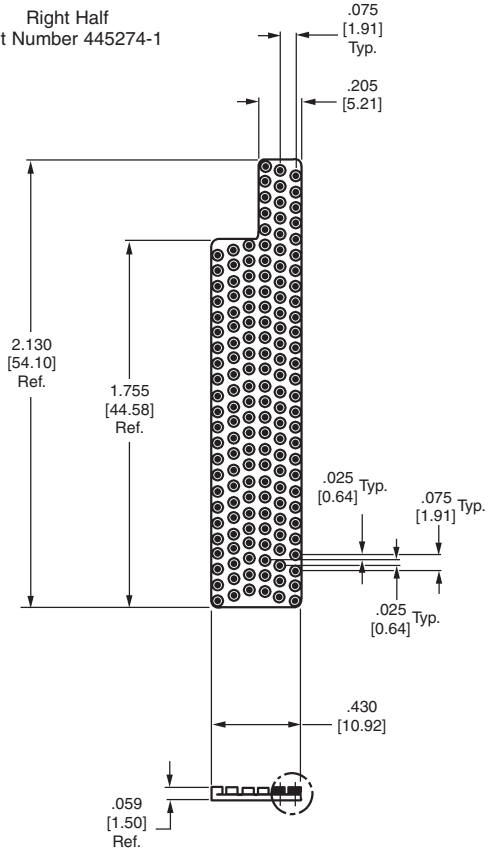


Part Number 445287-2

Part Number 445287-1

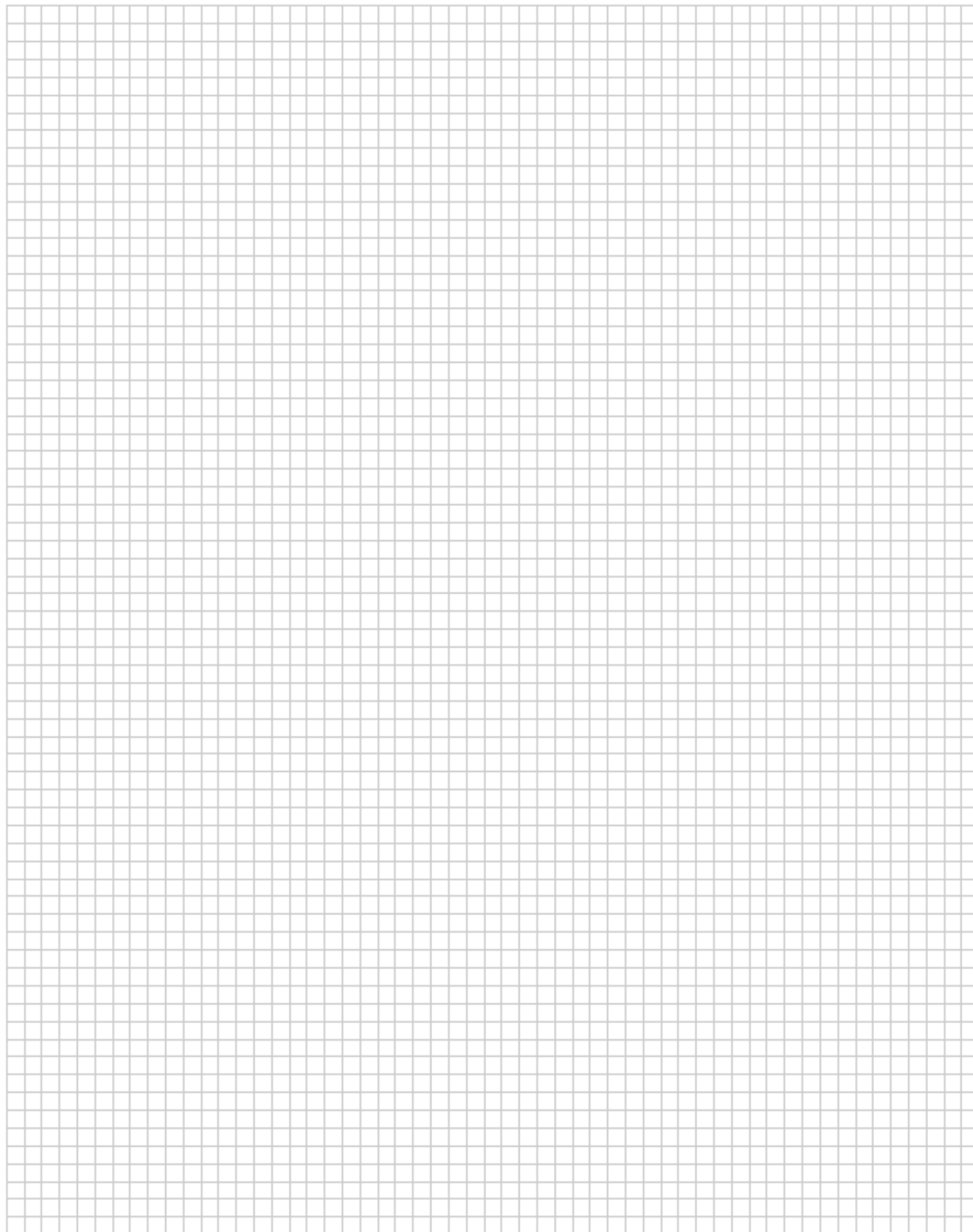


Guide Post

Left Half  
Part Number 445525-1

Right Half  
Part Number 445274-1


Interfacial Sealing Gaskets





## AMP-HDI 8-Row, 428-Position Connector

### LRM Motherboard Connector

Part Number 447447-1



### Material and Finish

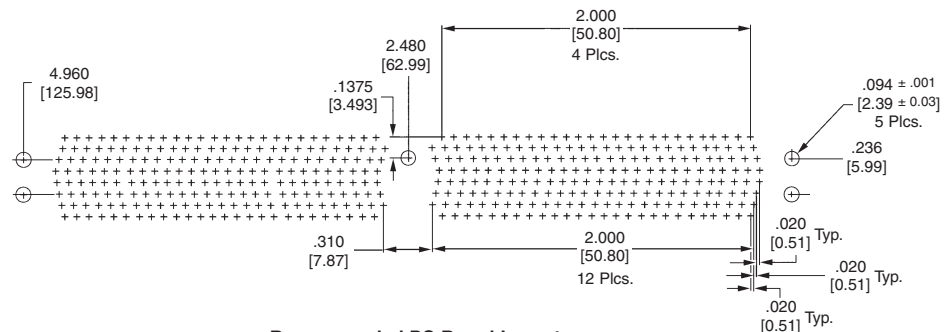
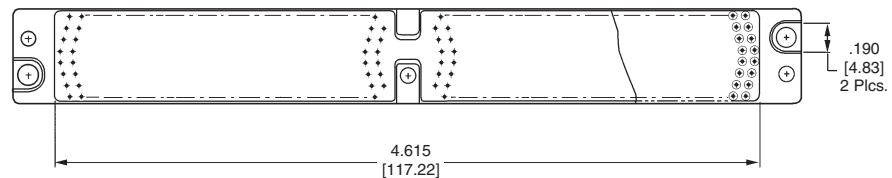
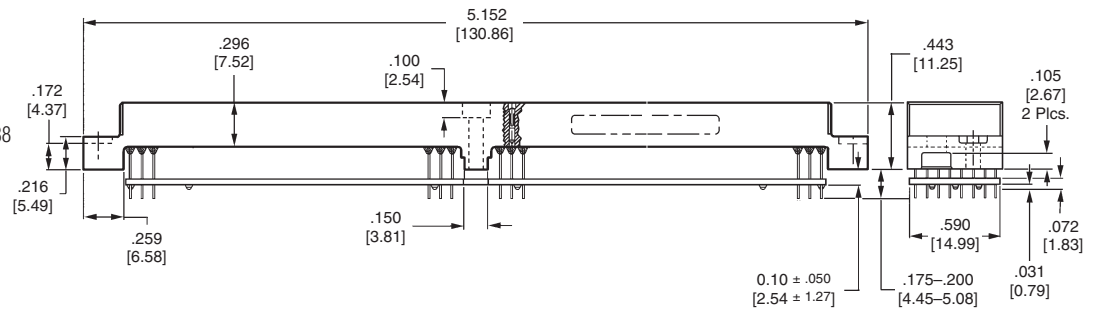
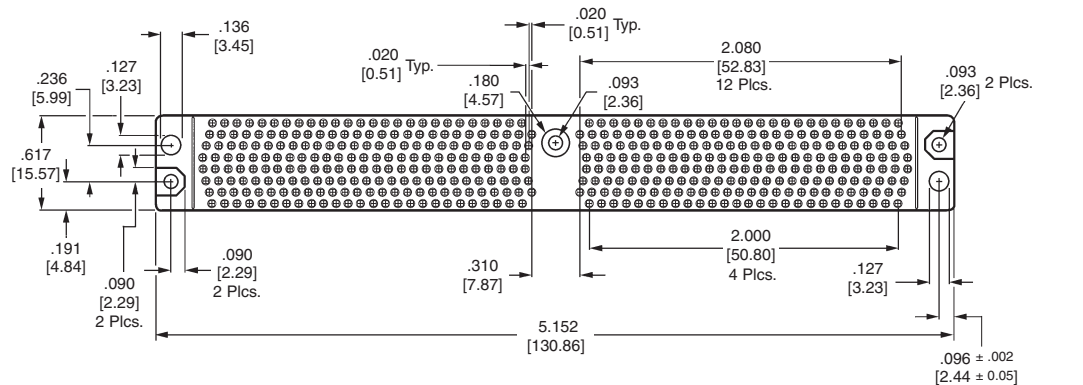
**Housing** — Polyphenylene sulfide per MIL-M-24519

**Contacts** — Beryllium copper, plated .000050 [0.00127] min. gold per MIL-G-45204 in the contact area, over .000050 [0.00127] min. on the entire contact per QQ-N-290

### Related Product Data

**Mates with** — Pin headers, page 1-38

**Available Hardware** — External Keys, Guide Pins



Recommended PC Board Layout

## AMP-HDI 8-Row, 428-Position Connector (Continued)

### LRM Daughterboard Connector

Part Number 447444

#### Material and Finish

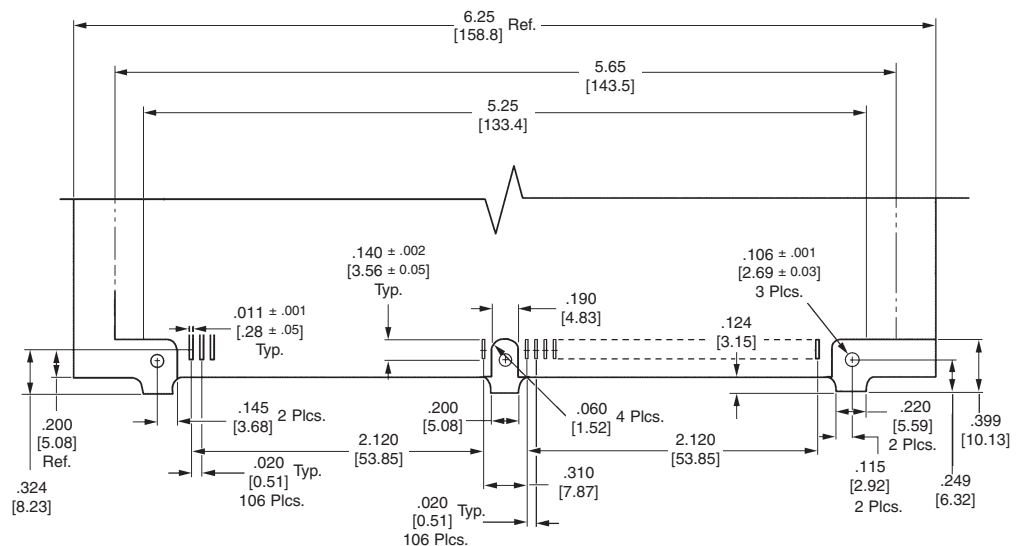
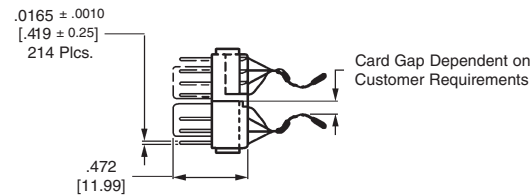
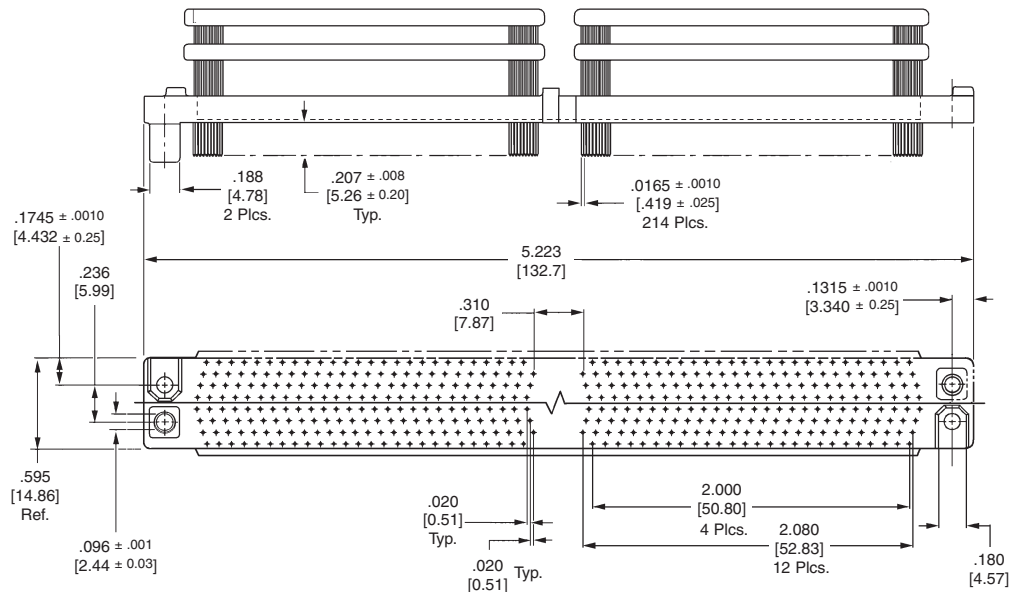
**Housing** — Polyphenylene sulfide per MIL-M-24519

**Contacts** — Beryllium copper, plated .000050 [0.00127] min. gold per MIL-G-45204 in the contact area, over .000050 [0.00127] min. on the entire contact per QQ-N-290

#### Related Product Data

**Mates with** — Receptacle, page 1-37

**Available Hardware** — Shell Assembly, Polarizing Keys



#### Recommended PC Board Layout

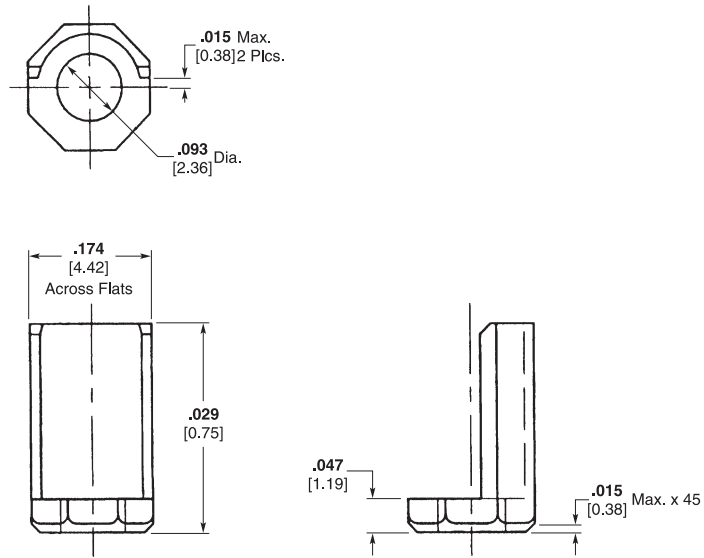
| Plug Housing Assembly | Part Number |
|-----------------------|-------------|
| B Side                | 447444-4    |
| Plug Half (214 Pos.)  | 447444-2    |
| A Side                | 447444-3    |
|                       | 447444-1    |

**Note:** 8-Row Housing Dim. (Typ.) — Plug, 5.223 [132.66] L x .585 [14.86] W x .472 [11.99] H.

## AMP-HDI Connector Accessories

### External Key for Part Number 445270 and Part Number 447447

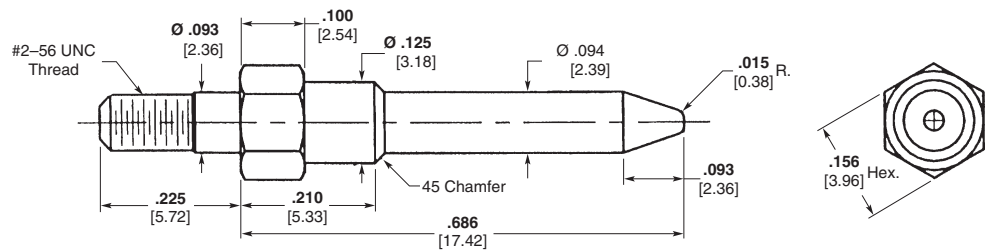
**Material** — Passivated stainless steel.  
Fasten with 2-56 cap screw x .50" long  
not included.



Part Number 445282-1

### Threaded Post Guide for Part Number 445270 and Part Number 447447

**Material** — Passivated stainless steel.  
Fasten with 2-56 nut not included.



Part Number 447448-1

## AMP-HDI Connector Shell Accessories

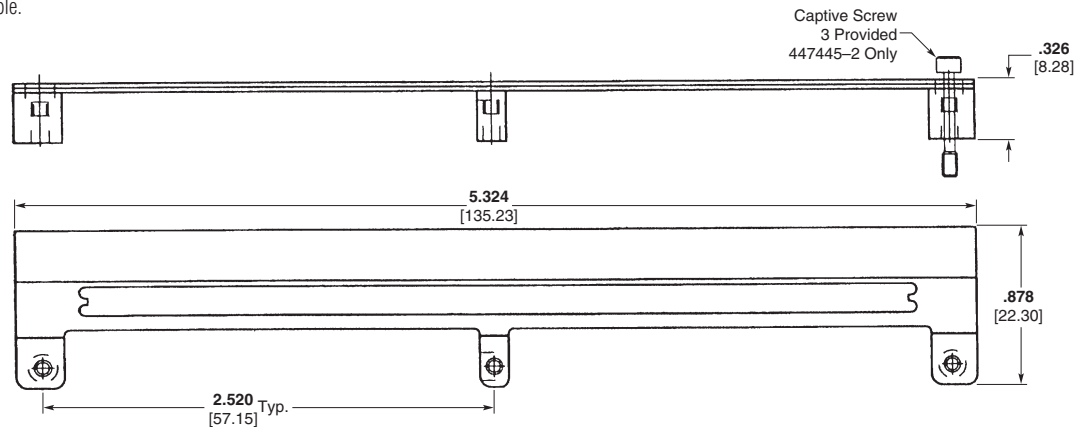
### Protective Shell for Part Number 447444

**Part Number 447445-2**  
Side "A" Shell With Captive Screws

**Part Number 447446-2**  
Side "B" Shell Without Captive Screws

**Material** — Aluminum

**Finish** — Chromate conversion.  
Special shell markings available.



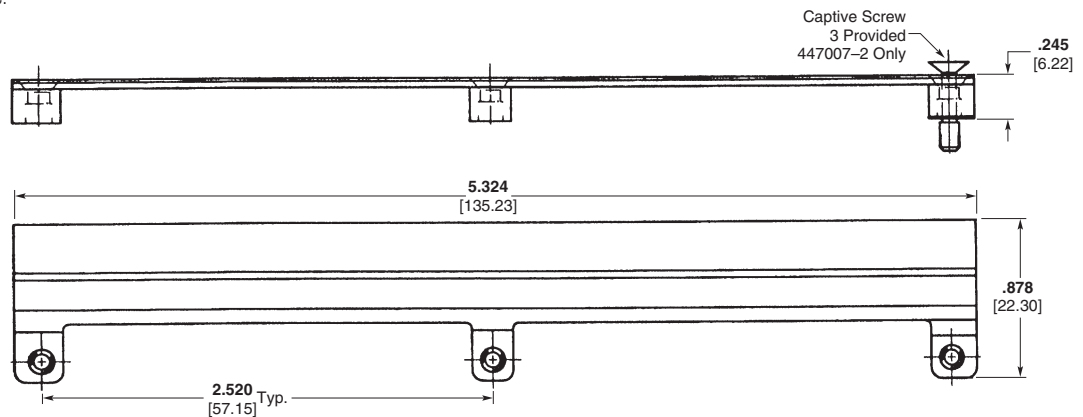
### Protective Shell for Part Number 445269

**Part Number 447007-2**  
Side "A" Shell With Captive Screws

**Part Number 447006-2**  
Side "B" Shell Without Captive Screws

**Material** — Aluminum

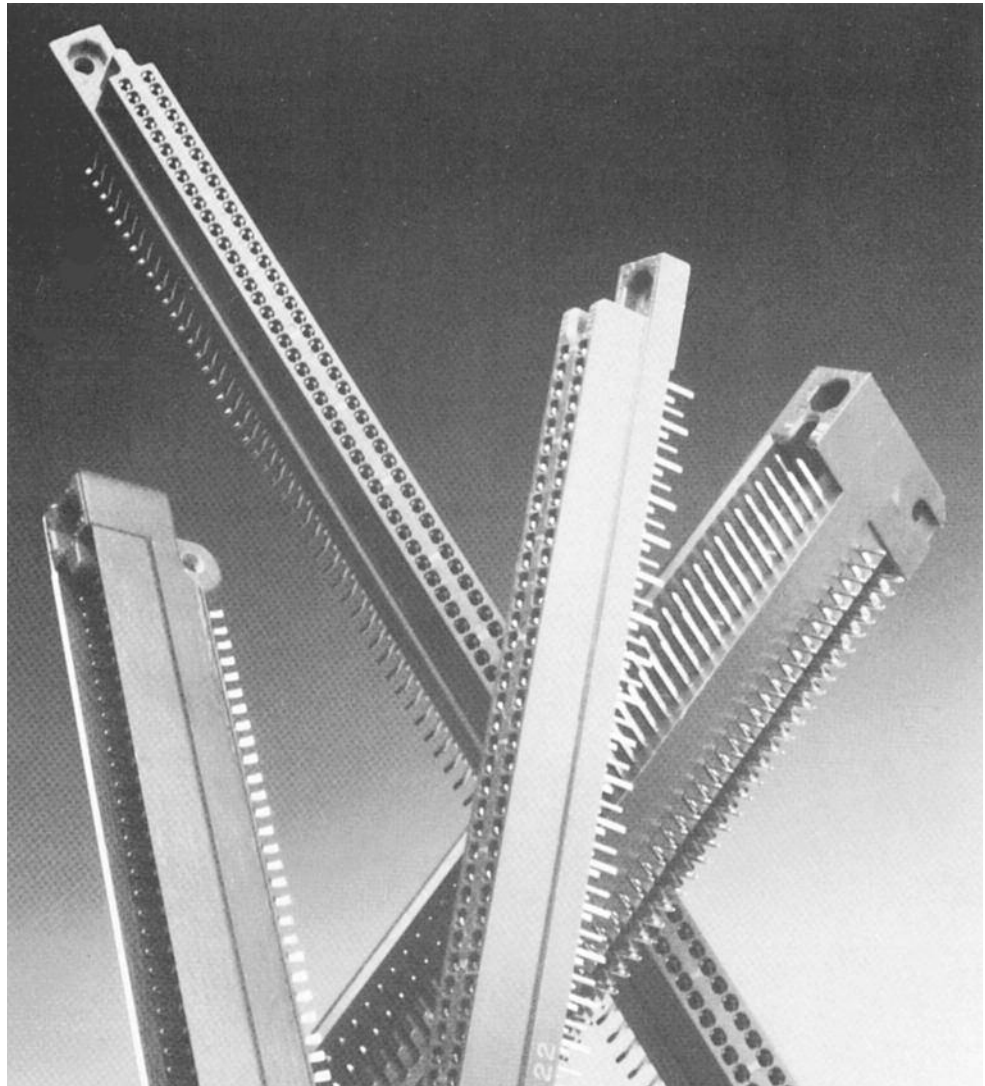
**Finish** — Chromate conversion.  
Special shell markings available.



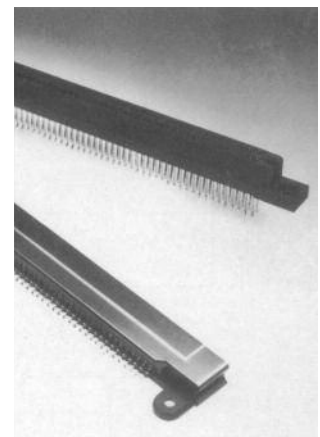
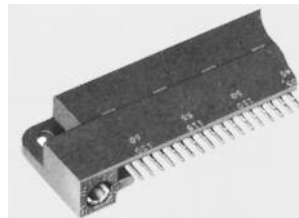
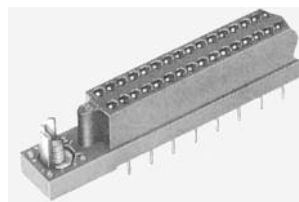
## Introduction

### Product Facts

- Contacts are on .075 x .125 [1.91 x 3.18] centers
- Pin headers are provided with pin protectors
- Box receptacle contacts are available in flow solder, solder eyelet and straddle mount styles
- Qualified to MIL-C-55302/24, /25, /23, /156
- Four-beam box-type receptacle contact design provides four areas of contact per connection

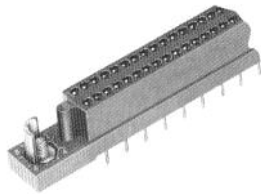


The .075 [1.91] centerline Box Connector series is available in a 2-row configuration with pin counts from 10 to 180 positions and uses the reliable four-beam box contact. The tighter centerline spacing provides more pins within a specified distance and the staggered footprint allows for easier manufacturing of the printed circuit board.





# Receptacle Assemblies for Flow Soldering — MIL-C-55302 Qualified



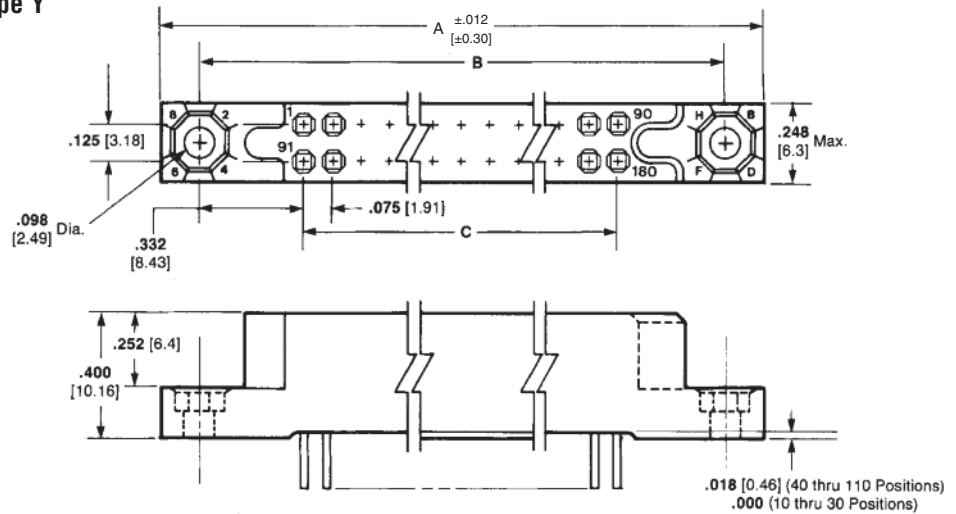
## Related Product Data

**Mates with** — Pin Headers,  
pages 1-44 and 1-45

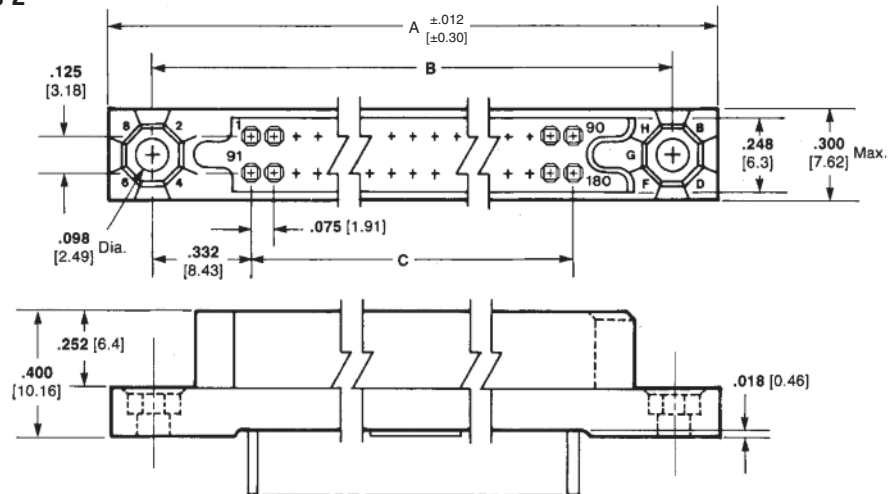
**External Keying** — page 1-80

**Recommended PC Board Layout** —  
page 1-47

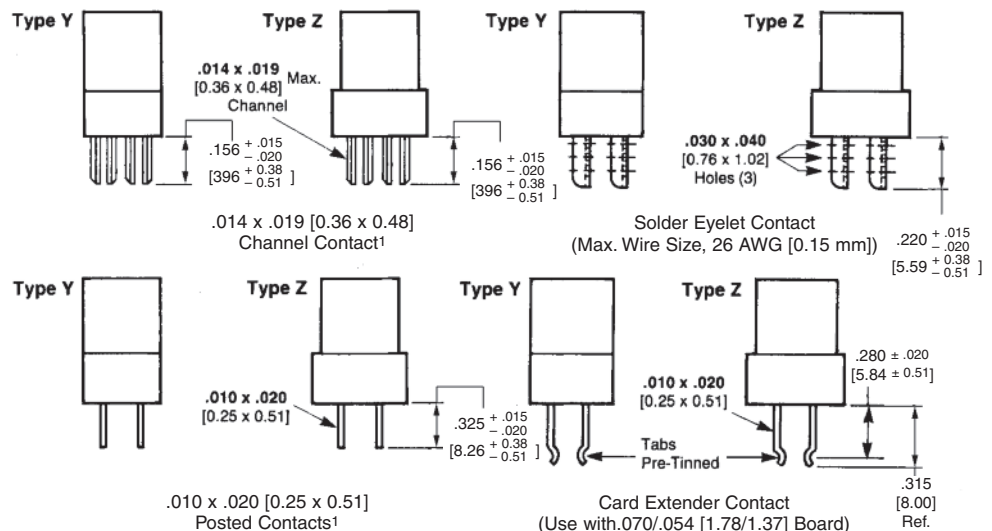
## Type Y



## Type Z



## Contact Styles



## Receptacle Assemblies for Flow Soldering — MIL-C-55302 Qualified (Continued)

### Commercial Receptacle Assemblies

**Housing Material**—In accordance with MIL-C-55302 or MIL-M-24519 type GLCP-30F

**Contact Material and Finish**—Beryllium copper per QQ-C-533 or copper nickel silicon per ASTM B422 and ASTM B888

Channel Contact, Posted Contact and Card Extender Contact—Plated .000030 [0.00076] gold in contact area, .000100 [0.00254] tin-lead on the tails over .00030 [0.00076] nickel on the entire contact.

Solder Eyelet Contact—Plated .000030 [0.00076] gold in the contact area, .000100 [0.00254] tin-lead on the tails over .000030 [0.00076] nickel on the entire contact.

| No. of Pos. | Housing Type | Dimensions      |                 |                 | .014 x .019<br>[0.36 x 0.48]<br>Channel Contacts<br>AMP Part No. | Solder Eyelet Contacts<br>AMP Part No. | .010 x .020<br>[0.25 x 0.51]<br>Posted Contacts<br>AMP Part No. | Card Extender Contacts<br>AMP Part No. |
|-------------|--------------|-----------------|-----------------|-----------------|------------------------------------------------------------------|----------------------------------------|-----------------------------------------------------------------|----------------------------------------|
|             |              | A               | B               | C               |                                                                  |                                        |                                                                 |                                        |
| 180         | Z            | 7.630<br>193.8  | 7.340<br>186.44 | 6.675<br>169.55 | 531813-4                                                         | 531811-4                               | 531815-4                                                        | 531817-4                               |
| 160         | Z            | 6.880<br>174.75 | 6.590<br>167.39 | 5.925<br>150.5  | 531813-3                                                         | —                                      | —                                                               | 531817-3                               |
| 150         | Z            | 6.505<br>165.23 | 6.215<br>157.86 | 5.550<br>140.97 | 531813-2                                                         | —                                      | —                                                               | 531817-2                               |
| 120         | Z            | 5.380<br>136.65 | 5.090<br>129.29 | 4.425<br>112.4  | —                                                                | 531811-1                               | 531815-1                                                        | 531817-1                               |
| 100         | Y            | 4.630<br>117.6  | 4.340<br>110.24 | 3.675<br>93.35  | —                                                                | 1-531810-0                             | —                                                               | 1-531816-0                             |
| 80          | Y            | 3.880<br>98.55  | 3.590<br>91.19  | 2.925<br>74.3   | 531812-8                                                         | 531810-8                               | —                                                               | —                                      |
| 50          | Y            | 2.755<br>69.98  | 2.465<br>62.61  | 1.800<br>45.72  | 531812-5                                                         | 531810-5                               | —                                                               | 531816-5                               |
| 40          | Y            | 2.380<br>60.45  | 2.090<br>53.09  | 1.425<br>36.2   | 531812-4                                                         | 531810-4                               | —                                                               | 531816-4                               |
| 30          | Y            | 2.005<br>50.93  | 1.715<br>43.56  | 1.050<br>26.67  | 531812-3                                                         | —                                      | —                                                               | 531816-3                               |
| 10          | Y            | 1.255<br>31.88  | .965<br>24.51   | .300<br>7.62    | —                                                                | —                                      | 531814-1                                                        | —                                      |

### Military Receptacle Assemblies

**Housing Material**—In accordance with MIL-C-55302 or MIL-M-24519 type GLCP-30F

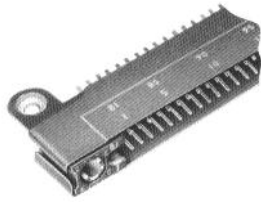
**Contact Material and Finish**—Beryllium copper per QQ-C-533

Channel Contact, Posted Contact and Card Extender Contact—Plated .000050 [0.00127] gold in the contact area, .000100 [0.00254] tin-lead on the tails over .000030 [0.00076] nickel on the entire contact.

Solder Eyelet Contact—Plated .000050 [0.00127] gold in the contact area, .000100 [0.00254] tin-lead on the tails over .000050 [0.00127] nickel on the entire contact.

| No. of Pos. | Housing Type | Dimensions      |                 |                 | .014 x .019 [0.36 x 0.48]<br>Channel Contacts |              | Solder Eyelet Contacts  |              | .010 x .020 [0.25 x 0.51]<br>Posted Contacts |              | Card Extender Contacts  |              |
|-------------|--------------|-----------------|-----------------|-----------------|-----------------------------------------------|--------------|-------------------------|--------------|----------------------------------------------|--------------|-------------------------|--------------|
|             |              | A               | B               | C               | MIL-Part No.<br>M55302/                       | AMP Part No. | MIL-Part No.<br>M55302/ | AMP Part No. | MIL-Part No.<br>M55302/                      | AMP Part No. | MIL-Part No.<br>M55302/ | AMP Part No. |
| 180         | Z            | 7.630<br>193.8  | 7.340<br>186.44 | 6.675<br>169.55 | 25-29                                         | 531145-4     | 25-30                   | 531146-4     | 25-31                                        | 531147-4     | 25-32                   | 531148-4     |
| 160         | Z            | 6.880<br>174.75 | 6.590<br>167.39 | 5.925<br>150.5  | 25-25                                         | 531145-3     | 25-26                   | 531146-3     | 25-27                                        | 531147-3     | 25-28                   | 531148-3     |
| 150         | Z            | 6.505<br>165.23 | 6.215<br>157.86 | 5.550<br>140.97 | 25-21                                         | 531145-2     | 25-22                   | 531146-2     | 25-23                                        | 531147-2     | 25-24                   | 531148-2     |
| 120         | Z            | 5.380<br>136.65 | 5.090<br>129.92 | 4.425<br>112.4  | 25-17                                         | 531145-1     | 25-18                   | 531146-1     | 25-19                                        | 531147-1     | 25-20                   | 531148-1     |
| 110         | Y            | 5.005<br>127.13 | 4.715<br>119.76 | 4.050<br>102.87 | 24-85                                         | 1-531142-1   | 24-86                   | 1-531129-1   | 24-87                                        | 1-531143-1   | 24-88                   | 1-531144-1   |
| 100         | Y            | 4.630<br>117.6  | 4.340<br>110.24 | 3.675<br>93.35  | 24-81                                         | 1-531142-0   | 24-82                   | 1-531129-0   | 24-83                                        | 1-531143-0   | 24-84                   | 1-531144-0   |
| 90          | Y            | 4.255<br>108.08 | 3.965<br>100.71 | 3.300<br>83.82  | 24-77                                         | 531142-9     | 24-78                   | 1-531129-2   | 24-79                                        | 531143-9     | 24-80                   | 531144-9     |
| 80          | Y            | 3.880<br>98.55  | 3.590<br>91.19  | 2.925<br>74.3   | 24-73                                         | 531142-8     | 24-74                   | 531129-9     | 24-75                                        | 531143-8     | 24-76                   | 531144-8     |
| 70          | Y            | 3.505<br>89.03  | 3.215<br>81.66  | 2.550<br>64.77  | 24-69                                         | 531142-7     | 24-70                   | 531129-8     | 24-71                                        | 531143-7     | 24-72                   | 531144-7     |
| 60          | Y            | 3.130<br>79.5   | 2.840<br>72.14  | 2.175<br>55.25  | 24-65                                         | 531142-6     | 24-66                   | 531129-7     | 24-67                                        | 531143-6     | 24-68                   | 531144-6     |
| 50          | Y            | 2.755<br>69.98  | 2.465<br>62.61  | 1.800<br>45.72  | 24-61                                         | 531142-5     | 24-62                   | 531129-6     | 24-63                                        | 531143-5     | 24-64                   | 531144-5     |
| 40          | Y            | 2.380<br>60.45  | 2.090<br>53.09  | 1.425<br>36.2   | 24-57                                         | 531142-4     | 24-58                   | 531129-5     | 24-59                                        | 531143-4     | 24-60                   | 531144-4     |
| 30          | Y            | 2.005<br>50.93  | 1.715<br>43.56  | 1.050<br>26.67  | 24-53                                         | 531142-3     | 24-54                   | 531129-4     | 24-55                                        | 531143-3     | 24-56                   | 531144-3     |
| 20          | Y            | 1.630<br>41.4   | 1.340<br>34.04  | .675<br>17.15   | 24-49                                         | 531142-2     | 24-50                   | 531129-3     | 24-51                                        | 531143-2     | 24-52                   | 531144-2     |
| 10          | Y            | 1.255<br>31.88  | .965<br>24.51   | .300<br>7.62    | 24-45                                         | 531142-1     | 24-46                   | 531129-2     | 24-47                                        | 531143-1     | 24-48                   | 531144-1     |

## Straddle Mount Pin Header Assemblies with Anodized Pin Protectors — MIL-C-55302 Qualified



### Related Product Data

**Mates with** — Receptacles, pages 1-42 and 1-43

**External Keying** — page 1-80

**Recommended PC Board Layout** — page 1-47

### Commercial Pin Header Assemblies

**Housing Material** — In accordance with MIL-C-55302 or MIL-M-24519 Type GLCP-30F

**Pin Protector Material** — Anodized aluminum per QQ-A-250/1

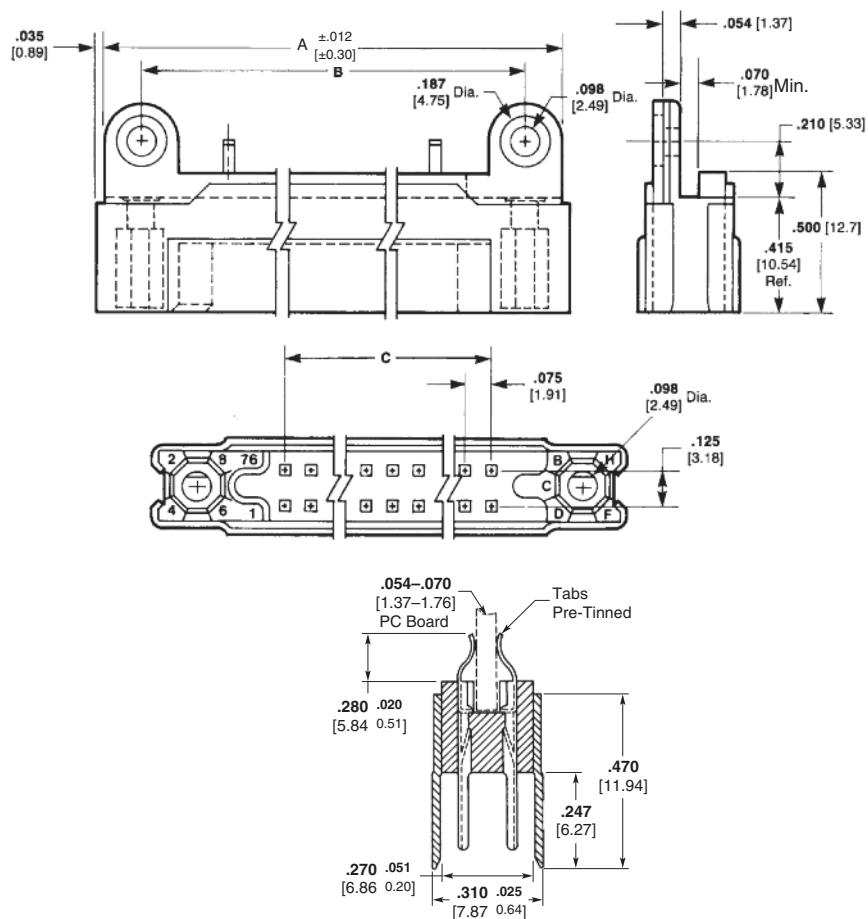
**Contact Material and Finish** — Brass per QQ-B-626 plated .000030 [0.00076] gold in the contact area, .000100 [0.00254] tin-lead on the tabs over .000050 [0.00127] nickel on the entire contact.

### Military Pin Header Assemblies

**Housing Material** — In accordance with MIL-C-55302 or MIL-M-24519 Type GLCP-30F

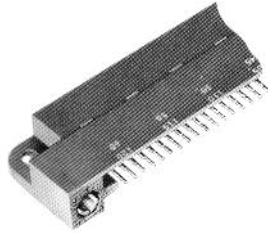
**Pin Protector Material** — Anodized aluminum per QQ-A-250/1

**Contact Material and Finish** — Brass per QQ-B-626 plated .000050 [0.000127] gold in the contact area, .000100 [0.00254] tin-lead on the tabs over .000050 [0.00127] nickel on the entire contact.



| No. of Pos. | Dimensions      |                 |                 | Military Pin Header |              |
|-------------|-----------------|-----------------|-----------------|---------------------|--------------|
|             | A               | B               | C               | M55302/             | AMP Part No. |
| 180         | 7.630<br>193.8  | 7.340<br>186.44 | 6.675<br>169.55 | 23-30               | 530785-4     |
| 160         | 6.880<br>174.75 | 6.590<br>167.39 | 5.925<br>150.5  | 23-29               | 530785-5     |
| 150         | 6.505<br>165.23 | 6.215<br>157.86 | 5.550<br>140.97 | 23-28               | 530785-2     |
| 120         | 5.380<br>136.65 | 5.090<br>129.29 | 4.425<br>112.4  | 23-27               | 530785-6     |
| 110         | 5.005<br>127.13 | 4.715<br>119.76 | 4.050<br>102.87 | 23-26               | 530785-7     |
| 100         | 4.630<br>117.6  | 4.340<br>110.24 | 3.675<br>93.35  | 23-25               | 530785-8     |
| 90          | 4.255<br>108.08 | 3.965<br>100.71 | 3.300<br>83.82  | 23-24               | 1-530785-7   |
| 80          | 3.880<br>98.55  | 3.590<br>91.19  | 2.925<br>74.3   | 23-23               | 530785-9     |
| 70          | 3.505<br>89.03  | 3.215<br>81.66  | 2.550<br>64.77  | 23-22               | 1-530785-0   |
| 60          | 3.130<br>79.5   | 2.840<br>72.14  | 2.175<br>55.25  | 23-21               | 1-530785-1   |
| 50          | 2.755<br>69.98  | 2.465<br>62.61  | 1.800<br>45.72  | 23-20               | 1-530785-2   |
| 40          | 2.380<br>60.45  | 2.090<br>53.09  | 1.425<br>36.2   | 23-19               | 1-530785-3   |
| 30          | 2.005<br>50.93  | 1.715<br>43.56  | 1.050<br>26.67  | 23-18               | 1-530785-4   |
| 20          | 1.630<br>41.4   | 1.340<br>34.04  | .675<br>17.15   | 23-17               | 1-530785-5   |
| 10          | 1.255<br>31.88  | .965<br>24.51   | .300<br>7.62    | 23-16               | 1-530785-6   |

## Right-Angle Pin Header Assemblies for Flow Soldering — MIL-C-55302 Qualified



### Related Product Data

**Mates with** — Receptacles,  
pages 1-42 and 1-43

**External Keying**—page 1-80

**Recommended PC Board Layout** —  
page 1-47

### Commercial Pin Header Assemblies

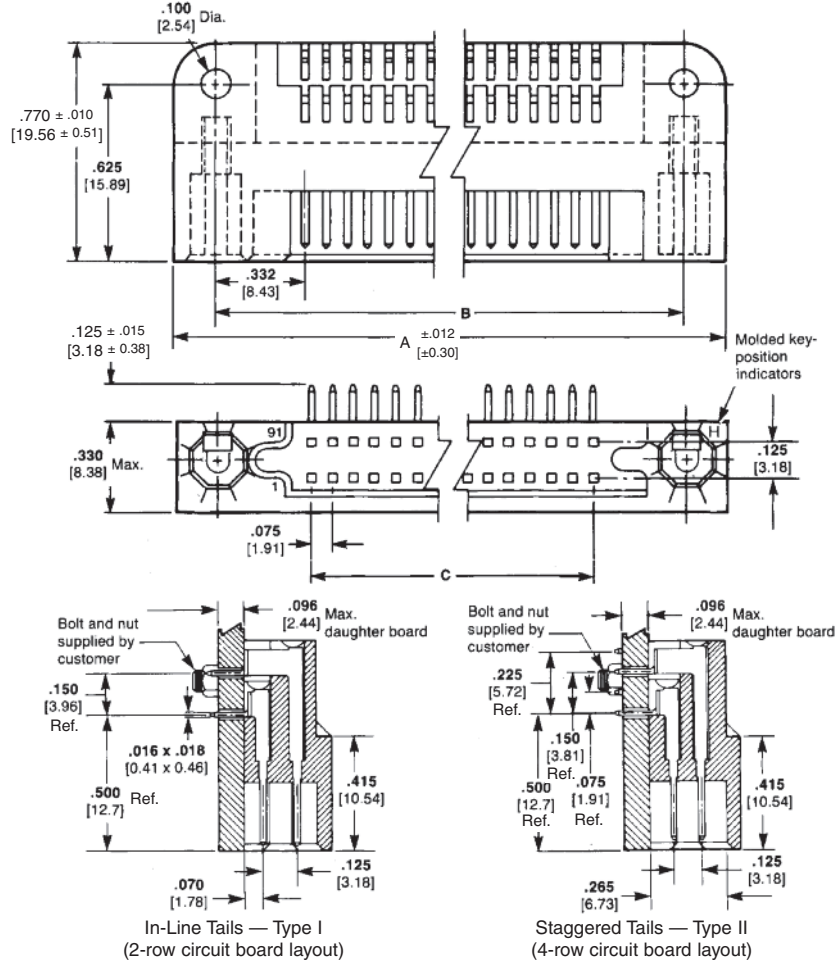
**Housing Material** — In accordance  
with MIL-C-55302

**Contact Material and Finish** —  
Brass per QQ-B-626 plated .000030  
[0.00076] gold in the contact area,  
.000100 [0.00254] tin-lead on the tails  
over .000050 [0.00127] nickel on the  
entire contact

### Military Pin Header Assemblies

**Housing Material** — In accordance  
with MIL-C-55302

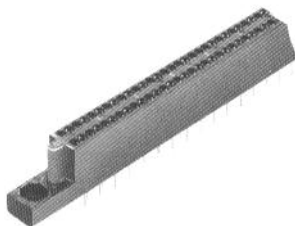
**Contact Material and Finish** —  
Brass per QQ-B-626 plated .000050  
[0.00127] gold in the contact area,  
.000100 [0.00254] tin-lead on the tails  
over .000050 [0.00127] nickel on the  
entire contact



| No. of<br>Positions | Dimensions      |                 |                 | In-line, Type I        |                         |                     | Staggered, Type II     |                         |                     |
|---------------------|-----------------|-----------------|-----------------|------------------------|-------------------------|---------------------|------------------------|-------------------------|---------------------|
|                     | A               | B               | C               | Commercial<br>Part No. | MIL-Part No.<br>M55302/ | AMP<br>MIL Part No. | Commercial<br>Part No. | MIL-Part No.<br>M55302/ | AMP<br>MIL Part No. |
| 180                 | 7.630<br>193.8  | 7.340<br>186.44 | 6.675<br>169.55 | —                      | 156-15                  | 1-531719-5          | 1-531124-5             | 156-30                  | 1-531720-5          |
| 160                 | 6.880<br>174.75 | 6.590<br>167.39 | 5.925<br>150.5  | 1-531127-4             | 156-14                  | 1-531719-4          | —                      | 156-29                  | 1-531720-4          |
| 150                 | 6.505<br>165.23 | 6.215<br>157.86 | 5.550<br>140.97 | —                      | 156-13                  | 1-531719-3          | 1-531124-3             | 156-28                  | 1-531720-3          |
| 120                 | 5.380<br>136.65 | 5.090<br>129.29 | 4.425<br>112.4  | —                      | 156-12                  | 1-531719-2          | —                      | 156-27                  | 1-531720-2          |
| 110                 | 5.005<br>127.13 | 4.715<br>119.76 | 4.050<br>102.87 | —                      | 156-11                  | 1-531719-1          | —                      | 156-26                  | 1-531720-1          |
| 100                 | 4.630<br>117.6  | 4.340<br>110.24 | 3.675<br>93.35  | —                      | 156-10                  | 1-531719-0          | —                      | 156-25                  | 1-531720-0          |
| 90                  | 4.255<br>108.08 | 3.965<br>100.71 | 3.300<br>83.82  | —                      | 156-09                  | 531719-9            | —                      | 156-24                  | 531720-9            |
| 80                  | 3.880<br>98.55  | 3.590<br>91.19  | 2.925<br>74.3   | —                      | 156-08                  | 531719-8            | —                      | 156-23                  | 531720-8            |
| 70                  | 3.505<br>89.03  | 3.215<br>81.66  | 2.550<br>64.77  | —                      | 156-07                  | 531719-7            | —                      | 156-22                  | 531720-7            |
| 60                  | 3.130<br>79.5   | 2.840<br>72.14  | 2.175<br>55.25  | —                      | 156-06                  | 531719-6            | 531124-6               | 156-21                  | 531720-6            |
| 50                  | 2.755<br>69.98  | 2.465<br>62.61  | 1.800<br>45.72  | —                      | 156-05                  | 531719-5            | 531124-5               | 156-20                  | 531720-5            |
| 40                  | 2.380<br>60.45  | 2.090<br>53.09  | 1.425<br>36.2   | —                      | 156-04                  | 531719-4            | 531124-4               | 156-19                  | 531720-4            |
| 30                  | 2.005<br>50.93  | 1.715<br>43.56  | 1.050<br>26.67  | —                      | 156-03                  | 531719-3            | 531124-3               | 156-18                  | 531720-3            |
| 20                  | 1.630<br>41.4   | 1.340<br>34.04  | .675<br>17.15   | —                      | 156-02                  | 531719-2            | —                      | 156-17                  | 531720-2            |
| 10                  | 1.255<br>31.88  | .965<br>24.51   | .300<br>7.62    | —                      | 156-01                  | 531719-1            | —                      | 156-16                  | 531720-1            |

## Stacking Connectors

### Receptacle Assembly



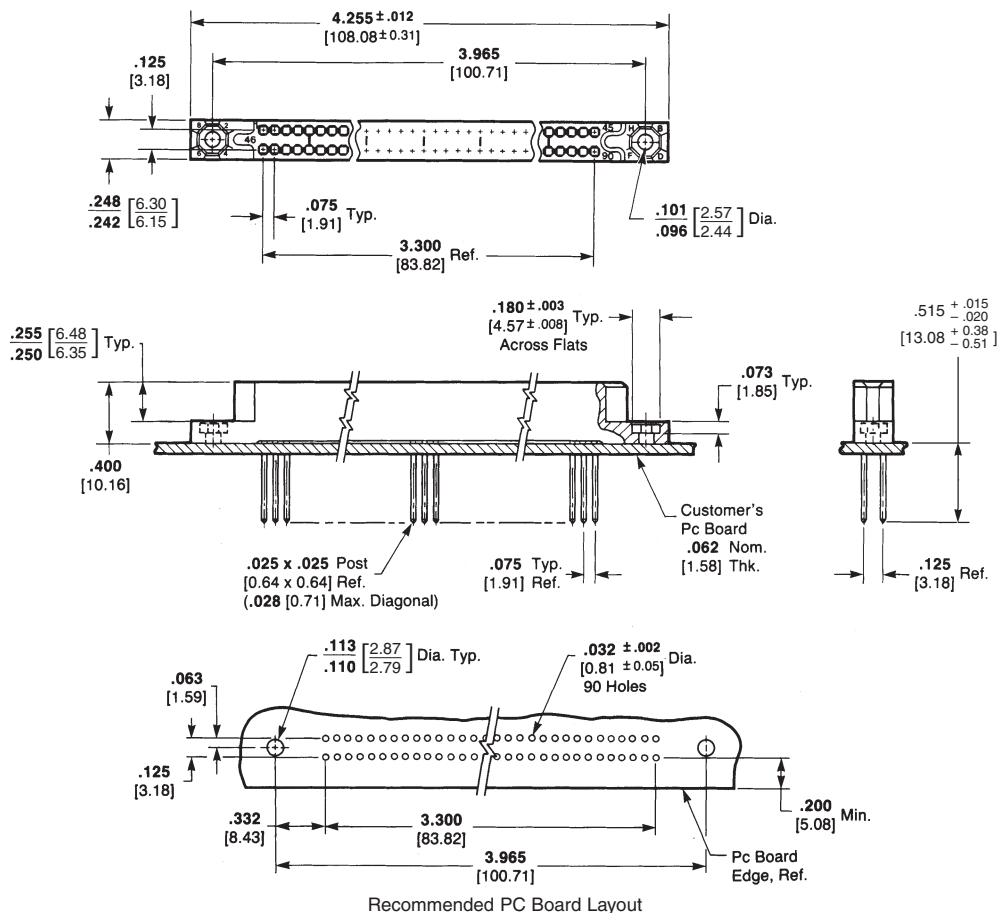
**Housing Material** — Blue Diallyl Phthalate or MIL-M-24519 Type GLCP-30F

**Contact Material and Finish** — Beryllium copper or copper nickel silicon per ASTM B422 and ASTM B888, plated gold .000050 [0.00127] thick all over nickel .000030 [0.00076] thick

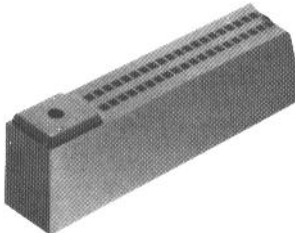
#### Related Product Data

**Mates with** — Pin Shroud Housing

**External Keying** — page 1-80



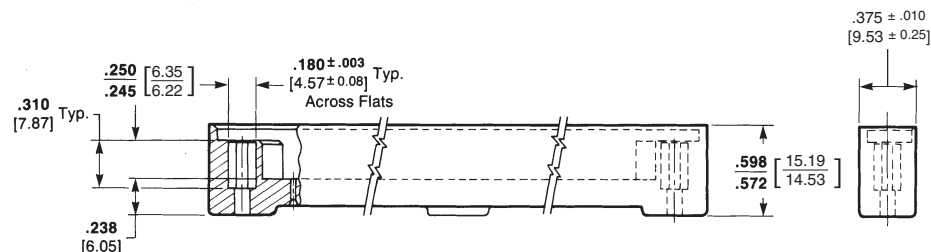
### Pin Shroud Housing



**Housing Material** — Blue Polyester

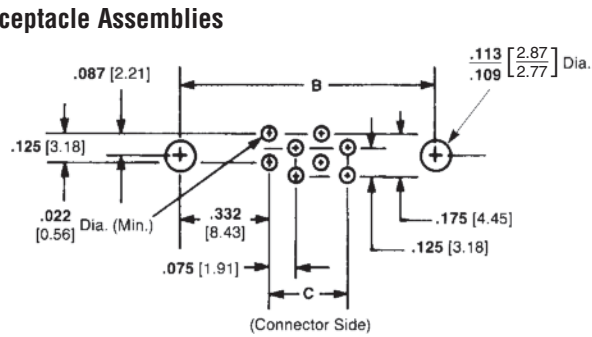
#### Related Product Data

**Mates with** — Receptacle Assembly

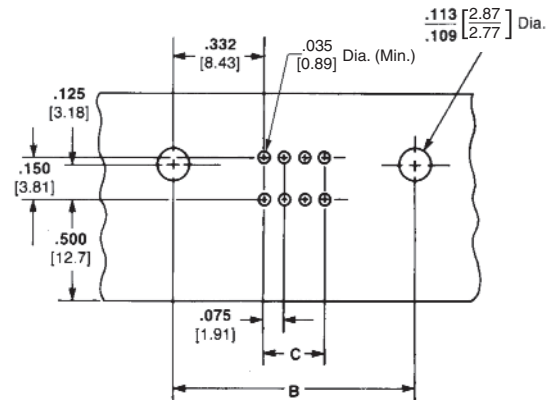


## Recommended Printed Circuit Board Layouts

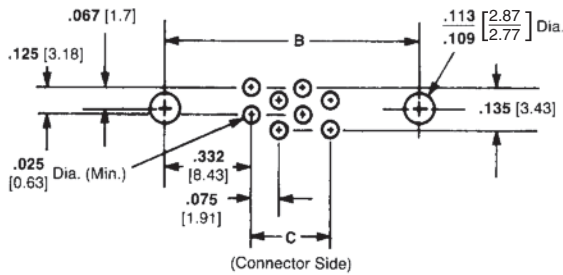
### Receptacle Assemblies



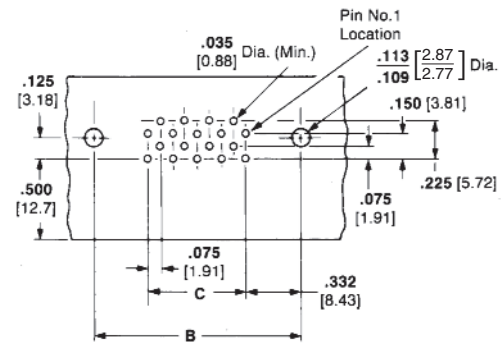
.014 x .019 [0.36 x 0.48]  
Channel Contacts



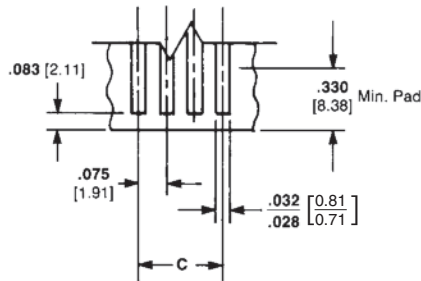
In-Line, Right-Angle



.010 x .020 [0.25 x 0.51]  
Posted Contacts

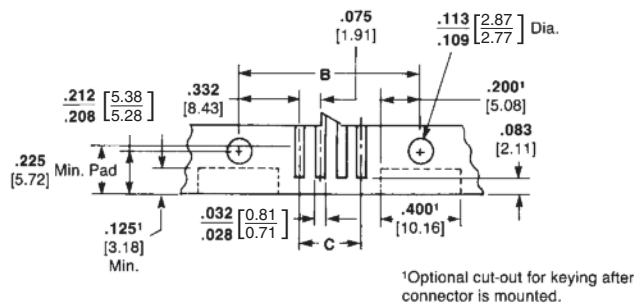


Staggered, Right-Angle  
(Connector Side)



Card Extender Contacts

### Pin Header Assemblies



Straddle Mount Assembly

| No. of Pos. | Dimensions      |                 |
|-------------|-----------------|-----------------|
|             | B               | C               |
| 180         | 7.340<br>186.44 | 6.675<br>169.55 |
| 160         | 6.590<br>167.39 | 5.925<br>150.5  |
| 150         | 6.215<br>157.86 | 5.550<br>140.97 |
| 120         | 5.090<br>129.29 | 4.425<br>112.4  |
| 110         | 4.715<br>119.76 | 4.050<br>102.87 |
| 100         | 4.340<br>110.24 | 3.675<br>93.35  |
| 90          | 3.965<br>100.71 | 3.300<br>83.82  |
| 80          | 3.590<br>91.19  | 2.925<br>74.3   |
| 70          | 3.215<br>81.66  | 2.550<br>64.77  |
| 60          | 2.840<br>72.14  | 2.175<br>55.25  |
| 50          | 2.465<br>62.61  | 1.800<br>45.72  |
| 40          | 2.090<br>53.09  | 1.425<br>36.2   |
| 30          | 1.715<br>43.56  | 1.050<br>26.67  |
| 20          | 1.340<br>34.04  | .675<br>17.15   |
| 10          | .965<br>24.51   | .300<br>7.62    |

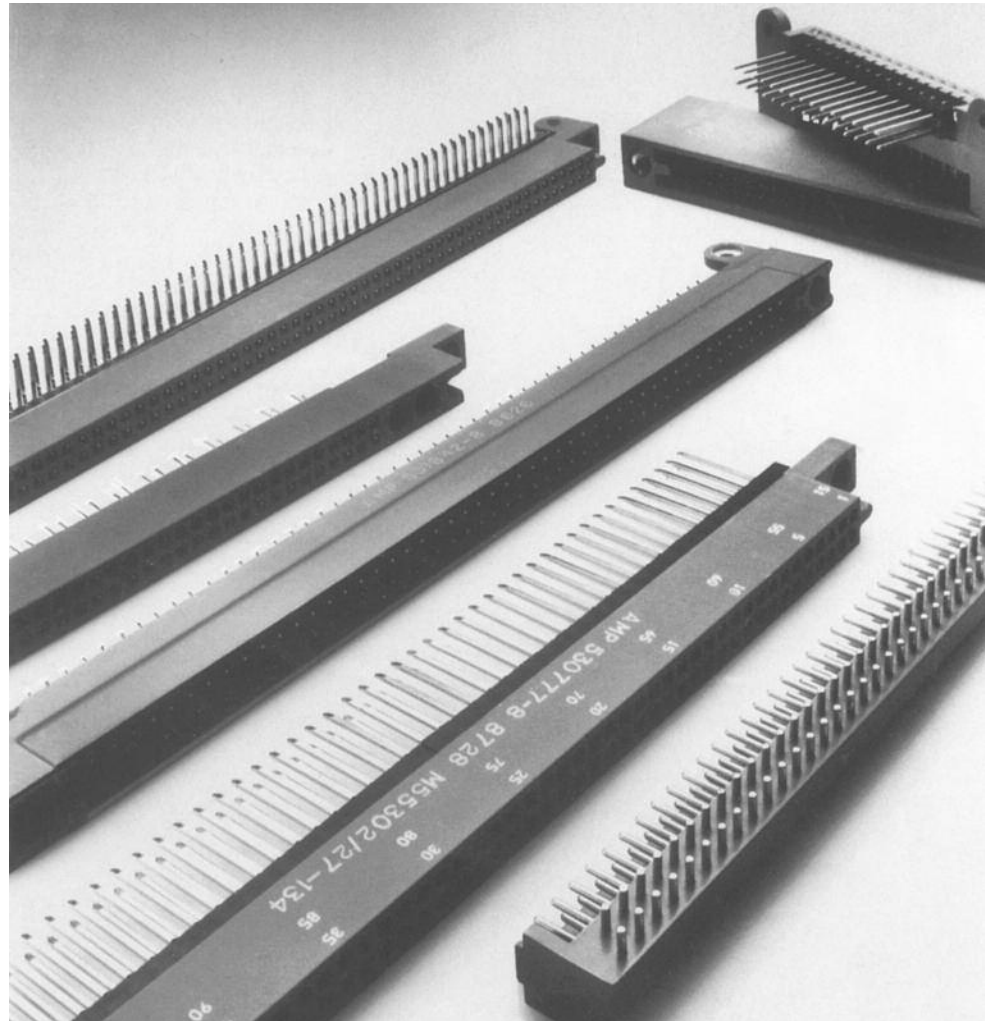
**Note:** These drawings are for reference only. Consult TE Connectivity for board layout details.



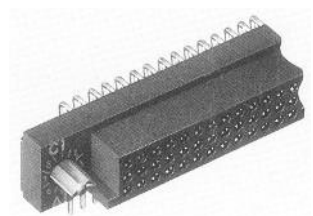
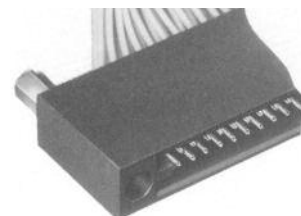
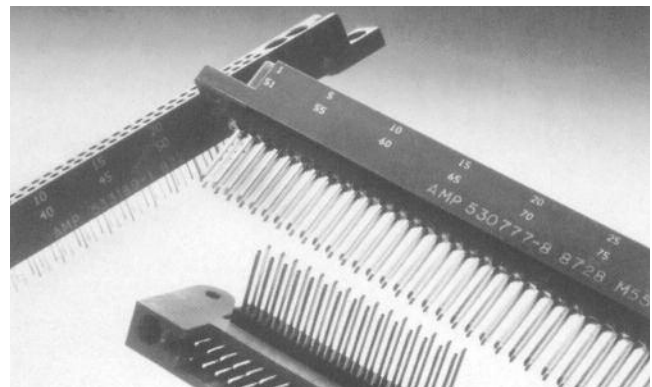
## Introduction

### Product Facts

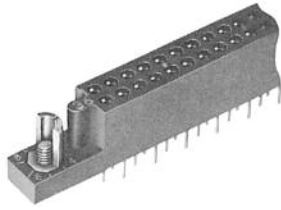
- Contacts are on .100 x .100 [2.54 x 2.54] centers
- Four-beam box-type contact design provides four areas of contact per connection
- Quad-beam redundancy offers high performance and reliability
- Sealed versions available
- Straddle mount pin headers have pretinned tabs for connection to daughter boards
- Pin headers are provided with pin protectors
- Straddle mount pin headers have replaceable contacts
- Box receptacle contacts are available in flow solder, solder eyelet, straddle mount, wrap-type and crimp styles
- Pin header assemblies are available in right-angle, straddle mount and crimp styles
- Solder tails are tin-lead plated for solderability
- Signal-coax mix connectors available
- Qualified to MIL-C-55302/26, /27, /110, /113, /129, /130



The .100 [2.54] Box Contact Connector series is available in 2, 3 and 4-row configurations with pin counts up to 300 positions. Each configuration uses the unique, very reliable four-beam box design which offers low applied cost while maintaining high performance and reliability. The ability to choose different sizes; housing materials; terminations; sealed versions; hybrids; etc. provides one with needed versatility in designing a system.



## 2-Row Receptacle Assemblies — MIL-C-55302 Qualified

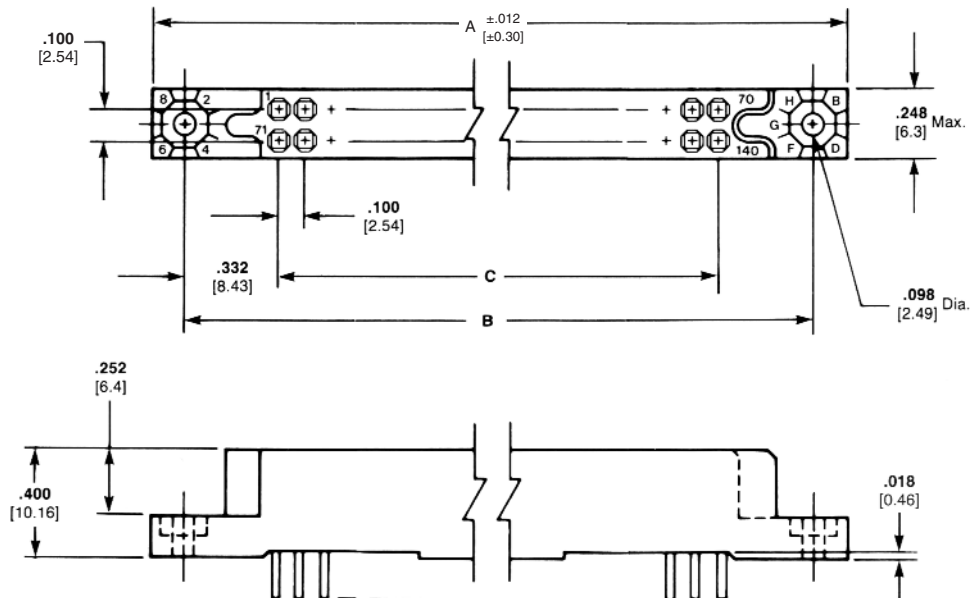


### Related Product Data

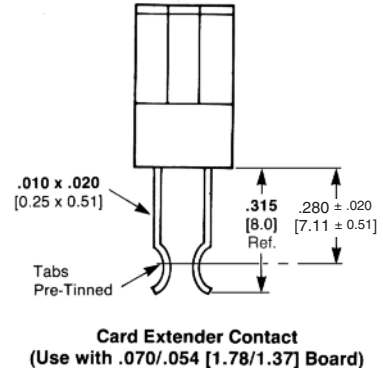
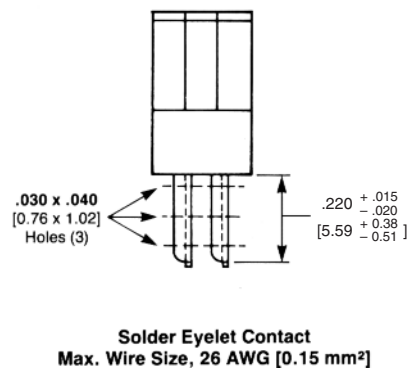
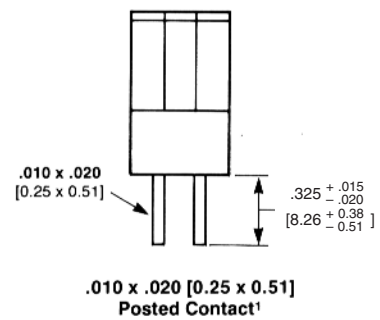
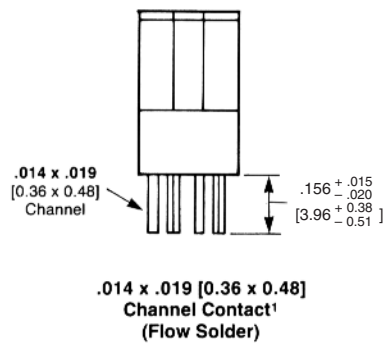
**Mates with** — Pin Headers and Assemblies, pages 1-56 to 1-60

**External Keying** — page 1-80

**Recommended PC Board Layout** — page 1-74



### Contact Styles



<sup>1</sup> For flow solder application

## 2-Row Receptacle Assemblies — MIL-C-55302 Qualified (Continued)

### Commercial Receptacle Assemblies

**Housing Material** — In accordance with MIL-C-55302

**Contact Material and Finish** — Beryllium copper or copper nickel silicon per ASTM B422 and ASTM B888

Channel Contact, Posted Contact and Card Extender Contact — Plated .000030 [0.00076] gold in contact area, .000100 [0.00254] tin-lead on the tails over .000030 [0.00076] nickel on the entire contact.

**Solder Eyelet Contact** — Plated .000030 [0.00076] gold in contact area, .000100 [0.00254] tin-lead on tails over .000030 [0.00076] nickel on the entire contact.

| No. of Pos. | Dimensions      |                 |                 | .014 x .019<br>[0.36 x 0.48]<br>Channel Contacts<br>AMP Part No. | .010 x .020<br>[0.25 x 0.51]<br>Posted Contacts<br>AMP Part No. | Solder Eyelet<br>Contacts<br>AMP Part No. | Card Extender<br>Contacts<br>AMP Part No. |
|-------------|-----------------|-----------------|-----------------|------------------------------------------------------------------|-----------------------------------------------------------------|-------------------------------------------|-------------------------------------------|
|             | A               | B               | C               |                                                                  |                                                                 |                                           |                                           |
| 140         | 7.855<br>199.52 | 7.565<br>192.15 | 6.900<br>175.26 | 1-531832-3                                                       | —*                                                              | —*                                        | —*                                        |
| 134         | 7.555<br>191.90 | 7.265<br>184.53 | 6.600<br>167.64 | —*                                                               | —*                                                              | 1-531833-2                                | —*                                        |
| 130         | 7.355<br>186.82 | 7.065<br>179.45 | 6.400<br>162.56 | —*                                                               | —*                                                              | —*                                        | —*                                        |
| 120         | 6.855<br>174.12 | 6.565<br>166.75 | 5.900<br>149.86 | —*                                                               | —*                                                              | —*                                        | —*                                        |
| 110         | 6.355<br>161.42 | 6.065<br>154.05 | 5.400<br>137.16 | 531832-9                                                         | —*                                                              | —*                                        | 531835-9                                  |
| 100         | 5.855<br>148.72 | 5.565<br>141.35 | 4.900<br>124.46 | 531832-8                                                         | —*                                                              | —*                                        | —*                                        |
| 90          | 5.355<br>136.02 | 5.065<br>128.65 | 4.400<br>111.76 | —*                                                               | —*                                                              | —*                                        | —*                                        |
| 80          | 4.855<br>123.32 | 4.565<br>115.95 | 3.900<br>99.06  | —*                                                               | 531834-6                                                        | —*                                        | —*                                        |
| 70          | 4.355<br>110.62 | 4.065<br>103.25 | 3.400<br>83.36  | —*                                                               | —*                                                              | —*                                        | —*                                        |
| 60          | 3.855<br>97.92  | 3.565<br>90.55  | 2.900<br>73.66  | —*                                                               | —*                                                              | 531833-4                                  | —*                                        |
| 50          | 3.355<br>85.22  | 3.065<br>77.85  | 2.400<br>60.96  | —*                                                               | —*                                                              | —*                                        | 531835-3                                  |
| 40          | 2.855<br>72.52  | 2.565<br>65.15  | 1.900<br>48.26  | —*                                                               | —*                                                              | —*                                        | —*                                        |
| 30          | 2.355<br>59.82  | 2.065<br>52.4 5 | 1.400<br>35.56  | —*                                                               | —*                                                              | —*                                        | —*                                        |

\* Part Numbers available upon request, contact TE Connectivity.

### Military Receptacle Assemblies

**Housing Material** — In accordance with MIL-C-55302

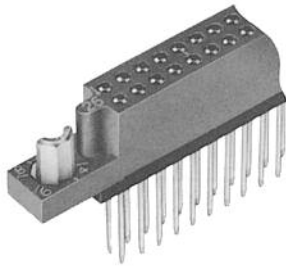
**Contact Material and Finish** — Beryllium copper or copper nickel silicon per ASTM B422 and ASTM B888

Channel Contact, Posted Contact and Card Extender Contact — Plated .000050 [0.00127] gold in contact area, .000100 [0.00254] tin-lead on the tails over .000030 [0.00076] nickel on the entire contact.

**Solder Eyelet Contact** — Plated .000050 [0.00127] gold in contact area, in accordance with MIL-C-55302 .000100 [0.00254] tin-lead on tails over .000050 [0.00127] nickel on the entire contact.

| No. of Pos. | Dimensions      |                 |                 | .014 x .019 [0.36 x 0.48]<br>Channel Contacts |                 | Solder Eyelet Contacts  |                 | .010 x .020 [0.25 x 0.51]<br>Posted Contacts |                 | Card Extender Contacts  |                 |
|-------------|-----------------|-----------------|-----------------|-----------------------------------------------|-----------------|-------------------------|-----------------|----------------------------------------------|-----------------|-------------------------|-----------------|
|             | A               | B               | C               | MIL-Part No.<br>M55302/                       | AMP<br>Part No. | MIL-Part No.<br>M55302/ | AMP<br>Part No. | MIL-Part No.<br>M55302/                      | AMP<br>Part No. | MIL-Part No.<br>M55302/ | AMP<br>Part No. |
| 140         | 7.855<br>199.52 | 7.565<br>192.15 | 6.900<br>175.26 | 27-193                                        | 2-530340-2      | 27-197                  | 1-530758-3      | 27-201                                       | 1-530776-3      | 27-229                  | 1-530782-3      |
| 134         | 7.555<br>191.90 | 7.265<br>184.53 | 6.600<br>167.64 | 27-192                                        | 2-530340-1      | 27-196                  | 1-530758-2      | 27-200                                       | 1-530776-2      | 27-228                  | 1-530782-2      |
| 130         | 7.355<br>186.82 | 7.065<br>179.45 | 6.400<br>162.56 | 27-191                                        | 2-530340-0      | 27-195                  | 1-530758-1      | 27-199                                       | 1-530776-1      | 27-227                  | 1-530782-1      |
| 120         | 6.855<br>174.12 | 6.565<br>166.75 | 5.900<br>149.86 | 27-190                                        | 1-530340-9      | 27-194                  | 1-530758-0      | 27-198                                       | 1-530776-0      | 27-226                  | 1-530782-0      |
| 110         | 6.355<br>161.42 | 6.065<br>154.05 | 5.400<br>137.16 | 27-99                                         | 530340-9        | 27-108                  | 530758-9        | 27-117                                       | 530776-9        | 27-180                  | 530782-9        |
| 100         | 5.855<br>148.72 | 5.565<br>141.35 | 4.900<br>124.46 | 27-98                                         | 530340-8        | 27-107                  | 530758-8        | 27-116                                       | 530776-8        | 27-179                  | 530782-8        |
| 90          | 5.355<br>136.02 | 5.065<br>128.65 | 4.400<br>111.76 | 27-97                                         | 530340-7        | 27-106                  | 530758-7        | 27-115                                       | 530776-7        | 27-178                  | 530782-7        |
| 80          | 4.855<br>123.32 | 4.565<br>115.95 | 3.900<br>99.06  | 27-96                                         | 530340-6        | 27-105                  | 530758-6        | 27-114                                       | 530776-6        | 27-177                  | 530782-6        |
| 70          | 4.355<br>110.62 | 4.065<br>103.25 | 3.400<br>83.36  | 27-95                                         | 530340-5        | 27-104                  | 530758-5        | 27-113                                       | 530776-5        | 27-176                  | 530782-5        |
| 60          | 3.855<br>97.92  | 3.565<br>90.55  | 2.900<br>73.66  | 27-94                                         | 530340-4        | 27-103                  | 530758-4        | 27-112                                       | 530776-4        | 27-175                  | 530782-4        |
| 50          | 3.355<br>85.22  | 3.065<br>77.85  | 2.400<br>60.96  | 27-93                                         | 530340-3        | 27-102                  | 530758-3        | 27-111                                       | 530776-3        | 27-174                  | 530782-3        |
| 40          | 2.855<br>72.52  | 2.565<br>65.15  | 1.900<br>48.26  | 27-92                                         | 530340-2        | 27-101                  | 530758-2        | 27-110                                       | 530776-2        | 27-173                  | 530782-2        |
| 30          | 2.355<br>59.82  | 2.065<br>52.45  | 1.400<br>35.56  | 27-91                                         | 530340-1        | 27-100                  | 530758-1        | 27-109                                       | 530776-1        | 27-172                  | 530782-1        |

## 2-Row Receptacle Assemblies for Rack Mounting with Posted Contacts (Wrap-Type) — MIL-C-55302 Qualified



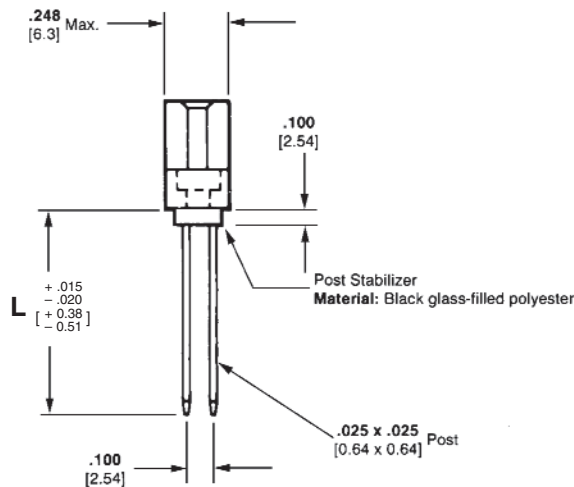
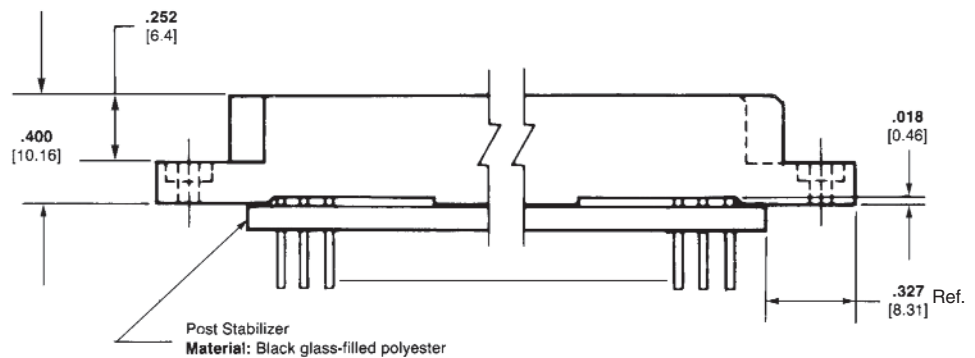
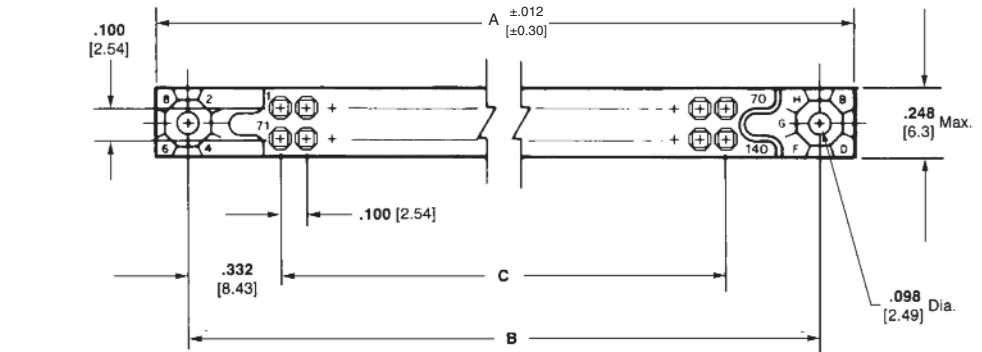
### Related Product Data

**Mates with** — Pin Headers

Assemblies, pages 1-56 to 1-60

**External Keying** — page 1-80

**Recommended PC Board Layout** —  
page 1-74



| Post Length | No. of Terminals per Post |               |               |
|-------------|---------------------------|---------------|---------------|
|             | 1 High                    | 2 High        | 3 High        |
| L           | .405<br>10.29             | .565<br>14.35 | .725<br>18.42 |

### Post Wrapping Information

Maximum wire size for wrapping a posted box terminal is 30 AWG [0.05mm<sup>2</sup>] (maximum insulated wire diameter, .019 [0.49mm]).

The following data can be used to determine bit and sleeve size:

Maximum Terminal  
Diagonal: .034 [0.87]  
Minimum Terminal  
Diagonal: .031 [0.78]  
Maximum Effective  
Radius: .067 [1.71]

Recommended Sleeve:

No. 507100<sup>1</sup>

Recommended Bits:

No. 511208<sup>1</sup>

No. 507063<sup>1</sup>

<sup>1</sup>Available from Gardner-Denver Co., Grand Haven, Michigan.

## 2-Row Receptacle Assemblies for Rack Mounting with Posted Contacts (Wrap-Type) — MIL-C-55302 Qualified (Continued)

### Commercial Receptacle Assemblies

**Housing Material** — In accordance with MIL-C-55302 or MIL-M-24519 Type GLCP-30F

**1 Contact Material and Finish** — Beryllium copper or copper nickel silicon per ASTM B422 and ASTM B888 plated .000030 [0.00076] gold in the contact area, .000100 [0.00254] tin-lead on the tails over .000030 [0.00076] nickel on the entire contact

**2 Contact Material and Finish** — Same as above except for tin on the tails

| No. of Pos. | Dimensions      |                 |                 | No. of Terminations Per Post |                              |                              |                                   |
|-------------|-----------------|-----------------|-----------------|------------------------------|------------------------------|------------------------------|-----------------------------------|
|             | A               | B               | C               | 1 High Part No. <sup>1</sup> | 2 High Part No. <sup>1</sup> | 3 High Part No. <sup>1</sup> | 3 High RoHS Part No. <sup>2</sup> |
| 140         | 7.855<br>199.52 | 7.565<br>192.15 | 6.900<br>175.26 | —*                           | —*                           | —*                           | —                                 |
| 134         | 7.555<br>191.50 | 7.265<br>184.53 | 6.600<br>167.64 | —*                           | —*                           | —*                           | —                                 |
| 130         | 7.355<br>186.82 | 7.065<br>179.45 | 6.400<br>162.56 | —*                           | —*                           | —*                           | —                                 |
| 120         | 6.855<br>174.12 | 6.565<br>166.75 | 5.900<br>149.86 | —*                           | —*                           | —*                           | —                                 |
| 110         | 6.355<br>161.42 | 6.065<br>154.05 | 5.400<br>137.16 | —*                           | —*                           | 531838-9                     | —                                 |
| 100         | 5.855<br>148.72 | 5.565<br>141.35 | 4.900<br>124.46 | —*                           | 531837-8                     | 531838-8                     | 5-531838-8                        |
| 90          | 5.355<br>136.02 | 5.065<br>128.65 | 4.400<br>111.76 | 531836-7                     | —*                           | —*                           | —                                 |
| 80          | 4.855<br>123.32 | 4.565<br>115.95 | 3.900<br>99.06  | —*                           | —*                           | 531838-6                     | 5-531838-6                        |
| 70          | 4.355<br>110.62 | 4.065<br>103.25 | 3.400<br>86.36  | —*                           | —*                           | —*                           | —                                 |
| 60          | 3.855<br>97.92  | 3.565<br>90.55  | 2.900<br>73.66  | —*                           | —*                           | —*                           | —                                 |
| 50          | 3.355<br>85.22  | 3.065<br>77.85  | 2.400<br>60.96  | 531836-3                     | —*                           | 531838-3                     | 5-531838-3                        |
| 40          | 2.855<br>72.52  | 2.565<br>65.15  | 1.900<br>48.26  | —*                           | —*                           | —*                           | —                                 |
| 30          | 2.355<br>59.82  | 2.065<br>52.45  | 1.400<br>35.56  | —*                           | —*                           | —*                           | —                                 |

\* Part Numbers available upon request, contact TE Connectivity.

### Military Receptacle Assemblies

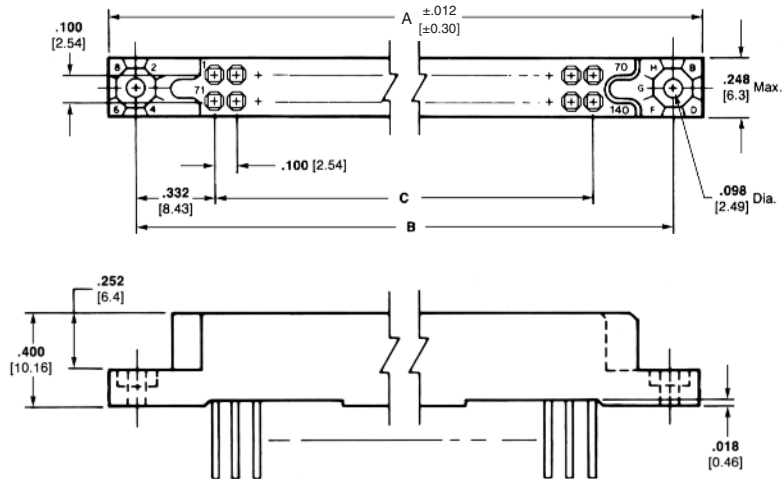
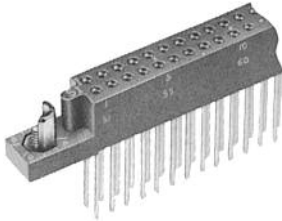
**Housing Material** — In accordance with MIL-C-55302 or MIL-M-24519 Type GLCP-30F

**Contact Material and Finish** — Beryllium copper or copper nickel silicon per ASTM B422 and ASTM B888 plated .000050 [0.00127] gold over .000030 [0.00076] nickel on the entire contact

| No. of Pos. | Dimensions      |                 |                 | No. of Terminations Per Post |              |               |              |               |              |
|-------------|-----------------|-----------------|-----------------|------------------------------|--------------|---------------|--------------|---------------|--------------|
|             | A               | B               | C               | 1 High                       |              | 2 High        |              | 3 High        |              |
|             |                 |                 |                 | MIL-Part No.                 | AMP Part No. | MIL-Part No.  | AMP Part No. | MIL-Part No.  | AMP Part No. |
| 140         | 7.855<br>199.52 | 7.565<br>192.15 | 6.900<br>175.26 | M55302/27-213                | —            | M55302/27-209 | 1-530777-3   | M55302/27-205 | 1-530763-3   |
| 134         | 7.555<br>191.50 | 7.265<br>184.53 | 6.600<br>167.64 | M55302/27-212                | 1-530778-2   | M55302/27-208 | 1-530777-2   | M55302/27-204 | 1-530763-2   |
| 130         | 7.355<br>186.82 | 7.065<br>179.45 | 6.400<br>162.56 | M55302/27-211                | 1-530778-1   | M55302/27-207 | 1-530777-1   | M55302/27-203 | 1-530763-1   |
| 120         | 6.855<br>174.12 | 6.565<br>166.75 | 5.900<br>149.86 | M55302/27-210                | 1-530778-0   | M55302/27-206 | 1-530777-0   | M55302/27-202 | 1-530763-0   |
| 110         | 6.355<br>161.42 | 6.065<br>154.05 | 5.400<br>137.16 | M55302/27-144                | 530778-9     | M55302/27-135 | 530777-9     | M55302/27-126 | 530763-9     |
| 100         | 5.855<br>148.72 | 5.565<br>141.35 | 4.900<br>124.46 | M55302/27-143                | 530778-8     | M55302/27-134 | 530777-8     | M55302/27-125 | 530763-8     |
| 90          | 5.355<br>136.02 | 5.065<br>128.65 | 4.400<br>111.76 | M55302/27-142                | 530778-7     | M55302/27-133 | 530777-7     | M55302/27-124 | 530763-7     |
| 80          | 4.855<br>123.32 | 4.565<br>115.95 | 3.900<br>99.06  | M55302/27-141                | 530778-6     | M55302/27-132 | 530777-6     | M55302/27-123 | 530763-6     |
| 70          | 4.355<br>110.62 | 4.065<br>103.25 | 3.400<br>86.36  | M55302/27-140                | 530778-5     | M55302/27-131 | 530777-5     | M55302/27-122 | 530763-5     |
| 60          | 3.855<br>97.92  | 3.565<br>90.55  | 2.900<br>73.66  | M55302/27-139                | 530778-4     | M55302/27-130 | 530777-4     | M55302/27-121 | 530763-4     |
| 50          | 3.355<br>85.22  | 3.065<br>77.85  | 2.400<br>60.96  | M55302/27-138                | 530778-3     | M55302/27-129 | 530777-3     | M55302/27-120 | 530763-3     |
| 40          | 2.855<br>72.52  | 2.565<br>65.15  | 1.900<br>48.26  | M55302/27-137                | 530778-2     | M55302/27-128 | 530777-2     | M55302/27-119 | 530763-2     |
| 30          | 2.355<br>59.82  | 2.065<br>52.45  | 1.400<br>35.56  | M55302/27-136                | 530778-1     | M55302/27-127 | 530777-1     | M55302/27-118 | 530763-1     |



## 2-Row Receptacle Assemblies for PC Solder Mount with Posted Contacts (Wrap-Type) — MIL-C-55302 Qualified



### Related Product Data

**Mates with** — Pin Header  
Assemblies, pages 1-56 to 1-60

**External Keying** — page 1-80

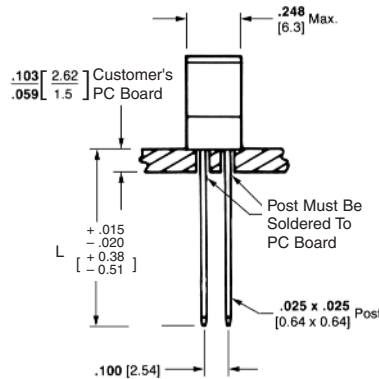
**Post Wrapping Information** —  
page 1-51

**Recommended PC Board Layout** —  
page 1-74

### Military Receptacle Assemblies

**Housing Material** — In accordance  
with MIL-C-55302 or MIL-M-24519  
Type GLCP-30F

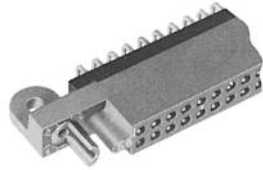
**Contact Material and Finish** —  
Beryllium copper or copper nickel silicon  
per ASTM B422 and ASTM B888 plated  
.000050 [0.00127] gold over .000030  
[0.00076] nickel on the entire contact.



| No. of<br>Pos. | Dimensions      |                 |                 | No. of Terminations Per Post |              |               |              |               |              |
|----------------|-----------------|-----------------|-----------------|------------------------------|--------------|---------------|--------------|---------------|--------------|
|                | A               | B               | C               | 1 High                       |              | 2 High        |              | 3 High        |              |
|                |                 |                 |                 | MIL-Part No.                 | AMP Part No. | MIL-Part No.  | AMP Part No. | MIL-Part No.  | AMP Part No. |
| 140            | 7.855<br>199.52 | 7.565<br>192.15 | 6.900<br>175.26 | M55302/27-225                | —            | M55302/27-221 | 1-530780-3   | M55302/27-217 | 1-530779-3   |
| 134            | 7.555<br>191.90 | 7.265<br>184.53 | 6.600<br>167.64 | M55302/27-224                | —            | M55302/27-220 | 1-530780-2   | M55302/27-216 | 1-530779-2   |
| 130            | 7.355<br>186.82 | 7.065<br>179.45 | 6.400<br>162.56 | M55302/27-223                | 1-530781-1   | M55302/27-219 | 1-530780-1   | M55302/27-215 | 1-530779-1   |
| 120            | 6.855<br>174.12 | 6.565<br>166.75 | 5.900<br>149.86 | M55302/27-222                | —            | M55302/27-218 | 1-530780-0   | M55302/27-214 | 1-530779-0   |
| 110            | 6.355<br>161.42 | 6.065<br>154.05 | 5.400<br>137.16 | M55302/27-171                | 530781-9     | M55302/27-162 | 530780-9     | M55302/27-153 | 530779-9     |
| 100            | 5.855<br>148.72 | 5.565<br>141.35 | 4.900<br>124.46 | M55302/27-170                | 530781-8     | M55302/27-161 | 530780-8     | M55302/27-152 | 530779-8     |
| 90             | 5.355<br>136.02 | 5.065<br>128.65 | 4.400<br>111.76 | M55302/27-169                | 530781-7     | M55302/27-160 | 530780-7     | M55302/27-151 | 530779-7     |
| 80             | 4.855<br>123.32 | 4.565<br>115.95 | 3.900<br>99.06  | M55302/27-168                | 530781-6     | M55302/27-159 | 530780-6     | M55302/27-150 | 530779-6     |
| 70             | 4.355<br>110.62 | 4.065<br>103.25 | 3.400<br>86.36  | M55302/27-167                | 530781-5     | M55302/27-158 | 530780-5     | M55302/27-149 | 530779-5     |
| 60             | 3.855<br>97.92  | 3.565<br>90.55  | 2.900<br>73.66  | M55302/27-166                | —            | M55302/27-157 | 530780-4     | M55302/27-148 | 530779-4     |
| 50             | 3.355<br>85.22  | 3.065<br>77.85  | 2.400<br>60.96  | M55302/27-165                | 530781-3     | M55302/27-156 | 530780-3     | M55302/27-147 | 530779-3     |
| 40             | 2.855<br>72.52  | 2.565<br>65.15  | 1.900<br>48.26  | M55302/27-164                | 530781-2     | M55302/27-155 | 530780-2     | M55302/27-146 | 530779-2     |
| 30             | 2.355<br>59.82  | 2.065<br>52.45  | 1.400<br>35.56  | M55302/27-163                | 530781-1     | M55302/27-154 | 530780-1     | M55302/27-145 | 530779-1     |



## 2-Row Right-Angle Receptacle Assemblies with Posted Contacts (Wrap-Type)



### Related Product Data

**Housing Material** — In accordance with MIL-C-55302 or MIL-M-24519 Type GLCP-30F

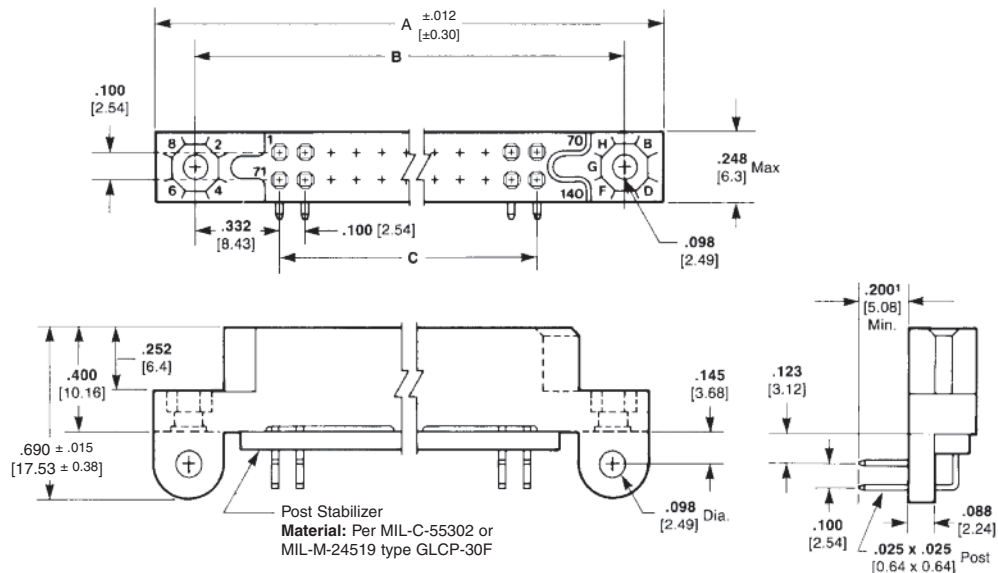
**1 Contact Material and Finish** — Beryllium copper or copper nickel silicon per ASTM B422 and ASTM B888 plated .000030 [0.00076] gold in the contact area, .000100 [0.00254] tin-lead on posts over .000030 [0.00076] nickel on the entire contact

**2 Contact Material and Finish** — Same as above except for tin on posts

**Mates with** — Pin Header Assemblies, pages 1-56 to 1-60

**External Keying** — page 1-80

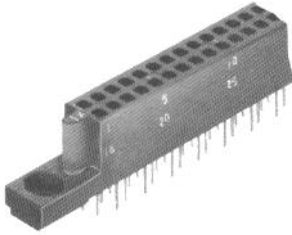
**Recommended PC Board Layout** — page 1-74



<sup>1</sup>The rows of posts will not be of equal length.

| No. of Pos. | Dimensions      |                 |                 | Part No. <sup>1</sup> | RoHS Part No. <sup>2</sup> |
|-------------|-----------------|-----------------|-----------------|-----------------------|----------------------------|
|             | A               | B               | C               |                       |                            |
| 140         | 7.855<br>199.52 | 7.565<br>192.15 | 6.900<br>175.26 | —                     | —                          |
| 134         | 7.555<br>191.50 | 7.265<br>184.53 | 6.600<br>167.64 | —                     | —                          |
| 130         | 7.355<br>186.82 | 7.065<br>179.45 | 6.400<br>162.56 | —                     | —                          |
| 120         | 6.855<br>174.12 | 6.565<br>166.75 | 5.900<br>149.86 | 532469-4              | —                          |
| 110         | 6.355<br>161.42 | 6.065<br>154.05 | 5.400<br>137.16 | 1-532469-0            | —                          |
| 100         | 5.855<br>148.72 | 5.565<br>141.35 | 4.900<br>124.46 | 532469-9              | 5-532469-9                 |
| 90          | 5.355<br>136.02 | 5.065<br>128.65 | 4.400<br>111.76 | 532469-3              | 5-532469-3                 |
| 80          | 4.855<br>123.32 | 4.565<br>115.95 | 3.900<br>99.06  | —                     | —                          |
| 70          | 4.355<br>110.62 | 4.065<br>103.25 | 3.400<br>86.36  | —                     | —                          |
| 60          | 3.855<br>97.92  | 3.565<br>90.55  | 2.900<br>73.66  | 532469-2              | —                          |
| 50          | 3.355<br>85.22  | 3.065<br>77.85  | 2.400<br>60.96  | —                     | —                          |
| 40          | 2.855<br>72.52  | 2.565<br>65.15  | 1.900<br>48.26  | 532469-6              | —                          |
| 30          | 2.355<br>59.82  | 2.065<br>52.45  | 1.400<br>35.56  | 532469-5              | —                          |

## 2-Row Sealed Receptacle Connector



**Housing Material** — Per MIL-C-55302 or MIL-M-24519 type GLCP-30F

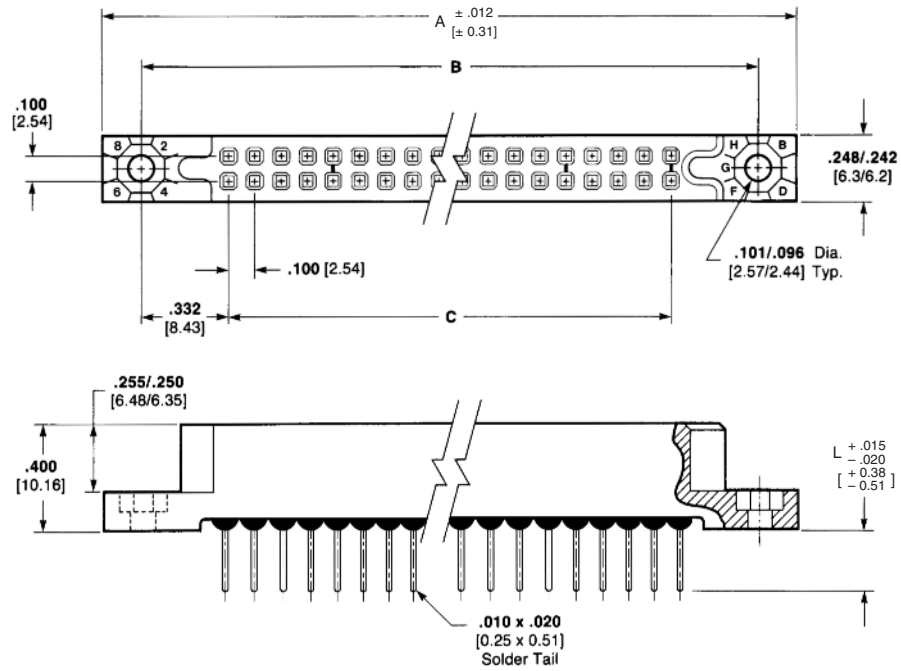
**Contact Material and Finish** — Beryllium copper or copper nickel silicon per ASTM B422 and ASTM B888 plated .000050 [0.00127] gold in the contact area, .000100 [0.00254] tin-lead on the solder tails over .000030 [0.00076] nickel on the entire contact

### Related Product Data

**Mates with** — Pin Header Assemblies, pages 1-56 to 1-60

**External Keying** — page 1-80

**Mating Sealed Pin Header Assembly** — Part Number 532795

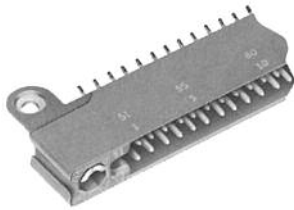


Recommended PC Board Layout

| No. of Pos. | Dimensions      |                 |                 |                 | Part Nos. Dim. L |             |
|-------------|-----------------|-----------------|-----------------|-----------------|------------------|-------------|
|             | A               | B               | C               | D               | .156 [3.96]      | .235 [5.97] |
| 140         | 7.855<br>199.52 | 7.565<br>192.15 | 7.165<br>181.99 | 6.900<br>175.26 | —*               | —*          |
| 134         | 7.555<br>191.90 | 7.265<br>184.53 | 6.865<br>174.37 | 6.600<br>167.64 | —*               | —*          |
| 130         | 7.355<br>186.82 | 7.065<br>179.45 | 6.555<br>166.50 | 6.400<br>162.56 | —*               | —*          |
| 120         | 6.855<br>174.12 | 6.565<br>166.75 | 6.165<br>156.59 | 5.906<br>149.86 | —*               | —*          |
| 110         | 6.355<br>161.42 | 6.065<br>154.05 | 5.655<br>143.64 | 5.400<br>137.16 | 534195-9         | 534650-9    |
| 100         | 5.855<br>148.72 | 5.565<br>141.35 | 5.165<br>131.19 | 4.900<br>124.46 | —*               | —*          |
| 90          | 5.355<br>136.02 | 5.065<br>128.65 | 4.655<br>118.24 | 4.400<br>111.76 | 534195-7         | —*          |
| 80          | 4.855<br>123.32 | 4.565<br>115.95 | 4.165<br>105.79 | 3.900<br>99.06  | 534195-6         | —*          |
| 70          | 4.355<br>110.62 | 4.065<br>103.25 | 3.655<br>92.84  | 3.400<br>86.36  | 534195-5         | —*          |
| 60          | 3.855<br>97.92  | 3.565<br>90.55  | 3.165<br>80.39  | 2.900<br>73.66  | 534195-4         | —*          |
| 50          | 3.355<br>85.22  | 3.065<br>77.85  | 2.655<br>67.44  | 2.400<br>60.96  | 534195-3         | —*          |
| 40          | 2.855<br>72.52  | 2.565<br>65.15  | 2.165<br>54.99  | 1.900<br>48.26  | 534195-2         | —*          |
| 30          | 2.355<br>59.82  | 2.065<br>52.45  | 1.665<br>42.29  | 1.400<br>35.56  | 534195-1         | —*          |

\* Part Numbers available upon request, contact TE Connectivity.

## 2-Row Straddle Mount Pin Header Assemblies with Anodized Pin Protectors — MIL-C-55302 Qualified



### Commercial Pin Header Assembly

**Housing Material** — In accordance with MIL-C-55302 or MIL-M-24519 type GLCP-30F

**Pin Protector Material** — Anodized aluminum per QQ-A-250/1

**Contact Material and Finish** — Brass per QQ-B-626 plated .000030 [0.00076] gold in the contact area, .000100 [0.00254] tin-lead on the tabs over .000050 [0.00127] nickel on the entire contact

### Military Pin Header Assembly

**Housing Material** — In accordance with MIL-C-55302 or MIL-M-24519 type GLCP-30F

**Pin Protector Material** — Anodized aluminum per QQ-A-250/1

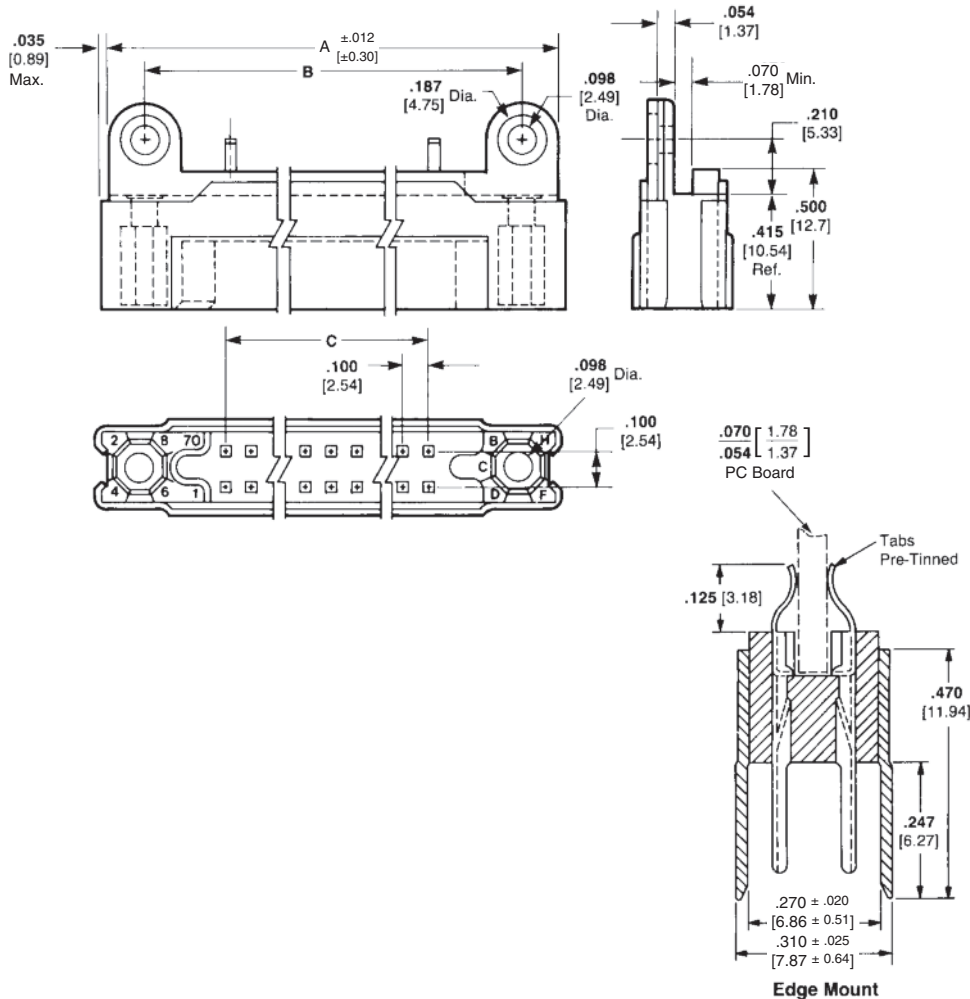
**Contact Material and Finish** — Brass per QQ-B-626 plated .000050 [0.00127] gold in the contact area, .000100 [0.00254] tin-lead on the tabs over .000050 [0.00127] nickel on the entire contact

### Related Product Data

**Mates with** — Receptacles, pages 1-49 to 1-54, 1-61 and 1-62

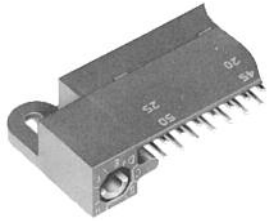
**External Keying** — page 1-80

**Recommended PC Board Layout** — page 1-75



| No. of Pos. | Dimensions      |                 |                 | Commercial Part No. | Military MIL Part No. | AMP Part No. |
|-------------|-----------------|-----------------|-----------------|---------------------|-----------------------|--------------|
|             | A               | B               | C               |                     |                       |              |
| 140         | 7.855<br>199.52 | 7.565<br>192.15 | 6.900<br>175.26 | —                   | M55302/26-22          | 1-530761-5   |
| 134         | 7.555<br>191.50 | 7.265<br>184.53 | 6.600<br>167.64 | —                   | M55302/26-21          | 530761-3     |
| 130         | 7.355<br>186.82 | 7.065<br>179.45 | 6.400<br>162.56 | —                   | M55302/26-20          | 1-530761-4   |
| 120         | 6.855<br>174.12 | 6.565<br>166.75 | 5.900<br>149.86 | —                   | M55302/26-19          | 1-530761-3   |
| 110         | 6.355<br>161.42 | 6.065<br>154.05 | 5.400<br>137.16 | —                   | M55302/26-18          | 530761-5     |
| 100         | 5.855<br>148.72 | 5.565<br>141.35 | 4.900<br>124.46 | 531842-8            | M55302/26-17          | 530761-6     |
| 90          | 5.355<br>136.02 | 5.065<br>128.65 | 4.400<br>111.76 | 531842-7            | M55302/26-16          | 530761-7     |
| 80          | 4.855<br>123.32 | 4.565<br>115.95 | 3.900<br>99.06  | 531842-6            | M55302/26-15          | 530761-4     |
| 70          | 4.355<br>110.62 | 4.065<br>103.25 | 3.400<br>86.36  | —                   | M55302/26-14          | 530761-8     |
| 60          | 3.855<br>97.92  | 3.565<br>90.55  | 2.900<br>73.66  | 531842-4            | M55302/26-13          | 530761-9     |
| 50          | 3.355<br>85.22  | 3.065<br>77.85  | 2.400<br>60.96  | 531842-3            | M55302/26-12          | 1-530761-0   |
| 40          | 2.855<br>72.52  | 2.565<br>65.15  | 1.900<br>48.26  | —                   | M55302/26-11          | 1-530761-1   |
| 30          | 2.355<br>59.82  | 2.065<br>52.45  | 1.400<br>35.56  | —                   | M55302/26-10          | 1-530761-2   |

## 2-Row Right-Angle Pin Header Assemblies for Flow Soldering — MIL-C-55302 Qualified



### Commercial Pin Header

#### 1 Contact Material and Finish —

Brass per QQ-B-626 plated .000030 [0.00076] gold in the contact area, .000100 [0.00254] tin-lead on the tails over .000050 [0.00127] nickel on the entire contact

#### 2 Contact Material and Finish —

Same as above except for tin on the tails

**Housing Material** — In accordance with MIL-C-55302 or MIL-M-24519 type GLCP-30F

### Military Pin Header

#### Contact Material and Finish —

Brass per QQ-B-626 plated .000050 [0.00127] gold in the contact area, .000100 [0.00254] tin-lead on the tails over .000050 [0.00127] nickel on the entire contact

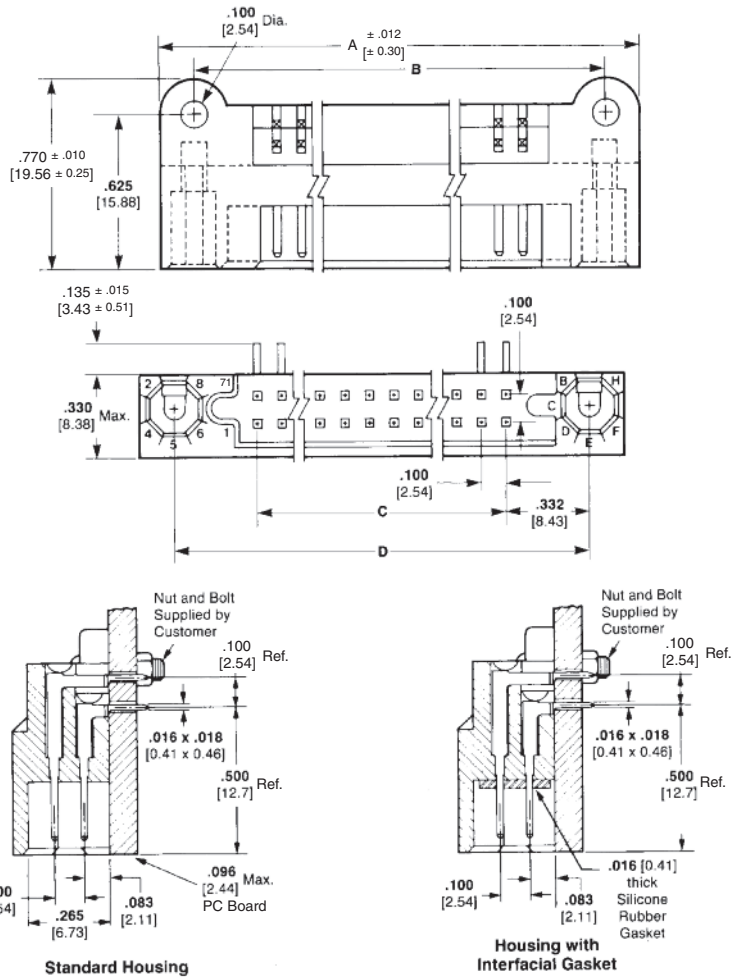
**Housing Material** — In accordance with MIL-C-55302 or MIL-M-24519 type GLCP-30F

### Related Product Data

**Mates with** — Receptacles, pages 1-49 to 1-54, 1-61 and 1-62

**External Keying** — page 1-80

**Recommended PC Board Layout** — page 1-75

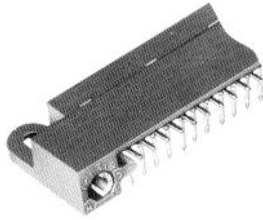


| No. of Pos. | Dimensions      |                 |                 |                 | Standard Housing           |                      |              | Housing with Interfacial Gasket |              |
|-------------|-----------------|-----------------|-----------------|-----------------|----------------------------|----------------------|--------------|---------------------------------|--------------|
|             | A               | B               | C               | D               | Commercial Part No.        | MIL Part No. M55302/ | AMP Part No. | MIL Part No. M55302/            | AMP Part No. |
| 140         | 7.855<br>199.52 | 7.565<br>192.15 | 6.900<br>175.26 | 7.565<br>192.15 | —                          | 110-31               | 1-531721-3   | 110-35                          | 1-531722-3   |
| 134         | 7.555<br>191.50 | 7.265<br>184.53 | 6.600<br>167.64 | 7.265<br>184.53 | 1-530942-21<br>6-530942-22 | 110-30               | 1-531721-2   | 110-34                          | 1-531722-2   |
| 130         | 7.355<br>186.82 | 7.065<br>179.45 | 6.400<br>162.56 | 7.065<br>179.45 | —                          | 110-29               | 1-531721-1   | 110-33                          | 1-531722-1   |
| 120         | 6.855<br>174.12 | 6.565<br>166.75 | 5.900<br>149.86 | 6.565<br>166.75 | —                          | 110-28               | 1-531721-0   | 110-32                          | 1-531722-0   |
| 110         | 6.355<br>161.42 | 6.065<br>154.05 | 5.400<br>137.16 | 6.065<br>154.05 | 530942-91                  | 110-18               | 531721-9     | 110-27                          | 531722-9     |
| 100         | 5.855<br>148.72 | 5.565<br>141.35 | 4.900<br>124.46 | 5.565<br>141.35 | 530942-81<br>5-530942-82   | 110-17               | 531721-8     | 110-26                          | 531722-8     |
| 90          | 5.355<br>136.02 | 5.065<br>128.65 | 4.400<br>111.76 | 5.065<br>128.65 | 530942-71                  | 110-16               | 531721-7     | 110-25                          | 531722-7     |
| 80          | 4.855<br>123.32 | 4.565<br>115.95 | 3.900<br>99.06  | 4.565<br>115.95 | —                          | 110-15               | 531721-6     | 110-24                          | 531722-6     |
| 70          | 4.355<br>110.62 | 4.065<br>103.25 | 3.400<br>86.36  | 4.065<br>103.25 | 530942-51<br>5-530942-52   | 110-14               | 531721-5     | 110-23                          | 531722-5     |
| 60          | 3.855<br>97.92  | 3.565<br>90.55  | 2.900<br>73.66  | 3.565<br>90.55  | 530942-41<br>5-530942-42   | 110-13               | 531721-4     | 110-22                          | 531722-4     |
| 50          | 3.355<br>85.22  | 3.065<br>77.85  | 2.400<br>60.96  | 3.065<br>77.85  | 530942-31                  | 110-12               | 531721-3     | 110-21                          | 531722-3     |
| 40          | 2.855<br>72.52  | 2.565<br>65.15  | 1.900<br>48.26  | 2.565<br>65.15  | 530942-21                  | 110-11               | 531721-2     | 110-20                          | 531722-2     |
| 30          | 2.355<br>59.82  | 2.065<br>52.45  | 1.400<br>35.56  | 2.065<br>52.45  | —                          | 110-10               | 531721-1     | 110-19                          | 531722-1     |

<sup>1</sup>See Material and Finish above.

<sup>2</sup>See Material and Finish for RoHS Part Numbers above.

## 2-Row Right-Angle Pin Header Assemblies with Posted Contacts (Wrap-Type)



### Related Product Data

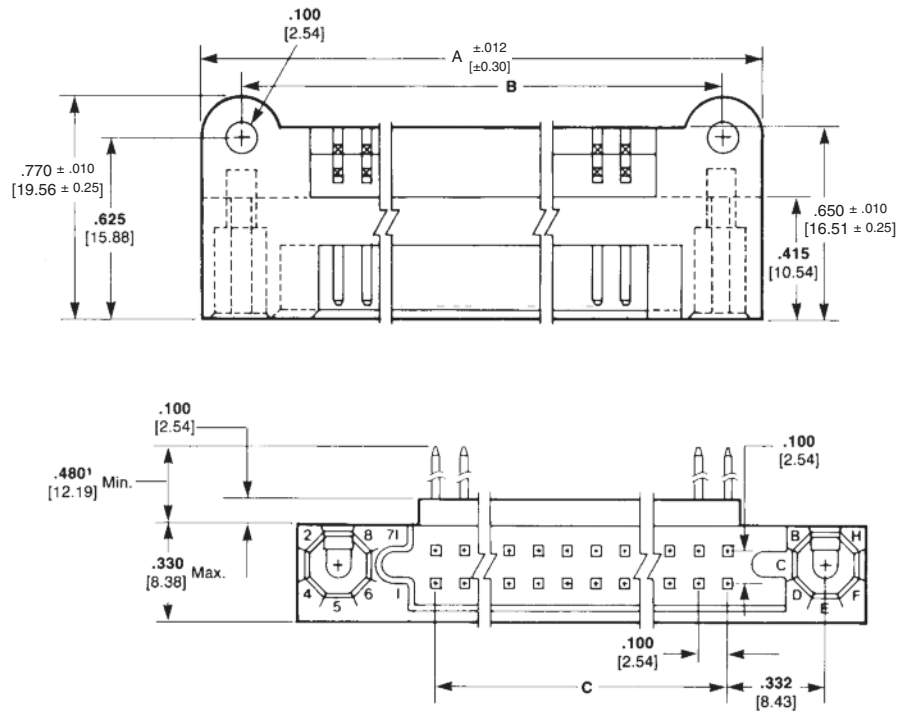
**Housing Material** — In accordance with MIL-C-55302 or MIL-M-24519 type GLCP-30F

**Contact Material and Finish** — Phosphor bronze plated .000050 [0.00127] gold over .000030 [0.00076] nickel on the entire contact

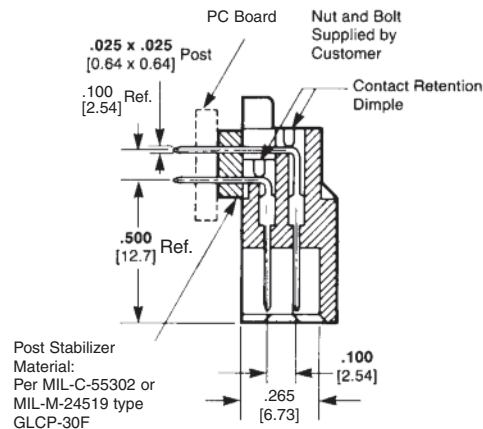
**Mates with** — Receptacles, pages 1-49 to 1-54, 1-61 and 1-62

**External Keying** — page 1-80

**Recommended PC Board Layout** — page 1-75



¹The two rows of posts will not be of equal length.

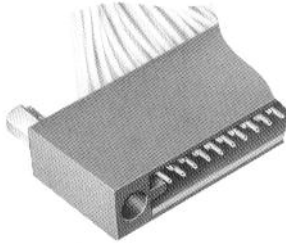


| No. of Pos. | Dimensions      |                 |                 | AMP Part No. |
|-------------|-----------------|-----------------|-----------------|--------------|
|             | A               | B               | C               |              |
| 110         | 6.355<br>161.42 | 6.065<br>154.05 | 5.400<br>137.16 | 532488-9     |
| 90          | 5.355<br>136.02 | 5.065<br>128.65 | 4.400<br>111.76 | 532488-7     |
| 80          | 4.855<br>123.32 | 4.565<br>115.95 | 3.900<br>99.06  | —            |
| 70          | 4.355<br>110.62 | 4.065<br>103.25 | 3.400<br>86.36  | —            |
| 30          | 2.355<br>59.82  | 2.065<br>52.45  | 1.400<br>35.56  | 532488-1     |

## 2-Row Pin Housing and Assemblies for Crimp Contacts — MIL-C-55302 Qualified

### Housing Assembly

(includes turnable jackscrews)



**Housing Material** — In accordance with MIL-C-55302 or MIL-M-24519 type GLCP-30F

**Jackscrew Material** — Passivated stainless steel

### Related Product Data

**Mates with** — Receptacle assemblies, pages 1-49 to 1-54, and receptacle housings, pages 1-61 and 1-62

### Crimp Type Pin Contact

**Material** — Brass

**Finish** — .000050 [0.00127] gold over .000050 [0.00127] nickel

**Wire Range** — 26-22 AWG [0.12-0.4mm<sup>2</sup>]

**Ins. Dia. Range** — .036-.054 [0.91-1.37]



**Extraction Tool** —  
Part Number 91156-1

Loose Piece

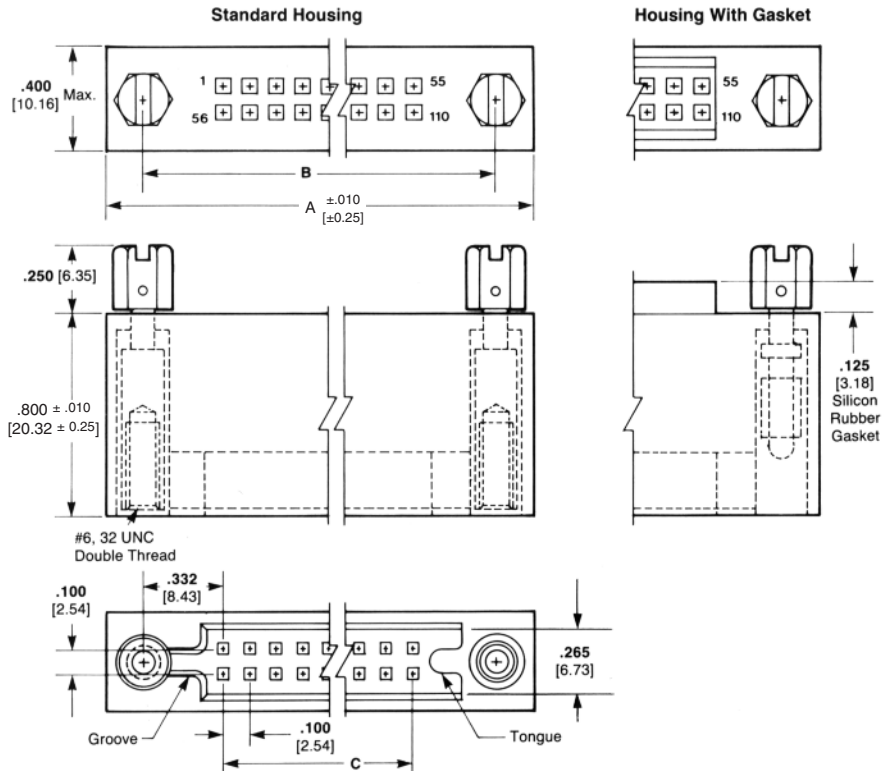
Military Part Number M55302/113-05  
AMP Part Number 530750-5

Strip Form

Military Part Number M55302/113-06  
AMP Part Number 530750-4

### Tooling

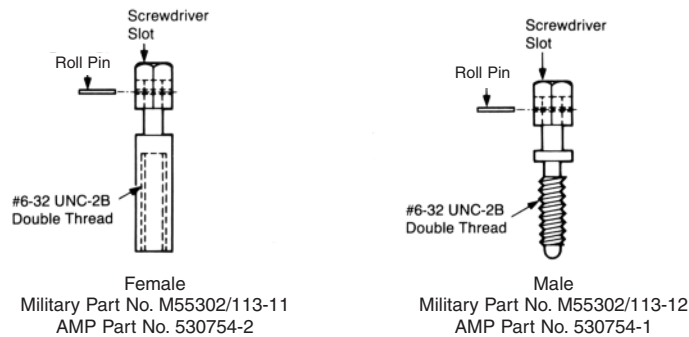
Hand Tool No. 90346-1 is used to apply the loose piece contacts (Hand tool instruction sheet 408-7820). For the application of strip contacts use the AMP-O-ELECTRIC Machine with the applicator No. 466625-3. Other automated machines are available, consult TE Connectivity for specifications.



### Turnable Jackscrews

**Material** — Passivated stainless steel

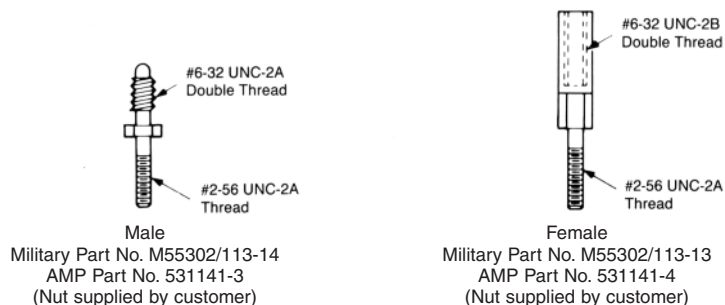
**Note:** To be used as replacement jackscrew for the pin housing assemblies shown above. They are not compatible with any other pin header assemblies.



### Fixed Jackscrews

**Material** — Passivated stainless steel

**Note:** To be used with receptacle assemblies shown on pages 1-49 to 1-54 for mating with pin assemblies shown above.





## 2-Row Pin Housing and Assemblies for Crimp Contacts — MIL-C-55302 Qualified (Continued)

### Standard Housing

| No. of Pos. | Dimensions      |                 |                 | Housing Part Nos.         |              | Turnable Jackscrew Combinations |            | Housing Assembly Part Nos. <sup>1</sup> |              | Kit Part Nos. <sup>2</sup> |              |
|-------------|-----------------|-----------------|-----------------|---------------------------|--------------|---------------------------------|------------|-----------------------------------------|--------------|----------------------------|--------------|
|             | A               | B               | C               | Military Part No. M55302/ | AMP Part No. | Tongue End                      | Groove End | Military Part No. M55302/               | AMP Part No. | Military Part No. M55302/  | AMP Part No. |
| 110         | 6.355<br>161.42 | 6.065<br>154.05 | 5.400<br>137.16 | 113-23                    | 1-530753-8   | Female                          | Female     | 113-84                                  | 3-530752-3   | 113-80                     | 530755-5     |
|             |                 |                 |                 |                           |              | Male                            | Female     | 113-85                                  | 3-530752-4   | 113-81                     | 530755-6     |
|             |                 |                 |                 |                           |              | Female                          | Male       | 113-86                                  | 3-530752-5   | 113-82                     | 530755-7     |
|             |                 |                 |                 |                           |              | Male                            | Male       | 113-87                                  | 3-530752-6   | 113-83                     | 530755-8     |
| 100         | 5.855<br>148.72 | 5.565<br>141.35 | 4.900<br>124.46 | 113-22                    | 1-530753-6   | Female                          | Female     | 113-76                                  | 2-530752-9   | 113-72                     | 3-530755-3   |
|             |                 |                 |                 |                           |              | Male                            | Female     | 113-77                                  | 3-530752-0   | 113-73                     | 3-530755-4   |
|             |                 |                 |                 |                           |              | Female                          | Male       | 113-78                                  | 3-530752-1   | 113-74                     | 3-530755-5   |
|             |                 |                 |                 |                           |              | Male                            | Male       | 113-79                                  | 3-530752-2   | 113-75                     | 3-530755-6   |
| 90          | 5.355<br>136.02 | 5.065<br>128.65 | 4.400<br>111.76 | 113-21                    | 1-530753-4   | Female                          | Female     | 113-68                                  | 2-530752-5   | 113-64                     | 2-530755-9   |
|             |                 |                 |                 |                           |              | Male                            | Female     | 113-69                                  | 2-530752-6   | 113-65                     | 3-530755-0   |
|             |                 |                 |                 |                           |              | Female                          | Male       | 113-70                                  | 2-530752-7   | 113-66                     | 3-530755-1   |
|             |                 |                 |                 |                           |              | Male                            | Male       | 113-71                                  | 2-530752-8   | 113-67                     | 3-530755-2   |
| 80          | 4.855<br>123.32 | 4.565<br>115.95 | 3.900<br>99.06  | 113-20                    | 1-530753-2   | Female                          | Female     | 113-60                                  | 2-530752-1   | 113-56                     | 2-530755-5   |
|             |                 |                 |                 |                           |              | Male                            | Female     | 113-61                                  | 2-530752-2   | 113-57                     | 2-530755-6   |
|             |                 |                 |                 |                           |              | Female                          | Male       | 113-62                                  | 2-530752-3   | 113-58                     | 2-530755-7   |
|             |                 |                 |                 |                           |              | Male                            | Male       | 113-63                                  | 2-530752-4   | 113-59                     | 2-530755-8   |
| 70          | 4.355<br>110.62 | 4.065<br>103.25 | 3.400<br>86.36  | 113-19                    | 530753-2     | Female                          | Female     | 113-07                                  | 530752-1     | 113-01                     | 530755-1     |
|             |                 |                 |                 |                           |              | Male                            | Female     | 113-08                                  | 530752-2     | 113-02                     | 530755-2     |
|             |                 |                 |                 |                           |              | Female                          | Male       | 113-09                                  | 530752-3     | 113-03                     | 530755-3     |
|             |                 |                 |                 |                           |              | Male                            | Male       | 113-10                                  | 530752-4     | 113-04                     | 530755-4     |
| 60          | 3.855<br>97.92  | 3.565<br>90.55  | 2.900<br>73.66  | 113-18                    | 1-530753-0   | Female                          | Female     | 113-52                                  | 1-530752-7   | 113-48                     | 2-530755-1   |
|             |                 |                 |                 |                           |              | Male                            | Female     | 113-53                                  | 1-530752-8   | 113-49                     | 2-530755-2   |
|             |                 |                 |                 |                           |              | Female                          | Male       | 113-54                                  | 1-530752-9   | 113-50                     | 2-530755-3   |
|             |                 |                 |                 |                           |              | Male                            | Male       | 113-55                                  | 2-530752-0   | 113-51                     | 2-530755-4   |
| 50          | 3.355<br>85.22  | 3.065<br>77.85  | 2.400<br>60.06  | 113-17                    | 530753-8     | Female                          | Female     | 113-44                                  | 1-530752-3   | 113-40                     | 1-530755-7   |
|             |                 |                 |                 |                           |              | Male                            | Female     | 113-45                                  | 1-530752-4   | 113-41                     | 1-530755-8   |
|             |                 |                 |                 |                           |              | Female                          | Male       | 113-46                                  | 1-530752-5   | 113-42                     | 1-530755-9   |
|             |                 |                 |                 |                           |              | Male                            | Male       | 113-47                                  | 1-530752-6   | 113-43                     | 2-530755-0   |
| 40          | 2.855<br>72.52  | 2.565<br>65.15  | 1.900<br>48.26  | 113-16                    | 530753-6     | Female                          | Female     | 113-36                                  | 530752-9     | 113-32                     | 1-530755-3   |
|             |                 |                 |                 |                           |              | Male                            | Female     | 113-37                                  | 1-530752-0   | 113-33                     | 1-530755-4   |
|             |                 |                 |                 |                           |              | Female                          | Male       | 113-38                                  | 1-530752-1   | 113-34                     | 1-530755-5   |
|             |                 |                 |                 |                           |              | Male                            | Male       | 113-39                                  | 1-530752-2   | 113-35                     | 1-530755-6   |
| 30          | 2.355<br>59.82  | 2.065<br>52.45  | 1.400<br>35.56  | 113-15                    | 530753-4     | Female                          | Female     | 113-28                                  | 530752-5     | 113-24                     | 530755-9     |
|             |                 |                 |                 |                           |              | Male                            | Female     | 113-29                                  | 530752-6     | 113-25                     | 1-530755-0   |
|             |                 |                 |                 |                           |              | Female                          | Male       | 113-30                                  | 530752-7     | 113-26                     | 1-530755-1   |
|             |                 |                 |                 |                           |              | Male                            | Male       | 113-31                                  | 530752-8     | 113-27                     | 1-530755-2   |

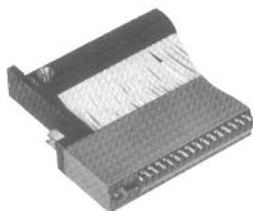
### Housing with Gasket

| No. of Pos. | Dimensions      |                 |                 | Housing Part Nos.         |              | Turnable Jackscrew Combinations |            | Housing Assembly Part Nos. <sup>1</sup> |              | Kit Part Nos. <sup>2</sup> |              |
|-------------|-----------------|-----------------|-----------------|---------------------------|--------------|---------------------------------|------------|-----------------------------------------|--------------|----------------------------|--------------|
|             | A               | B               | C               | Military Part No. M55302/ | AMP Part No. | Tongue End                      | Groove End | Military Part No. M55302/               | AMP Part No. | Military Part No. M55302/  | AMP Part No. |
| 110         | 6.355<br>161.42 | 6.065<br>154.05 | 5.400<br>137.16 | 113-89                    | 530884-2     | Female                          | Female     | 113-94                                  | 530885-5     | 113-102                    | 530886-5     |
|             |                 |                 |                 |                           |              | Male                            | Female     | 113-95                                  | 530885-6     | 113-103                    | 530886-6     |
|             |                 |                 |                 |                           |              | Female                          | Male       | 113-96                                  | 530885-7     | 113-104                    | 530886-7     |
|             |                 |                 |                 |                           |              | Male                            | Male       | 113-97                                  | 530885-8     | 113-105                    | 530886-8     |
| 70          | 4.355<br>110.62 | 4.065<br>103.25 | 3.400<br>86.36  | 113-88                    | 530884-1     | Female                          | Female     | 113-90                                  | 530885-1     | 113-98                     | 530886-1     |
|             |                 |                 |                 |                           |              | Male                            | Female     | 113-91                                  | 530885-2     | 113-99                     | 530886-2     |
|             |                 |                 |                 |                           |              | Female                          | Male       | 113-92                                  | 530885-3     | 113-100                    | 530886-3     |
|             |                 |                 |                 |                           |              | Male                            | Male       | 113-93                                  | 530885-4     | 113-101                    | 530886-4     |

<sup>1</sup>Each Housing Assembly contains: A. 1 Housing. B. 2 Turnable Jackscrews installed (four combinations available, see table).

<sup>2</sup>Each Kit contains: A. 1 Housing Assembly with 2 Turnable Jackscrews installed (four combinations are available, see table). B. 2 Fixed Jackscrews to mate with Turnable Jackscrews (nuts included). These jackscrews are for installation on the mating receptacle housing. C. Loose Piece Contacts. Quantity is number of positions plus 5 extra.

### Pin Housing Assembly with Strain Relief

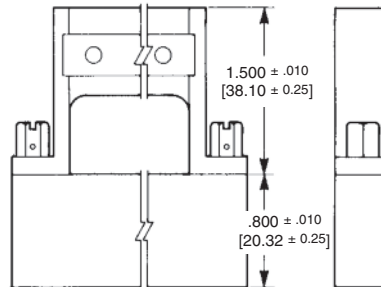


#### Material

**Strain Relief** — Black glass-filled nylon

**Jackscrews** — Passivated stainless steel

**Housing** — Blue glass-filled polyester

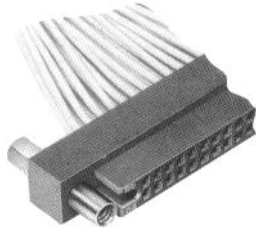


### 110 Position Housing and Strain Relief Kits

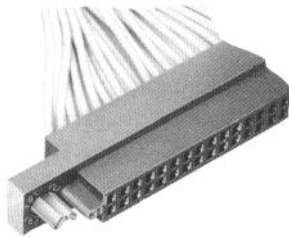
| Tongue End | Groove End | Part No. |
|------------|------------|----------|
| Female     | Female     | 533194-1 |
| Male       | Female     | —        |
| Female     | Male       | —        |
| Male       | Male       | 533194-4 |

Other sizes can be made available, consult TE Connectivity.

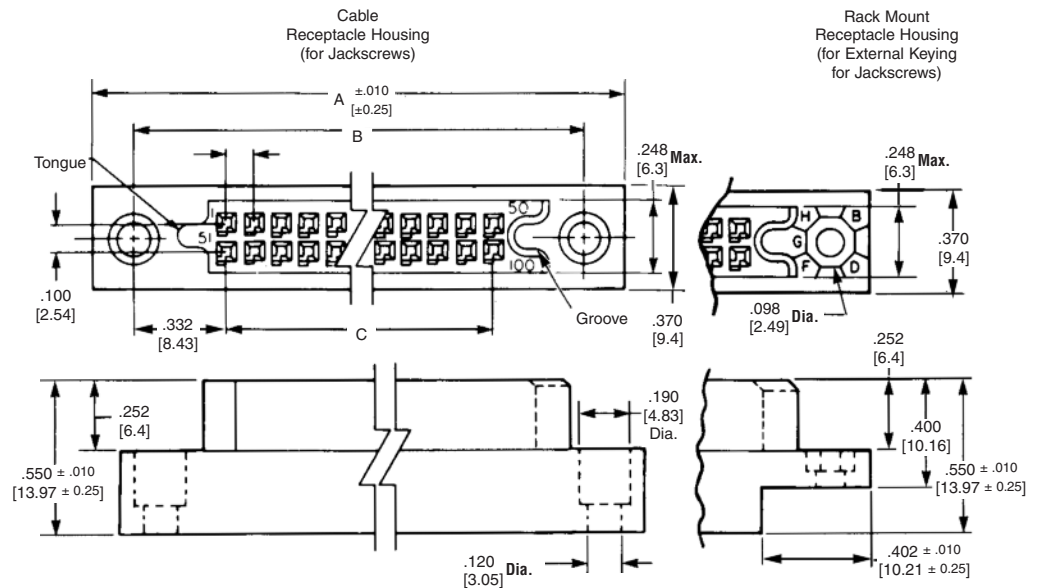
## 2-Row Receptacle Housing and Assemblies for Crimp Contacts



Cable Receptacle  
with Jackscrews



Rack Mount Receptacle  
with External Keying



**Housing Material** — In accordance with MIL-C-55302 or MIL-M-24519 type GLCP-30F

### Related Product Data

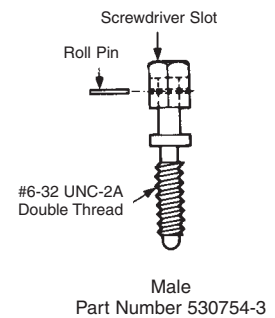
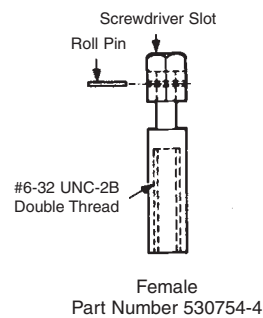
**Mates with** — Cable Receptacle Housings mate with Pin Housings on pages 1-56 to 1-60. Rack Mount Receptacle Housings mate with Pin Header Assemblies pages 1-56 to 1-60

**External Keying** — page 1-80

### Turnable Jackscrews

**Material** — Passivated stainless steel

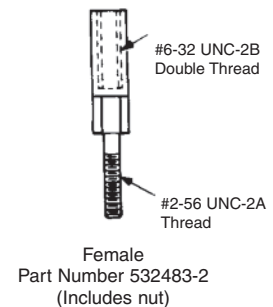
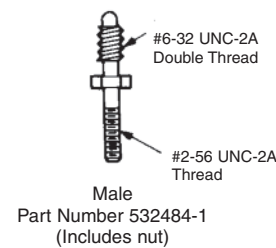
**Note:** To be used with the cable receptacle housings shown above. They are not compatible with other receptacle assemblies.



### Fixed Jackscrews

**Material** — Passivated stainless steel

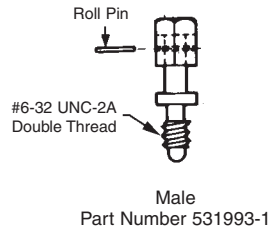
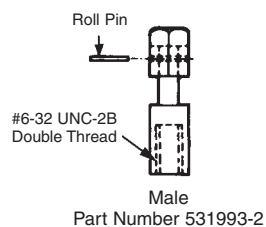
**Note:** For use with rack mount receptacles shown above.



### Turnable Jackscrews

**Material** — Passivated stainless steel

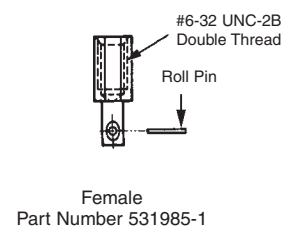
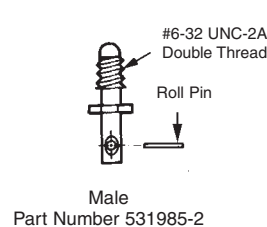
**Note:** For use with rack mount receptacles shown above.



### Fixed Jackscrews

**Material** — Passivated stainless steel

**Note:** For use with external key type Right-Angle pin headers when mating with rack mount receptacle housings with turnable jackscrews shown to the left.



## 2-Row Receptacle Housing and Assemblies for Crimp Contacts (Continued)

| No. of Pos. | Dimensions      |                 |                 | Rack Mount Housing Part No. | Cable Housing Part No. | Jackscrews Combinations <sup>1</sup> |            | Cable Housing with Jackscrews Part No. |
|-------------|-----------------|-----------------|-----------------|-----------------------------|------------------------|--------------------------------------|------------|----------------------------------------|
|             | A               | B               | C               |                             |                        | Groove End                           | Tongue End |                                        |
| 110         | 6.355<br>161.42 | 6.065<br>154.05 | 5.400<br>137.16 | 1-531802-7                  | 1-531840-7             | Male                                 | Male       | —                                      |
|             |                 |                 |                 |                             |                        | Female                               | Female     | 3-531841-3                             |
| 100         | 5.855<br>148.72 | 5.565<br>141.35 | 4.900<br>124.46 | 1-531802-5                  | 1-531840-5             | Male                                 | Male       | —                                      |
|             |                 |                 |                 |                             |                        | Male                                 | Female     | —                                      |
|             |                 |                 |                 |                             |                        | Female                               | Male       | 3-531841-0                             |
|             |                 |                 |                 |                             |                        | Female                               | Female     | —                                      |
| 80          | 4.855<br>123.32 | 4.565<br>115.95 | 3.900<br>99.06  | —                           | 1-531840-1             | Male                                 | Male       | —                                      |
|             |                 |                 |                 |                             |                        | Female                               | Female     | 2-531841-1                             |
| 70          | 4.355<br>110.62 | 4.065<br>103.25 | 3.400<br>86.36  | 531802-9                    | 531840-9               | Male                                 | Male       | —                                      |
|             |                 |                 |                 |                             |                        | Female                               | Female     | —                                      |
| 60          | 3.855<br>97.92  | 3.565<br>90.55  | 2.900<br>73.66  | 531802-7                    | 531840-7               | Male                                 | Male       | —                                      |
|             |                 |                 |                 |                             |                        | Male                                 | Female     | —                                      |
|             |                 |                 |                 |                             |                        | Female                               | Female     | —                                      |
| 50          | 3.355<br>85.22  | 3.065<br>77.85  | 2.400<br>60.96  | 531802-5                    | 531840-5               | Male                                 | Male       | 1-531841-2                             |
|             |                 |                 |                 |                             |                        | Male                                 | Female     | —                                      |
|             |                 |                 |                 |                             |                        | Female                               | Male       | —                                      |
|             |                 |                 |                 |                             |                        | Female                               | Female     | —                                      |
| 40          | 2.855<br>72.52  | 2.565<br>65.15  | 1.900<br>48.26  | 531802-3                    | 531840-3               | Male                                 | Male       | —                                      |
|             |                 |                 |                 |                             |                        | Female                               | Male       | —                                      |
|             |                 |                 |                 |                             |                        | Female                               | Female     | —                                      |
| 30          | 2.355<br>59.82  | 2.065<br>52.45  | 1.400<br>35.56  | 531802-1                    | 531840-1               | Male                                 | Male       | 531841-4                               |
|             |                 |                 |                 |                             |                        | Male                                 | Female     | 531841-3                               |
|             |                 |                 |                 |                             |                        | Female                               | Male       | —                                      |

<sup>1</sup>Jackscrews supplied with assemblies 531841 are 530754-4, female, and 530754-3, male, shown on page 1-61.

### Crimp Type Receptacle Contacts

**Material** — Phosphor bronze

**Finish** — Gold over nickel  
(See chart for gold thickness)



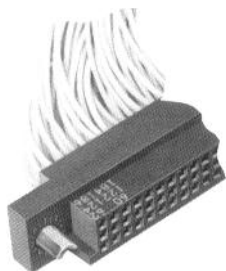
| Wire Range                           | Insulation Range       | Loose Piece               |                           | Strip                     |                           | Hand Tool | Applicator for AMP-O-ELECTRIC Machine | Applicator for Stripper Crimper Machine |
|--------------------------------------|------------------------|---------------------------|---------------------------|---------------------------|---------------------------|-----------|---------------------------------------|-----------------------------------------|
|                                      |                        | .000030<br>[0.00076] Gold | .000050<br>[0.00127] Gold | .000030<br>[0.00076] Gold | .000050<br>[0.00127] Gold |           |                                       |                                         |
| 26-22 AWG<br>0.15-0.3mm <sup>2</sup> | .036-.054<br>0.91-1.37 | 531216-2                  | 531216-4                  | 531216-1                  | 531216-3                  | 91540-1   | 466819-2 <sup>2</sup>                 | 466943-1                                |

<sup>2</sup>Use Applicator 466819-1 for the AMPOMATOR Machine.

**Note:** Instruction sheet for Hand Tool 90301-2 is 408-7909.

Extraction Tool Part Number 91156-2

### 3-Row Receptacle Housings for Crimp Contacts

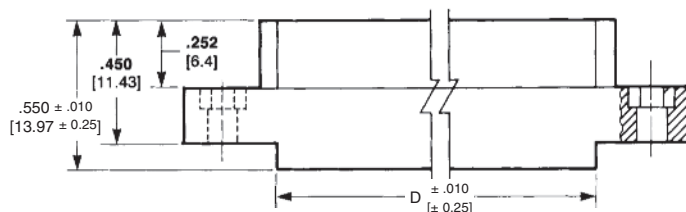
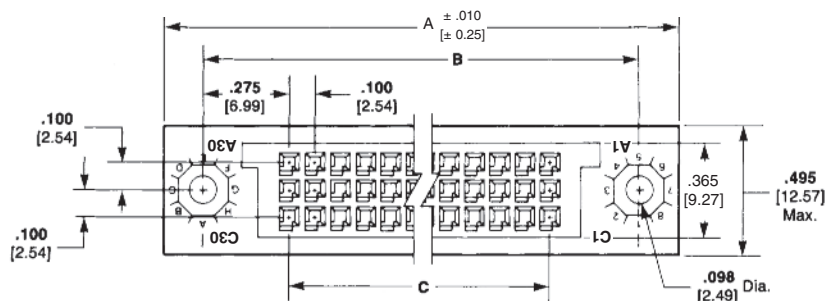


**Housing Material** — In accordance with MIL-C-55302 or MIL-M-24519 type GLCP-30F

#### Related Product Data

**Mates with** — Pin Headers, page 1-66

**External Keying** — page 1-80



| No. of Pos. | Dimensions      |                 |                 |                 | Part No.   |
|-------------|-----------------|-----------------|-----------------|-----------------|------------|
|             | A               | B               | C               | D               |            |
| 165         | 6.250<br>158.75 | 5.950<br>151.13 | 5.400<br>137.16 | 5.550<br>140.97 | 1-531984-4 |
| 150         | 5.750<br>146.05 | 5.450<br>138.43 | 4.900<br>124.46 | 5.050<br>128.27 | 1-531984-3 |
| 135         | 5.250<br>133.35 | 4.950<br>125.73 | 4.400<br>111.76 | 4.550<br>115.57 | 1-531984-1 |
| 126         | 4.950<br>125.73 | 4.650<br>118.11 | 4.100<br>104.14 | 4.250<br>107.95 | 531984-8   |
| 120         | 4.750<br>120.65 | 4.450<br>113.03 | 3.900<br>99.06  | 4.050<br>102.87 | 531984-6   |
| 105         | 4.250<br>107.95 | 3.950<br>100.33 | 3.400<br>86.36  | 3.550<br>90.17  | 531984-4   |
| 90          | 3.750<br>95.25  | 3.450<br>87.63  | 2.900<br>73.66  | 3.050<br>77.47  | 531984-1   |

#### Crimp Type Receptacle Contact

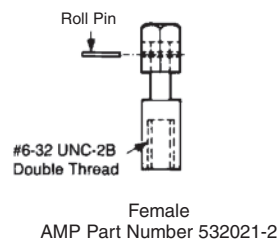
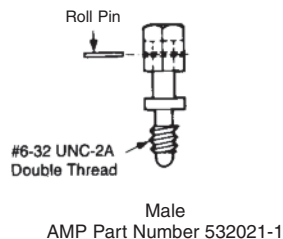
(Refer to page 1-62 for specifications and part numbers)



#### Turnable Jackscrews

**Material** — Passivated stainless steel

**Note:** For use with receptacle housings shown above when mating with Right-Angle pin headers having fixed jackscrews (531985-1 and 531985-2) shown on page 1-61.



### 3-Row Receptacle Assemblies — MIL-C-55302 Qualified



#### Commercial Receptacle Assemblies

**Housing Material** — In accordance with MIL-C-55302 or MIL-M-24519 type GLCP-30F

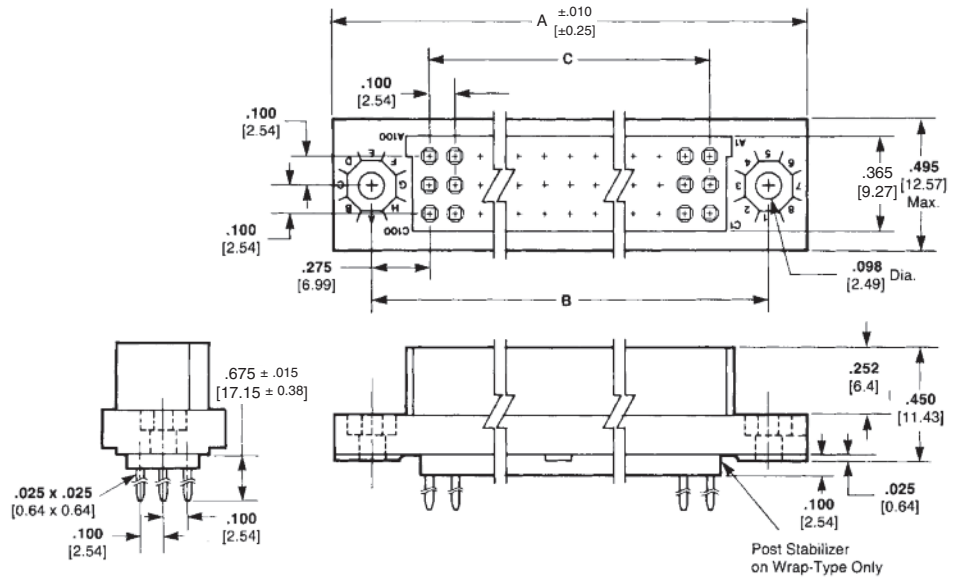
**1 Contact Material and Finish** — Beryllium copper or copper nickel silicon per ASTM B422 and ASTM B888 Channel Contact and Wrap-Type Posted Contact — Plated .000030 [0.00076] gold in the contact area, .000100 [0.00254] tin-lead on the tails over .000030 [0.00076] nickel on the entire contact; Solder Eyelet — Plated .000030 [0.00076] gold in the contact area, in accordance with MIL-C-55302 tin-lead on the tails over .000030 [0.00076] nickel on the entire contact

**2 Contact Material and Finish** — Same as above except for tin on the tails

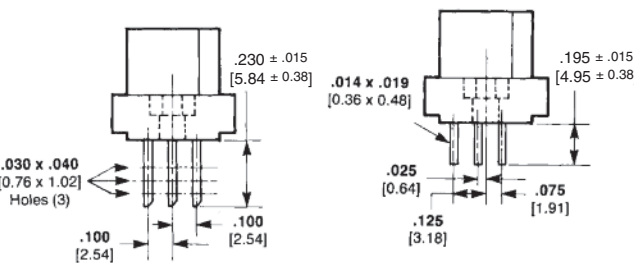
#### Military Receptacle Assemblies

**Housing Material** — In accordance with MIL-C-55302 or MIL-M-24519 type GLCP-30F

**Contact Material and Finish** — Beryllium copper or copper nickel silicon per ASTM B422 and ASTM B888 Channel Contact — Plated .000050 [0.00127] gold in the contact area, .000100 [0.00254] tin-lead on the tails over .000030 [0.00076] nickel on the entire contact; Wrap-Type Posted Contact — Plated .000050 [0.00127] gold over .000030 [0.00076] nickel on the entire contact; Solder Eyelet — Plated .000050 [0.00127] gold in the contact area, in accordance with MIL-C-55302 .000100 [0.00254] tin-lead on the tails over .000030 [0.00076] nickel on the entire contact



Wrap-Type Posted Contact



Solder Eyelet Contact

#### Related Product Data

**Mates with** — Pin Headers, page 1-68

**External Keying** — page 1-80

**Recommended PC Board Layout** — page 1-76

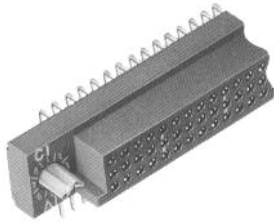
| No. of Pos.      | Dimensions       |                  |                 | Flow Solder Contacts |                                                  |                     |              |            |                         | Solder Eyelet       |              |                         | Wrap-Type Posted Contact |              |  |
|------------------|------------------|------------------|-----------------|----------------------|--------------------------------------------------|---------------------|--------------|------------|-------------------------|---------------------|--------------|-------------------------|--------------------------|--------------|--|
|                  |                  |                  |                 | Commercial Part No.  |                                                  | Military M55302/130 | AMP Part No. |            |                         |                     |              |                         |                          |              |  |
|                  | A                | B                | C               | Sealed               | Unsealed                                         |                     | Sealed       | Unsealed   |                         |                     |              |                         |                          |              |  |
|                  |                  |                  |                 |                      |                                                  |                     |              |            | Commercial Part No.     | Military M55302/130 | AMP Part No. | Commercial Part No.     | Military M55302/130      | AMP Part No. |  |
| 300 <sup>3</sup> | 10.750<br>273.05 | 10.450<br>265.43 | 9.900<br>251.46 | —                    | —                                                | —                   | —            | —          | —                       | —                   | —            | —                       | —                        | —            |  |
| 270 <sup>3</sup> | 9.750<br>247.65  | 9.450<br>240.03  | 8.900<br>226.06 | —                    | —                                                | —                   | —            | —          | —                       | —                   | —            | —                       | —                        | —            |  |
| 240              | 8.750<br>222.25  | 8.450<br>214.63  | 7.900<br>200.66 | —                    | 531138-8 <sup>1</sup>                            | -44                 | 446853-8     | 531134-8   | —                       | -46                 | 447192-8     | —                       | -45                      | 447193-8     |  |
| 210              | 7.750<br>196.85  | 7.450<br>189.23  | 6.900<br>175.26 | —                    | 531138-7 <sup>1</sup>                            | -41                 | 446853-7     | 531134-7   | —                       | -43                 | 447192-7     | —                       | -42                      | 447193-7     |  |
| 195              | 7.250<br>184.15  | 6.950<br>176.53  | 6.400<br>162.56 | —                    | 1-531138-3 <sup>1</sup>                          | -38                 | 1-446853-0   | 1-531134-3 | 1-531140-3 <sup>1</sup> | -40                 | 1-447192-0   | —                       | -39                      | 1-447193-0   |  |
| 180              | 6.750<br>171.45  | 6.450<br>163.83  | 5.900<br>149.86 | —                    | 531138-6 <sup>1</sup>                            | -35                 | 446853-6     | 531134-6   | —                       | -37                 | 447192-6     | 531139-6 <sup>1</sup>   | -36                      | 447193-6     |  |
| 165              | 6.250<br>158.75  | 5.950<br>151.13  | 5.400<br>137.16 | —                    | 531138-5 <sup>1</sup>                            | -32                 | 446853-5     | 531134-5   | —                       | -34                 | 447192-5     | —                       | -33                      | 447193-5     |  |
| 150              | 5.750<br>146.05  | 5.450<br>138.43  | 4.900<br>124.46 | —                    | 531138-4 <sup>1</sup><br>5-531138-4 <sup>2</sup> | -29                 | 446853-4     | 531134-4   | —                       | -31                 | 447192-4     | —                       | -30                      | 447193-4     |  |
| 135              | 5.250<br>133.35  | 4.950<br>125.73  | 4.400<br>111.76 | —                    | 1-531138-2 <sup>1</sup>                          | -26                 | 446853-9     | 1-531134-2 | —                       | -28                 | 447192-9     | 1-531139-2 <sup>1</sup> | -27                      | 447193-9     |  |
| 126 <sup>3</sup> | 4.950<br>125.73  | 4.650<br>118.11  | 4.100<br>104.14 | —                    | —                                                | —                   | —            | —          | —                       | —                   | —            | —                       | —                        | —            |  |
| 120              | 4.750<br>120.65  | 4.450<br>113.03  | 3.900<br>99.06  | —                    | 531138-3 <sup>1</sup>                            | -23                 | 446853-3     | 531134-3   | —                       | -25                 | 447192-3     | —                       | -24                      | 447193-3     |  |
| 105              | 4.250<br>107.95  | 3.950<br>100.33  | 3.400<br>86.36  | —                    | 531138-2 <sup>1</sup><br>5-531138-2 <sup>2</sup> | -20                 | 446853-2     | 531134-2   | —                       | -22                 | 447192-2     | —                       | -21                      | 447193-2     |  |
| 90               | 3.750<br>95.25   | 3.450<br>87.63   | 2.900<br>73.66  | —                    | 531138-1 <sup>1</sup><br>5-531138-1 <sup>2</sup> | -17                 | 446853-1     | 531134-1   | —                       | -19                 | 447192-1     | 531139-1 <sup>1</sup>   | -18                      | 447193-1     |  |

<sup>1</sup>See Material and Finish above.

<sup>2</sup>See Material and Finish for RoHS Part Numbers above.

<sup>3</sup>Part Numbers available upon request.

### 3-Row Right-Angle Receptacle Assemblies with Posted Contacts (Wrap-Type)



**Housing Material** — In accordance with MIL-C-55302

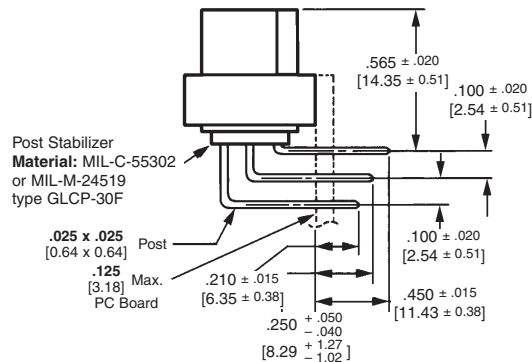
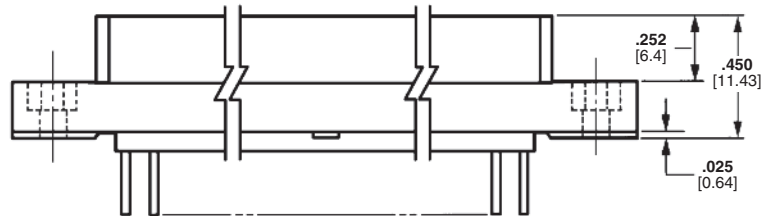
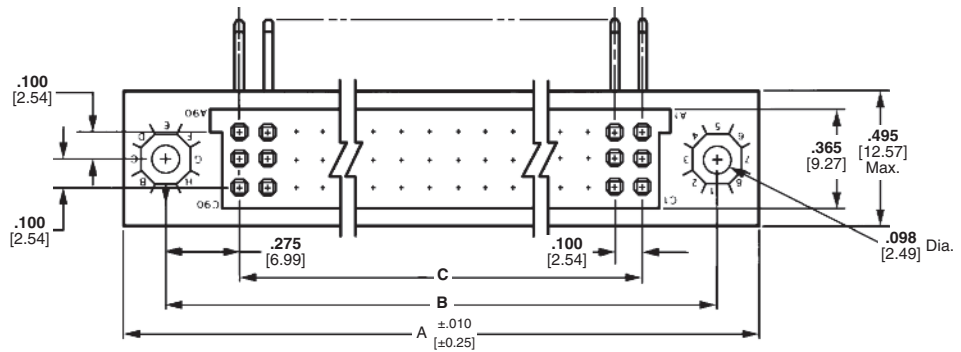
**Contact Material and Finish** — Beryllium copper or copper nickel silicon per ASTM B422 and ASTM B888 plated .000050 [0.00127] gold over .000030 [0.00076] nickel on the entire contact

#### Related Product Data

**Mates with** — Pin Headers, page 1-66

**External Keying** — page 1-80

**Recommended PC Board Layout** — page 1-76



Right-Angle Wrap-Type Posts

| No. of Pos.      | Dimensions      |                 |                 | Part No.   |
|------------------|-----------------|-----------------|-----------------|------------|
|                  | A               | B               | C               |            |
| 270 <sup>1</sup> | 9.750<br>247.65 | 9.450<br>240.03 | 8.900<br>226.06 | —          |
| 240 <sup>1</sup> | 8.750<br>222.25 | 8.450<br>214.63 | 7.900<br>200.66 | —          |
| 210              | 7.750<br>196.85 | 7.450<br>189.23 | 6.900<br>175.26 | 447255-2   |
| 195              | 7.250<br>184.15 | 6.950<br>176.53 | 6.400<br>162.58 | 447255-3   |
| 180              | 6.750<br>171.45 | 6.450<br>163.83 | 5.900<br>149.86 | 447255-4   |
| 165 <sup>1</sup> | 6.250<br>158.75 | 5.950<br>151.13 | 5.400<br>137.16 | —          |
| 150              | 5.750<br>146.05 | 5.450<br>138.43 | 4.900<br>124.46 | 447255-6   |
| 135 <sup>1</sup> | 5.250<br>133.35 | 4.950<br>125.73 | 4.400<br>111.76 | —          |
| 126 <sup>1</sup> | 4.950<br>125.73 | 4.650<br>118.11 | 4.100<br>104.14 | —          |
| 123 <sup>1</sup> | 4.850<br>123.19 | 4.550<br>115.57 | 4.000<br>101.6  | —          |
| 120              | 4.750<br>120.65 | 4.450<br>113.03 | 3.900<br>86.36  | 447255-8   |
| 105              | 4.250<br>107.95 | 3.950<br>100.33 | 3.400<br>86.36  | 447255-9   |
| 90               | 3.750<br>95.25  | 3.450<br>87.63  | 2.900<br>73.66  | 1-447255-0 |

<sup>1</sup>Part numbers available upon request.



### 3-Row Right-Angle Pin Header Assemblies — MIL-C-55302 Qualified



**Housing Material** — In accordance with MIL-C-55302 or MIL-M-24519 type GLCP-30F

**1 Contact Material and Finish** — Commercial Flow Solder Contact — Brass per QQ-B-626 plated .000030 [0.00076] gold in the contact area, .000100 [0.00254] tin-lead on the tails over .000050 [0.00127] nickel on the entire contact; Military Flow Solder Contact — Brass per QQ-B-626 plated .000050 [0.00127] gold in the contact area, .000100 [0.00254] tin-lead on the tails over .000050 [0.00127] nickel on the entire contact; Wrap-Type Contact — Phosphor bronze plate .000050 [0.00127] gold over .000030 [0.00076] nickel on the entire contact

**2 Contact Material and Finish** — Same as above except for tin on the tails

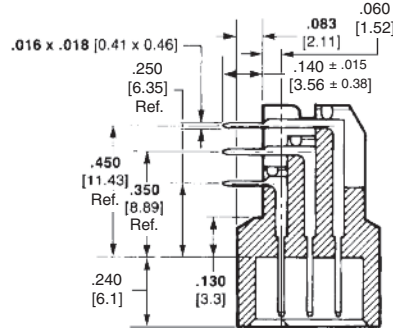
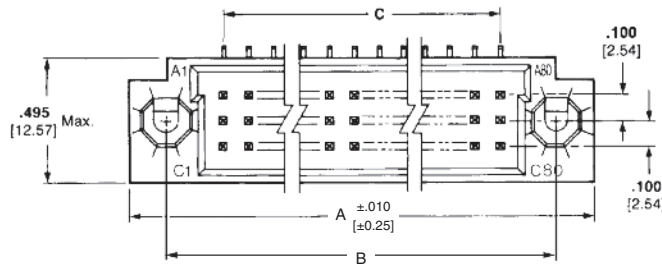
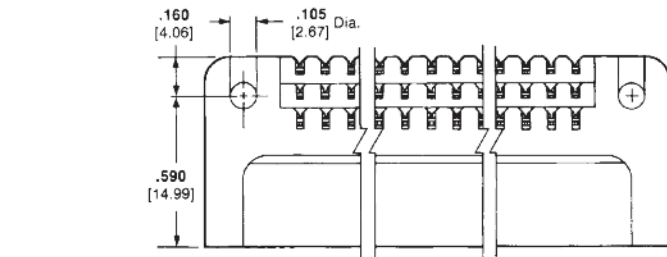
#### Related Product Data

**Mates with** — 3-Row Receptacles, pages 1-63 to 1-65

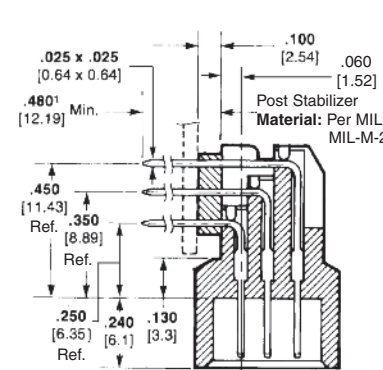
**External Keying** — page 1-80

**Recommended PC Board Layout** — page 1-76

**Fixed Jackscrew** — page 1-61



**Flow Solder Contacts**  
(for use with .096 [2.44] Max.  
thick PC board)



**Wrap-Type Posted Contacts**

<sup>1</sup>The three rows of posts will not be of equal length.

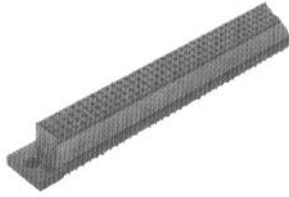
| No. of Pos.      | Dimensions       |                  |                 | Flow Solder Contacts    |                                                  |                         |                         | Wrap-Type Posted Contacts (2 High) |                                                |
|------------------|------------------|------------------|-----------------|-------------------------|--------------------------------------------------|-------------------------|-------------------------|------------------------------------|------------------------------------------------|
|                  | A                | B                | C               | Commercial Part No.     |                                                  | MIL-Part No. M55302/129 | AMP Part No.            |                                    | AMP Part No.                                   |
|                  |                  |                  |                 | Sealed                  | Unsealed                                         |                         | Sealed                  | Unsealed                           |                                                |
| 300 <sup>3</sup> | 10.750<br>273.05 | 10.450<br>265.43 | 9.900<br>251.46 | 1-447373-1 <sup>1</sup> | —                                                | —                       | —                       | —                                  | —                                              |
| 270 <sup>3</sup> | 9.750<br>247.65  | 9.450<br>240.03  | 8.900<br>226.06 | —                       | —                                                | —                       | —                       | —                                  | —                                              |
| 240              | 8.750<br>222.25  | 8.450<br>214.63  | 7.900<br>200.66 | —                       | 531137-8 <sup>1</sup>                            | -18                     | 446852-8 <sup>1</sup>   | 531133-8 <sup>1</sup>              | —                                              |
| 210              | 7.750<br>196.85  | 7.450<br>189.23  | 6.900<br>175.26 | —                       | 531137-7 <sup>1</sup>                            | -17                     | 446852-7 <sup>1</sup>   | 531133-7 <sup>1</sup>              | —                                              |
| 195              | 7.250<br>184.15  | 6.950<br>176.53  | 6.400<br>162.56 | —                       | 1-531137-3 <sup>1</sup>                          | -16                     | 1-446852-0 <sup>1</sup> | 1-531133-3 <sup>1</sup>            | —                                              |
| 180              | 6.750<br>171.45  | 6.450<br>163.83  | 5.900<br>149.86 | —                       | —                                                | -15                     | 446852-6 <sup>1</sup>   | 531133-6 <sup>1</sup>              | —                                              |
| 165              | 6.250<br>158.75  | 5.950<br>151.13  | 5.400<br>137.16 | —                       | 531137-5 <sup>1</sup>                            | -14                     | 446852-5 <sup>1</sup>   | 531133-5 <sup>1</sup>              | 532775-3 <sup>1</sup>                          |
| 150              | 5.750<br>146.05  | 5.450<br>138.43  | 4.900<br>124.46 | —                       | 531137-4 <sup>1</sup><br>5-531137-4 <sup>2</sup> | -13                     | 446852-4 <sup>1</sup>   | 531133-4 <sup>1</sup>              | 1-532775-2 <sup>1</sup>                        |
| 135              | 5.250<br>133.35  | 4.950<br>125.73  | 4.400<br>111.76 | —                       | —                                                | -12                     | 446852-9 <sup>1</sup>   | 1-531133-2 <sup>1</sup>            | —                                              |
| 126              | 4.950<br>125.73  | 4.650<br>118.11  | 4.100<br>104.14 | —                       | —                                                | —                       | —                       | 1-531133-0 <sup>1</sup>            | 1-532775-0 <sup>1</sup>                        |
| 120              | 4.750<br>120.65  | 4.450<br>113.03  | 3.900<br>99.06  | —                       | 531137-3 <sup>1</sup>                            | -11                     | 446852-3 <sup>1</sup>   | 531133-3 <sup>1</sup>              | 532775-8 <sup>1</sup><br>447380-7 <sup>1</sup> |
| 105              | 4.250<br>107.95  | 3.950<br>100.33  | 3.400<br>86.36  | —                       | 531137-2 <sup>1</sup><br>5-531137-2 <sup>2</sup> | -10                     | 446852-2 <sup>1</sup>   | 531133-2 <sup>1</sup>              | —                                              |
| 90               | 3.750<br>95.25   | 3.450<br>87.63   | 2.900<br>73.66  | —                       | 531137-1 <sup>1</sup><br>5-531137-1 <sup>2</sup> | -09                     | 446852-1 <sup>1</sup>   | 531133-1 <sup>1</sup>              | 447380-5 <sup>1</sup>                          |

<sup>1</sup>See Material and Finish above.

<sup>2</sup>See Material and Finish for RoHS Part Numbers.

<sup>3</sup>Part Numbers available upon request.

## 4-Row Receptacle Assemblies



**Housing Material** — Polyphenylene sulfide per MIL-M-24519 or type GLCP-30F

**1 Contact Material and Finish** — Beryllium copper or copper nickel silicon per ASTM B422 and ASTM B888 plated gold .000050 [0.00127] thick per MIL-G-45204 in contact area, tails plated tin-lead all over nickel per QQ-N-290

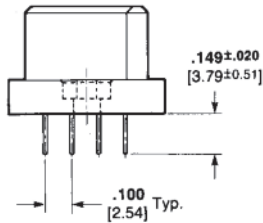
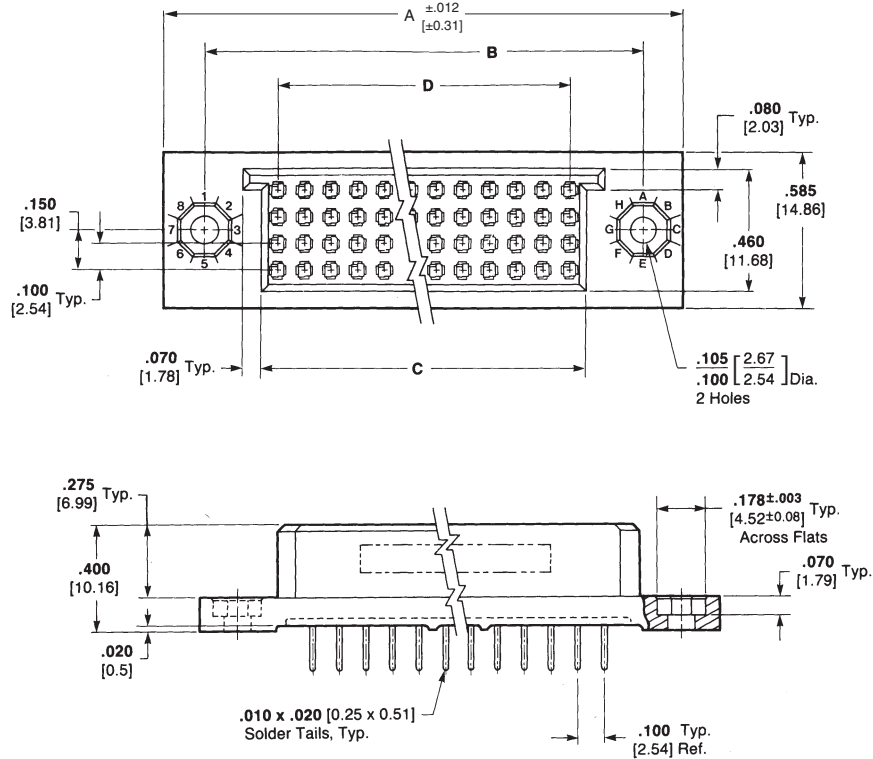
**2 Contact Material and Finish** — Same as above except for tin on tails

### Related Product Data

**Mates with** — Pin Header assembly, page 1-68

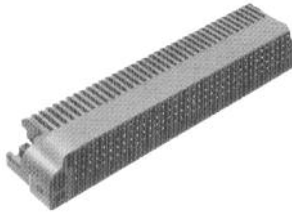
**External Keying** — page 1-80

**Recommended PC Board Layout** — page 1-77



| No. of Pos. | Dimensions      |                 |                 |                 | Part No. <sup>1</sup> | RoHS Part No. <sup>2</sup> |
|-------------|-----------------|-----------------|-----------------|-----------------|-----------------------|----------------------------|
|             | A               | B               | C               | D               |                       |                            |
| 300         | 8.250<br>209.60 | 7.950<br>201.93 | 7.524<br>191.11 | 7.400<br>187.96 | —*                    | —                          |
| 292         | 8.050<br>204.47 | 7.750<br>196.85 | 7.324<br>186.03 | 7.200<br>182.88 | —*                    | —                          |
| 280         | 7.750<br>196.85 | 7.450<br>189.23 | 7.024<br>178.41 | 6.900<br>175.26 | —*                    | —                          |
| 268         | 7.450<br>189.23 | 7.150<br>181.61 | 6.724<br>170.79 | 6.600<br>167.64 | —*                    | —                          |
| 260         | 7.250<br>184.15 | 6.950<br>176.53 | 6.524<br>165.71 | 6.400<br>162.56 | —*                    | —                          |
| 240         | 6.750<br>171.45 | 6.450<br>163.83 | 6.024<br>153.01 | 5.900<br>149.86 | —*                    | —                          |
| 232         | 6.550<br>166.37 | 6.250<br>158.75 | 5.824<br>147.93 | 5.700<br>144.78 | —*                    | —                          |
| 220         | 6.250<br>158.75 | 5.950<br>151.13 | 5.524<br>140.31 | 5.400<br>137.16 | 446081-8              | —                          |
| 216         | 6.150<br>156.21 | 5.850<br>148.59 | 5.424<br>137.77 | 5.300<br>134.62 | —*                    | —                          |
| 200         | 5.750<br>146.05 | 5.450<br>138.43 | 5.024<br>127.61 | 4.900<br>124.46 | 1-446081-0            | 6-446081-0                 |
| 192         | 5.550<br>140.97 | 5.250<br>133.35 | 4.824<br>122.53 | 4.700<br>119.38 | —*                    | —                          |
| 180         | 5.250<br>133.35 | 4.950<br>125.73 | 4.524<br>114.91 | 4.400<br>111.76 | —*                    | —                          |
| 168         | 4.950<br>125.73 | 4.650<br>118.11 | 4.224<br>107.29 | 4.100<br>104.14 | —*                    | —                          |
| 160         | 4.750<br>120.65 | 4.450<br>113.03 | 4.024<br>102.21 | 3.900<br>99.06  | —*                    | —                          |
| 152         | 4.550<br>115.57 | 4.250<br>107.95 | 3.824<br>97.13  | 3.700<br>93.98  | —*                    | —                          |
| 140         | 4.250<br>107.95 | 3.950<br>100.33 | 3.524<br>89.51  | 3.400<br>86.36  | —*                    | —                          |
| 128         | 3.950<br>100.33 | 3.650<br>92.71  | 3.224<br>81.89  | 3.100<br>78.74  | 1-446081-7            | 6-446081-7                 |
| 120         | 3.750<br>95.25  | 3.450<br>87.63  | 3.024<br>76.81  | 2.900<br>73.66  | —*                    | —                          |
| 100         | 3.250<br>82.55  | 2.950<br>74.93  | 2.524<br>64.11  | 2.400<br>60.96  | 1-446081-9            | —                          |
| 68          | 2.450<br>62.23  | 2.150<br>54.60  | 1.727<br>43.87  | 1.600<br>40.64  | —*                    | —                          |
| 40          | 1.750<br>44.45  | 1.450<br>36.83  | 1.024<br>26.01  | .900<br>22.86   | —*                    | —                          |

\* Part Numbers available upon request, contact TE Connectivity.



**Housing Material** — Polyphenylene sulfide per MIL-M-24519 or type GLCP-30F

**1 Contact Material and Finish —** Phosphor bronze per QQ-B-750, plated gold .000050 [0.00127] thick per MIL-G-45204 on mating end for a length of .120 [3.05] min., tails plated tin-lead over nickel per QQ-N-290

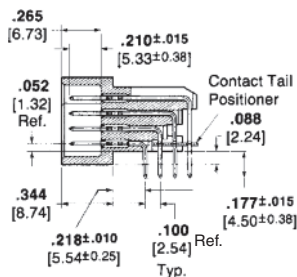
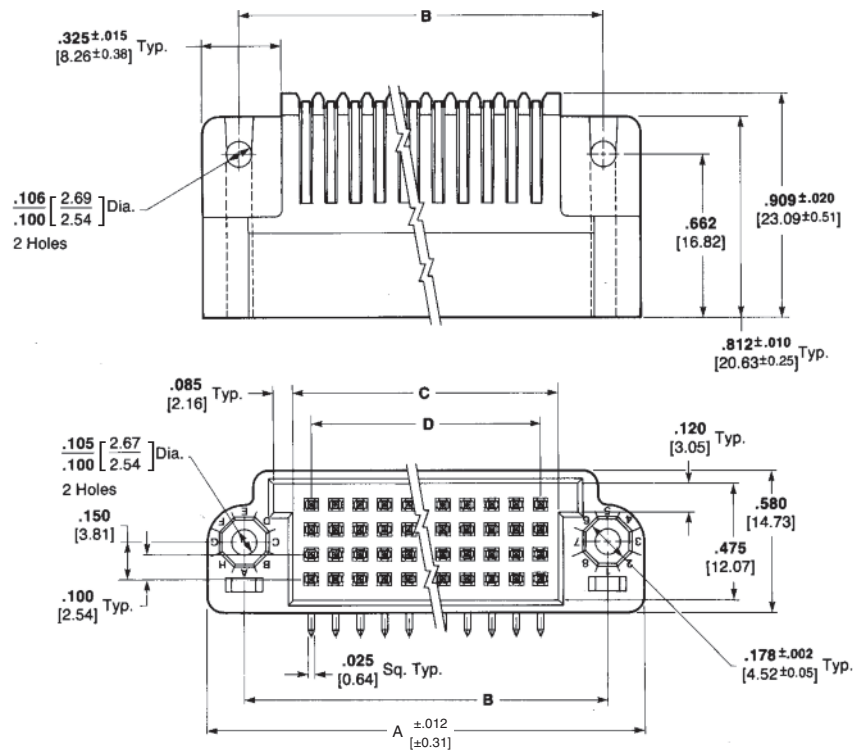
**2 Contact Material and Finish —**  
Same as above except for tin on tails

### Related Product Data

**Mates with** — Receptacle assembly,  
page 1-67

**External Keying** — page 1-80

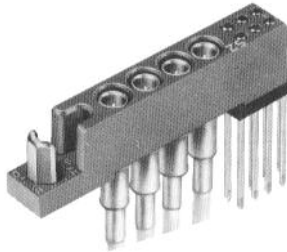
**Recommended PC Board Layout** —  
page 1-77



| No. of Pos. | Dimensions      |                 |                 |                 | Part No. <sup>1</sup> | RoHS Part No. <sup>2</sup> |
|-------------|-----------------|-----------------|-----------------|-----------------|-----------------------|----------------------------|
|             | A               | B               | C               | D               |                       |                            |
| 300         | 8.250<br>209.60 | 7.950<br>201.93 | 7.550<br>191.77 | 7.400<br>187.96 | —*                    | —                          |
| 292         | 8.050<br>204.47 | 7.750<br>196.85 | 7.350<br>186.69 | 7.200<br>182.88 | —*                    | —                          |
| 280         | 7.750<br>196.85 | 7.450<br>189.23 | 7.050<br>179.07 | 6.900<br>175.26 | —*                    | —                          |
| 268         | 7.450<br>189.23 | 7.150<br>181.61 | 6.750<br>171.45 | 6.600<br>167.64 | —*                    | —                          |
| 260         | 7.250<br>184.15 | 6.950<br>176.53 | 6.550<br>166.37 | 6.400<br>162.56 | —*                    | —                          |
| 240         | 6.750<br>171.45 | 6.450<br>163.83 | 6.050<br>153.67 | 5.900<br>149.86 | —*                    | —                          |
| 232         | 6.550<br>166.37 | 6.250<br>158.75 | 5.850<br>148.59 | 5.700<br>144.78 | —*                    | —                          |
| 220         | 6.250<br>158.75 | 5.950<br>151.13 | 5.550<br>140.97 | 5.400<br>137.16 | —*                    | —                          |
| 216         | 6.150<br>156.21 | 5.850<br>148.59 | 5.450<br>138.43 | 5.300<br>134.62 | —*                    | —                          |
| 200         | 5.750<br>146.05 | 5.450<br>138.43 | 5.050<br>128.27 | 4.900<br>124.46 | 1-446080-0            | 6-446080-0                 |
| 192         | 5.550<br>140.97 | 5.250<br>133.35 | 4.850<br>123.19 | 4.700<br>119.38 | —*                    | —                          |
| 180         | 5.250<br>133.35 | 4.950<br>125.73 | 4.550<br>115.57 | 4.400<br>111.76 | 1-446080-2            | —                          |
| 168         | 4.950<br>125.73 | 4.650<br>118.11 | 4.250<br>107.95 | 4.100<br>104.14 | —*                    | —                          |
| 160         | 4.750<br>120.65 | 4.450<br>113.03 | 4.050<br>102.87 | 3.900<br>99.06  | —*                    | —                          |
| 152         | 4.550<br>115.57 | 4.250<br>107.95 | 3.850<br>97.79  | 3.700<br>93.98  | —*                    | —                          |
| 140         | 4.250<br>107.95 | 3.950<br>100.33 | 3.550<br>90.17  | 3.400<br>86.36  | —*                    | —                          |
| 128         | 3.950<br>100.33 | 3.650<br>92.71  | 3.250<br>82.55  | 3.100<br>78.74  | 1-446080-7            | 6-446080-7                 |
| 120         | 3.750<br>95.25  | 3.450<br>87.63  | 3.050<br>77.47  | 2.900<br>73.66  | —*                    | —                          |
| 100         | 3.250<br>82.55  | 2.950<br>74.93  | 2.550<br>64.77  | 2.400<br>60.96  | —*                    | —                          |
| 68          | 2.450<br>62.23  | 2.150<br>54.60  | 1.750<br>44.45  | 1.600<br>40.64  | —*                    | —                          |
| 40          | 1.750<br>44.45  | 1.450<br>36.83  | 1.050<br>26.67  | .900<br>22.86   | —*                    | —                          |

\* Part Numbers available upon request, contact TE Connectivity.

## Receptacle Assemblies with Hybrid Cavities



8 Hybrid Cavity Shown

**Housing Material** — In accordance with MIL-C-55302 or MIL-M-24519 type GLCP-30F

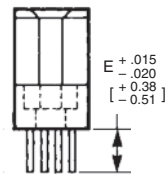
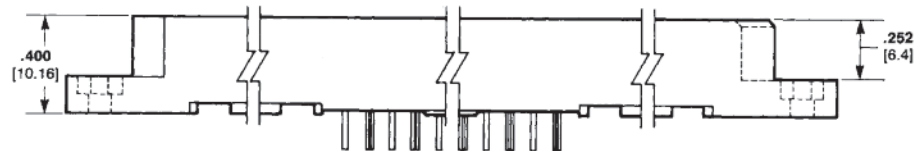
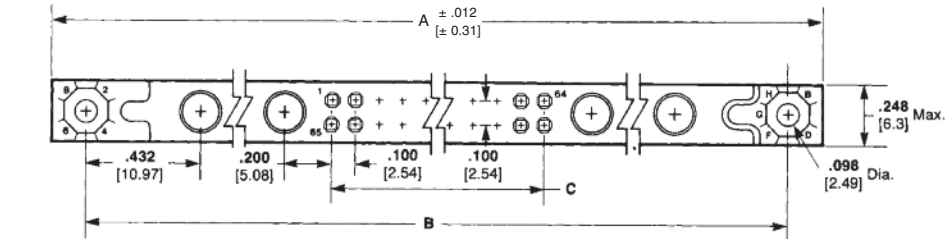
**Contact Material and Finish** — Beryllium copper per QQ-C-533 or copper nickel silicon per ASTM B422 and ASTM B888 Channel Contact and Posted Contact — Plated .000050 [0.00127] gold in contact area, .000100 [0.00254] tin-lead on the tails over .00030 [0.0076] nickel on the entire contact; Solder Eyelet Contact — Plated .000050 [0.00127] gold in the contact area, in accordance with MIL-C-55302 .000100 [0.00254] tin-lead on the tails over .000050 [0.00127] nickel on the entire contact

### Related Product Data

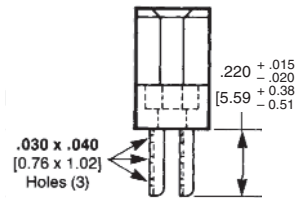
**Mates with** — Right-Angle Pin Headers, pages 1-71 and 1-72

**External Keying** — page 1-80

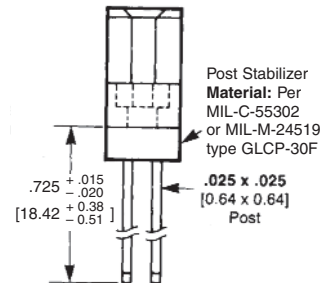
**Recommended PC Board Layout** — page 1-78



**.014 x .019 [0.36 x 0.48]  
Channel Contact**



**Solder Eyelet Contact  
(Max. Wire Size,  
#26 AWG [0.15 mm])**



**Wrap-Type  
Posted Contact  
(3 terminations per post)**

Post Stabilizer  
Material: Per  
MIL-C-55302  
or MIL-M-24519  
type GLCP-30F

E = .235 [5.97] - 2 Hybrid cavity connector  
.154 [3.91] - 4 and 6 Hybrid cavity connector

### 2 Hybrid Cavity Connectors<sup>1</sup>

| No. of<br>Box Contact<br>Pos. | Dimensions      |                 |                 | .014 x .019 [0.36 x 0.48]<br>Channel Contacts<br>Part No. |
|-------------------------------|-----------------|-----------------|-----------------|-----------------------------------------------------------|
|                               | A               | B               | C               |                                                           |
| 128                           | 7.885<br>199.52 | 7.565<br>192.15 | 6.300<br>160.02 | —*                                                        |
| 122                           | 7.555<br>191.90 | 7.265<br>184.53 | 6.000<br>152.4  | —*                                                        |
| 118                           | 7.355<br>186.82 | 7.065<br>179.45 | 5.800<br>147.32 | —*                                                        |
| 108                           | 6.855<br>174.12 | 6.565<br>166.75 | 5.300<br>134.62 | —*                                                        |
| 98                            | 6.335<br>161.42 | 6.065<br>154.05 | 4.800<br>121.92 | —*                                                        |
| 88                            | 5.855<br>148.72 | 5.565<br>141.35 | 4.300<br>109.22 | —*                                                        |
| 78                            | 5.355<br>136.02 | 5.065<br>128.65 | 3.800<br>96.52  | 533606-7                                                  |
| 68                            | 4.855<br>123.32 | 4.565<br>115.95 | 3.300<br>83.82  | —*                                                        |
| 58                            | 4.355<br>110.62 | 4.065<br>103.25 | 2.800<br>71.12  | 533606-5                                                  |
| 48                            | 3.855<br>97.92  | 3.565<br>90.55  | 2.300<br>58.42  | —*                                                        |
| 38                            | 3.355<br>85.22  | 3.065<br>77.85  | 1.800<br>45.72  | —*                                                        |
| 28                            | 2.855<br>72.52  | 2.565<br>65.15  | 1.300<br>33.02  | 533606-2                                                  |
| 18                            | 2.355<br>58.82  | 2.065<br>52.45  | .800<br>20.32   | 533606-1                                                  |

<sup>1</sup>These receptacle assemblies accept coaxial contacts—Vertical Cable Socket 227605-1, Right-Angle Cable Socket 227606-1 and Vertical Printed Circuit Board Mount Socket 227603-1.

\* Part Numbers available upon request, contact TE Connectivity.

## Receptacle Assemblies with Hybrid Cavities (Continued)

### 4 Hybrid Cavity Connectors<sup>1</sup>

| No. of<br>Box Contact<br>Pos. | Dimensions      |                 |                 |              | .014 x .019<br>[0.36 x 0.48]<br>Channel Contacts<br>Part No. | Solder<br>Eyelet<br>Contacts<br>Part No. | Wrap-Type<br>Posted<br>Contacts<br>Part No. |
|-------------------------------|-----------------|-----------------|-----------------|--------------|--------------------------------------------------------------|------------------------------------------|---------------------------------------------|
|                               | A               | B               | C               | D            |                                                              |                                          |                                             |
| 120                           | 7.855<br>199.52 | 7.565<br>192.15 | 5.900<br>149.86 | .200<br>5.08 | —*                                                           | —*                                       | —*                                          |
| 110                           | 7.355<br>186.82 | 7.065<br>179.45 | 5.400<br>137.16 | .200<br>5.08 | —*                                                           | —*                                       | —*                                          |
| 100                           | 6.855<br>174.12 | 6.565<br>166.75 | 4.900<br>124.46 | .200<br>5.08 | 533189-8                                                     | —*                                       | 533181-3                                    |
| 90                            | 6.355<br>161.42 | 6.065<br>154.05 | 4.400<br>111.76 | .200<br>5.08 | —*                                                           | —*                                       | —*                                          |
| 80                            | 5.855<br>148.72 | 5.565<br>141.35 | 3.900<br>99.06  | .200<br>5.08 | —*                                                           | —*                                       | —*                                          |
| 70                            | 5.355<br>136.02 | 5.065<br>128.65 | 3.400<br>86.36  | .200<br>5.08 | —*                                                           | —*                                       | —*                                          |
| 60                            | 4.855<br>123.32 | 4.565<br>115.95 | 2.900<br>73.66  | .200<br>5.08 | —*                                                           | —*                                       | —*                                          |
| 50                            | 4.355<br>110.62 | 4.065<br>103.25 | 2.400<br>60.96  | .200<br>5.08 | —*                                                           | —*                                       | —*                                          |
| 40                            | 3.855<br>97.92  | 3.565<br>90.55  | 1.900<br>48.26  | .200<br>5.08 | 533189-3                                                     | —*                                       | —*                                          |
| 30                            | 3.355<br>85.22  | 3.065<br>77.85  | 1.400<br>35.56  | .200<br>5.08 | 533189-2                                                     | —*                                       | —*                                          |

### 6 Hybrid Cavity Connectors<sup>1</sup>

| No. of<br>Box Contact<br>Pos. | Dimensions      |                 |                |               | .014 x .019<br>[0.36 x 0.48]<br>Channel Contacts<br>Part No. |
|-------------------------------|-----------------|-----------------|----------------|---------------|--------------------------------------------------------------|
|                               | A               | B               | C              | D             |                                                              |
| 112                           | 7.855<br>199.52 | 7.565<br>192.15 | 5.500<br>139.7 | .400<br>10.16 | —*                                                           |
| 102                           | 7.355<br>186.82 | 7.065<br>179.45 | 5.000<br>127.0 | .400<br>10.16 | —*                                                           |
| 92                            | 6.855<br>174.12 | 6.565<br>166.75 | 4.500<br>114.3 | .400<br>10.16 | —*                                                           |
| 82                            | 6.355<br>161.42 | 6.065<br>154.05 | 4.000<br>101.6 | .400<br>10.16 | —*                                                           |
| 72                            | 5.855<br>148.72 | 5.565<br>141.35 | 3.500<br>88.9  | .400<br>10.16 | —*                                                           |
| 62                            | 5.355<br>136.02 | 5.065<br>128.65 | 3.000<br>76.2  | .400<br>10.16 | 533639-5                                                     |
| 52                            | 4.855<br>123.32 | 4.565<br>115.95 | 2.500<br>63.5  | .400<br>10.16 | —*                                                           |
| 42                            | 4.355<br>110.62 | 4.065<br>103.25 | 2.000<br>50.8  | .400<br>10.16 | —*                                                           |
| 32                            | 3.855<br>97.92  | 3.565<br>90.55  | 1.500<br>38.1  | .400<br>10.16 | —*                                                           |
| 22                            | 3.355<br>85.22  | 3.065<br>77.85  | 1.000<br>25.4  | .400<br>10.16 | 533639-1                                                     |

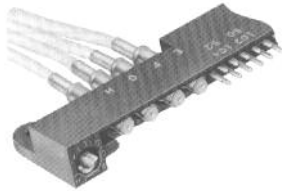
### 8 Hybrid Cavity Connectors<sup>1</sup>

| No. of<br>Box Contact<br>Positions | Dimensions      |                 |                 |               | Wrap-Type<br>Contacts<br>Part No. |
|------------------------------------|-----------------|-----------------|-----------------|---------------|-----------------------------------|
|                                    | A               | B               | C               | D             |                                   |
| 104                                | 7.855<br>199.52 | 7.565<br>192.15 | 5.100<br>129.54 | .600<br>15.24 | —*                                |
| 94                                 | 7.355<br>186.82 | 7.065<br>179.45 | 4.600<br>116.84 | .600<br>15.24 | —*                                |
| 84                                 | 6.855<br>174.12 | 6.565<br>166.75 | 4.100<br>104.14 | .600<br>15.24 | —*                                |
| 74                                 | 6.355<br>161.42 | 6.065<br>154.05 | 3.600<br>91.44  | .600<br>15.24 | —*                                |
| 64                                 | 5.855<br>148.72 | 5.565<br>141.35 | 3.100<br>78.74  | .600<br>15.24 | —*                                |
| 54                                 | 5.355<br>136.02 | 5.065<br>128.65 | 2.600<br>66.04  | .600<br>15.24 | —*                                |
| 44                                 | 4.855<br>123.32 | 4.565<br>115.95 | 2.100<br>53.34  | .600<br>15.24 | —*                                |
| 34                                 | 4.355<br>110.62 | 4.065<br>103.25 | 1.600<br>40.64  | .600<br>15.24 | 533170-8                          |
| 24                                 | 3.855<br>97.92  | 3.565<br>90.55  | 1.100<br>27.94  | .600<br>15.24 | —*                                |
| 14                                 | 3.355<br>85.22  | 3.065<br>77.85  | .600<br>15.24   | .600<br>15.24 | 1-533170-0                        |

<sup>1</sup>These receptacle assemblies accept coaxial contacts — Vertical Cable Sockets 227605-1, Right-Angle Cable Socket 227606-1 and Vertical PC Board Mount Socket 227603-1.

\* Part Numbers available upon request, contact TE Connectivity.

## Right-Angle Pin Header Assemblies with Hybrid Contact Cavities



8 Hybrid Cavity Shown

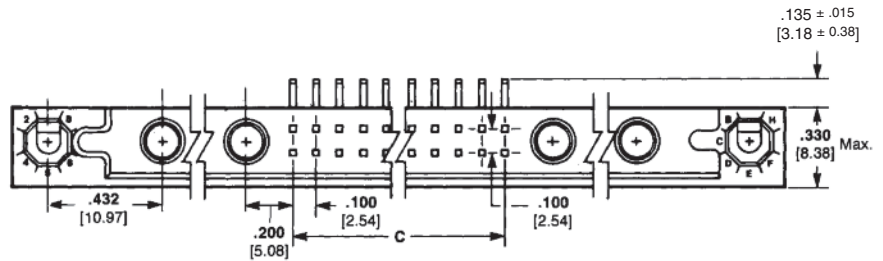
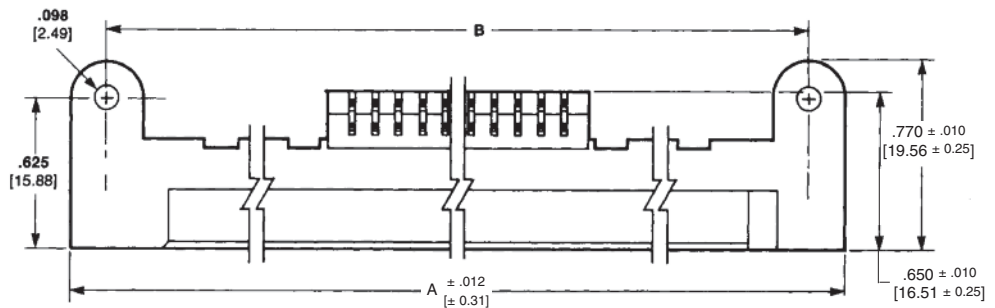
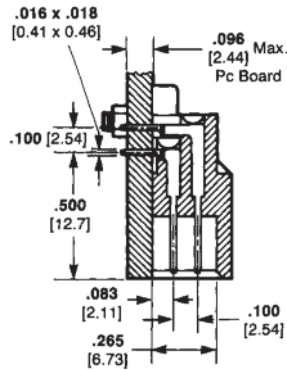
### Related Product Data

**Mates with** — Receptacles, pages 1-69 and 1-70

**External Keying** — page 1-80

**Recommended PC Board Layout** — page 1-79

**Fixed Jackscrews** — page 1-61



### 2 Hybrid Cavity Connectors<sup>1</sup>

| No. of<br>Box Contact<br>Pos. | Dimensions      |                 |                 | Part No. <sup>2</sup> | RoHS<br>Part No. <sup>3</sup> |
|-------------------------------|-----------------|-----------------|-----------------|-----------------------|-------------------------------|
|                               | A               | B               | C               |                       |                               |
| 128                           | 7.885<br>199.52 | 7.565<br>192.15 | 6.300<br>160.02 | —*                    | —                             |
| 122                           | 7.555<br>191.90 | 7.265<br>184.53 | 6.000<br>152.4  | —*                    | —                             |
| 118                           | 7.355<br>186.82 | 7.065<br>179.45 | 5.800<br>147.32 | —*                    | —                             |
| 108                           | 6.855<br>174.12 | 6.565<br>166.75 | 5.300<br>134.62 | —*                    | —                             |
| 98                            | 6.335<br>161.42 | 6.065<br>154.05 | 4.800<br>121.92 | —*                    | —                             |
| 88                            | 5.855<br>148.72 | 5.565<br>141.35 | 4.300<br>109.22 | —*                    | —                             |
| 78                            | 5.355<br>136.02 | 5.065<br>128.65 | 3.800<br>96.52  | —*                    | —                             |
| 68                            | 4.855<br>123.32 | 4.565<br>115.95 | 3.300<br>83.82  | —*                    | —                             |
| 58                            | 4.355<br>110.62 | 4.065<br>103.25 | 2.800<br>71.12  | —*                    | —                             |
| 48                            | 3.855<br>97.92  | 3.565<br>90.55  | 2.300<br>58.42  | —*                    | —                             |
| 38                            | 3.355<br>85.22  | 3.065<br>77.85  | 1.800<br>45.72  | —*                    | —                             |
| 28                            | 2.855<br>72.52  | 2.565<br>65.15  | 1.300<br>33.02  | 533607-3              | —                             |
| 18                            | 2.355<br>59.82  | 2.065<br>52.45  | .800<br>20.32   | 533607-1              | 5-533607-1                    |

<sup>1</sup>These pin header assemblies accept coaxial contacts—Vertical Cable Pin 227604-1 and Right-Angle Printed Circuit Board Mount Pin 227602-1.

\* Part Numbers available upon request, contact TE Connectivity.



## Right-Angle Pin Header Assemblies with Hybrid Contact Cavities (Continued)

### 4 Hybrid Cavity Connectors<sup>1</sup>

| No. of<br>Box Contact<br>Pos. | Dimensions      |                 |                 |              | Part No. <sup>2</sup> | RoHS<br>Part No. <sup>3</sup> |
|-------------------------------|-----------------|-----------------|-----------------|--------------|-----------------------|-------------------------------|
|                               | A               | B               | C               | D            |                       |                               |
| 120                           | 7.855<br>199.52 | 7.565<br>192.15 | 5.900<br>149.86 | .200<br>5.08 | 1-533182-0            | —                             |
| 80                            | 5.855<br>148.72 | 5.565<br>141.35 | 3.900<br>99.06  | .200<br>5.08 | —*                    | —                             |
| 70                            | 5.355<br>136.02 | 5.065<br>128.65 | 3.400<br>86.36  | .200<br>5.08 | —*                    | —                             |
| 40                            | 3.855<br>97.92  | 3.565<br>90.55  | 1.900<br>48.26  | .200<br>5.08 | 533182-3              | 5-533182-3                    |
| 30                            | 3.355<br>85.22  | 3.065<br>77.85  | 1.400<br>35.56  | .200<br>5.08 | —*                    | —                             |

### 6 Hybrid Cavity Connectors<sup>1</sup>

| No. of<br>Box Contact<br>Pos. | Dimensions      |                 |                |               | Part No. |
|-------------------------------|-----------------|-----------------|----------------|---------------|----------|
|                               | A               | B               | C              | D             |          |
| 112                           | 7.855<br>199.52 | 7.565<br>192.15 | 5.500<br>139.7 | .400<br>10.16 | —*       |
| 102                           | 7.355<br>186.82 | 7.065<br>179.45 | 5.000<br>127.0 | .400<br>10.16 | —*       |
| 92                            | 6.855<br>174.12 | 6.565<br>166.75 | 4.500<br>114.3 | .400<br>10.16 | —*       |
| 82                            | 6.355<br>161.42 | 6.065<br>154.05 | 4.000<br>101.6 | .400<br>10.16 | —*       |
| 72                            | 5.855<br>148.72 | 5.565<br>141.35 | 3.500<br>88.9  | .400<br>10.16 | —*       |
| 62                            | 5.355<br>136.02 | 5.065<br>128.65 | 3.000<br>76.2  | .400<br>10.16 | 533637-5 |
| 52                            | 4.855<br>123.32 | 4.565<br>115.95 | 2.500<br>63.5  | .400<br>10.16 | —*       |
| 42                            | 4.355<br>110.62 | 4.065<br>103.25 | 2.000<br>50.8  | .400<br>10.16 | —*       |
| 32                            | 3.855<br>97.92  | 3.565<br>90.55  | 1.500<br>38.1  | .400<br>10.16 | —*       |
| 22                            | 3.355<br>85.22  | 3.065<br>77.85  | 1.000<br>25.4  | .400<br>10.16 | —*       |

### 8 Hybrid Cavity Connectors<sup>1</sup>

| No. of<br>Box Contact<br>Pos. | Dimensions      |                 |                 |               | Part No.   |
|-------------------------------|-----------------|-----------------|-----------------|---------------|------------|
|                               | A               | B               | C               | D             |            |
| 104                           | 7.855<br>199.52 | 7.565<br>192.15 | 5.100<br>129.54 | .600<br>15.24 | —*         |
| 94                            | 7.355<br>186.82 | 7.065<br>179.45 | 4.600<br>116.84 | .600<br>15.24 | 533171-2   |
| 84                            | 6.855<br>174.12 | 6.565<br>166.75 | 4.100<br>104.14 | .600<br>15.24 | —*         |
| 74                            | 6.355<br>161.42 | 6.065<br>154.05 | 3.600<br>91.44  | .600<br>15.24 | —*         |
| 64                            | 5.855<br>148.72 | 5.565<br>141.35 | 3.100<br>78.74  | .600<br>15.24 | 533171-5   |
| 54                            | 5.355<br>136.02 | 5.065<br>128.65 | 2.600<br>66.04  | .600<br>15.24 | —*         |
| 44                            | 4.855<br>123.32 | 4.565<br>115.95 | 2.100<br>53.34  | .600<br>15.24 | —*         |
| 34                            | 4.355<br>110.62 | 4.065<br>103.25 | 1.600<br>40.64  | .600<br>15.24 | 533171-8   |
| 24                            | 3.855<br>97.92  | 3.565<br>90.55  | 1.100<br>27.94  | .600<br>15.24 | —*         |
| 14                            | 3.355<br>85.22  | 3.065<br>77.85  | .600<br>15.24   | .600<br>15.24 | 1-533171-0 |

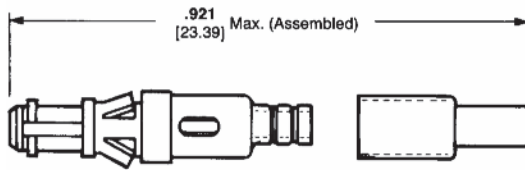
<sup>1</sup>These pin header assemblies accept coaxial contacts—Vertical Cable Pin 227604-1 and Right-Angle Printed Circuit Board Mount Pin 227602-1.

<sup>2</sup>See Material and Finish on previous page.

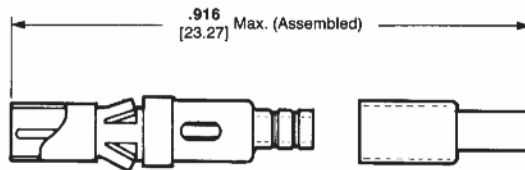
<sup>3</sup>See Material and Finish for RoHS Part Numbers on previous page.

\* Part Numbers available upon request, contact TE Connectivity.

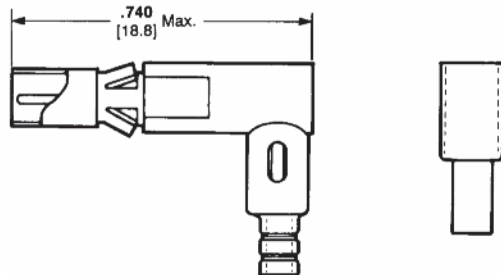
## Microminiature COAXICON Contacts for Hybrid Cavities



Cable Pin



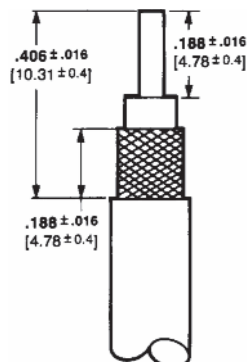
Cable Socket



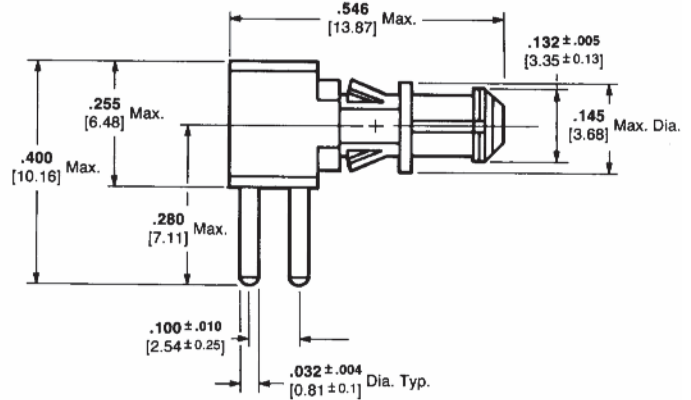
Right-Angle Cable Socket

| Cable Size                        | Contact Style            | Part No. | Application Tool Part No. |
|-----------------------------------|--------------------------|----------|---------------------------|
| RG 178/U Double Braid<br>RG 196/U | Cable Pin                | 227604-1 | 220215-1                  |
|                                   | Cable Socket             | 227605-1 |                           |
|                                   | Right-Angle Cable Socket | 227606-1 |                           |

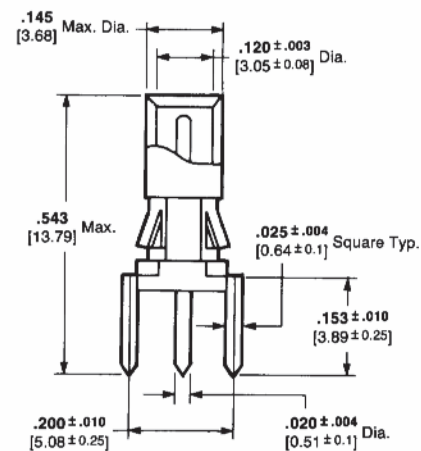
Extraction Tool Part Number 220216-1



Recommended Strip Length



Right-Angle Pin  
for PC Board Application  
Part Number 227602-1  
Plated .000030 [0.00076] gold



Vertical Socket  
for PC Board Application  
Part Number 227603-1

### Notes:

- Center contacts are plated with .000030 [0.00076] gold.
- For .125 [3.18] maximum thick PC boards.

### Electrical Characteristics

Nominal Impedance — 50 ohms

Frequency Range — 0-2 GHz

Maximum Operating Voltage (Sea Level) — 150 VAC RMS

### Mechanical Characteristics

Operating Temperature Range — -55°C to +125°C

Cable Retention — 15 lb. [66.7N] min. (RG 178 type double braid)

### Contact Materials

Stainless Steel — QQ-S-766

Gold Plate — MIL-G-45204

Nickel Plate — QQ-N-290

Beryllium Copper — QQ-C-530

PTFE — MIL-P-19468A

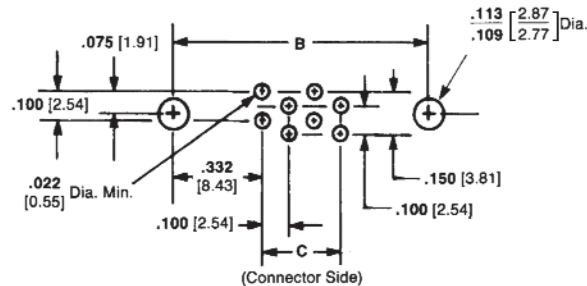
Brass — QQ-B-626

### Ferrule Material

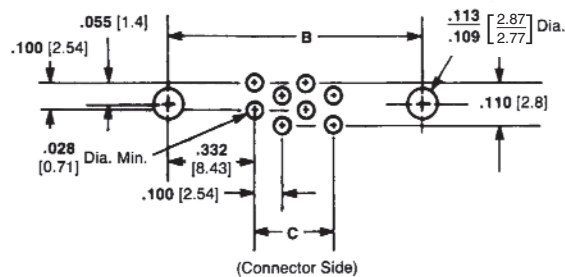
Brass — MIL-C-50, tin plate per MIL-T-10727

## Recommended Printed Circuit Board Layouts

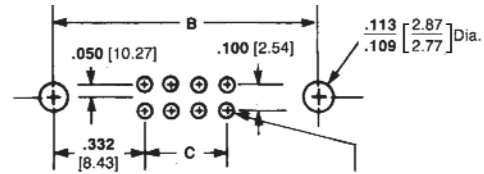
### Receptacle Assemblies



.014 x .019 [0.36 x 0.48] Channel Contacts

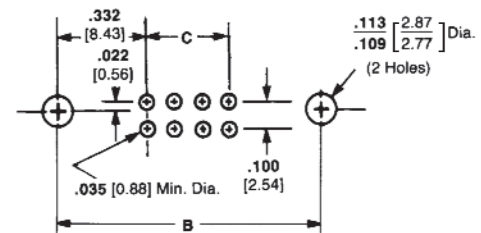


.010 x .020 [0.25 x 0.51] Posted Contacts

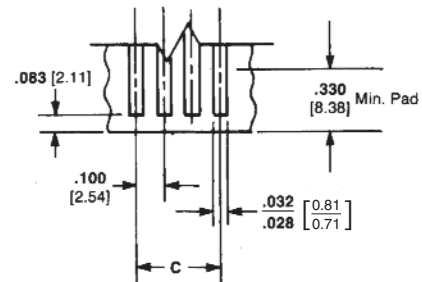


.035 [0.88] Dia. (Min) - Posted Contact

.025 x .025 [0.64 x 0.64] Posted Contacts



Right-Angle .025 x .025 [0.64 x 0.64] Posted Contacts

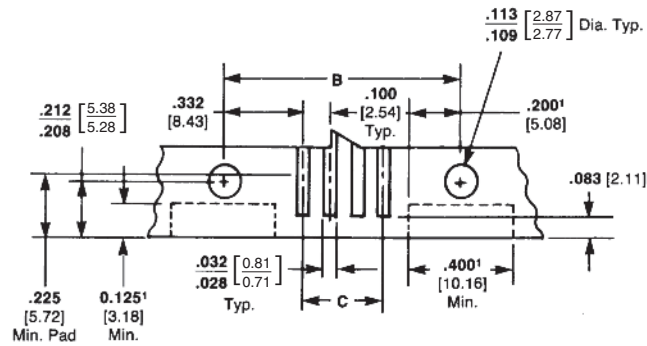


Card Extender Contacts

| No. of Pos. | Dimensions      |                 |
|-------------|-----------------|-----------------|
|             | B               | C               |
| 140         | 7.565<br>192.15 | 6.900<br>175.26 |
| 134         | 7.265<br>184.53 | 6.600<br>167.64 |
| 130         | 7.065<br>179.45 | 6.400<br>162.56 |
| 120         | 6.565<br>166.75 | 5.906<br>149.86 |
| 110         | 6.065<br>154.05 | 5.400<br>137.16 |
| 100         | 5.565<br>141.35 | 4.900<br>124.46 |
| 90          | 5.065<br>128.65 | 4.400<br>111.76 |
| 80          | 4.565<br>115.95 | 3.900<br>99.06  |
| 70          | 4.065<br>103.25 | 3.400<br>86.36  |
| 60          | 3.565<br>90.55  | 2.900<br>73.66  |
| 50          | 3.065<br>77.85  | 2.400<br>60.96  |
| 40          | 2.565<br>65.15  | 1.900<br>48.26  |
| 30          | 2.065<br>52.45  | 1.400<br>35.56  |

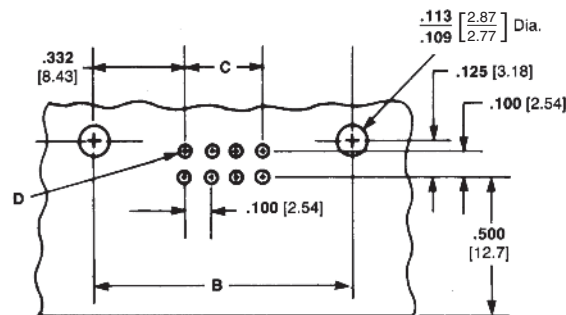
## Recommended Printed Circuit Board Layouts (Continued)

### Pin Header Assemblies



<sup>1</sup>Optional cut-out for keying after connector is mounted.

### Straddle Mount Assembly



D = Right-Angle Flow Solder - .035 [0.88] Dia. (Min.)  
Wrap-Type Posts - .045 [1.14] Dia. (Min.)

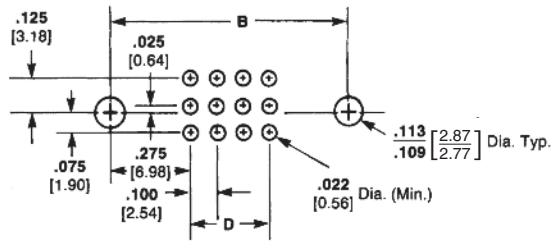
#### Right-Angle Flow Solder and Wrap-Type Posted Contacts

**Note:** These drawings are for reference only. Consult TE Connectivity for board layout details.

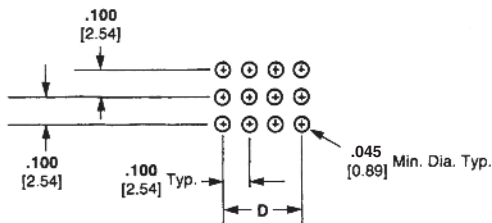
| No. of Pos. | Dimensions      |                 |
|-------------|-----------------|-----------------|
|             | B               | C               |
| 140         | 7.565<br>192.15 | 6.900<br>175.26 |
| 134         | 7.265<br>184.53 | 6.600<br>167.64 |
| 130         | 7.065<br>179.45 | 6.400<br>162.56 |
| 120         | 6.565<br>166.75 | 5.906<br>149.86 |
| 110         | 6.065<br>154.05 | 5.400<br>137.16 |
| 100         | 5.565<br>141.35 | 4.900<br>124.46 |
| 90          | 5.065<br>128.65 | 4.400<br>111.76 |
| 80          | 4.565<br>115.95 | 3.900<br>99.06  |
| 70          | 4.065<br>103.25 | 3.400<br>86.36  |
| 60          | 3.565<br>90.55  | 2.900<br>73.66  |
| 50          | 3.065<br>77.85  | 2.400<br>60.96  |
| 40          | 2.565<br>65.15  | 1.900<br>48.26  |
| 30          | 2.065<br>52.45  | 1.400<br>35.56  |

### 3-Row Assembly Recommended Printed Circuit Board Layouts

#### Receptacle Assemblies

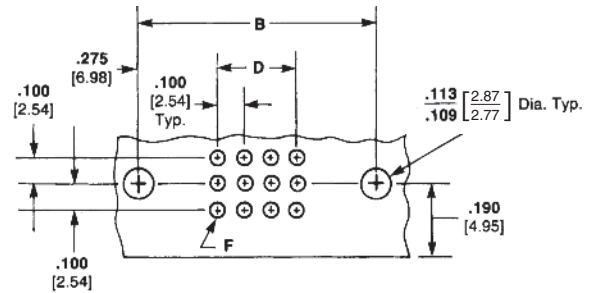


.014 x .019 [0.36 x 0.48] Channel Contacts



Right-Angle Wrap-Type Posted Contacts

#### Pin Header Assemblies



F = Right-Angle Flow Solder — .035 [0.88] Dia. Min.  
Wrap-Type Posts — .045 [1.14] Dia. Min.

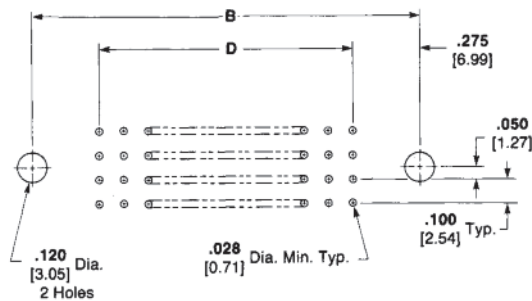
Right-Angle Flow Solder and Wrap-Type Posted Contacts

**Note:** These drawings are for reference only. Consult TE Connectivity for board layout details.

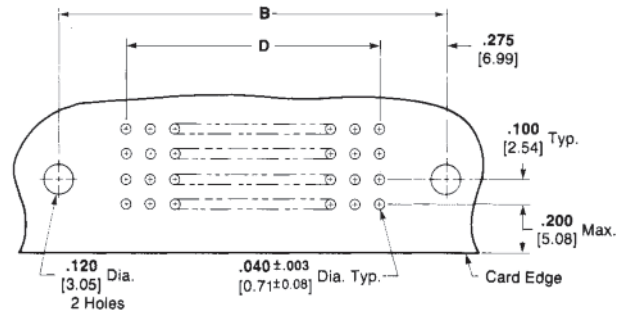
| No. of Pos. | Dimensions |        |
|-------------|------------|--------|
|             | B          | D      |
| 300         | 10.450     | 9.900  |
|             | 265.43     | 251.46 |
| 270         | 9.450      | 8.900  |
|             | 240.03     | 226.06 |
| 240         | 8.450      | 7.900  |
|             | 214.63     | 200.66 |
| 210         | 7.450      | 6.900  |
|             | 189.23     | 175.26 |
| 180         | 6.450      | 5.900  |
|             | 163.83     | 149.86 |
| 165         | 5.950      | 5.400  |
|             | 151.13     | 137.16 |
| 150         | 5.450      | 4.900  |
|             | 138.43     | 124.46 |
| 126         | 4.650      | 4.100  |
|             | 118.11     | 104.14 |
| 123         | 4.550      | 4.000  |
|             | 115.57     | 101.6  |
| 120         | 4.450      | 3.900  |
|             | 113.03     | 99.06  |
| 105         | 3.950      | 3.400  |
|             | 100.33     | 86.36  |
| 90          | 3.450      | 2.900  |
|             | 87.63      | 73.66  |

## 4-Row Assembly Recommended Printed Circuit Board Layouts

### Receptacle Assemblies



### Pin Header Assemblies



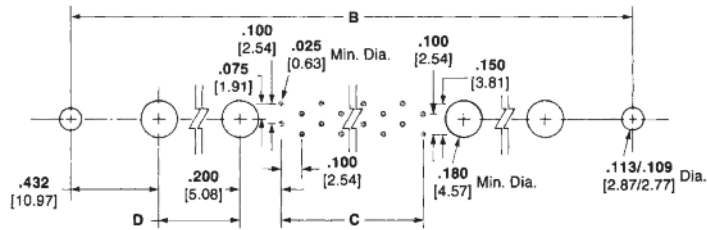
| No. of Pos. | Dimensions      |                 |
|-------------|-----------------|-----------------|
|             | B               | D               |
| 300         | 7.950<br>201.93 | 7.400<br>187.96 |
| 292         | 7.750<br>196.85 | 7.200<br>182.88 |
| 280         | 7.450<br>189.23 | 6.900<br>175.26 |
| 268         | 7.150<br>181.61 | 6.600<br>167.64 |
| 260         | 6.950<br>176.53 | 6.400<br>162.56 |
| 240         | 6.450<br>163.83 | 5.900<br>149.86 |
| 232         | 6.250<br>158.75 | 5.700<br>144.78 |
| 220         | 5.950<br>151.13 | 5.400<br>137.16 |
| 216         | 5.850<br>148.59 | 5.300<br>134.62 |
| 200         | 5.450<br>138.43 | 4.900<br>124.46 |
| 192         | 5.250<br>133.35 | 4.700<br>119.38 |
| 180         | 4.950<br>125.73 | 4.400<br>111.76 |
| 168         | 4.650<br>118.11 | 4.100<br>104.14 |
| 160         | 4.450<br>113.03 | 3.900<br>99.06  |
| 152         | 4.250<br>107.95 | 3.700<br>93.98  |
| 140         | 3.950<br>100.33 | 3.400<br>86.36  |
| 128         | 3.650<br>92.71  | 3.100<br>78.74  |
| 120         | 3.450<br>87.63  | 2.900<br>73.66  |
| 100         | 2.950<br>74.93  | 2.400<br>60.96  |
| 68          | 2.150<br>54.60  | 1.600<br>40.64  |
| 40          | 1.450<br>36.83  | .900<br>22.86   |



## Hybrid Contacts Recommended Printed Circuit Board Layouts

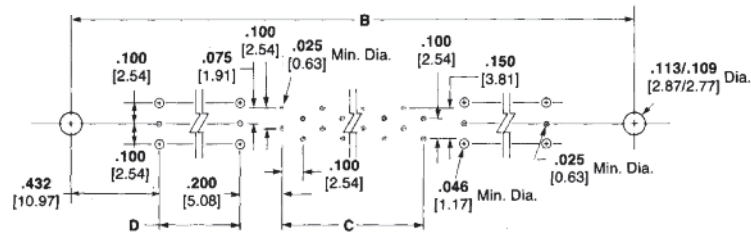
### Receptacle Assemblies with Hybrid Contacts

#### With Cable



.014 x .019 [0.36 x 0.48] Channel Contacts  
with Hybrid Printed Circuit Board Mount Sockets

#### With Solder Terminations



.014 x .019 [0.36 x 0.48] Channel Contacts  
with Vertical Coaxial Printed Circuit Board Mount Sockets

### 2 Hybrid Contact Connectors

| No. of<br>Box Contact<br>Pos. | Dimensions      |                 |
|-------------------------------|-----------------|-----------------|
|                               | B               | C               |
| 128                           | 7.565<br>192.15 | 6.300<br>160.02 |
| 122                           | 7.265<br>184.53 | 6.000<br>152.4  |
| 118                           | 7.065<br>179.45 | 5.800<br>147.32 |
| 108                           | 6.565<br>166.75 | 5.300<br>134.62 |
| 98                            | 6.065<br>154.05 | 4.800<br>121.92 |
| 88                            | 5.565<br>141.35 | 4.300<br>109.22 |
| 78                            | 5.065<br>128.65 | 3.800<br>96.52  |
| 68                            | 4.565<br>115.95 | 3.300<br>83.82  |
| 58                            | 4.065<br>103.25 | 2.800<br>71.12  |
| 48                            | 3.565<br>90.55  | 2.300<br>58.42  |
| 38                            | 3.065<br>77.85  | 1.800<br>45.72  |
| 28                            | 2.565<br>65.15  | 1.300<br>33.02  |
| 18                            | 2.065<br>52.45  | .800<br>20.32   |

### 4 Hybrid Contact Connectors

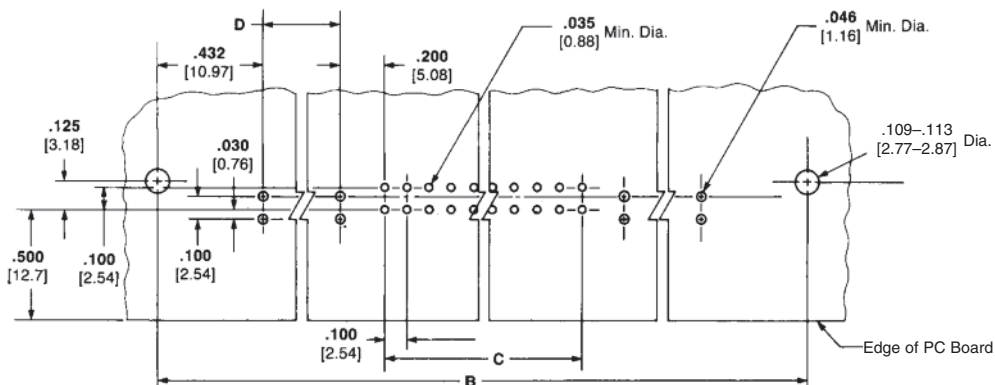
| No. of<br>Box Contact<br>Pos. | Dimensions      |                 |              |
|-------------------------------|-----------------|-----------------|--------------|
|                               | B               | C               | D            |
| 120                           | 7.565<br>192.15 | 5.900<br>149.86 | .200<br>5.08 |
| 110                           | 7.065<br>179.45 | 5.400<br>137.16 | .200<br>5.08 |
| 100                           | 6.565<br>166.75 | 4.900<br>124.46 | .200<br>5.08 |
| 90                            | 6.065<br>154.05 | 4.400<br>111.76 | .200<br>5.08 |
| 80                            | 5.565<br>141.35 | 3.900<br>99.06  | .200<br>5.08 |
| 70                            | 5.065<br>128.65 | 3.400<br>86.36  | .200<br>5.08 |
| 60                            | 4.565<br>115.95 | 2.900<br>73.66  | .200<br>5.08 |
| 50                            | 4.065<br>103.25 | 2.400<br>60.96  | .200<br>5.08 |
| 40                            | 3.565<br>90.55  | 1.900<br>48.26  | .200<br>5.08 |
| 30                            | 3.065<br>77.85  | 1.400<br>35.56  | .200<br>5.08 |

### 6 Hybrid Contact Connectors

| No. of<br>Box Contact<br>Pos. | Dimensions      |                |               |
|-------------------------------|-----------------|----------------|---------------|
|                               | B               | C              | D             |
| 112                           | 7.565<br>192.15 | 5.500<br>139.7 | .400<br>10.16 |
| 102                           | 7.065<br>179.45 | 5.000<br>127.0 | .400<br>10.16 |
| 92                            | 6.565<br>166.75 | 4.500<br>114.3 | .400<br>10.16 |
| 82                            | 6.065<br>154.05 | 4.000<br>101.6 | .400<br>10.16 |
| 72                            | 5.565<br>141.35 | 3.500<br>88.9  | .400<br>10.16 |
| 62                            | 5.065<br>128.65 | 3.000<br>76.2  | .400<br>10.16 |
| 52                            | 4.565<br>115.95 | 2.500<br>63.5  | .400<br>10.16 |
| 42                            | 4.065<br>103.25 | 2.000<br>50.8  | .400<br>10.16 |
| 32                            | 3.565<br>90.55  | 1.500<br>38.1  | .400<br>10.16 |
| 22                            | 3.065<br>77.85  | 1.000<br>25.4  | .400<br>10.16 |

### Hybrid Contacts Recommended Printed Circuit Board Layouts (Continued)

## Pin Header Assemblies with Hybrid Cavities



## 2 Hybrid Contact Connectors

| No. of<br>Box Contact<br>Pos. | Dimensions |        |
|-------------------------------|------------|--------|
|                               | B          | C      |
| 128                           | 7.565      | 6.300  |
|                               | 192.15     | 160.02 |
| 122                           | 7.265      | 6.000  |
|                               | 184.53     | 152.4  |
| 118                           | 7.065      | 5.800  |
|                               | 179.45     | 147.32 |
| 108                           | 6.565      | 5.300  |
|                               | 166.75     | 134.62 |
| 98                            | 6.065      | 4.800  |
|                               | 154.05     | 121.92 |
| 88                            | 5.565      | 4.300  |
|                               | 141.35     | 109.22 |
| 78                            | 5.065      | 3.800  |
|                               | 128.65     | 96.52  |
| 68                            | 4.565      | 3.300  |
|                               | 115.95     | 83.82  |
| 58                            | 4.065      | 2.800  |
|                               | 103.25     | 71.12  |
| 48                            | 3.565      | 2.300  |
|                               | 90.55      | 58.42  |
| 38                            | 3.065      | 1.800  |
|                               | 77.85      | 45.72  |
| 28                            | 2.565      | 1.300  |
|                               | 65.15      | 33.02  |
| 18                            | 2.065      | .800   |
|                               | 52.45      | 20.32  |

#### 4 Hybrid Contact Connectors

| No. of<br>Box Contact<br>Positions | Dimensions |        |      |
|------------------------------------|------------|--------|------|
|                                    | B          | C      | D    |
| 120                                | 7.565      | 5.900  | .200 |
|                                    | 192.15     | 149.86 | 5.08 |
| 80                                 | 5.565      | 3.900  | .200 |
|                                    | 141.35     | 99.06  | 5.08 |
| 70                                 | 5.065      | 3.400  | .200 |
|                                    | 128.65     | 86.36  | 5.08 |
| 40                                 | 3.565      | 1.900  | .200 |
|                                    | 90.55      | 48.26  | 5.08 |
| 30                                 | 3.065      | 1.400  | .200 |
|                                    | 77.85      | 35.56  | 5.08 |

## 6 Hybrid Contact Connectors

| No. of<br>Box Contact<br>Positions | Dimensions |       |       |
|------------------------------------|------------|-------|-------|
|                                    | B          | C     | D     |
| 112                                | 7.565      | 5.500 | .400  |
|                                    | 192.15     | 139.7 | 10.16 |
| 102                                | 7.065      | 5.000 | .400  |
|                                    | 179.45     | 127.0 | 10.16 |
| 92                                 | 6.565      | 4.500 | .400  |
|                                    | 166.75     | 114.3 | 10.16 |
| 82                                 | 6.065      | 4.000 | .400  |
|                                    | 154.05     | 101.6 | 10.16 |
| 72                                 | 5.565      | 3.500 | .400  |
|                                    | 141.35     | 88.9  | 10.16 |
| 62                                 | 5.065      | 3.000 | .400  |
|                                    | 128.65     | 76.2  | 10.16 |
| 52                                 | 4.565      | 2.500 | .400  |
|                                    | 115.95     | 63.5  | 10.16 |
| 42                                 | 4.065      | 2.000 | .400  |
|                                    | 103.25     | 50.8  | 10.16 |
| 32                                 | 3.565      | 1.500 | .400  |
|                                    | 90.55      | 38.1  | 10.16 |
| 22                                 | 3.065      | 1.000 | .400  |
|                                    | 77.85      | 25.4  | 10.16 |

## 8 Hybrid Contact Connectors

| No. of<br>Box Contact<br>Positions | Dimensions |        |       |
|------------------------------------|------------|--------|-------|
|                                    | B          | C      | D     |
| 104                                | 7.565      | 5.100  | .600  |
|                                    | 192.15     | 129.54 | 15.24 |
| 94                                 | 7.065      | 4.600  | .600  |
|                                    | 179.45     | 116.84 | 15.24 |
| 84                                 | 6.565      | 4.100  | .600  |
|                                    | 166.75     | 104.14 | 15.24 |
| 74                                 | 6.065      | 3.600  | .600  |
|                                    | 154.05     | 91.44  | 15.24 |
| 64                                 | 5.565      | 3.100  | .600  |
|                                    | 141.35     | 78.74  | 15.24 |
| 54                                 | 5.065      | 2.600  | .600  |
|                                    | 128.65     | 66.04  | 15.24 |
| 44                                 | 4.565      | 2.100  | .600  |
|                                    | 115.95     | 53.34  | 15.24 |
| 34                                 | 4.065      | 1.600  | .600  |
|                                    | 103.25     | 40.64  | 15.24 |
| 24                                 | 3.565      | 1.100  | .600  |
|                                    | 90.55      | 27.94  | 15.24 |
| 14                                 | 3.065      | .600   | .600  |
|                                    | 77.85      | 15.24  | 15.24 |

## Keying Hardware — MIL-C-55302 Qualified

### External Keys

#### Receptacle Key

For use with Receptacles

#### Kit Part Number 530341-3

Kit includes 2 each of the following:

Keys, passivated stainless steel

#### Part Number 530341-1

#### Military Part Number M55302/31-04

Screws, #2-56 .250 [6.35] long

#### Pin Header Key

For use with 2-row Straddle Mount Pin Headers

#### Kit Part Number 530341-4<sup>1</sup>

Kit includes 2 each of the following:

Keys, passivated stainless steel

#### Part Number 530341-1

#### Military Part Number M55302/31-04

Rivets, nickel plated brass

#### Part Number 530347-1

#### Military Part Number M55302/31-05

#### Pin Header Key

For use with 2-, 3-, and 4-row Pin Headers

#### Kit Part Number 530341-5<sup>1</sup>

Kit includes 2 each of the following:

Keys, passivated stainless steel

#### Part Number 530341-1

#### Military Part Number M55302/31-04

Rivets, nickel plated brass

#### Part Number 530347-3

#### Military Part Number M55302/31-10

<sup>1</sup>Rivet Clinching Tools:

2-Row Pin Headers—Tool Part Number 91117-1

(See instruction sheet 408-7803)

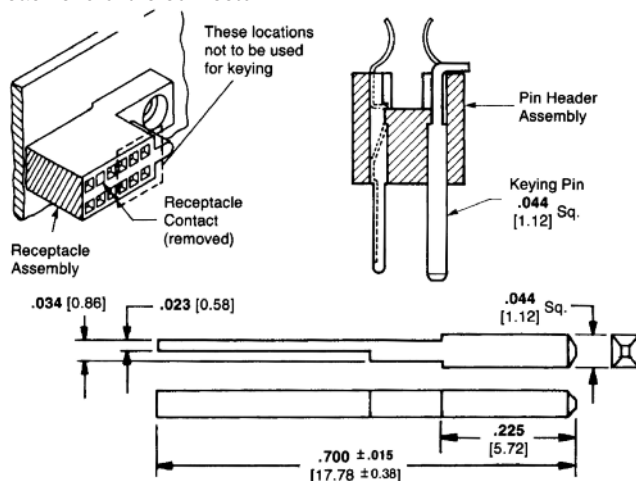
3-Row Pin Headers—Tool Part Number 91117-3

(See instruction sheet 408-6626)

4-Row Pin Headers—Tool Part Number 92-0800-003

### Solid Keying Pin

Solid keying pins are for use on connectors when external keying is not used or on external keyed assemblies when more than 64 keying positions are required. Solid keying pins are not to be installed in the three dual positions at each end of the connector.



Material: Nickel plated brass  
Part Number 530328-2  
Military Part Number M55302/31-03

#### Assembly Instructions:

1. Remove pin and receptacle from desired keying locations.
2. Insert keying pin in pin header, secure by bending rear of pin over outside edge of housing, and trim excess material.

### Guide Keys

#### Guide Keying Pin and Insert

For use with 2-row Receptacles and 2-row Straddle Mount Pin Headers

#### Kit Part Number 531715-1<sup>1</sup>

Kit includes 2 each of the following:

Guide keying pin, passivated stainless steel

#### Part Number 531713-1

Nut, #2-56

#### Part Number 23174-1

Guide keying insert, passivated stainless steel

#### Part Number 531714-1

Rivet, nickel plated brass

#### Part Number 530347-9

#### Guide Keying Pin and Insert

For use with 2- and 3-row Receptacles and Right-Angle Pin Headers

#### Kit Part Number 531715-2<sup>1</sup>

Kit includes 2 each of the following:

Guide keying pin, passivated stainless steel

#### Part Number 531713-1

Nut, #2-56

#### Part Number 23174-1

Guide keying insert, passivated stainless steel

#### Part Number 531714-1

Rivet, nickel plated brass

#### Part Number 530347-8

<sup>1</sup>Rivet Clinching Tools:

2-Row Pin Headers—Tool Part Number 91117-1

(See instruction sheet 408-7803)

3-Row Pin Headers—Tool Part Number 91117-4

(See instruction sheet 408-6627)

### Guide Pin/Insert

#### Guide Pin

Passivated stainless steel

| A     | Part No. |
|-------|----------|
| .400  | 530345-1 |
| 10.16 | —        |
| .680  | —        |
| 17.27 | —        |
| .750  | 530345-3 |
| 19.05 | —        |

#### Guide Insert

Passivated stainless steel

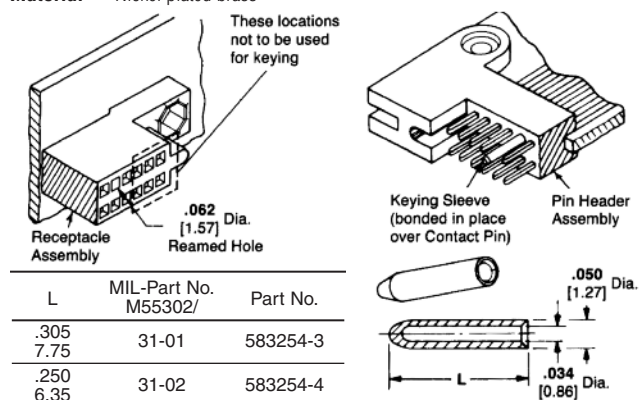
#### Part Number 530346-1

(Consult TE Connectivity for mounting recommendations)

### Keying Sleeve

Keying sleeves, like solid keying pins, are used as an alternative to external keys or when additional keying is required. When the keying sleeve is used on the pin header, the contact must be removed from the receptacle assembly and the cavity reamed to .062 [1.57] diameter.

#### Material — Nickel plated brass



| L    | MIL-Part No. M55302/ | Part No. |
|------|----------------------|----------|
| .305 | 31-01                | 583254-3 |
| 7.75 | —                    | —        |
| .250 | 31-02                | 583254-4 |
| 6.35 | —                    | —        |

## Replacement Contacts — MIL-C-55302 Qualified

### Plating Code

Contacts are plated in various thicknesses. These thicknesses are coded in the charts as follows:

1. — .000030 [0.00076] gold in the contact area, .000100 [0.00254] tin-lead on the tail over .000050 [0.00127] nickel on the entire contact.
2. — .000050 [0.00127] gold in the contact area, .000100 [0.00254] tin-lead on the tail over .000050 [0.00127] nickel on the entire contact.
3. — .000030 [0.00076] gold in the contact area, .000100 [0.00254] tin-lead on the tail over .000030 [0.00076] nickel on the entire contact.
4. — .000050 [0.00127] gold over .000030 [0.00076] nickel.
5. — .000050 [0.00127] gold in the contact area, .000100 [0.00254] tin-lead on the tail over .000030 [0.00076] nickel on the entire contact.
6. — .000030 [0.00076] gold in the contact area, in accordance with MIL-C-55302, .000100 [0.00254] tin-lead on the tails over .000030 [0.00076] nickel on the entire contact.
7. — .000050 [0.00127] gold in the contact area, in accordance with MIL-C-55302 .000100 [0.00254] tin-lead on tails over .000050 [0.00127] nickel on the entire contact.

### Contact Extraction

#### Pin Contacts

Extraction Tool

**Part Number 91156-1**

#### Receptacle Contacts

Extraction Tool

**Part Number 91035-1**

**Military Part Number**

**M81969/9-01**



### Posted Receptacle Contacts

Contact for Rack Mounting

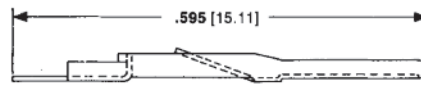
Extraction Tool

Part Number 1-265871-7  
(Extraction Tool Instruction sheet 408-2636)

### Contact for PC Board

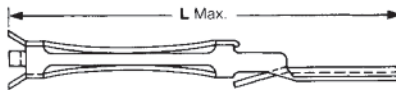
No tool needed — After de-soldering, extract by pressing on post end of contact.

### Pin Contacts

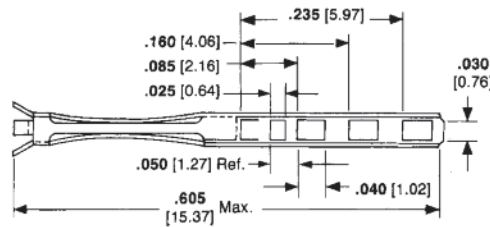


For Straddle Mount Pin Headers

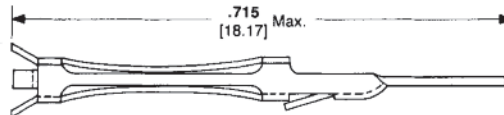
### Receptacle Contacts



**.014 x .019 [0.36 x 0.48]  
Channel Contact**



**Solder Eyelet Contact  
(Max. Wire Size, 26 AWG [0.15mm])**



**.010 x .020 [0.25 x 0.51]  
Posted Contact<sup>1</sup>**

<sup>1</sup>.010 x .020 [0.25 x 0.51] posted contacts are used as replacement contacts in card extender assemblies.

| Plating Code | AMP Part No. |
|--------------|--------------|
| 1            | 202947-2     |
| 2            | 202947-3     |

| Plating Code | AMP Part No. |
|--------------|--------------|
| 3            | 202946-1     |
| 4            | 202946-7     |

| Plating Code | AMP Part No.     |                  |
|--------------|------------------|------------------|
|              | 2-Row Connectors | 3-Row Connectors |
| 5            | 202946-7         | 202946-5         |
| 6            | 202946-1         | 202946-2         |

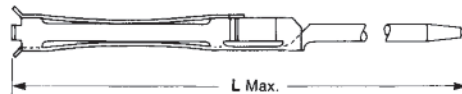
L Length Equals .540 Max. for 2-Row .619 Max for 3-Row

| Plating Code | MIL-Part No. | AMP Part No. |
|--------------|--------------|--------------|
| 5            | —            | —            |
| 6            | —            | —            |
| 7            | M55302/32-01 | 583218-3     |

For 2-Row Only

| Plating Code | AMP Part No. |
|--------------|--------------|
| 3            | 583452-4     |
| 5            | 1-583452-9   |

### Posted Receptacle Contacts



**Wrap-Type Contact for Rack Mounting  
Double Latch .025 x .025 [0.64 x 0.64] Post**



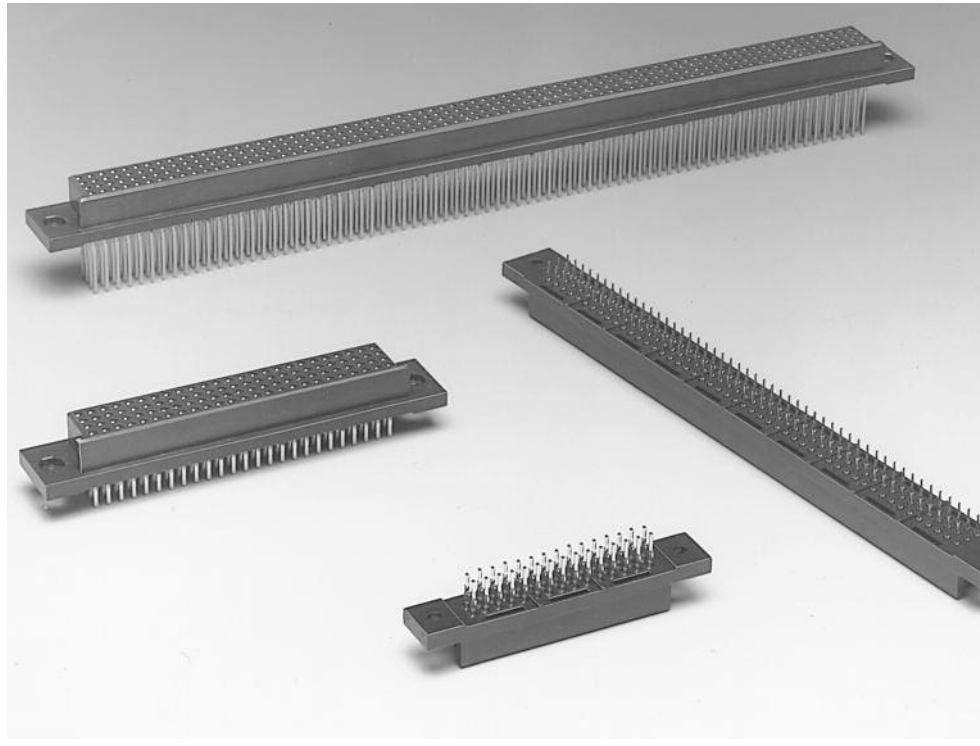
**Wrap-Type Contact for PC Mounting  
Single Latch .022 x .027 [0.56 x 0.69] Post**

| No. Terminations | Dim. L         | For Rack Mount (Double Latch) |                | For PC Mount (Single Latch) |                |              |            |
|------------------|----------------|-------------------------------|----------------|-----------------------------|----------------|--------------|------------|
|                  |                | Plating Code 3                | Plating Code 4 | Plating Code 3              | Plating Code 4 |              |            |
|                  |                | Part No.                      | MIL-Part No.   | Part No.                    | Part No.       | MIL-Part No. | Part No.   |
| 1 High           | .795<br>20.0   | 446629-6                      | M55302/32-05   | 1-446629-4                  | —              | M55302/32-02 | 2-583812-6 |
| 2 High           | .955<br>24.26  | 446629-9                      | M55302/32-06   | 1-446629-6                  | —              | M55302/32-03 | 2-583812-8 |
| 3 High           | 1.115<br>28.32 | 1-446629-2                    | M55302/32-07   | 1-446629-8                  | 583812-9       | M55302/32-04 | 3-583812-0 |

## Vertical Receptacles with ACTION PIN Posts and Solder Post Contacts

### Product Facts

- Horizontal motherboard stacking capability
- Mateable with AMP-HDI pin assemblies
- 4-beam box-type receptacle contact design provides four areas of contact per connection
- Available with ACTION PIN contacts or solder posts
- Inserts into standard .100 [2.54] grid
- Keying system provides 64 combinations without loss of contact count
- High temperature material permits vapor phase reflow soldering
- Low mating forces
- Highly economical for quality and density
- Product Specification 108-9003



TE Connectivity vertical receptacle assemblies, when mated with AMP-HDI pin assemblies, permit horizontal stacking of motherboards. They are available with two, three or four rows of contacts on a .100 [2.54] grid and with a choice of either ACTION PIN posts or solder posts.

The required PC board hole sizes and patterns of these receptacle assemblies allow space-efficient circuitry layout. The box-type, quad redundant receptacle contacts with selective gold plating in the contact area deliver high reliability while maintaining low mating force.

In addition, contact and housing configurations prevent pin damage if a long connector is "peeled" apart from one end.

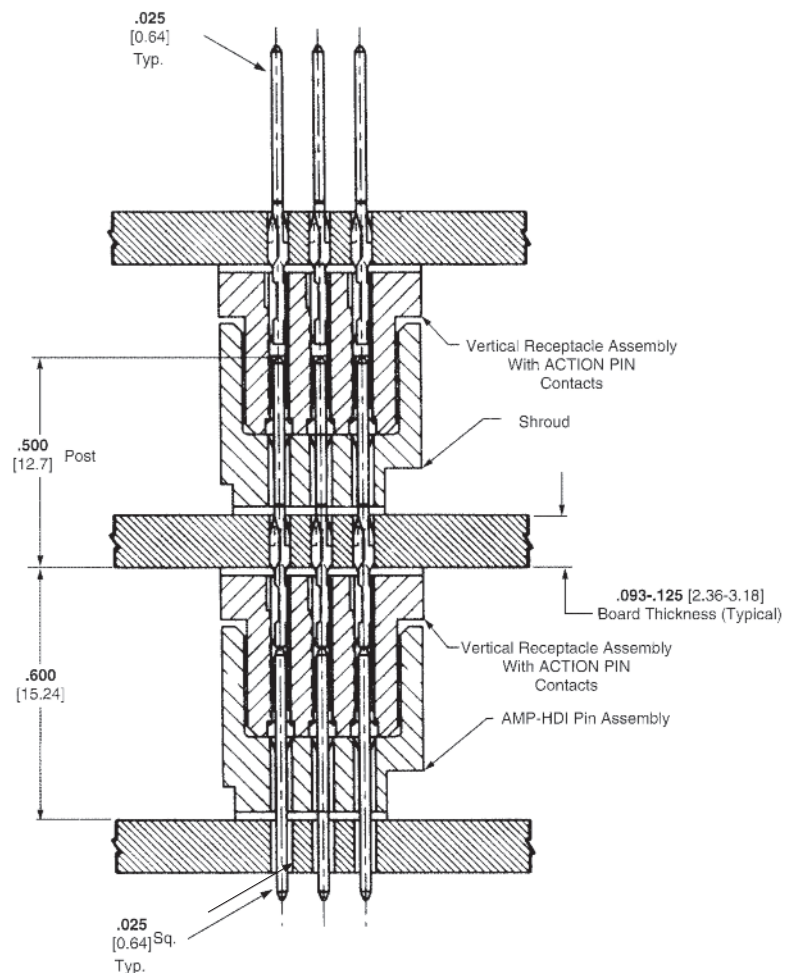
Features such as 64-combination keying and high temperature housing materials add to the appeal of TE vertical receptacle assemblies.

These connectors are highly specialized products for applications demanding their unusual characteristics.



## Horizontal Motherboard Stacking (Not Recommended for MFBL Applications)

Multiple stacking of motherboards on backplanes is readily achieved using TE Connectivity vertical receptacle assemblies and AMP-HDI pin assemblies. This unique board-to-board interconnection concept eliminates exposed contacts inherent with open pin fields. Vertical receptacle assemblies with either ACTION PIN posts or solder posts provide the same low .600 [15.24] stack height between boards.



**Note:** The .600 [15.24] board-to-board stacking height is also achieved using vertical receptacle assemblies with solder posts.



## Four-Row Vertical Receptacle Assemblies Without Guide Holes

### ACTION PIN Posts and Solder Posts

#### Material and Finish

**Housing** — Brown glass-filled polyphenylene sulfide

**Contacts** — ACTION PIN (phosphor bronze), solder (beryllium copper), plated as follows:

**A** .000030 [0.00076] gold in contact area, tin-lead on posts, with entire contact underplated .000050-.000100 [0.00127-0.00254] nickel

**B** Gold flash over .000050-.000100 [0.00127-0.00254] nickel on entire contact, with .000030 [0.00076] gold on contact area and for .200 [5.08] from tip of ACTION PIN post

**C** .000050 [0.00127-0.00254] gold in contact area, tin-lead on posts, with entire contact underplated .000050-.000100 [0.00127-0.00254] nickel

**D** RoHS Part Numbers same as A plating except for tin on posts

#### Related Product Data

##### Mateable Connectors —

##### Vertical Pin Headers —

Base numbers 533435, 533254, 533270, 532448, 532436

##### 90° Pin Headers —

Base numbers 533444, 533286

Consult TE Connectivity for part number details.

##### Accessories —

**Keys** — page 1-92

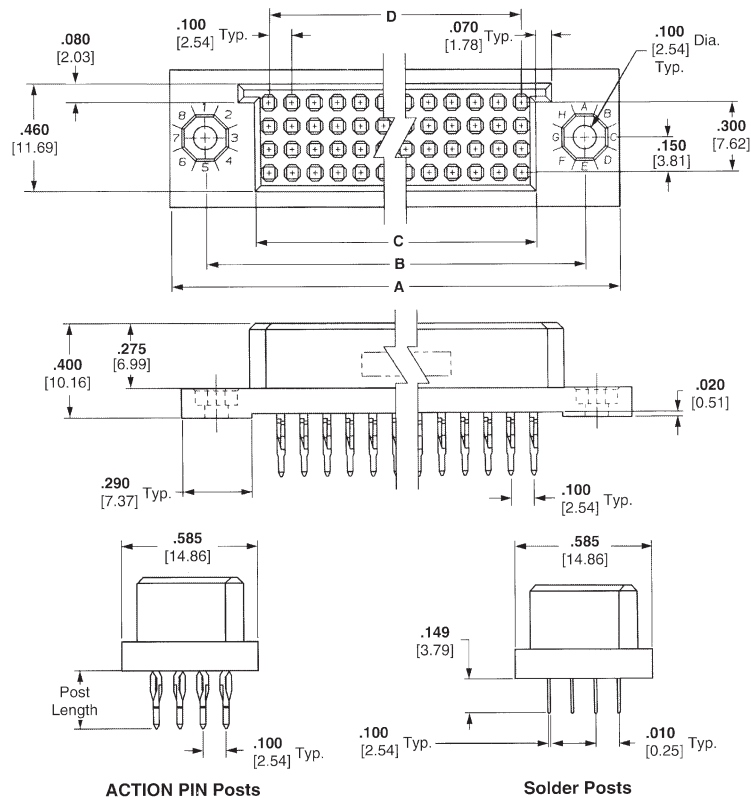
**Jackscrews** — page 1-93

**PCB Hole Layouts** — page 1-88

**Application Tooling** — page 1-91

##### Technical Documents —

Product Specifications  
108-9069, 108-26003  
Application Specification  
114-9010  
Instruction Sheets 408-6927,  
408-6979, 408-6989, 408-9185



| No. of Pos. | Dimensions |        |        |        | Contact Finish | Part Numbers*      |                    |                    |                    |
|-------------|------------|--------|--------|--------|----------------|--------------------|--------------------|--------------------|--------------------|
|             |            |        |        |        |                | ACTION PIN Posts   |                    | Solder Posts       |                    |
|             | A          | B      | C      | D      |                | .500 [12.7] Length | .250 [6.35] Length | .149 [3.78] Length | .180 [4.57] Length |
| 300         | 8.250      | 7.950  | 7.524  | 7.400  | A              | —                  | 1-533427-2         | 1-533285-2         | —                  |
|             | 209.55     | 201.93 | 191.11 | 187.95 | B              | 1-533656-2         | —                  | —                  | —                  |
|             |            |        |        |        | D              | —                  | —                  | 6-533285-2         | —                  |
| 280         | 7.750      | 7.450  | 7.024  | 6.900  | A              | —                  | —                  | 1-533285-1         | —                  |
| 260         | 7.250      | 6.950  | 6.524  | 6.400  | A              | —                  | 1-533427-0         | 1-533285-0         | —                  |
|             | 184.15     | 176.53 | 165.71 | 162.56 | D              | —                  | —                  | 6-533285-0         | —                  |
| 240         | 6.750      | 6.450  | 6.024  | 5.900  | A              | —                  | 533427-9           | 533285-9           | —                  |
|             | 171.45     | 163.83 | 153.01 | 149.86 | B              | 533656-9           | —                  | —                  | —                  |
|             |            |        |        |        | D              | —                  | —                  | 5-533285-9         | —                  |
| 232         | 6.550      | 6.250  | 5.824  | 5.700  | A              | —                  | —                  | —                  | 533499-2           |
|             | 166.37     | 158.75 | 147.93 | 144.78 | D              | —                  | —                  | —                  | 5-533499-2         |
| 216         | 6.150      | 5.850  | 5.424  | 5.300  | A              | —                  | —                  | —                  | 533499-1           |
|             | 156.21     | 148.59 | 137.77 | 134.62 | D              | —                  | —                  | —                  | 5-533499-1         |
| 200         | 5.750      | 5.450  | 5.024  | 4.900  | A              | —                  | —                  | 533285-7           | —                  |
|             | 146.05     | 138.43 | 127.61 | 124.46 | B              | 533656-7           | —                  | —                  | —                  |
|             |            |        |        |        | D              | —                  | —                  | 5-533285-7         | —                  |
| 180         | 5.250      | 4.950  | 4.524  | 4.400  | B              | 533656-6           | —                  | 533285-6           | —                  |
|             | 133.35     | 125.73 | 114.91 | 111.76 | D              | —                  | —                  | 5-533285-6         | —                  |
| 160         | 4.750      | 4.450  | 4.024  | 3.900  | A              | —                  | 533427-5           | 533285-5           | 533492-1           |
|             | 120.65     | 113.03 | 102.21 | 99.06  | C              | —                  | —                  | 650844-1           | —                  |
|             |            |        |        |        | D              | —                  | —                  | 5-533285-5         | —                  |
| 140         | 4.250      | 3.950  | 3.524  | 3.400  | A              | —                  | —                  | 533285-4           | —                  |
| 128         | 3.950      | 3.650  | 3.224  | 3.100  | A              | —                  | 533427-3           | 533285-3           | —                  |
|             | 100.33     | 92.71  | 81.89  | 78.74  | D              | —                  | —                  | 5-533285-3         | —                  |
| 100         | 3.250      | 2.950  | 2.524  | 2.400  | A              | 533694-1           | 533427-1           | 533285-1           | —                  |
|             | 82.55      | 74.93  | 64.11  | 60.96  | B              | 533656-1           | —                  | —                  | —                  |
|             |            |        |        |        | D              | —                  | —                  | 5-533285-1         | —                  |

\*Other connector sizes and solder post lengths can be made available. Consult TE Connectivity.

## Four-Row Vertical Receptacle Assemblies Without Guide Holes (Continued)

### Material and Finish

**Housing** — Natural (brown)  
polyphenylene sulfide

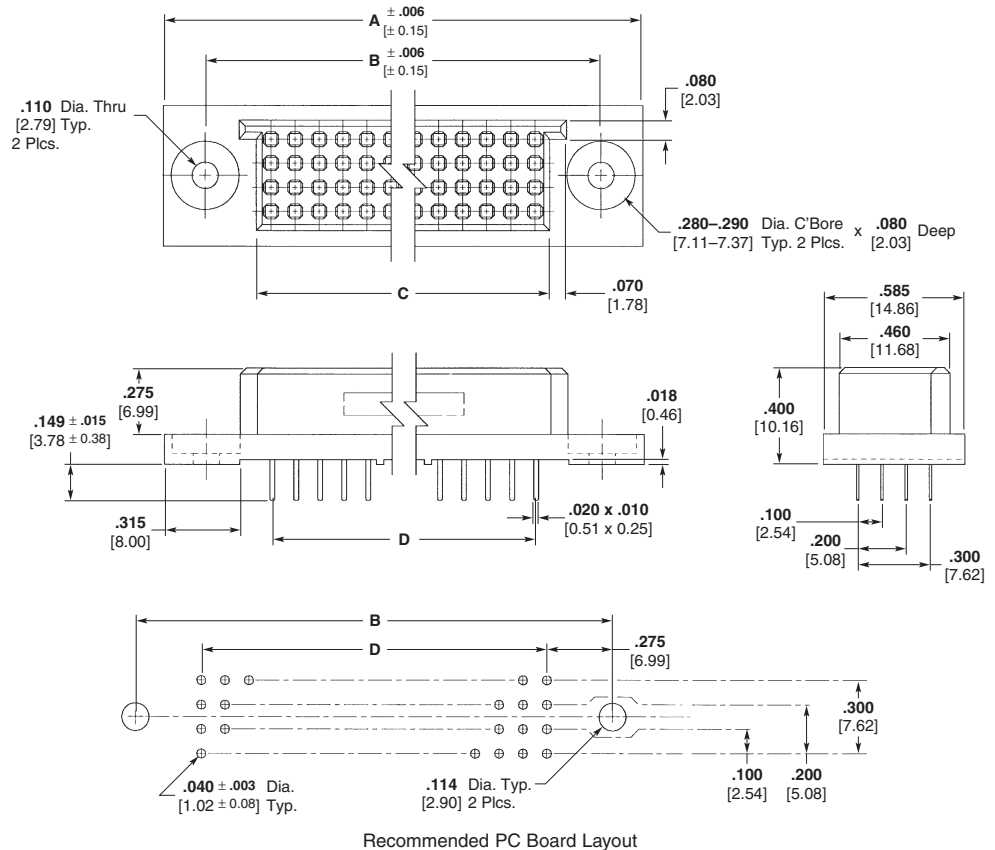
**Contacts** — Beryllium copper,  
.000050–.000100 [0.00127–0.00254]  
nickel underplate over .000030  
[0.00076] gold in contact area, tin-lead  
plated solder tails

### Solder Posts .149 [3.78] Length

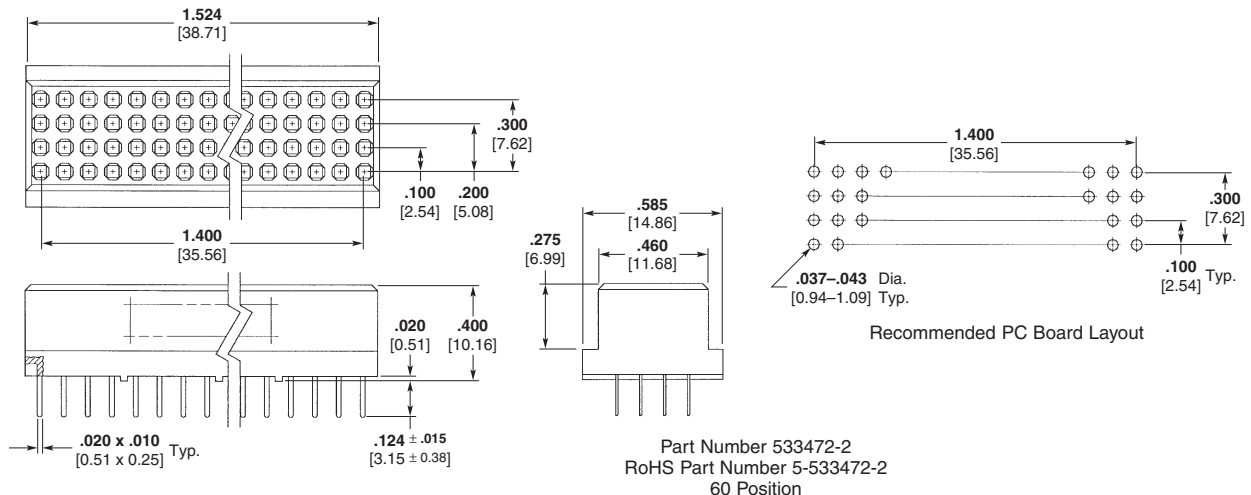
### Mounting Ears Have .285 [7.24] C'Bore x .080 [2.03] Deep

| No. of<br>Pos. | Dimensions      |                 |                 |                 | Contact<br>Finish | Part No. |
|----------------|-----------------|-----------------|-----------------|-----------------|-------------------|----------|
|                | A               | B               | C               | D               |                   |          |
| 192            | 5.600<br>142.24 | 5.450<br>133.35 | 4.824<br>122.53 | 4.700<br>119.38 | A                 | 533484-1 |
| 68             | 2.500<br>63.50  | 2.150<br>54.61  | 1.724<br>43.79  | 1.600<br>40.64  | A                 | 533484-2 |

### With Special Mounting Ears



### Without Mounting Ears



## Three-Row Vertical Receptacle Assemblies Without Guide Holes

### ACTION PIN Posts and Solder Posts

#### Material and Finish

**Housing** — Brown glass-filled polyphenylene sulfide

**Contacts** — ACTION PIN (phosphor bronze), solder (beryllium copper), plated as follows:

**A** .000030 [0.00076] gold in contact area; tin-lead on posts, with entire contact underplated .000050-.000100 [0.00127-0.00254] nickel

**B** Gold flash over .000050-.000100 [0.00127-0.00254] nickel on entire contact, with .000030 [0.00076] gold on contact area and for .200 [5.08] from tip of ACTION PIN post

**C** RoHS Part Numbers same as A plating except for tin on posts

#### Related Product Data

**Mateable Connectors** —

**Vertical Pin Headers** —

Base numbers 532432, 533061, 533093, 532447, 532433

**90° Pin Headers** —

Base numbers 533420, 533288

Consult TE Connectivity for part number details.

**Accessories** —

**Keys** — page 1-92

**Jackscrews** — page 1-93

**PCB Hole Layouts** — page 1-89

**Application Tooling** — page 1-91

**Technical Documents** —

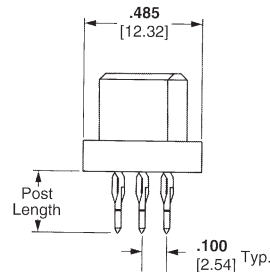
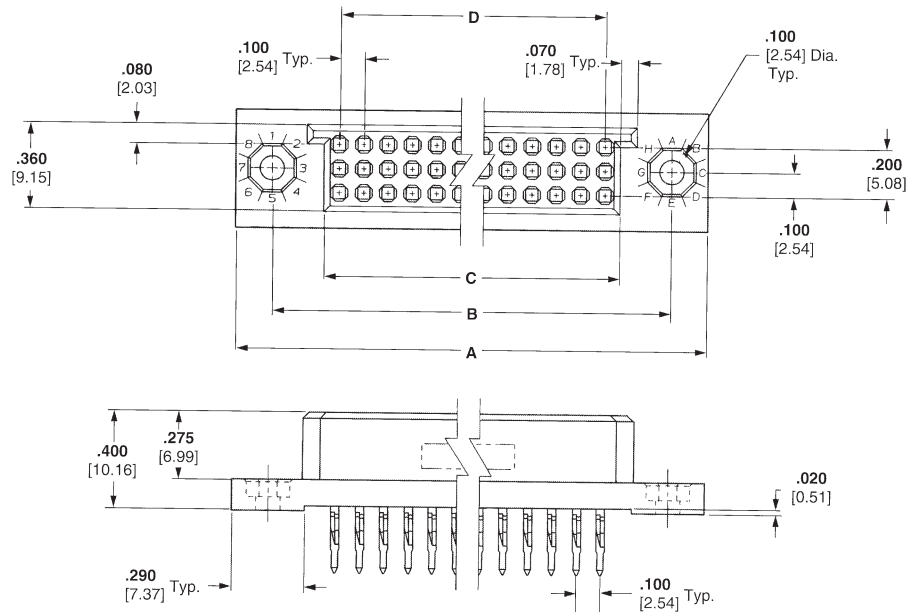
Product Specifications

108-9069, 108-26003

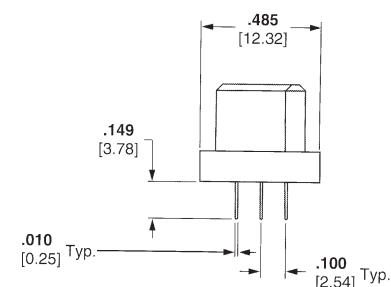
Application Specification 114-9010

Instruction Sheets 408-6927,

408-6981, 408-6989, 408-9185



ACTION PIN Posts



Solder Posts

| No. of Pos. | Dimensions      |                 |                 |                 | Contact Finish | Part Numbers*      |                    |                    |
|-------------|-----------------|-----------------|-----------------|-----------------|----------------|--------------------|--------------------|--------------------|
|             | A               | B               | C               | D               |                | ACTION PIN Posts   | Solder Posts       |                    |
|             |                 |                 |                 |                 |                | .250 [6.35] Length | .149 [3.78] Length | .180 [4.57] Length |
| 174         | 6.550<br>166.37 | 6.250<br>158.75 | 5.824<br>147.93 | 5.700<br>144.78 | A              | —                  | —                  | 533495-3           |
|             |                 |                 |                 |                 | C              | —                  | —                  | 5-533495-3         |
| 150         | 5.750<br>146.05 | 5.450<br>138.43 | 5.024<br>127.61 | 4.900<br>124.46 | A              | 533657-7           | 533287-7           | —                  |
|             |                 |                 |                 |                 | B              | —                  | —                  | 533495-2           |
|             |                 |                 |                 |                 | C              | —                  | 5-533287-7         | 5-533495-2         |
| 120         | 4.750<br>120.65 | 4.450<br>113.03 | 4.024<br>102.21 | 3.900<br>99.06  | A              | 533657-5           | 533287-5           | —                  |
| 105         | 4.250<br>101.95 | 3.950<br>100.33 | 3.524<br>89.51  | 3.400<br>86.36  | A              | —                  | 533287-4           | —                  |
|             |                 |                 |                 |                 | C              | —                  | 5-533287-4         | —                  |
| 96          | 3.950<br>100.33 | 3.650<br>92.71  | 3.224<br>81.89  | 3.100<br>78.74  | A              | —                  | 533287-3           | —                  |
|             |                 |                 |                 |                 | C              | —                  | 5-533287-3         | —                  |

\*Other connector sizes and solder post lengths can be made available, consult TE Connectivity.

## Two-Row Vertical Receptacle Assemblies Without Guide Holes

### ACTION PIN Posts and Solder Posts

#### Material and Finish

**Housing** — Brown glass-filled polyphenylene sulfide

**Contacts** — ACTION PIN (phosphor bronze), solder (beryllium copper), plated as follows:

**A** .000030 [0.00076] gold in contact area, tin-lead on posts, with entire contact underplated .000050-.000100 [0.00127-0.00254] nickel

**B** Gold flash over .000050-.000100 [0.00127-0.00254] nickel on entire contact, with .000030 [0.00076] gold on contact area and for .200 [5.08] from tip of ACTION PIN post

**C** RoHS Part Numbers same as A plating except for tin on posts

#### Related Product Data

**Mateable Connectors** —

**Vertical Pin Headers** —

Base numbers 533060, 532446, 532430, 532091, 532430

**90° Pin Headers** —

Base numbers 533515, 533295

Consult TE Connectivity for part number details.

**Accessories** —

**Keys** — page 1-92

**Jackscrews** — page 1-93

**PCB Hole Layouts** — page 1-89

**Application Tooling** — page 1-91

**Technical Documents** —

Product Specifications

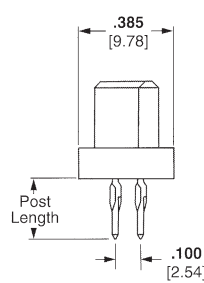
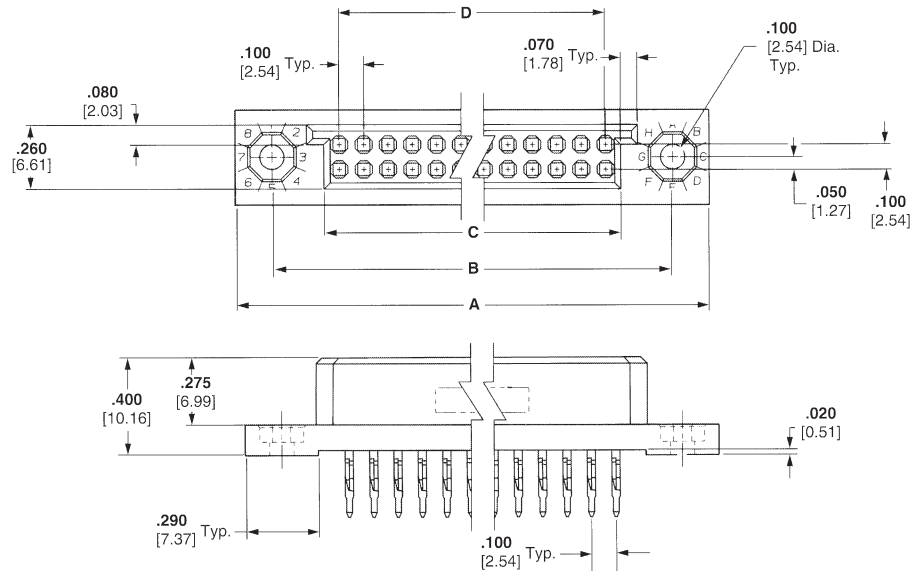
108-9069, 108-26003

Application Specification

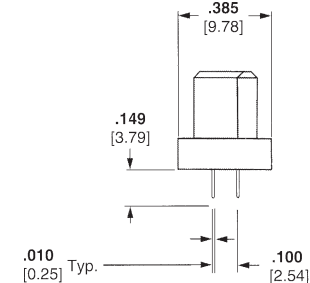
114-9010

Instruction Sheets 408-6927,

408-6980, 408-6989, 408-9185



ACTION PIN Posts



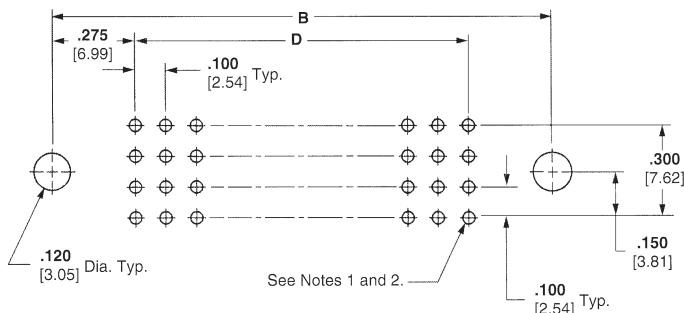
Solder Posts

| No. of Pos. | Dimensions       |                  |                  |                 | Contact Finish | Part Numbers*      |                    |              |
|-------------|------------------|------------------|------------------|-----------------|----------------|--------------------|--------------------|--------------|
|             | A                | B                | C                | D               |                | ACTION PIN Posts   |                    | Solder Posts |
|             |                  |                  |                  |                 |                | .500 [12.7] Length | .250 [6.35] Length |              |
| 200         | 10.750<br>273.05 | 10.450<br>265.43 | 10.024<br>254.61 | 9.900<br>251.46 | A              | —                  | 1-533650-9         | —            |
| 80          | 4.750<br>120.65  | 4.450<br>113.03  | 4.024<br>102.21  | 3.900<br>99.06  | B              | 533693-7           | —                  | —            |
| 60          | 3.750<br>95.25   | 3.450<br>87.63   | 3.024<br>76.81   | 2.900<br>73.66  | A              | —                  | —                  | 533289-5     |
|             |                  |                  |                  |                 | C              | —                  | —                  | 5-533289-5   |
| 40          | 2.750<br>69.85   | 2.450<br>62.23   | 2.024<br>51.41   | 1.900<br>48.26  | A              | 533693-3           | —                  | 533289-3     |
| 20          | 1.750<br>44.45   | 1.450<br>36.83   | 1.024<br>26.10   | .900<br>22.86   | A              | —                  | —                  | 533289-1     |

\*Other connector sizes and solder post lengths can be made available, consult TE Connectivity.

## Recommended Printed Circuit Board Hole Layouts

### Four-Row Receptacle Assemblies Without Guide Holes



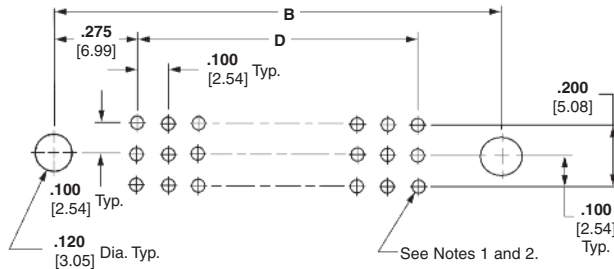
Vertical Receptacle Assemblies  
with ACTION PIN Contacts and Solder Posts

- Notes:** 1. ACTION PIN posts require .093 [2.36] min. thick PC board. For ACTION PIN post plated-through hole specifications, see page 1-90.  
2. Plated-through hole diameter for solder posts is .037-.043 [0.94-1.09]; recommended pad diameter is hole diameter plus .020 [0.51].

| No. of<br>Pos. | Dimensions             |                        |
|----------------|------------------------|------------------------|
|                | B                      | D                      |
| 300            | <b>7.950</b><br>201.93 | <b>7.400</b><br>187.96 |
| 280            | <b>7.450</b><br>189.23 | <b>6.900</b><br>175.26 |
| 260            | <b>6.950</b><br>176.53 | <b>6.400</b><br>162.56 |
| 240            | <b>6.450</b><br>163.83 | <b>5.900</b><br>149.86 |
| 232            | <b>6.250</b><br>166.37 | <b>5.700</b><br>144.78 |
| 216            | <b>5.850</b><br>148.59 | <b>5.300</b><br>134.62 |
| 200            | <b>5.450</b><br>138.43 | <b>4.900</b><br>124.46 |
| 180            | <b>4.950</b><br>125.73 | <b>4.400</b><br>111.76 |
| 160            | <b>4.450</b><br>113.03 | <b>3.900</b><br>99.06  |
| 140            | <b>3.950</b><br>100.33 | <b>3.400</b><br>86.36  |
| 128            | <b>3.650</b><br>92.71  | <b>3.100</b><br>78.74  |
| 120            | <b>3.450</b><br>87.63  | <b>2.900</b><br>73.66  |
| 100            | <b>2.950</b><br>74.93  | <b>2.400</b><br>60.96  |
| 40             | <b>1.450</b><br>36.83  | <b>.900</b><br>22.86   |

## Recommended Printed Circuit Board Hole Layouts (Continued)

### Three-Row Receptacle Assemblies Without Guide Holes

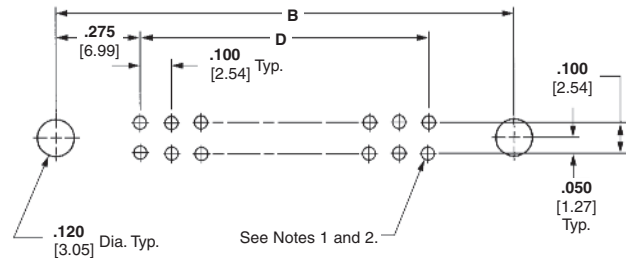


#### Vertical Receptacle Assemblies with ACTION PIN Contacts and Solder Posts

- Notes:** 1. ACTION PIN posts require .093 [2.36] min. thick PC board.  
For ACTION PIN post plated-through hole specifications, see page 1-90.  
2. Plated-through hole diameter for solder posts is .037-.043 [0.94-1.09];  
recommended pad diameter is hole diameter plus .020 [0.51].

| No. of<br>Pos. | Dimensions             |                        |
|----------------|------------------------|------------------------|
|                | B                      | D                      |
| 174            | <b>6.250</b><br>158.75 | <b>5.700</b><br>144.78 |
| 150            | <b>5.450</b><br>138.43 | <b>4.900</b><br>124.46 |
| 120            | <b>4.450</b><br>113.03 | <b>3.900</b><br>99.06  |
| 105            | <b>3.950</b><br>100.33 | <b>3.400</b><br>86.36  |
| 96             | <b>3.650</b><br>92.71  | <b>3.100</b><br>78.74  |

### Two-Row Receptacle Assemblies Without Guide Holes



#### Vertical Receptacle Assemblies with ACTION PIN Contacts and Solder Posts

- Notes:** 1. ACTION PIN posts require .093 [2.36] min. thick PC board.  
For ACTION PIN post plated-through hole specifications, see page 1-90.  
2. Plated-through hole diameter for solder posts is .037-.043 [0.94-1.09];  
recommended pad diameter is hole diameter plus .020 [0.51].

| No. of<br>Pos. | Dimensions              |                        |
|----------------|-------------------------|------------------------|
|                | B                       | D                      |
| 200            | <b>10.450</b><br>265.43 | <b>9.900</b><br>251.46 |
| 80             | <b>4.450</b><br>113.03  | <b>3.900</b><br>99.06  |
| 60             | <b>3.450</b><br>87.63   | <b>2.900</b><br>73.66  |
| 40             | <b>2.450</b><br>62.23   | <b>1.900</b><br>48.26  |
| 30             | <b>1.950</b><br>49.53   | <b>1.400</b><br>35.56  |
| 20             | <b>1.450</b><br>36.83   | <b>.900</b><br>22.86   |



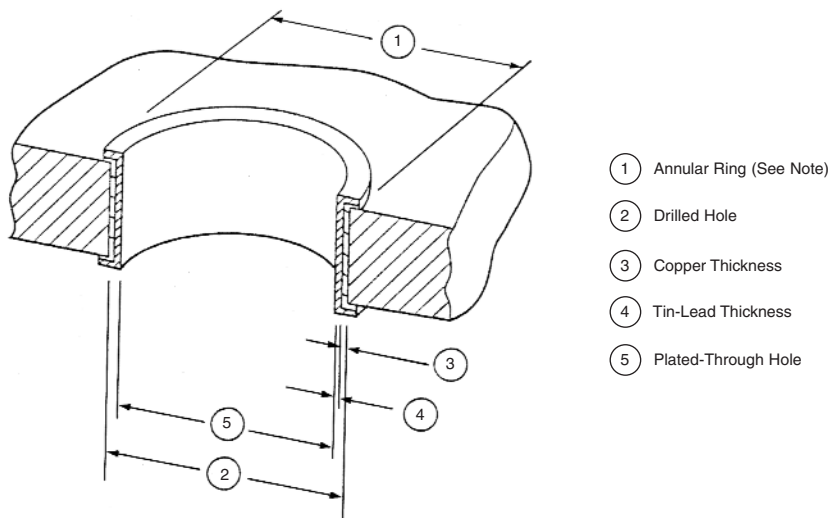
## ACTION PIN Press-Fit Contacts



ACTION PIN contacts provide a reliable press-fit connection. Localized pressure in the interface area promotes oxide breakthrough and prevents corrosion in harsh environments to provide a reliable connection. Also, radial and axial distortion are controlled to meet today's standards for multilayer board applications.

### PC Board Thickness

ACTION PIN contacts are designed for use in a variety of PC board thicknesses. However, certain ACTION PIN contacts are to be used in specific ranges of board thicknesses. For optimum performance, the recommended board thicknesses provided with the connector being used must be followed.



### ACTION PIN Contact/PC Board Applications

| Connector Type                 | ACTION PIN                 |                          | Plating Thicknesses    |                     | Plated-Through Hole Diameter | Radial Hole Distortion |               |
|--------------------------------|----------------------------|--------------------------|------------------------|---------------------|------------------------------|------------------------|---------------|
|                                | Contact Material Thickness | Drilled Hole Diameter    | Copper *               | Tin-Lead            |                              | Average                | Maximum       |
| Vertical Receptacle Assemblies | .025<br>0.64               | .0453±.001<br>1.151±0.03 | .001-.003<br>0.03-0.08 | .0003 Min.<br>0.008 | .037-.043<br>0.94-1.09       | Not Specified          | Not Specified |

\*Maximum hardness of copper layer is 150 Knoop

**Note:** Recommended annular ring diameter is hole diameter plus .020 [0.51]

## Application Tooling

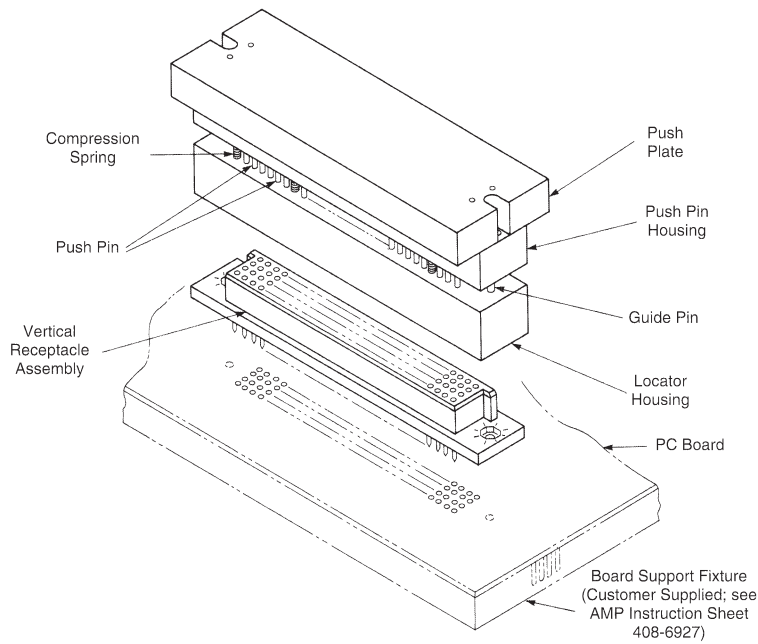
Receptacle assemblies with ACTION PIN contacts allow high speed, solderless backplane construction through reliable press-fit application. Press fitting connectors to printed circuit boards requires special seating tools which transfer application force directly to the contacts.

Each spring-loaded seating tool features a push plate, push pin housing, and locator housing. The push plate provides the bearing surface for the application tooling which forces the ACTION PIN posts into the PC board. The push pin housing holds the same number of push pins as the connector size (no. of contact positions). The locator housing fits over the connector body to align the components for proper seating. Compression springs (approximately one for every seven contacts) and guide pins (one at each end) provide tool alignment and stability.

Board support fixtures are used to support PC boards or backplanes while connectors are being assembled to the boards or backplanes. TE Connectivity Instruction Sheet 408-6927 provides recommendations for manufacturing board support fixtures.

Force applied to the tool to seat the connectors can be provided by the TE seating machines shown below, or by commercially available hand-operated arbor presses such as Greenerd 3A or 3B. Refer to Instruction Sheet 408-9027 for use of TE adapter kits with these presses.

For tooling information, contact Technical Support.



| Receptacle Assembly Configuration |                 |                   | Seating Tool Numbers |
|-----------------------------------|-----------------|-------------------|----------------------|
| No. of Rows                       | No. of Pins/Row | Total No. of Pins |                      |
| Four (without Guide Holes)        | 25              | 100               | 58279-2              |
|                                   | 30              | 120               | 58279-4              |
|                                   | 32              | 128               | 58279-8              |
|                                   | 35              | 140               | 58279-9              |
|                                   | 45              | 180               | 58279-5              |
|                                   | 60              | 240               | 58279-3              |
|                                   | 65              | 260               | 58279-7              |
|                                   | 67              | 268               | 58279-1              |
| Three (without Guide Holes)       | 75              | 300               | 58279-6              |
|                                   | 32              | 96                | 58277-2              |
|                                   | 33              | 99                | 58277-3              |
|                                   | 50              | 150               | 58277-4              |
| Two (without Guide Holes)         | 67              | 201               | 58277-1              |
|                                   | 15              | 30                | 58280-4              |
|                                   | 28              | 56                | 58280-1              |
|                                   | 35              | 70                | 58280-6              |
|                                   | 60              | 120               | 58280-5              |
|                                   | 67              | 134               | 58280-2              |
|                                   | 70              | 140               | 58280-3              |



**MANTA Servo Electric Press**

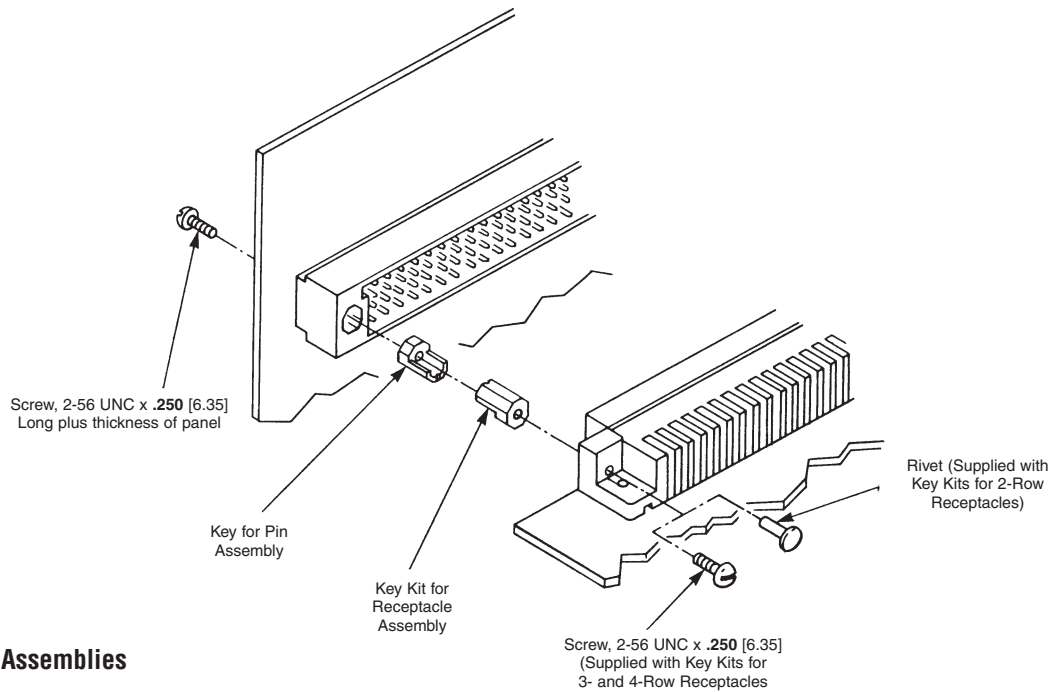
Electric Servo Press created to satisfy the increasing need for a "Low Cost" method of controlled connector pressing into today's complex circuit boards. The MANTA can precisely control force and speed of each pressing cycle. Quality feedback is accessible in the form of SPC analysis, display, and reports. The "C-Frame" design, with a 12-inch throat depth, accommodates a wide range of smaller printed circuit boards.



**BMEP-3T/5T Bench Top Electric Servo Press (3 or 5 ton)**

PC-controlled, cost effective bench mounted machine for semi-automatic pressing of ACTION PIN (Compliant Pin, Pressfit) connectors into printed circuit boards. The pressing force is delivered by an all-electric servomotor, providing precise control of force, speed, and seating height. A touch screen monitor provides a user-friendly interface and a bar code scanner provides PCB serial number input for product tracking.

## Keying Hardware and Applications



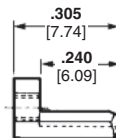
### Keys for Pin Assemblies

#### Material and Finish

Passivated Stainless Steel

**Key Part Number 530341-1**

**Key Part Number 530341-6**  
(contains 2 per package)



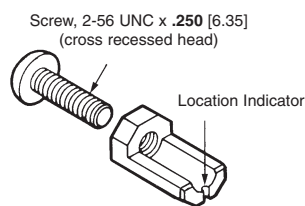
**Note:** Customer must supply screws; .250 [6.35] min. long, plus thickness of panel.

### Key Kits for Three- and Four-Row Receptacles

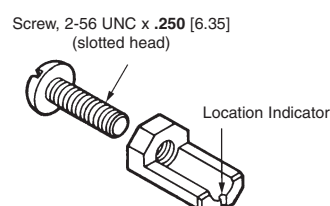
#### Material and Finish

**Key** — Passivated Stainless Steel

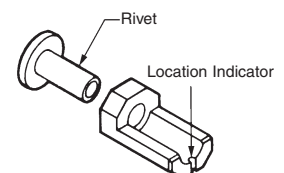
**Screw** — Passivated Stainless Steel



**Kit Number 530341-7**  
(includes 2 keys and 2 screws)



**Kit Number 530341-3**  
(includes 2 keys and 2 screws)



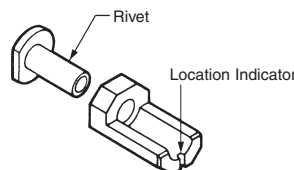
**Kit Number 530341-5**  
(includes 2 keys and 2 rivets)  
Note: Use Clinching Tool Number 91117-3  
(See Instruction Sheet 408-6626.)

### Key Kit for Two-Row Receptacles

#### Material and Finish

**Key** — Passivated Stainless Steel

**Rivet** — Nickel plated brass

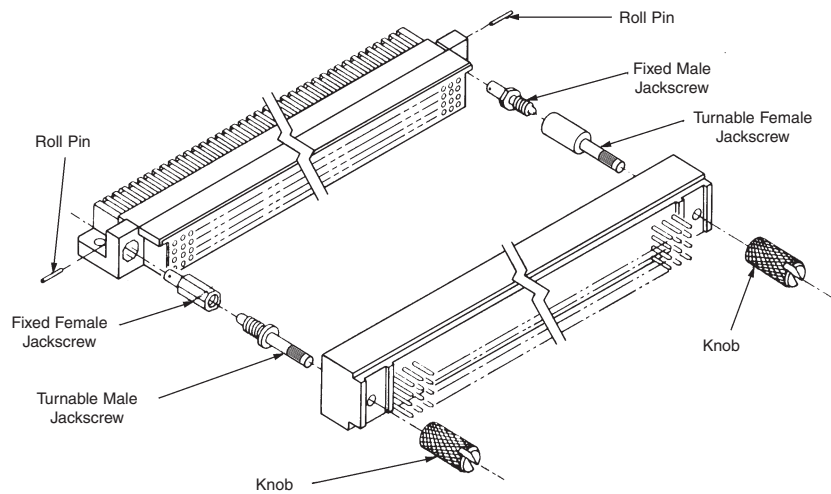


**Kit Number 530341-4**  
(includes 2 keys and 2 rivets)  
Note: Use Clinching Tool Number 91117-5  
(See Instruction Sheet 408-9178.)

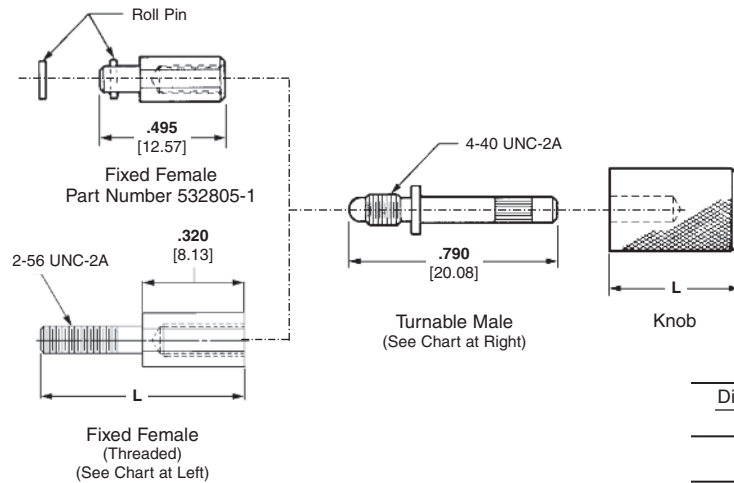
## Mating Hardware and Applications

### Jackscrews for Three- and Four-Row Connectors Only

See Instruction Sheet 408-6909.



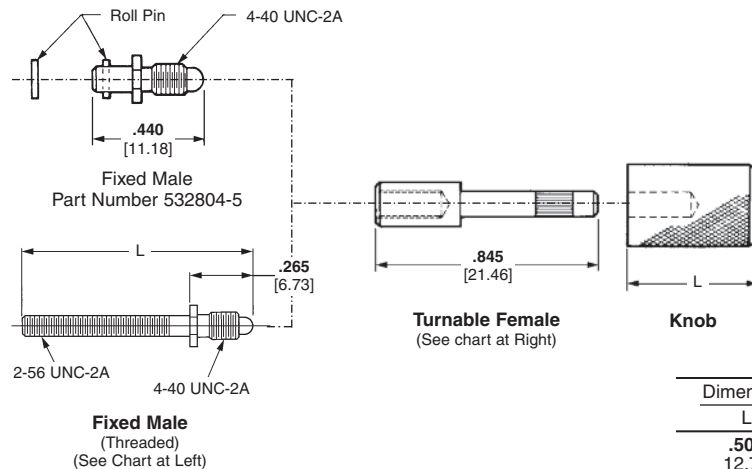
| Dimension<br>L       | Material<br>and<br>Finish     | Fixed Female<br>(Threaded)<br>Part Numbers |
|----------------------|-------------------------------|--------------------------------------------|
| <b>.750</b><br>19.05 | Plain<br>Stainless Steel      | 533424-1                                   |
|                      | Passivated<br>Stainless Steel | 533424-2                                   |
| <b>.625</b><br>15.88 | Plain<br>Stainless Steel      | 533424-3                                   |
|                      | Passivated<br>Stainless Steel | 533424-4                                   |
| <b>.525</b><br>14.61 | Plain<br>Stainless Steel      | 533424-5                                   |
|                      | Passivated<br>Stainless Steel | 533424-6                                   |



| Dimension<br>L       | Turnable Male<br>Part Numbers |
|----------------------|-------------------------------|
| <b>.500</b><br>12.70 | 532805-3*                     |

\*Knob with screwdriver slot

| Dimension<br>L       | Material<br>and<br>Finish     | Fixed Male<br>(Threaded)<br>Part Numbers |
|----------------------|-------------------------------|------------------------------------------|
| <b>.695</b><br>17.65 | Plain<br>Stainless Steel      | 533423-1                                 |
|                      | Passivated<br>Stainless Steel | 533423-2                                 |
| <b>.960</b><br>24.38 | Plain<br>Stainless Steel      | 533423-3                                 |



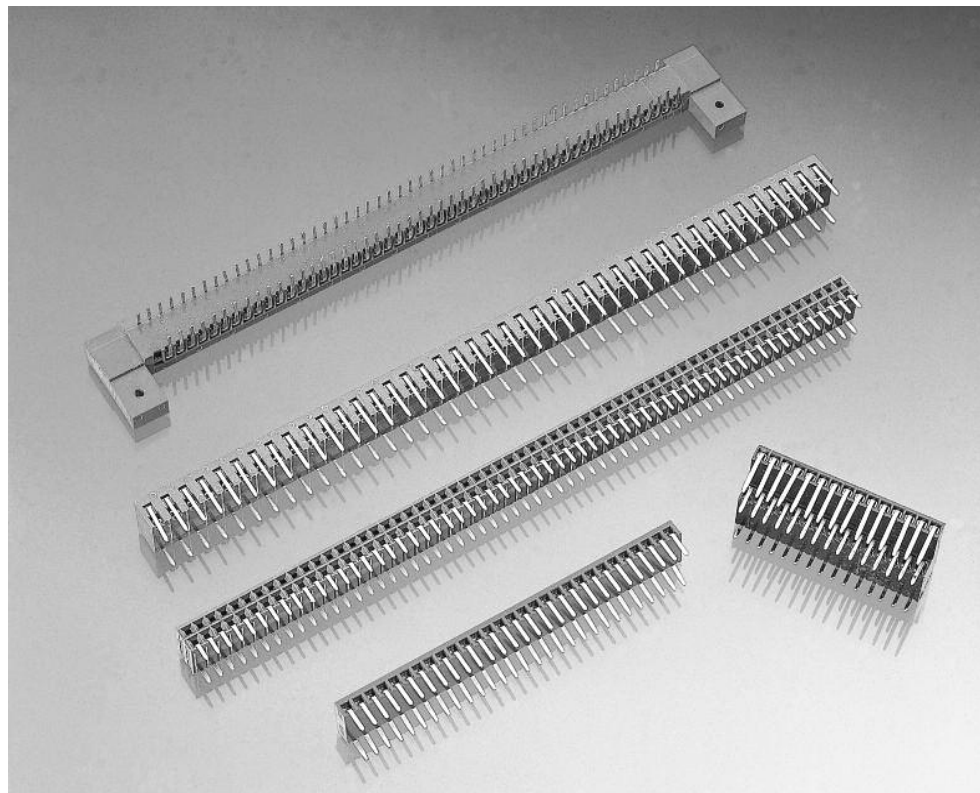
| Dimension<br>L       | Turnable Male<br>Part Numbers |
|----------------------|-------------------------------|
| <b>.500</b><br>12.70 | 532804-3*                     |

\*Knob with screwdriver slot

## Introduction

### Product Facts

- Qualified to MIL-C-55302/127 and /128
- Mates with .025 x .025 [0.64 x 0.64] posts
- Dual cantilever spring contact design and built-in anti-overstress
- Wide misalignment tolerances
- One-piece phosphor bronze contacts, plated gold over nickel per MIL-C-55302
- .100 [2.54] centerline spacing
- Choice of single or double row assemblies
- Assemblies available for .062 [1.57] or .093 [2.36] thick PC boards
- Special right-angle receptacle configurations available



AMPMODU Receptacle Assemblies per MIL-C-55302 are specifically designed to meet today's need for a reliable, modular inter-connection system for advanced electronic packaging.

These right-angle assemblies mate with the electronic industry's popular, .025 x .025 [0.64 x 0.64] posts. This means that the AMPMODU Connector system may be used with a host of applications ... from individual PC board mount posts to complex post headers and connectors.

Housings are made of blue diallyl phthalate, 94V-0 rated thermoplastic, and are pre-loaded with phosphor bronze contacts, plated .000050 [0.00127] gold over .000050 [0.00127] nickel per MIL-C-55302. A special AMPMODU Receptacle Assembly is available for high temperature requirements. This double row, right-angle assembly has a housing made of polyphenylene sulfide (PPS) GST-40F, per MIL-M-24519 with a choice of contact platings.

Keying plugs are available for all assembly configurations.

### Technical Features

**Center Spacing** — 0.100 [2.54]

**Housing Materials** — Polyphenylene sulfide or diallyl phthalate

**Flammability Rating** — 94 V-0

**Contact Material** — Phosphor bronze

**Contact Finish** — .000050 [0.00127] Gold or gold flash

**Temperature Range** — -85° to 257°F [-65° to 125°C]

**Current Rating** — 3 amp max.

**Termination Resistance (max)** — 12 milliohms max.

### Performance Characteristics

**Dielectric Withstand Voltage** — 750 Vac at sea level

**Insulation Resistance** — 5000 megohms minimum

**Contact Insertion Force** — 6 oz. [1.67 N] max. per contact

**Durability** — 500 cycles

**Vibration** — MIL-STD-1344 method 2005 Cond III (15G)

**Physical Shock** — MIL-STD-1344 method 2004 Cond G (100G)

**Thermal Shock** — MIL-STD-1344 method 1003 Cond A

**Temperature Humidity** — MIL-STD-1344 method 1002 Type II

### Technical Documents

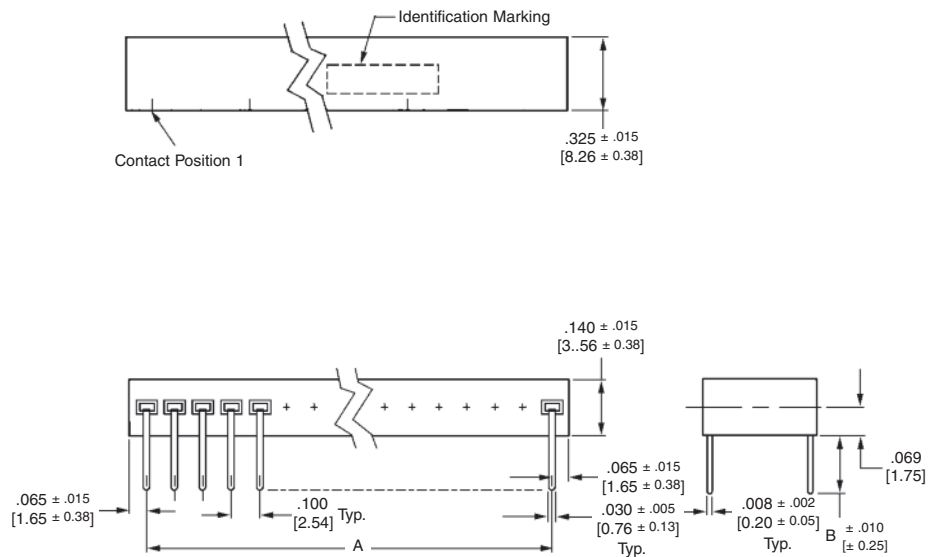
Application spec. 114-25018

## Receptacle Assemblies, Single Row

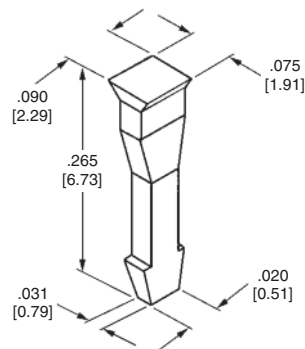
### Material and Finish

**Housing** — In accordance with MIL-C-55302 or MIL-M-24519 type GST-40F

**Contacts** — In accordance with MIL-C-55302



| No. of Pos. | Dimensions     |              | Board Thickness | Military Part No M55302/127- | AMP Part No. |
|-------------|----------------|--------------|-----------------|------------------------------|--------------|
|             | A              | B            |                 |                              |              |
| 2           | .100<br>2.54   | .175<br>4.45 | .125<br>3.18    | 023B                         | 102275-1     |
| 3           | .200<br>5.08   | .175<br>4.45 | .125<br>3.18    | 033B                         | 102275-2     |
| 4           | .300<br>7.62   | .175<br>4.45 | .125<br>3.18    | 043B                         | 102275-3     |
| 5           | .400<br>10.16  | .175<br>4.45 | .125<br>3.18    | 053B                         | 102275-4     |
| 6           | .500<br>12.70  | .115<br>2.92 | .062<br>1.57    | 061B                         | 87968-5      |
| 7           | .600<br>15.24  | .175<br>4.45 | .125<br>3.18    | 073B                         | 102275-6     |
| 8           | .700<br>17.78  | .175<br>4.45 | .125<br>3.18    | 083B                         | 102275-7     |
| 9           | .800<br>20.32  | .175<br>4.45 | .125<br>3.18    | 093B                         | 102275-8     |
| 10          | .900<br>22.86  | .175<br>4.45 | .125<br>3.18    | 103B                         | 102275-9     |
| 11          | 1.000<br>25.40 | .175<br>4.45 | .125<br>3.18    | 113B                         | 1-102275-0   |

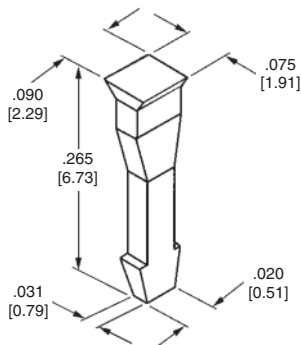


**Keying Plug —**  
**Military Part Number**  
**M55302/127-00KY**  
**Part Number 102188-1**



## Receptacle Assemblies, Single Row (Continued)

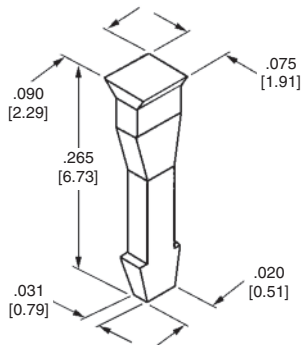
| No. of Pos. | Dimensions     |              | Board Thickness | Military Part No M55302/127- | AMP Part No. |
|-------------|----------------|--------------|-----------------|------------------------------|--------------|
|             | A              | B            |                 |                              |              |
| 12          | 1.100<br>27.94 | .175<br>4.45 | .125<br>3.18    | 123B                         | 1-102275-1   |
| 13          | 1.200<br>30.48 | .175<br>4.45 | .125<br>3.18    | 133B                         | 1-102275-2   |
| 15          | 1.400<br>35.56 | .175<br>4.45 | .125<br>3.18    | 153B                         | 1-102275-4   |
| 16          | 1.500<br>38.10 | .175<br>4.45 | .125<br>3.18    | 163B                         | 1-102275-5   |
| 17          | 1.600<br>40.64 | .175<br>4.45 | .125<br>3.18    | 173B                         | 1-102275-6   |
| 18          | 1.700<br>43.18 | .175<br>4.45 | .125<br>3.18    | 183B                         | 1-102275-7   |
| 19          | 1.800<br>45.72 | .175<br>4.45 | .125<br>3.18    | 193B                         | 1-102275-8   |
| 20          | 1.900<br>48.26 | .175<br>4.45 | .125<br>3.18    | 203B                         | 1-102275-9   |
| 21          | 2.000          | .145<br>3.68 | .093<br>2.36    | 212B                         | 2-87971-0    |
|             | 50.80          | .175<br>4.45 | .125<br>3.18    | 213B                         | 2-102275-0   |
| 22          | 2.100<br>5.34  | .175<br>4.45 | .125<br>3.18    | 223B                         | 2-102275-1   |
| 23          | 2.200<br>55.88 | .175<br>4.45 | .125<br>3.18    | 233B                         | 2-102275-2   |
| 24          | 2.300<br>58.42 | .175<br>4.45 | .125<br>3.18    | 243B                         | 2-102275-3   |
| 25          | 2.400<br>60.96 | .175<br>4.45 | .125<br>3.18    | 253B                         | 2-102275-4   |
| 26          | 2.500          | .175<br>4.45 | .125<br>3.18    | 263B                         | 2-102275-5   |
| 27          | 2.600          | .145<br>3.68 | .093<br>2.36    | 272B                         | 2-87971-6    |
|             | 66.04          | .175<br>4.45 | .125<br>3.18    | 273B                         | 2-102275-6   |
| 28          | 2.700<br>68.58 | .175<br>4.45 | .125<br>3.18    | 283B                         | 2-102275-7   |
| 29          | 2.800<br>71.12 | .175<br>4.45 | .125<br>3.18    | 293B                         | 2-102275-8   |
| 30          | 2.900<br>73.66 | .175<br>4.45 | .125<br>3.18    | 303B                         | 2-102275-9   |
| 31          | 3.000<br>76.20 | .175<br>4.45 | .125<br>3.18    | 313B                         | 3-102275-0   |
| 32          | 3.100<br>78.74 | .175<br>4.45 | .125<br>3.18    | 323B                         | 3-102275-1   |
| 33          | 3.200<br>81.28 | .175<br>4.45 | .125<br>3.18    | 333B                         | 3-102275-2   |
| 34          | 3.300<br>83.82 | .175<br>4.45 | .125<br>3.18    | 343B                         | 3-102275-3   |
| 35          | 3.400<br>86.36 | .175<br>4.45 | .125<br>3.18    | 353B                         | 3-102275-4   |
| 36          | 3.500<br>88.90 | .175<br>4.45 | .125<br>3.18    | 363B                         | 3-102275-5   |
| 37          | 3.600<br>91.44 | .175<br>4.45 | .125<br>4.45    | 373B                         | 3-102275-6   |
| 38          | 3.700<br>93.98 | .175<br>4.45 | .125<br>3.18    | 383B                         | 3-102275-7   |
| 39          | 3.800<br>96.52 | .175<br>4.45 | .125<br>3.18    | 393B                         | 3-102275-8   |



**Keying Plug —**  
**Military Part Number**  
**M55302/127-00KY**  
**Part Number 102188-1**

### Receptacle Assemblies, Single Row (Continued)

| No. of Pos. | Dimensions      |              | Board Thickness | Military Part No M55302/127- | AMP Part No. |
|-------------|-----------------|--------------|-----------------|------------------------------|--------------|
|             | A               | B            |                 |                              |              |
| 40          | 3.900           | .145<br>3.68 | .093<br>2.36    | 402B                         | 3-87971-9    |
|             | 99.06           | .175<br>4.45 | .125<br>3.18    | 403B                         | 3-102275-9   |
| 41          | 4.000<br>101.60 | .175<br>4.45 | .125<br>3.18    | 413B                         | 4-102275-0   |
| 42          | 4.100<br>104.14 | .175<br>4.45 | .125<br>3.18    | 423B                         | 4-102275-1   |
| 43          | 4.200<br>106.68 | .175<br>4.45 | .125<br>3.18    | 433B                         | 4-102275-2   |
| 44          | 4.300<br>109.22 | .175<br>4.45 | .125<br>3.18    | 443B                         | 4-102275-3   |
| 45          | 4.400<br>111.76 | .175<br>4.45 | .125<br>3.18    | 453B                         | 4-102275-4   |
| 46          | 4.500<br>114.30 | .175<br>4.45 | .125<br>3.18    | 463B                         | 4-102275-5   |
| 47          | 4.600<br>116.84 | .175<br>4.45 | .125<br>3.18    | 473B                         | 4-102275-6   |
| 48          | 4.100<br>119.38 | .175<br>4.45 | .125<br>3.18    | 483B                         | 4-102275-7   |
| 49          | 4.800<br>121.92 | .175<br>4.45 | .125<br>3.18    | 493B                         | 4-102275-8   |
| 50          | 4.900<br>124.46 | .175<br>4.45 | .125<br>3.18    | 503B                         | 4-102275-9   |
| 51          | 5.000<br>127.00 | .175<br>4.45 | .125<br>3.18    | 513B                         | 5-102275-0   |
| 53          | 5.200<br>132.08 | .175<br>4.45 | .125<br>3.18    | 533B                         | 5-102275-2   |
| 54          | 5.300<br>134.62 | .175<br>4.45 | .125<br>3.18    | 543B                         | 5-102275-3   |
| 55          | 5.400<br>137.16 | .175<br>4.45 | .125<br>3.18    | 553B                         | 5-102275-4   |
| 56          | 5.500<br>139.70 | .175<br>4.45 | .125<br>3.18    | 563B                         | 5-102275-5   |
| 57          | 5.600<br>142.24 | .175<br>4.45 | .125<br>3.18    | 573B                         | 5-102275-6   |
| 58          | 5.700<br>144.78 | .175<br>4.45 | .125<br>3.18    | 583B                         | 5-102275-7   |
| 59          | 5.800<br>147.32 | .175<br>4.45 | .125<br>3.18    | 593B                         | 5-102275-8   |
| 60          | 5.900<br>149.86 | .175<br>4.45 | .125<br>3.18    | 603B                         | 5-102275-9   |
| 61          | 6.000<br>152.40 | .175<br>4.45 | .125<br>3.18    | 613B                         | 6-102275-0   |
| 62          | 6.100<br>154.94 | .175<br>4.45 | .125<br>3.18    | 623B                         | 6-102275-1   |
| 63          | 6.200<br>157.48 | .175<br>4.45 | .125<br>3.18    | 633B                         | 6-102275-2   |
| 64          | 6.300<br>160.02 | .175<br>4.45 | .125<br>3.18    | 643B                         | 6-102275-3   |
| 65          | 6.400<br>162.56 | .175<br>4.45 | .125<br>3.18    | 653B                         | 6-102275-4   |



**Keying Plug —**  
**Military Part Number**  
**M55302/127-00KY**  
**Part Number 102188-1**

## Receptacle Assemblies, Double Row

### Material and Finish

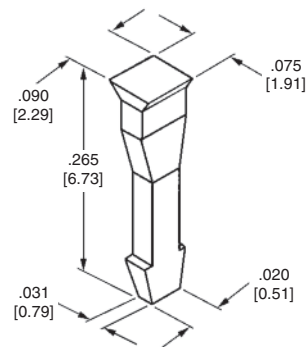
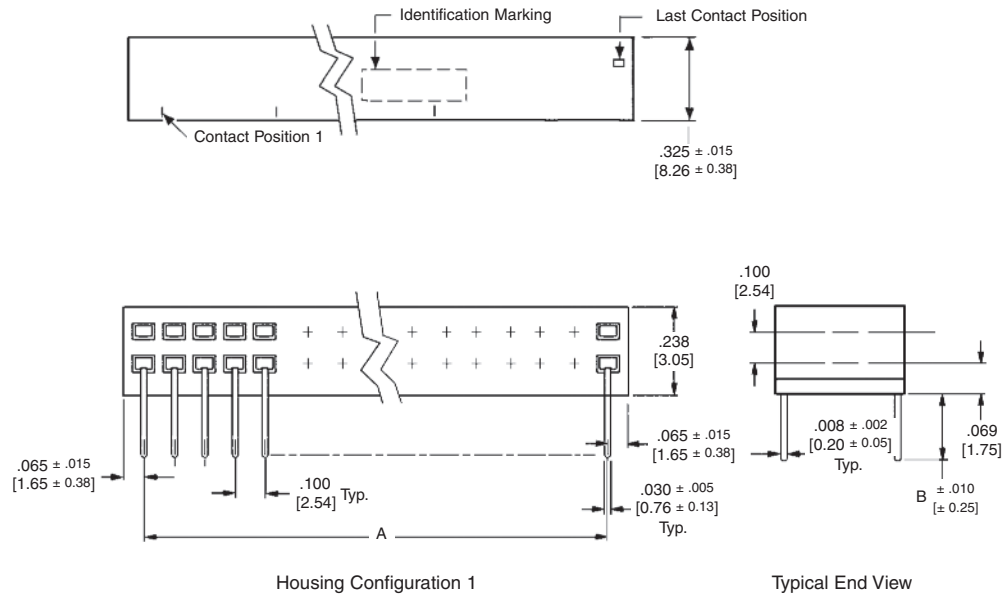
**Housing** — In accordance with MIL-C-55302 or MIL-M-24519 type GST-40F

**Contacts** — In accordance with MIL-C-55302

#### Plating Codes:

**A** — Gold flash over .000050 [0.00127] min. nickel on entire contact, .000050 [0.00127] min. gold on contact area

**B** — .000050 [0.00127] min. gold over .000050 [0.00127] min. nickel on the entire contact

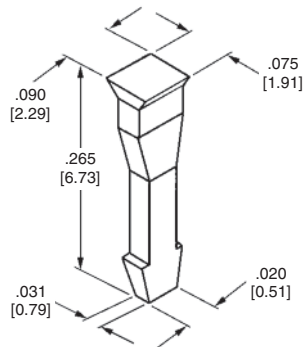


**Keying Plug —**  
**Military Part Number**  
**M55302/127-00KY**  
**Part Number 102188-1**

| No. of Pos. | Dimensions     |              | Board Thickness | Plating Code A               |            | Plating Code B                |           |
|-------------|----------------|--------------|-----------------|------------------------------|------------|-------------------------------|-----------|
|             | A              | B            |                 | Military Part No M55302/128- | Part No.   | Military Part No. M55302/128- | Part No.  |
| 4           | .100<br>2.54   | .115<br>2.92 | .062<br>1.57    | AA1A                         | 87961-1    | —                             | —         |
| 8           | .300<br>7.62   | .145<br>3.68 | .093<br>2.36    | AC1C                         | 87964-3    | —                             | —         |
| 10          | .400<br>10.16  | .115<br>2.92 | .062<br>1.57    | AD1A                         | 87961-4    | AD1B                          | 87962-4   |
| 12          | .500<br>12.70  | .115<br>2.92 | .062<br>1.57    | AE1A                         | 87961-5    | —                             | —         |
|             |                | .145<br>3.68 | .093<br>2.36    | AE1C                         | 87964-5    | —                             | —         |
| 14          | .600<br>15.24  | .115<br>2.92 | .062<br>1.57    | AF1A                         | 87961-6    | AF1B                          | 87962-6   |
| 16          | .700<br>17.78  | .115<br>2.92 | .062<br>1.57    | AG1A                         | 87961-7    | AG1B                          | 87962-7   |
| 18          | .800<br>20.32  | .115<br>2.92 | .062<br>1.57    | —                            | —          | AH1B                          | 87962-8   |
|             |                | .145<br>3.68 | .093<br>2.36    | AH1C                         | 87964-8    | —                             | —         |
| 20          | .900<br>22.86  | .115<br>2.92 | .062<br>1.57    | AJ1A                         | 87961-9    | AJ1B                          | 87962-9   |
|             |                | .145<br>3.68 | .093<br>2.36    | —                            | —          | AJ1D                          | 87965-9   |
| 22          | 1.000<br>25.40 | .115<br>2.92 | .062<br>1.57    | AK1A                         | 1-87961-0  | AK1B                          | 1-87962-0 |
|             |                | .175<br>4.45 | .125<br>3.18    | AK1E                         | 1-102277-0 | —                             | —         |
| 24          | 1.100<br>27.94 | .115<br>2.92 | .062<br>1.57    | AL1A                         | 1-87961-1  | AL1B                          | 1-87962-1 |
| 26          | 1.200<br>30.48 | .115<br>2.92 | .062<br>1.57    | AM1A                         | 1-87961-2  | AM1B                          | 1-87962-2 |
|             |                | .145<br>3.68 | .093<br>2.36    | AM1C                         | 1-87964-2  | —                             | —         |

### Receptacle Assemblies, Double Row (Continued)

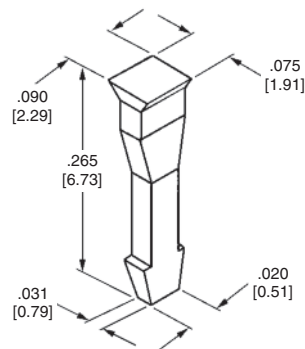
| No. of Pos. | Dimensions     |              | Board Thickness | Plating Code A               |            | Plating Code B                |            |
|-------------|----------------|--------------|-----------------|------------------------------|------------|-------------------------------|------------|
|             | A              | B            |                 | Military Part No M55302/128- | Part No.   | Military Part No. M55302/128- | Part No.   |
| 28          | 1.300<br>33.02 | .115<br>2.92 | .062<br>1.57    | AN1A                         | 1-87961-3  | AN1B                          | 1-87962-3  |
| 30          | 1.400<br>35.56 | .115<br>2.92 | .062<br>1.57    | AP1A                         | 1-87961-4  | AP1B                          | 1-87962-4  |
|             |                | .145<br>3.68 | .093<br>2.36    | AP1C                         | 1-87964-4  | —                             | —          |
| 32          | 1.500<br>38.10 | .115<br>2.92 | .062<br>1.57    | AQ1A                         | 1-87961-5  | AQ1B                          | 1-87962-5  |
| 34          | 1.600<br>40.64 | .115<br>2.92 | .062<br>1.57    | —                            | —          | AR1B                          | 1-87962-6  |
|             |                | .145<br>3.68 | .093<br>2.36    | AR1C                         | 1-87964-6  | —                             | —          |
|             |                | .175<br>4.45 | .125<br>3.18    | AR1E                         | 1-102277-6 | —                             | —          |
| 36          | 1.700<br>43.18 | .115<br>2.92 | .062<br>1.57    | BA1A                         | 1-87961-7  | BA1B                          | 1-87962-7  |
|             |                | .145<br>3.68 | .093<br>2.36    | BA1C                         | 1-87964-7  | BA1D                          | 1-87965-7  |
|             |                | .175<br>4.45 | .125<br>3.18    | BA1E                         | 1-102277-7 | —                             | —          |
| 38          | 1.800<br>45.72 | .115<br>2.92 | .062<br>1.57    | BB1A                         | 1-87961-8  | BB1B                          | 1-87962-8  |
|             |                | .175<br>4.45 | .125<br>3.18    | —                            | —          | —                             | —          |
| 40          | 1.900<br>48.26 | .115<br>2.92 | .062<br>1.57    | BC1A                         | 1-87961-9  | BC1B                          | 1-87962-9  |
|             |                | .145<br>3.68 | .093<br>2.36    | BC1C                         | 1-87964-9  | —                             | —          |
| 42          | 2.000<br>50.80 | .115<br>2.92 | .062<br>1.57    | BD1A                         | 2-87961-0  | BD1B                          | 2-87962-0  |
|             |                | .145<br>3.68 | .093<br>2.36    | BD1C                         | 2-87964-0  | —                             | —          |
| 44          | 2.100<br>53.34 | .115<br>2.92 | .062<br>1.57    | —                            | —          | BE1B                          | 2-87962-1  |
|             |                | .175<br>4.45 | .125<br>3.18    | —                            | —          | BE1F                          | 2-102278-1 |
| 46          | 2.200<br>55.88 | .115<br>2.92 | .062<br>1.57    | BF1A                         | 2-87961-2  | BF1B                          | 2-87962-2  |
|             |                | .145<br>3.68 | .093<br>2.36    | BF1C                         | 2-87964-2  | —                             | —          |
| 48          | 2.300<br>58.42 | .115<br>2.92 | .062<br>1.57    | BG1A                         | 2-87961-3  | —                             | —          |
|             |                | .145<br>3.68 | .093<br>2.36    | BG1C                         | 2-87964-3  | —                             | —          |
| 50          | 2.400<br>60.96 | .115<br>2.92 | .062<br>1.57    | BH1A                         | 2-87961-4  | BH1B                          | 2-87962-4  |
|             |                | .145<br>3.68 | .093<br>2.36    | BH1C                         | 2-87964-4  | —                             | —          |
|             |                | .175<br>4.45 | .125<br>3.18    | BH1E                         | 2-102277-4 | —                             | —          |
| 52          | 2.500<br>63.50 | .115<br>2.92 | .062<br>1.57    | BJ1A                         | 2-87961-5  | BJ1B                          | 2-87962-5  |
|             |                | .145<br>3.68 | .093<br>2.36    | BJ1C                         | 2-87964-5  | —                             | —          |
| 54          | 2.600<br>66.04 | .115<br>2.92 | .062<br>1.57    | —                            | —          | BK1B                          | 2-87962-6  |
| 56          | 2.700<br>68.58 | .115<br>2.92 | .062<br>1.57    | BL1A                         | 2-87961-7  | BL1B                          | 2-87962-7  |
| 58          | 2.800<br>71.12 | .115<br>2.92 | .062<br>1.57    | BM1A                         | 2-87961-8  | BM1B                          | 2-87962-8  |
| 60          | 2.900<br>73.66 | .115<br>2.92 | .062<br>1.57    | BN1A                         | 2-87961-9  | BN1B                          | 2-87962-9  |
|             |                | .175<br>4.45 | .125<br>3.18    | BN1E                         | 2-102277-9 | BN1F                          | 2-102278-9 |



**Keying Plug —**  
**Military Part Number**  
**M55302/127-00KY**  
**Part Number 102188-1**

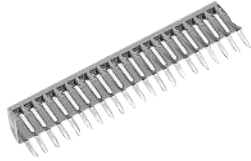
## Receptacle Assemblies, Double Row (Continued)

| No. of Pos. | Dimensions             |                     | Board Thickness     | Plating Code A               |            | Plating Code B                |            |
|-------------|------------------------|---------------------|---------------------|------------------------------|------------|-------------------------------|------------|
|             | A                      | B                   |                     | Military Part No M55302/128- | Part No.   | Military Part No. M55302/128- | Part No.   |
| 62          | <b>3.000</b><br>76.20  | <b>.115</b><br>2.92 | <b>.062</b><br>1.57 | —                            | —          | BP1B                          | 3-87962-0  |
|             |                        | <b>.145</b><br>3.68 | <b>.093</b><br>2.36 | —                            | —          | BP1D                          | 3-87965-0  |
| 64          | <b>3.100</b><br>78.74  | <b>.115</b><br>2.92 | <b>.062</b><br>1.57 | —                            | —          | BQ1B                          | 3-87962-1  |
|             |                        | <b>.115</b><br>2.92 | <b>.062</b><br>1.57 | BR1A                         | 3-87961-2  | BR1B                          | 3-87962-2  |
| 66          | <b>3.200</b><br>81.28  | <b>.115</b><br>2.92 | <b>.062</b><br>1.57 | BR1E                         | 3-102277-2 | —                             | —          |
|             |                        | <b>.175</b><br>4.45 | <b>.125</b><br>3.18 | —                            | —          | —                             | —          |
| 68          | <b>3.300</b><br>83.82  | <b>.115</b><br>2.92 | <b>.062</b><br>1.57 | CA1A                         | 3-87961-3  | CA1B                          | 3-87962-3  |
|             |                        | <b>.145</b><br>3.68 | <b>.093</b><br>2.36 | CA1C                         | 3-87964-3  | —                             | —          |
| 70          | <b>3.400</b><br>86.36  | <b>.115</b><br>2.92 | <b>.062</b><br>1.57 | CB1A                         | 3-87961-4  | CB1B                          | 3-87962-4  |
|             |                        | <b>.145</b><br>3.68 | <b>.093</b><br>2.36 | CB1C                         | 3-87964-4  | —                             | —          |
| 72          | <b>3.500</b><br>88.90  | <b>.115</b><br>2.92 | <b>.062</b><br>1.57 | CC1A                         | 3-87961-5  | —                             | —          |
| 74          | <b>3.600</b><br>91.44  | <b>.115</b><br>2.92 | <b>.062</b><br>1.57 | CD1A                         | 3-87961-6  | CD1B                          | 3-87962-6  |
| 76          | <b>3.700</b><br>93.98  | <b>.115</b><br>2.92 | <b>.062</b><br>1.57 | CE1A                         | 3-87961-7  | —                             | —          |
| 78          | <b>3.800</b><br>96.52  | <b>.115</b><br>2.92 | <b>.062</b><br>1.57 | —                            | —          | CF1B                          | 3-87962-8  |
|             |                        | <b>.145</b><br>3.68 | <b>.093</b><br>2.36 | CF1C                         | 3-87964-8  | —                             | —          |
| 80          | <b>3.900</b><br>99.06  | <b>.115</b><br>2.92 | <b>.062</b><br>1.57 | CG1A                         | 3-87961-9  | CG1B                          | 3-87962-9  |
|             |                        | <b>.145</b><br>3.68 | <b>.093</b><br>2.36 | CG1C                         | 3-87964-9  | —                             | —          |
| 86          | <b>4.200</b><br>106.68 | <b>.115</b><br>2.92 | <b>.062</b><br>1.57 | —                            | —          | CK1B                          | 4-87962-2  |
| 88          | <b>4.300</b><br>109.22 | <b>.115</b><br>2.92 | <b>.062</b><br>1.57 | CL1A                         | 4-87961-3  | —                             | —          |
|             |                        | <b>.145</b><br>3.68 | <b>.093</b><br>2.36 | —                            | —          | CL1D                          | 4-87965-3  |
| 90          | <b>4.400</b><br>111.76 | <b>.115</b><br>2.92 | <b>.062</b><br>1.57 | CM1A                         | 4-87961-4  | —                             | —          |
|             |                        | <b>.175</b><br>4.45 | <b>.125</b><br>3.18 | —                            | —          | CM1F                          | 4-102278-4 |
| 96          | <b>4.700</b><br>119.38 | <b>.115</b><br>2.92 | <b>.062</b><br>1.57 | —                            | —          | CQ1B                          | 4-87962-7  |
| 98          | <b>4.800</b><br>121.92 | <b>.115</b><br>2.92 | <b>.062</b><br>1.57 | CR1A                         | 4-87961-8  | —                             | —          |
|             |                        | <b>.145</b><br>3.68 | <b>.093</b><br>2.36 | CR1C                         | 4-87964-8  | —                             | —          |
| 100         | <b>4.900</b><br>124.46 | <b>.115</b><br>2.92 | <b>.062</b><br>1.57 | DA1A                         | 4-87961-9  | DA1B                          | 4-87962-9  |
| 106         | <b>5.200</b><br>132.08 | <b>.115</b><br>2.92 | <b>.062</b><br>1.57 | DD1A                         | 5-87961-2  | —                             | —          |
| 108         | <b>5.300</b><br>134.62 | <b>.115</b><br>2.92 | <b>.062</b><br>1.57 | DE1A                         | 5-87961-3  | —                             | —          |
| 110         | <b>5.400</b><br>137.16 | <b>.115</b><br>2.92 | <b>.062</b><br>1.57 | DF1A                         | 5-87961-4  | —                             | —          |
| 116         | <b>5.700</b><br>144.78 | <b>.115</b><br>2.92 | <b>.062</b><br>1.57 | DJ1A                         | 5-87961-7  | DJ1B                          | 5-87962-7  |
|             |                        | <b>.145</b><br>3.68 | <b>.093</b><br>2.36 | DJ1C                         | 5-87964-7  | DJ1D                          | 5-87965-7  |
| 120         | <b>5.900</b><br>149.86 | <b>.115</b><br>2.92 | <b>.062</b><br>1.57 | —                            | —          | DL1B                          | 5-87962-9  |
| 122         | <b>6.000</b><br>152.40 | <b>.115</b><br>2.92 | <b>.062</b><br>1.57 | DM1A                         | 6-87961-0  | DM1B                          | 6-87962-0  |
| 124         | <b>6.100</b><br>154.94 | <b>.115</b><br>2.92 | <b>.062</b><br>1.57 | DN1A                         | 6-87961-1  | —                             | —          |
| 130         | <b>6.400</b><br>162.66 | <b>.115</b><br>2.92 | <b>.062</b><br>1.57 | DR1A                         | 6-87961-4  | DR1B                          | 6-87962-4  |



**Keying Plug —**  
**Military Part Number**  
**M55302/127-00KY**  
**Part Number 102188-1**

## Special Double Row Receptacle Assemblies



### Material and Finish

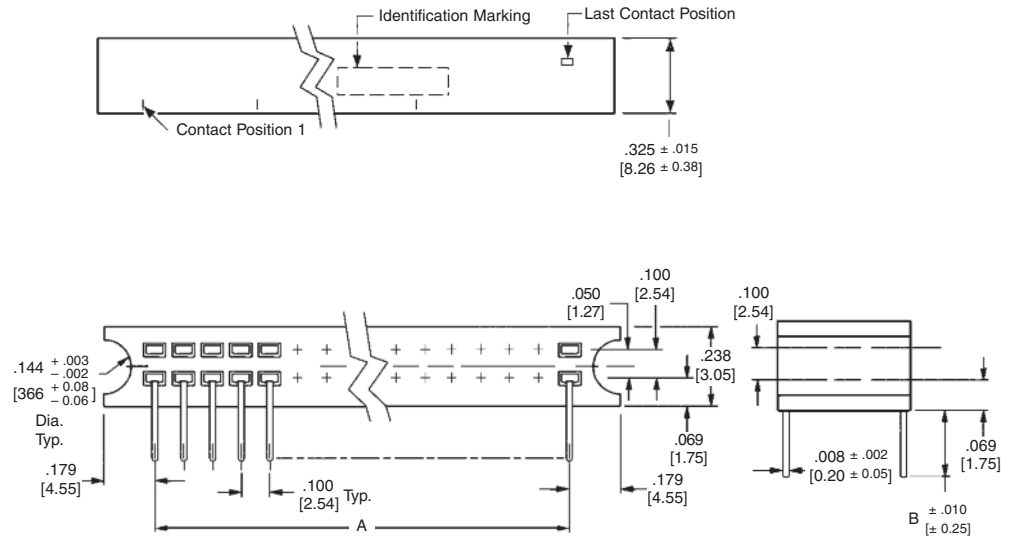
**Housing** — In accordance with MIL-C-55302 or MIL-M-24519 type GST-40F

**Contacts** — Per MIL-C-55302

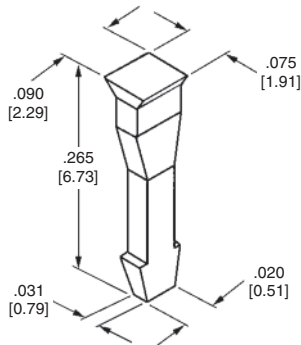
#### Plating Codes:

**A** — Gold flash over .000050 [0.00127] min. nickel on entire contact, .000050 [0.00127] min. gold on contact area

**B** — .000050 [0.00127] min. gold over .000050 [0.00127] min. nickel on the entire contact



| No. of Pos. | Dimensions      |              | Board Thickness | Plating Code A               |            | Plating Code B                |            |
|-------------|-----------------|--------------|-----------------|------------------------------|------------|-------------------------------|------------|
|             | A               | B            |                 | Military Part No M55302/128- | Part No.   | Military Part No. M55302/128- | Part No.   |
| 22          | 1.000<br>25.40  | .115<br>2.92 | .062<br>1.57    | AK2A                         | 102192-5   | —                             | —          |
| 26          | 1.200<br>30.48  | .175<br>4.45 | .125<br>3.18    | AM2E                         | 102281-6   | —                             | —          |
| 50          | 2.400<br>60.96  | .115<br>2.92 | .062<br>1.57    | BH2A                         | 102192-8   | —                             | —          |
|             |                 | .145<br>3.68 | .093<br>2.36    | —                            | —          | BH2D                          | 102196-8   |
| 54          | 2.600<br>66.04  | .115<br>2.92 | .062<br>1.57    | —                            | —          | BK2B                          | 102193-3   |
| 58          | 2.800<br>71.12  | .115<br>2.92 | .062<br>1.57    | BM2A                         | 102192-2   | BM2B                          | 102193-2   |
| 60          | 2.900<br>73.66  | .115<br>2.92 | .062<br>1.57    | BN2A                         | 102192-4   | —                             | —          |
| 80          | 3.900<br>99.06  | .115<br>2.92 | .062<br>1.57    | CG2A                         | 102192-9   | —                             | —          |
| 84          | 4.100<br>104.14 | .115<br>2.92 | .062<br>1.57    | —                            | —          | CJ2B                          | 102193-1   |
| 100         | 4.900<br>124.46 | .115<br>2.92 | .062<br>1.57    | DA2A                         | 1-102192-0 | DA2B                          | 1-102193-0 |
| 102         | 5.000<br>127.00 | .115<br>2.92 | .062<br>1.57    | —                            | —          | DB2B                          | 102193-7   |



**Keying Plug —**  
**Military Part Number**  
**M55302/127-00KY**  
**Part Number 102188-1**



## Introduction

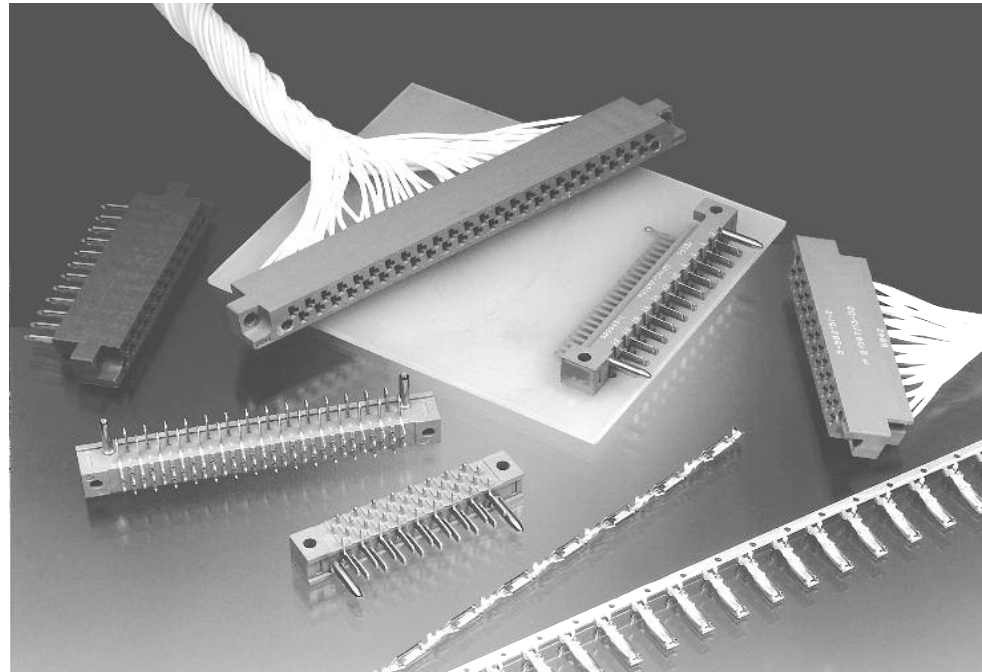
### Product Facts

#### AMP-BLADE II Connectors

- Selective gold plating for economy with high performance
- Glass-filled polyester housing

#### AMP-BLADE and Military Connectors

- Full gold plating
- Diallyl phthalate housing rated from -85°F to 257°F [-65°C to 125°C]
- 5 amps per contact
- Recognized under the Component Program of Underwriters Laboratories Inc. File No. E28476 



Various technical documents are available for your use:

**Product Specifications** describe technical performance characteristics and verification tests. They are intended for the Design, Component and Quality Engineer.

108-9004 Diallyl Phthalate

108-9009 Phenolic

108-9201 Contact Crimp

**Instruction Sheets** provide instructions for assembling or applying the product. They are intended for the Manufacturing Assembler or Operator.

Instructional material covering operation, setup, maintenance, repair, etc. is included with each machine, tool or die set. If this material is required prior to receiving your tooling, contact Technical Support for the applicable document.

#### Electrical Characteristics

**Contact Rating** — 5 amps

**Operating Temperature** — -85° to 257°F [-65° to 125°C] (Military)

For applications requiring the highest level of conductivity and reliability, AMP-BLADE Two-Piece Printed Circuit Edge Connectors meet all applicable performance requirements of MIL-C-21097.

The blade and receptacle design provides multiple areas of contact for maximum conductivity. Gold-over-nickel plating in mating areas of the contacts prevents metal migration and oxide build-up for additional reliability. Controlled insertion and extraction forces permit easy mating and unmating of connector assemblies.

A guide system helps prevent contact damage and provides positive alignment for reliable mating of connector halves.

The receptacle half of this two-piece connector accepts a variety of contact designs, but requires only that number of contacts which fulfills circuitry needs.

Crimp snap-in contacts are available in loose-piece or, to further reduce installed costs, in strip form for application by high-speed, automatic compression-crimping equipment.

Post-type contacts are specifically designed for wiring TE Connectivity TERMI-POINT clips and tools. The connectors with post-type contacts also adapt to wrap-type terminations.

The split eyelet contact simplifies bus wiring by permitting wire to be easily snapped into the contact notch for soldering. Each contact accepts up to two 18 AWG [0.8 to 0.9 mm<sup>2</sup>] stranded or 16 AWG [1.25 to 1.4 mm<sup>2</sup>] solid wires.

High reliability, versatility and speed of assembly are features which recommend the AMP-BLADE Two-Piece Printed Circuit Edge Connectors for dense wiring in applications where rugged serviceability is a prime consideration.

### Construction

**Contact Material** — Phosphor bronze per QQ-B-750

**Contact Plating** —

**Gold plate** — MIL-G-45204;

**Nickel plate** — QQ-N-290 (thickness as specified); Tin-lead per MIL-T-10727, Type 1, on solder tails

**Contact Identification** —

Cavities identified on both faces of receptacle block

### Performance

This connector meets performance requirements of MIL-C-21097

| Altitude               | Test Voltage (AC RMS) |
|------------------------|-----------------------|
| Sea level              | 1,800 VAC             |
| 50,000 feet [15,240 m] | 700 VAC               |
| 70,000 feet [21,336 m] | 500 VAC               |

### Individual-Contact Engaging and Separating Forces

2 ounces to 16 ounces [0.6 N to 4.5 N]

**Contact Resistance** —

25 millivolts maximum at 5 amps

**Vibration Tolerance** —

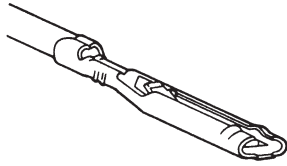
10 to 2,000 Hz. @ 15Gs per method 204B of MIL STD 202

**Durability** —

| Gold Thickness     | Cycles |
|--------------------|--------|
| .000015<br>0.00038 | 100    |
| .000030<br>0.00076 | 250    |
| .000050<br>0.00127 | 500    |

## AMP-BLADE Connector for Snap-In Receptacle Contacts

### Crimp, Snap-In Receptacle Contacts



#### Materials

**Contact** — Phosphor bronze

**1 Finish** — Selective gold plating in contact mating area over .000030 [0.00076] nickel, see table for gold thicknesses; tin-lead in wire barrel

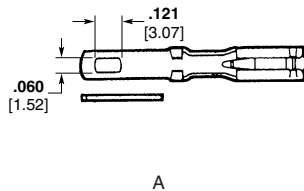
**2 Finish** — RoHS Part Numbers are same as above except for tin in wire barrel

| Wire (Insulation) Ranges                                                                                                             | Gold Plate Thickness | Side Feed Contact Strip Form                     | Part Number Loose Piece*                         |
|--------------------------------------------------------------------------------------------------------------------------------------|----------------------|--------------------------------------------------|--------------------------------------------------|
| <b>24-20 AWG</b><br>0.2-0.5 mm <sup>2</sup><br>(.040-.080)<br>(1.02-2.03)                                                            | .000030<br>0.00076   | 531586-3 <sup>1</sup><br>5-531586-3 <sup>2</sup> | 531586-6 <sup>1</sup><br>5-531586-6 <sup>2</sup> |
| <b>28-24 AWG</b><br>0.09-0.2 mm <sup>2</sup><br>(.030-.060)<br>(0.76-1.52)                                                           | .000030<br>0.00076   | 531586-4                                         | —                                                |
| <b>1: 18 AWG</b><br>0.8-0.9 mm <sup>2</sup><br>or<br><b>2: 20 or 22 AWG</b><br>0.3-0.6 mm <sup>2</sup><br>(.067-.090)<br>(1.70-2.28) | .000015<br>0.00038   | —                                                | —                                                |
|                                                                                                                                      | .000030<br>0.00076   | 531589-3 <sup>1</sup><br>5-531589-3 <sup>2</sup> | 531589-6                                         |

\*See page 1-109 for crimping tool.

| Wire Range           |                      | Insulation Range                                     | Commercial Type                                      |                      | Military Type     |                                                      |                      |
|----------------------|----------------------|------------------------------------------------------|------------------------------------------------------|----------------------|-------------------|------------------------------------------------------|----------------------|
| AWG                  | mm <sup>2</sup>      |                                                      | End Feed Strip Part No.                              | Loose Piece Part No. | Military Part No. | End Feed Strip Part No.                              | Loose Piece Part No. |
|                      |                      |                                                      | .000030 [0.00076] Gold Over .000030 [0.00076] Nickel |                      |                   | .000050 [0.00127] Gold Over .000030 [0.00076] Nickel |                      |
| 24-20                | 0.2-0.6              | .040-.080<br>1.02-2.03                               | 66005-2                                              | 66010-2              | 21097/16-03       | 66005-3                                              | 66010-3              |
| 28-24                | 0.08-0.2             | .030-.060<br>0.76-1.52                               | —                                                    | 66011-2              | 21097/16-01       | 66009-3                                              | 66011-3              |
| (2)20<br>or<br>(2)22 | 0.183<br>or<br>0.643 | (2).045<br>to<br>(2)1.14<br>(2).072<br>to<br>(2)1.83 | 66021-2                                              | 66026-2              | 21097/16-04       | 66021-3                                              | 66026-3              |
| 18                   | 0.8                  | .067-.090<br>1.70-2.29                               | 66021-2                                              | 66026-2              | 21097/16-04       | 66021-3                                              | 66026-3              |
| 28-24                | 0.08-0.2             | .078<br>1.98                                         | 66027-2                                              | —                    | 21097/16-02       | 66027-3                                              | —                    |

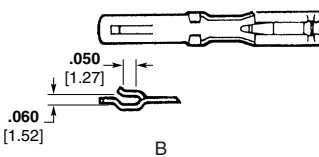
### Solder—Tab Receptacle Contacts



A

#### Materials

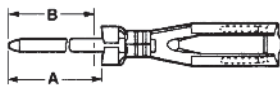
**Contact** — Phosphor bronze



B

| Type | Maximum Extension Beyond Back Face of Block | Part Numbers—Loose Piece                                                                      |
|------|---------------------------------------------|-----------------------------------------------------------------------------------------------|
|      |                                             | Commercial Type<br>Gold Plate Thickness<br>.000030 [0.00076]<br>over .000030 [0.00076] Nickel |
| A    | .390<br>9.91                                | 66086-2                                                                                       |
| B    | .375<br>9.52                                | 66086-4                                                                                       |

### Post-Type Receptacle Contacts



#### Materials

**Contact** — Phosphor bronze

**1 Finish** — Selective gold plating in contact mating area over .000030 [0.00076] nickel (see table for gold thicknesses); posts, tin plated

**2 Finish** — RoHS Part Numbers have same finish as above except for tin on posts

| Dimensions     |               | Gold Plate Thickness | Part Numbers - Loose Piece      |
|----------------|---------------|----------------------|---------------------------------|
| A              | B*            |                      | .045 x .045 [1.14 x 1.14] Posts |
| .410<br>10.41  | .370<br>9.40  | .000030<br>0.00076   | 1-582364-11<br>6-582364-12      |
| .640<br>16.26  | .600<br>15.24 | .000030<br>0.00076   | 1-582364-21                     |
| .810<br>20.57  | .770<br>19.56 | .000030<br>0.00076   | 1-582364-31                     |
| 1.040<br>26.42 | 1.000<br>25.4 | .000030<br>0.00076   | 1-582364-41                     |

\*Post length after inserted into housing.

## Board Half Housing Pre-loaded with Blade Type Contacts

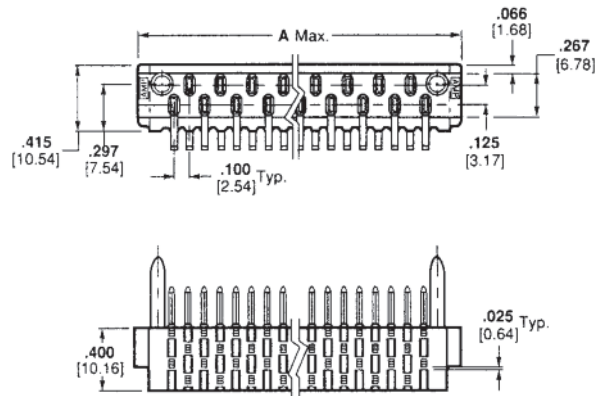
### Housing without Mounting Holes

#### Materials

**Housing** — Diallyl phthalate

**Blade Contact** — Gilding material

**Finish** — Selective gold plating in contact mating area over .000030 [0.00076] min. nickel. See table for gold thicknesses



| No. of Positions | A (Max.)        | Printed Circuit Board Thickness | Military Type CS                                                 |            |
|------------------|-----------------|---------------------------------|------------------------------------------------------------------|------------|
|                  |                 |                                 | Diallyl Phthalate Housing                                        |            |
|                  |                 |                                 | Military Part No.<br>Gold Plating Thickness<br>.000050 [0.00127] | Part No.   |
| 17               | 2.070<br>52.58  | .125<br>3.18                    | 21097/15-03                                                      | —          |
|                  |                 | .063<br>1.59                    | 21097/15-04                                                      | 582843-9   |
| 23               | 2.670<br>67.80  | .094<br>2.38                    | 21097/15-05                                                      | 2-582843-0 |
|                  |                 | .125<br>3.18                    | 21097/15-06                                                      | 3-582843-2 |
|                  |                 | .063<br>1.59                    | 21097/15-10                                                      | 1-582843-1 |
| 35               | 3.870<br>98.30  | .094<br>2.38                    | 21097/15-11                                                      | 2-582843-2 |
|                  |                 | .063<br>1.59                    | 21097/15-13                                                      | 1-582843-2 |
| 41               | 4.470<br>113.54 | .094<br>2.38                    | 21097/15-14                                                      | 2-582843-3 |
|                  |                 | .063<br>1.59                    | 21097/15-16                                                      | 1-582843-3 |
| 47               | 5.070<br>128.80 | .125<br>3.18                    | 21097/15-18                                                      | 3-582843-6 |

#### Notes:

- AMP-BLADE contacts (gold plated) are molded into housing in predetermined positions to mate with receptacle housing.
- Connectors can be furnished with the two middle rows of lines removed to fit existing board hole patterns.

## Board Half Housing Pre-loaded with Blade Type Contacts (Continued)

### Housing with Mounting Holes

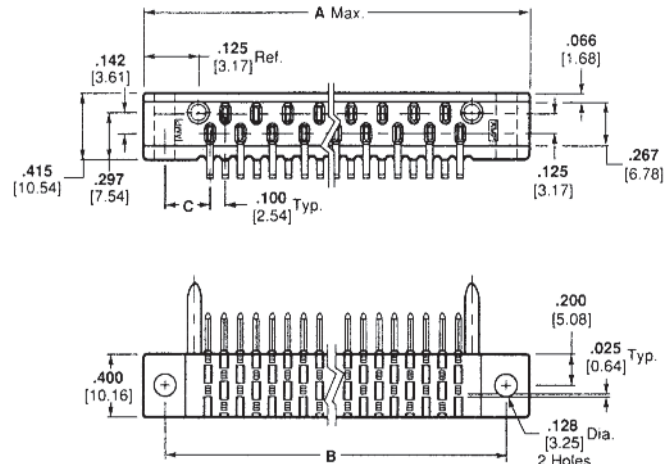
#### Materials

**Housing** — Diallyl phthalate

**Blade Contact** — Gilding metal

**3 Finish** — Selective gold plating in contact mating area over .000030 [0.00076] min. nickel. See table for gold thicknesses. Gold flash on tails (2 rows) and tin-lead on remaining tails.

**4 Finish** — RoHS Part Numbers are same as above except for tin on remaining tails



| No. of Positions | A (Max.)        | B               | C            | Printed Circuit Board Thickness | Commercial Type                                     |                                                     | Military Type CS                                           |            |
|------------------|-----------------|-----------------|--------------|---------------------------------|-----------------------------------------------------|-----------------------------------------------------|------------------------------------------------------------|------------|
|                  |                 |                 |              |                                 | Diallyl Phthalate Housing                           |                                                     | Diallyl Phthalate Housing                                  |            |
|                  |                 |                 |              |                                 | Gold Plate Thickness .000015 [0.00030]              |                                                     | Military Part No. Gold Plating Thickness .000050 [0.00127] |            |
| 17               | 2.390<br>60.70  | 2.130<br>54.10  | .265<br>6.73 | .063<br>1.59                    | 1-582390-1 <sup>3</sup>                             | 3-582152-1 <sup>3</sup><br>3-5582152-1 <sup>4</sup> | 21097/14-01                                                | 582843-2   |
|                  |                 |                 |              | .094<br>2.38                    | —                                                   | —                                                   | 21097/14-02                                                | 1-582843-4 |
|                  |                 |                 |              | .125<br>3.18                    | —                                                   | —                                                   | 21097/14-03                                                | 2-582843-5 |
| 23               | 2.990<br>54.10  | 2.730<br>69.34  | .265<br>6.73 | .063<br>1.59                    | —                                                   | 3-582152-2 <sup>3</sup><br>3-5582152-2 <sup>4</sup> | 21097/14-04                                                | 582843-3   |
|                  |                 |                 |              | .094<br>2.38                    | —                                                   | —                                                   | 21097/14-05                                                | 582843-1   |
|                  |                 |                 |              | .125<br>3.18                    | —                                                   | —                                                   | 21097/14-06                                                | 2-582843-6 |
| 29               | 3.590<br>91.19  | 3.330<br>84.58  | .265<br>6.73 | .063<br>1.59                    | 1-582390-3 <sup>3</sup><br>1-5582390-3 <sup>4</sup> | 3-582152-3 <sup>3</sup><br>3-5582152-3 <sup>4</sup> | 21097/14-07                                                | 582843-4   |
|                  |                 |                 |              | .094<br>2.38                    | 2-582390-3 <sup>3</sup><br>2-5582390-3 <sup>4</sup> | —                                                   | 21097/14-08                                                | 1-582843-5 |
|                  |                 |                 |              | .125<br>3.18                    | —                                                   | —                                                   | 21097/14-09                                                | —          |
| 35               | 4.190<br>106.43 | 3.930<br>99.82  | .265<br>6.73 | .063<br>1.59                    | 1-582390-4 <sup>3</sup><br>1-5582390-4 <sup>4</sup> | 3-582152-4 <sup>3</sup><br>3-5582152-4 <sup>4</sup> | 21097/14-10                                                | 582843-5   |
|                  |                 |                 |              | .094<br>2.38                    | 2-582390-4 <sup>3</sup><br>2-5582390-4 <sup>4</sup> | 6-582152-4 <sup>3</sup><br>6-5582152-4 <sup>4</sup> | 21097/14-11                                                | 1-582843-6 |
|                  |                 |                 |              | .125<br>3.18                    | —                                                   | —                                                   | 21097/14-12                                                | 2-582843-8 |
| 41               | 4.790<br>121.67 | 4.530<br>115.06 | .265<br>6.73 | .063<br>1.59                    | 1-582390-5 <sup>3</sup>                             | 3-582152-5 <sup>3</sup><br>3-5582152-5 <sup>4</sup> | 21097/14-13                                                | 582843-6   |
|                  |                 |                 |              | .094<br>2.38                    | —                                                   | 6-582152-5 <sup>3</sup><br>6-5582152-5 <sup>4</sup> | 21097/14-14                                                | 1-582843-7 |
|                  |                 |                 |              | .125<br>3.18                    | 3-582390-5 <sup>3</sup><br>3-5582390-5 <sup>4</sup> | 9-582152-5 <sup>3</sup>                             | —                                                          | —          |
| 47               | 5.623<br>142.82 | 5.363<br>136.22 | .381<br>9.68 | .063<br>1.59                    | —                                                   | 3-582308-1 <sup>3</sup><br>3-5582308-1 <sup>4</sup> | 21097/14-16                                                | 582843-7   |
|                  |                 |                 |              | .094<br>2.38                    | 2-582390-6 <sup>3</sup><br>2-5582390-6 <sup>4</sup> | 6-582308-1 <sup>3</sup>                             | 21097/14-17                                                | 1-582843-8 |
|                  |                 |                 |              | .125<br>4.65                    | 3-582390-6 <sup>3</sup>                             | —                                                   | 21097/14-18                                                | 3-582843-0 |

#### Notes:

- AMP-BLADE contacts (gold plated) are molded into housing in predetermined positions to mate with receptacle housing.
- Connectors can be furnished with the two middle rows of lines removed to fit existing board hole patterns.

## Wire-Half Assemblies and Housings

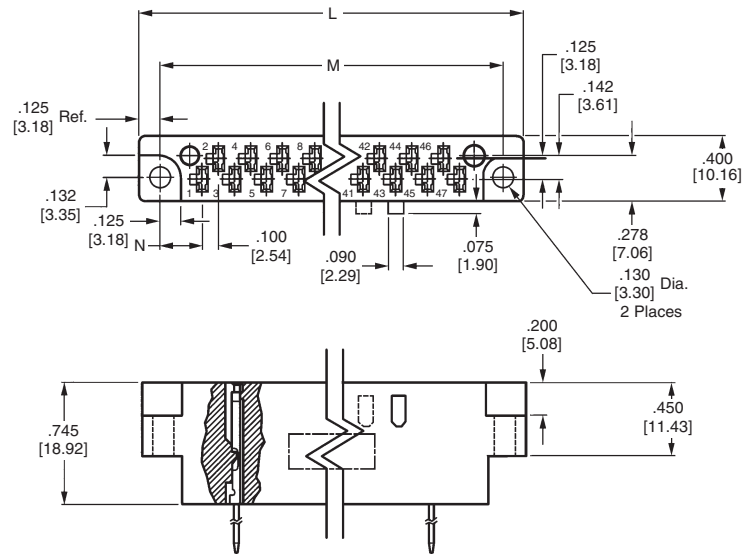
### Pre-loaded Assemblies for Crimp Contacts, TERMI-POINT Clip or Wrap-Type Post Contacts, Solder/Weld Contacts

#### Materials

**Housing** — Diallyl phthalate glass-filled polyester, green

**Contact** — Phosphor bronze

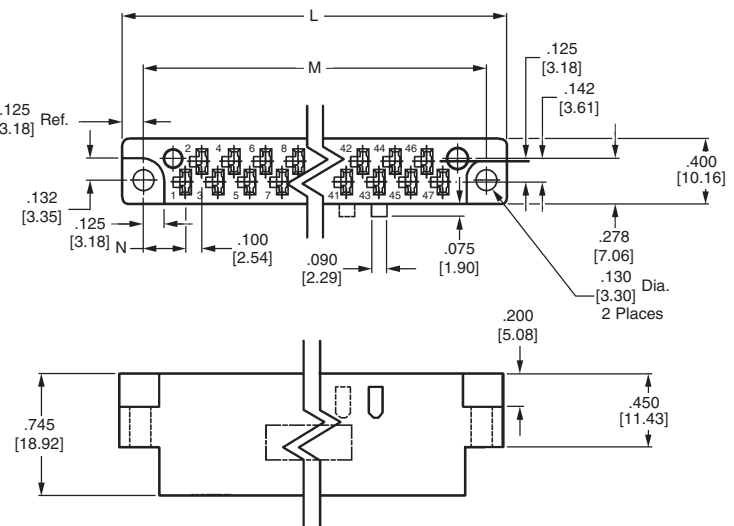
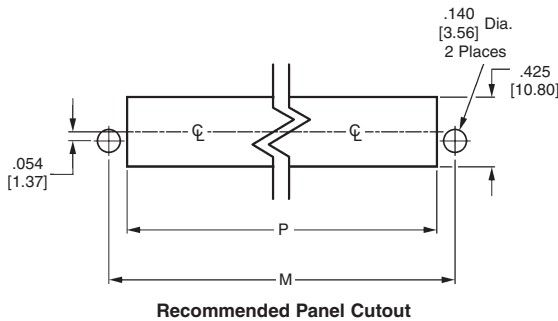
**Posts** — Brass, tin plated



### Receptacle Housing

#### Material

Diallyl phthalate



| No. of Pos. | Post in. | Length mm | No. of Clip or Wrap Type Terminations | Dimensions      |                 |              | Cutout Dim. for Mounting P | Diallyl Phthalate                                                     |                          |                                           |            |  |
|-------------|----------|-----------|---------------------------------------|-----------------|-----------------|--------------|----------------------------|-----------------------------------------------------------------------|--------------------------|-------------------------------------------|------------|--|
|             |          |           |                                       | L               | M               | N            |                            | Preloaded Housing Part No.                                            |                          | Housings for Crimp or Eyelet Type Contact |            |  |
|             |          |           |                                       |                 |                 |              |                            | .031 x .062 [0.79 x 1.57] Post Gold Plate Thickness .000030 [0.00076] | Commercial Type Part No. | Military Type CR-Receptacle Part No.      | Part No.   |  |
|             |          |           |                                       |                 |                 |              |                            |                                                                       |                          |                                           |            |  |
| 17          | .370     | 9.40      | 1                                     | 2.390<br>60.71  | 2.130<br>54.10  | .265<br>6.73 | 1.910<br>48.51             | 582828-4                                                              | 3-582151-1               | 21097/13-01                               | 5-582151-1 |  |
| 23          | .770     | 19.65     | 3                                     | 2.990<br>75.95  | 2.730<br>69.34  | .265<br>6.73 | 2.510<br>63.75             | —                                                                     | 3-582151-2               | 21097/13-02                               | 5-582151-2 |  |
| 29          | 1.000    | 25.40     | 4                                     | 3.590<br>91.19  | 3.330<br>84.58  | .265<br>6.73 | 3.110<br>78.99             | 582830-1                                                              | 3-582151-3               | 21097/13-03                               | 5-582151-3 |  |
|             | .770     | 19.65     | 3                                     |                 |                 |              |                            | 582830-2                                                              |                          |                                           |            |  |
| 35          | .370     | 9.40      | 1                                     | 4.190<br>106.43 | 3.930<br>99.82  | .265<br>6.73 | 3.710<br>94.23             | —                                                                     | 3-582151-4               | 21097/13-04                               | 5-582151-4 |  |
|             | 1.000    | 25.40     | 4                                     |                 |                 |              |                            | 582831-1                                                              |                          |                                           |            |  |
|             | .770     | 19.65     | 3                                     |                 |                 |              |                            | —                                                                     |                          |                                           |            |  |
|             | .600     | 15.24     | 2                                     |                 |                 |              |                            | —                                                                     |                          |                                           |            |  |
| 41          | .370     | 9.40      | 1                                     | 4.790<br>121.67 | 4.530<br>115.06 | .265<br>6.73 | 4.310<br>109.47            | 582831-4                                                              | 3-582151-5               | 21097/13-05                               | 5-582151-5 |  |
|             | .770     | 19.65     | 3                                     |                 |                 |              |                            | —                                                                     |                          |                                           |            |  |
|             | .600     | 15.24     | 2                                     |                 |                 |              |                            | —                                                                     |                          |                                           |            |  |
|             | .370     | 9.40      | 1                                     |                 |                 |              |                            | 582832-4                                                              |                          |                                           |            |  |
| 47          | .370     | 9.40      | 1                                     | 5.623<br>142.82 | 5.363<br>136.22 | .381<br>9.68 | 5.143<br>130.63            | 582819-1                                                              | 3-582307-1               | 21097/13-06                               | 5-582307-1 |  |
|             | .770     | 19.65     | 3                                     |                 |                 |              |                            | 582819-2                                                              |                          |                                           |            |  |
|             | .600     | 15.24     | 2                                     |                 |                 |              |                            | —                                                                     |                          |                                           |            |  |
|             | .370     | 9.40      | 1                                     |                 |                 |              |                            | —                                                                     |                          |                                           |            |  |

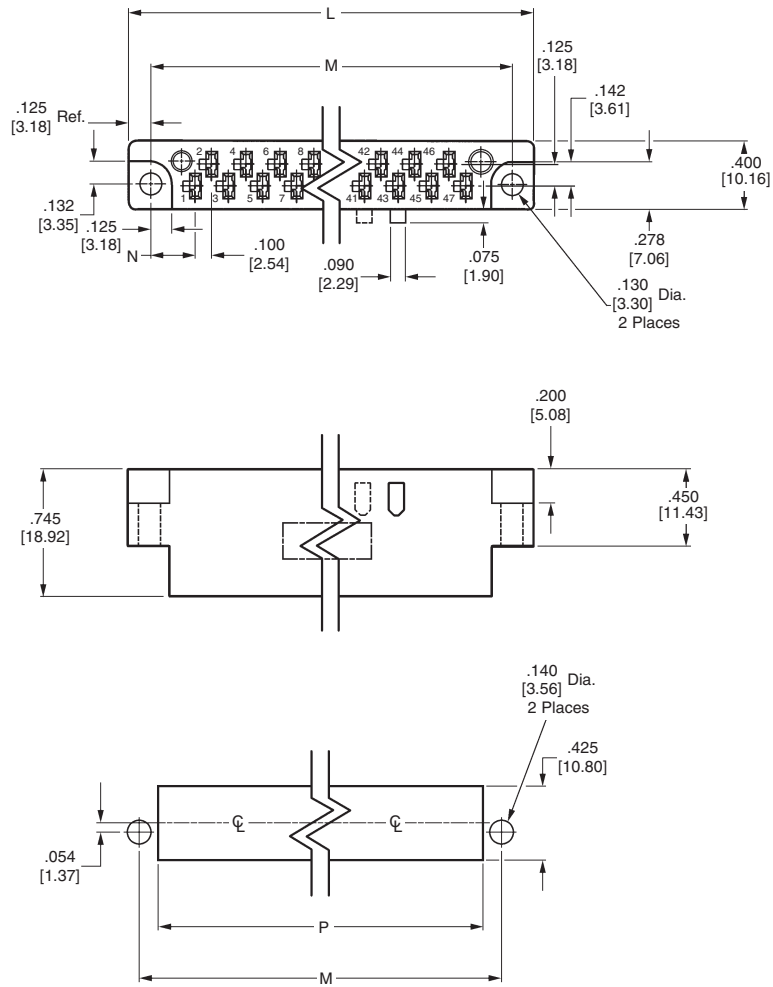
## Receptacle Housings for Crimp Snap-in Contacts

### Material

Glass-filled polyester, green

### Related Product Data

Contact Part Numbers —  
page 1-103



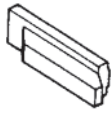
Recommended Panel Cutout

| No. of Pos. | Dimensions      |                 |              |                 | AMP Part Number |
|-------------|-----------------|-----------------|--------------|-----------------|-----------------|
|             | L               | M               | N            | P               |                 |
| 17          | 2.390<br>60.71  | 2.130<br>54.10  | .265<br>6.73 | 1.910<br>48.51  | 531590-1        |
| 23          | 2.990<br>75.95  | 2.730<br>69.34  | .265<br>6.73 | 2.510<br>63.75  | 531590-2        |
| 29          | 3.590<br>91.19  | 3.330<br>84.58  | .265<br>6.73 | 3.110<br>78.99  | 531590-3        |
| 35          | 4.190<br>106.43 | 3.930<br>99.82  | .265<br>6.73 | 3.710<br>94.23  | 531590-4        |
| 41          | 4.790<br>121.67 | 4.530<br>115.06 | .265<br>6.73 | 4.310<br>109.47 | 531590-5        |
| 47          | 5.623<br>142.82 | 5.363<br>136.22 | .381<br>9.68 | 5.143<br>130.63 | 531590-6        |

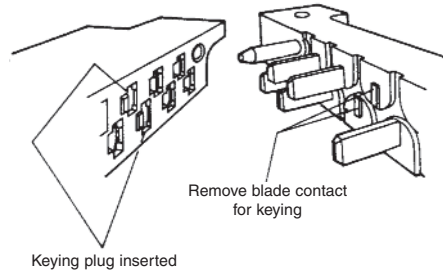


## AMP-BLADE Connector Keying

### Keying Plugs



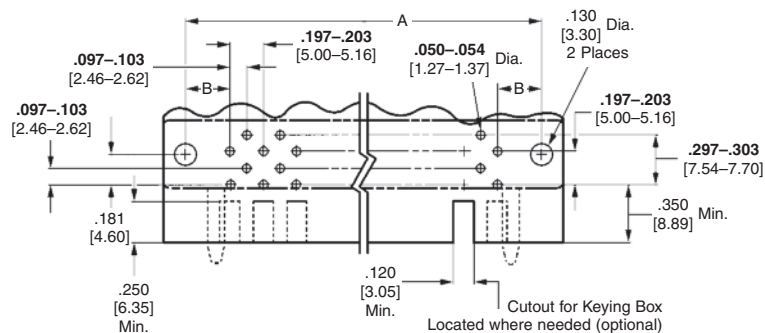
**Keying Plug** — Nylon  
**Part Number** 1-582156-9  
**Military Part Number** 21097/11-07



Keying of the connector can be achieved by plugging receptacle cavities. Insert keying plug into mating side of receptacle housing cavity. Remove corresponding blade contact from blade housing using tool number 811145.

### Printed Circuit Board Layout

| No. of Pos. | Dimensions      |              |
|-------------|-----------------|--------------|
|             | A               | B            |
| 17          | 2.130<br>54.10  | .265<br>6.73 |
| 23          | 2.730<br>69.34  | .265<br>6.73 |
| 29          | 3.330<br>84.58  | .265<br>6.73 |
| 35          | 3.930<br>99.82  | .265<br>6.73 |
| 41          | 4.530<br>115.06 | .265<br>6.73 |
| 47          | 5.363<br>136.22 | .381<br>9.68 |



**Note:** If existing printed circuit board layout does not include the two middle rows of holes, TE Connectivity can supply the connector with the middle rows of tines removed.

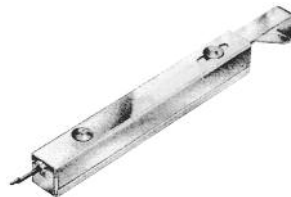
## Application Tooling

### AMP-O-LECTRIC Machine

Substantial savings and the benefits of mass production are obtained with the AMP-BLADE Printed Circuit Connector through the use of AMP automatic machines. The AMP-BLADE receptacle contacts are available in strip form for this use (see table on AMP-BLADE receptacle contacts) and can be terminated to wire leads at rates up to 1500 per hour, depending on operator skill. Contact TE Connectivity for complete specifications and part numbers.

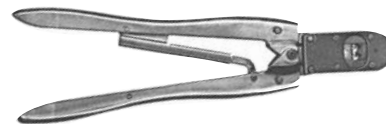


### Extraction Tool



**Receptacle Contact  
Extraction Tool**  
Part Number 465199-1  
Military Part Number M21097/18-01

### Hand Crimping Tools



| Hand Tool<br>Part Number | Loose-Piece<br>Receptacle<br>Contact<br>Part Number | Wire<br>Combinations        |
|--------------------------|-----------------------------------------------------|-----------------------------|
| 91555-1                  | 66010                                               | One 24, one 22<br>or one 20 |
|                          | 531586                                              |                             |
| 59524-1                  | 66010                                               | Two 24 or two 22            |
|                          | 66010                                               | One 22 or one 20            |
|                          | 66011                                               | One 26 or one 24            |
|                          | 531587                                              | One 28, one 26 or one 24    |
| 59525-1                  | 66026                                               | Two 22 or two 20            |
|                          | 531589                                              |                             |
| 90005-1                  | 66026                                               | Two 20, one 18 or one 20    |
|                          | 531589                                              | Two 22 or three 22          |

## Table of Contents

### RF Connectors

|                                                                 |              |
|-----------------------------------------------------------------|--------------|
| Military Specifications .....                                   | 2-4          |
| N Series Connectors .....                                       | 2-5, 2-6     |
| BNC Connectors .....                                            | 2-7, 2-8     |
| TNC Connectors .....                                            | 2-9, 2-10    |
| SMA Connectors                                                  |              |
| Introduction .....                                              | 2-11 to 2-13 |
| For Flexible Cable .....                                        | 2-14 to 2-20 |
| Panel Mount .....                                               | 2-21         |
| For Semi-Rigid Cable .....                                      | 2-22 to 2-25 |
| Printed Circuit Mount .....                                     | 2-26         |
| In-Series Adapters MIL-A-55339 .....                            | 2-26         |
| SMA Receptacles MIL-C-83517                                     |              |
| Panel Mount .....                                               | 2-27 to 2-29 |
| Surface Launch .....                                            | 2-30         |
| End Launch .....                                                | 2-31         |
| Field Replaceable Launchers .....                               | 2-32         |
| Between Series Adapters for Semi-Rigid and Flexible Cable ..... | 2-33, 2-34   |

### Push-On Coaxial Connectors

|                                                         |              |
|---------------------------------------------------------|--------------|
| SMPM Microminiature Connectors .....                    | 2-35, 2-46   |
| Multi-position Backplane RF Modules .....               | 2-37, 2-38   |
| SMP Microminiature Connectors .....                     | 2-39 to 2-43 |
| Between Series Adapters .....                           | 2-43         |
| Miscellaneous .....                                     | 2-43         |
| OSSP Subminiature Modular Blind Mate Connectors .....   | 2-44 to 2-49 |
| OSP (BMA) Miniature Modular Blind Mate Connectors ..... | 2-50 to 2-61 |

### Threaded Connectors

|                                             |              |
|---------------------------------------------|--------------|
| OSMM Microminiature Connectors              |              |
| Introduction .....                          | 2-62, 2-63   |
| For Flexible and Semi-Rigid Cables .....    | 2-64         |
| SSMA Subminiature Connectors                |              |
| Introduction .....                          | 2-65 to 2-67 |
| For Semi-Rigid Cable .....                  | 2-68         |
| For Flexible Cable .....                    | 2-69         |
| Panel Mount Receptacles .....               | 2-70         |
| Bulkhead Mount Receptacles .....            | 2-70         |
| Panel Mount Receptacles .....               | 2-71         |
| Printed Circuit Boards .....                | 2-71         |
| Microstrip Transmission Line Circuits ..... | 2-71         |
| Hermetically Sealed .....                   | 2-72, 2-73   |
| In-Series Adapters .....                    | 2-74         |
| High Frequency for Semi-Rigid Cable .....   | 2-75         |

## Coaxial Cable Termination

One-Step BNC/TNC Connectors ..... 2-76 to 2-81

**Application Tooling** ..... 2-82 to 2-87

**Cross Reference** ..... 2-88 to 2-92

**Cheminax Coaxial Cables Cross Reference** ..... 2-92

## Nanonics Coaxial Connectors

Introduction ..... 2-93

Typical VSWR and Insertion Loss ..... 2-94

50 Ohm Coax Connectors ..... 2-95

Part Numbering Guideline for 50 Ohm Coax Connectors ..... 2-96

Horizontal SMT 50 Ohm Coax Connectors ..... 2-97

Part Numbering Guideline for Horizontal SMT 50 Ohm Coax Connectors ..... 2-98

50 Ohm Coax with Mixed Signal Connectors ..... 2-99

Part Numbering Guideline for 50 Ohm Coax with Mixed Signal Connectors ..... 2-100

Part Number Index Cross Reference ..... 2-101

## MICRODOT Coaxial Connectors

Introduction ..... 2-102

### Standard Connectors

Performance Data Summary ..... 2-103

Screw-On Series ..... 2-104 to 2-109

Slide-On Series ..... 2-110 to 2-113

Quick-Connect Series ..... 2-114 to 2-116

Twinax Series ..... 2-117

Triax Series and Terminals ..... 2-118

Module Blocks ..... 2-119

Caps for Screw-On Series, Receptacle Hoods ..... 2-120

Feed Thru Adapters for Screw-On Series ..... 2-121

BNC and TNC Adapters for Screw-On, Slide-On,  
Quick-Connect Series ..... 2-121, 2-122

### Gold Plated Crimp Style Coaxial Connector Series

Performance Data Summary ..... 2-123

Screw-On Series ..... 2-124 to 2-127

Assembly Tools ..... 2-127

### LEPRA/CON Ultra-Miniature Connectors

Performance Data Summary ..... 2-128

Screw-On Series — Standard Interface ..... 2-129, 2-130

Screw-On Series — Locking Interface ..... 2-131, 2-132

Slide-On Series ..... 2-133, 2-134

Assembly Tools ..... 2-134

BNC / LEPRA/CON Adapters ..... 2-135, 2-136

Snap-Lock Series ..... 2-137

Cable Assemblies ..... 2-138, 2-139

Cable Acceptance Dimensions ..... 2-140 to 2-145

### Hermetic Connectors

Coaxial Screw-On, Slide-On Series ..... 2-146, 2-147

---

**Appendix**

|                                                              |                |
|--------------------------------------------------------------|----------------|
| A - Theory and Application . . . . .                         | 2-148 to 2-153 |
| B - Typical Coaxial Cable Specifications . . . . .           | 2-154 to 2-156 |
| C - Maximum Power Handling Capabilities for Cables . . . . . | 2-157          |
| D - Nominal Loss Characteristics for Cables . . . . .        | 2-158          |

## Military Specifications

### MIL-PRF-39012

- Defines the general requirements and tests for radio frequency (RF) connectors used with flexible RF cables and certain other types of coaxial transmission lines. It includes the following series of connectors in this catalog: N, BNC, TNC, SMA

### MIL-C-55339

- Defines the performance requirements and tests for between series and within series, RF coaxial connector adapters. The In-Series Adapters are shown in this catalog

### MIL-C-83517

- Defines the general requirements and test for RF connectors used with coaxial, strip, or microstrip transmission line devices. It includes the SMA Receptacles as shown in this catalog



### Definition of Categories for MIL-PRF-39012

#### Category A — Flexible Cable

Field serviceable, no special tools required to assemble. Standard wrenches, soldering equipment, pliers, etc., are not defined as special tools. Captured center contact.

#### Category B — Flexible & Semi-Rigid Cable

Non-field replaceable, special tools may be required. These connectors may be used for original installations. Field replacement is intended to be made by Category A or C Connectors. Will not be stocked or procured by the Government. Captured and non-captured center contacts.

#### Category C — Flexible Cable

Field replaceable. Requires crimp tool and specified cable stripping dimensions. Captured center contact. Recommended crimp tool kit: Part Number 1055236-1.

#### Category D — Flexible Cable

Field replaceable. Requires crimp tool for center contact and outer ferrule; specified cable stripping dimensions (same as Category C) and defined piece parts. Captured center contact. Recommended crimp tool kit: Part Number 1055236-1.

#### Category E — Semi-Rigid Cable

Field replaceable. Requires specified cable stripping dimensions. Captured and non-captured center contact. Uses standard tool kit: Part Number 1055420-1.

#### Category F — Semi-Rigid Cable

Field replaceable. Requires crimp tool and specified cable stripping dimensions. Captured center contact. Recommended crimp tool kit: Part Number 1055835-1.



## N Series Connectors (MIL-PRF-39012)

### Product Facts

- Dual “O” Crimp connectors are MIL-PRF-39012, Class II, Category B qualified
- COTS equivalent parts available
- Captive center contacts
- Completely crimpable application – one hand tool crimps all cables with single or double braided shields of a given size
- Impedance matching crimps
- Broad band performance – low VSWR
- Superior cable retention
- PTFE dielectric

The TE Connectivity N Series Connector, featuring a .625 [15.88] - 24 threaded coupling for optimum stability, is highly suited for critical applications and environments. This medium sized connector can withstand shock and vibration for a low noise level and has a constant impedance of 50 ohms. It also features a captive center contact and provides excellent performance at frequencies up to 11 GHz, with voltages to 1000 volts rms.

This connector offers the added benefits of low overall applied cost with a labor-saving two-crimp assembly. The contact is simply crimped to the cable's center conductor, then both braid and cable support are simultaneously crimped to complete the termination.

N Series Connectors are available in standard plug, jack, bulkhead jack and right-angle plug configurations.

### Materials

**Brass**—QQ-B-626  
**Beryllium Copper**—QQ-C-530  
**Dielectric**—PTFE  
**PTFE**—MIL-P-19468  
**Copper, Annealed**—QQ-C-576  
**Phosphor Bronze**—QQ-B-750  
**Silicone Rubber**—ZZ-R-765

### Plating

**Body**—  
Silver per QQ-S-365  
**Center Contact**—  
Gold per ASTM B488, type 3, grade C



### Electrical Characteristics

**Nominal Impedance**—50 ohms  
**Working Voltage**—1000 volts, rms at sea level  
**Frequency Range**—0 to 11 GHz  
**Voltage Standing Wave Ratio (VSWR)**—Straight Plug or Jack—1.3:1 max.  
Right-Angle Plug—  
1.35 max. at 0 to 9.0 GHz  
1.50 max. at 9.0 to 11.0 GHz

**Contact Resistance**—  
Outer Contact—0.2 milliohms  
Center Contact—1.0 milliohms  
Right-Angle—2.5 milliohms

**Insulation Resistance**—  
5000 megohms min.

**Dielectric Withstanding Voltage**—  
2500 Volts, rms at sea level

**RF Leakage**—-90 dB min. at 2 to 3 GHz

**RF Insertion Loss**—0.15 dB max. at 10 GHz; Right-Angle Plug, 0.3 dB max. at 10 GHz

**Corona Level**—500 volts min. at 21 336 m [70,000 ft.]

### Mechanical Characteristics

**Mating/Unmating**—Threaded coupling

**Cable Attachment**—Crimp type - center contact and braid

**Coupling Nut Retention**—445 N [100 lbs.] min.

**Cable Retention**—400 N [90 lbs.] min. RG 214/U Cable

**Durability**—500 cycles per MIL-PRF-39012

**Captive Contact**—27 N [6 lbs.] min. axial retention, either direction

### Environmental Characteristics

**Temperature Range**—  
-85°F to +329°F [-65°C to +165°C]

**Vibration**—MIL-STD-202, Method 204, Test Cond. B

**Shock**—MIL-STD-202, Method 213, Test Cond. I

**Moisture Resistance**—MIL-STD-202 Method 106

**Salt Spray**—MIL-STD-202, Method 101, Test Cond B

**Temperature Cycling**—MIL-STD-202, Method 107, Test Cond. B (except high temperature is +85°C)

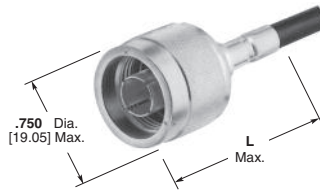
**Note:** All data pertains to use with MIL-PRF-39012 specified cables only.

### Termination Tooling

**Integral Die**—  
Hand Tool Part Number 220015-1

## N Series Connectors (MIL-PRF-39012) (Continued)

### Plugs MIL-PRF-39012/01



### Jacks MIL-PRF-39012/02



### Bulkhead Jacks MIL-PRF-39012/03



### Right-Angle Plugs MIL-PRF-39012/05



### Plugs

| TE Part No. | Reference Part No. | Military PN M39012/01 | Notes        | Termination Style | Body Plating     | Dim L         | RG/U Cable               |
|-------------|--------------------|-----------------------|--------------|-------------------|------------------|---------------|--------------------------|
| 225092-7    | —                  | B0012                 | Weatherproof | Crimp             | Silver           | 1.859 [47.22] | 225                      |
| 1-225092-1  | —                  | —                     | Weatherproof | Crimp             | Silver           | 1.859 [47.22] | 393                      |
| 51692-4     | —                  | B0013                 |              | Crimp             | Silver           | 1.687 [42.85] | 11, 11A, 216             |
| 225392-2    | —                  | —                     | Weatherproof | Crimp             | Silver           | 1.687 [42.85] | 142, 142A, 142B, 400     |
| 225361-4    | —                  | —                     |              | Crimp             | Silver           | 1.687 [42.85] | 142, 142A, 142B, 400     |
| 225361-2    | —                  | —                     |              | Crimp             | Silver           | 1.687 [42.85] | 223, 55, 55A, 55B        |
| 225361-1    | —                  | —                     |              | Crimp             | Silver           | 1.687 [42.85] | 58, 58A, 58B, 58C        |
| 1-225661-2  | —                  | —                     |              | Crimp             | Nickel           | 1.687 [42.85] | 58, 58A, 58B, 58C        |
| 225092-2    | —                  | B0007                 | Weatherproof | Crimp             | Silver           | 1.859 [47.22] | 8, 8A, 213               |
| 51692-2     | —                  | B0007                 |              | Crimp             | Silver           | 1.687 [42.85] | 8, 8A, 213               |
| 225661-2    | —                  | —                     |              | Crimp             | Nickel           | 1.687 [42.85] | 8, 8A, 213               |
| 225092-1    | —                  | B0008                 | Weatherproof | Crimp             | Silver           | 1.859 [47.22] | 9, 9A, 9B, 214           |
| 51692-1     | —                  | B0008                 |              | Crimp             | Silver           | 1.687 [42.85] | 9, 9A, 9B, 214           |
| 225661-1    | —                  | —                     |              | Crimp             | Nickel           | 1.687 [42.85] | 9, 9A, 9B, 214           |
| 1057088-1   | 3001-7941-00       | —                     |              | Solder            | Passivate / Gold | 0.970 [24.60] | 402 semirigid (.141 dia) |
| 1057094-1   | 3001-7985-00       | —                     |              | Solder            | Passivate / Gold | 0.970 [24.60] | 405 semirigid (.086 dia) |

### Jacks

| TE Part No. | Reference Part No. | Military PN M39012/02 | Notes        | Termination Style | Body Plating     | Dim L         | RG/U Cable               |
|-------------|--------------------|-----------------------|--------------|-------------------|------------------|---------------|--------------------------|
| 225093-2    | —                  | B0008                 |              | Crimp             | Silver           | 1.937 [49.19] | 8, 8A, 213               |
| 225664-2    | —                  | —                     | Weatherproof | Crimp             | Nickel           | 1.937 [49.19] | 8, 8A, 213               |
| 225093-7    | —                  | —                     |              | Crimp             | Silver           | 1.937 [49.19] | 225                      |
| 1057116-1   | 3002-7941-00       | —                     |              | Solder            | Passivate / Gold | 1.050 [26.70] | 402 semirigid (.141 dia) |

### Bulkhead Jacks

| TE Part No. | Reference Part No. | Military PN M39012/03 | Notes        | Termination Style | Body Plating     | Dim L         | RG/U Cable                 |
|-------------|--------------------|-----------------------|--------------|-------------------|------------------|---------------|----------------------------|
| 225094-2    | —                  | B0004                 | Weatherproof | Crimp             | Silver           | 2.125 [53.98] | 8, 8A, 213                 |
| 225094-1    | —                  | B0005                 | Weatherproof | Crimp             | Silver           | 2.125 [53.98] | 9, 9A, 9B, 214             |
| 1-225668-1  | —                  | —                     | Weatherproof | Crimp             | Nickel           | 2.125 [53.98] | 393                        |
| 1057140-1   | 3004-7388-10       | —                     |              | Clamp             | Nickel           | 1.125 [28.60] | 174, 179, 187, 188, 316    |
| 1057138-1   | 3004-7341-10       | —                     |              | Clamp             | Nickel           | 1.125 [28.60] | 55, 58, 141, 142, 223, 303 |
| 1057159-1   | 3004-7941-00       | —                     |              | Solder            | Passivate / Gold | 1.335 [33.90] | 402 semirigid (.141 dia)   |
| 1058628-1   | 3604-7841-02       | —                     | 18 GHz       | Solder            | Passivate / Gold | 1.125 [28.60] | 402 semirigid (.141 dia)   |
| 1057165-1   | 3004-7985-00       | —                     |              | Solder            | Passivate / Gold | 1.335 [33.90] | 405 semirigid (.086 dia)   |

### Flange Mount Cable Jacks

| TE Part No. | Reference Part No. | Termination Style | Body Plating     | Dim L         | RG/U Cable               |
|-------------|--------------------|-------------------|------------------|---------------|--------------------------|
| 1057176-1   | 3006-7941-00       | Solder            | Passivate / Gold | 1.000 [25.40] | 402 semirigid (.141 dia) |
| 1057178-1   | 3006-7985-00       | Solder            | Passivate / Gold | 1.000 [25.40] | 405 semirigid (.086 dia) |

### Right Angle Plugs

| TE Part No. | Reference Part No. | Military PN M39012/05 | Notes        | Termination Style | Body Plating | Dim L         | RG/U Cable     |
|-------------|--------------------|-----------------------|--------------|-------------------|--------------|---------------|----------------|
| 225014-2    | —                  | B0002                 |              | Crimp             | Silver       | 2.275 [57.79] | 8, 8A, 213     |
| 225389-2    | —                  | B0002                 | Weatherproof | Crimp             | Silver       | 2.453 [62.31] | 8, 8A, 213     |
| 225669-2    | —                  | —                     |              | Crimp             | Nickel       | 2.275 [57.79] | 8, 8A, 213     |
| 225014-3    | —                  | B0003                 |              | Crimp             | Silver       | 2.275 [57.79] | 9, 9A, 9B, 214 |
| 225389-6    | —                  | —                     | Weatherproof | Crimp             | Silver       | 2.453 [62.31] | 393            |
| 225389-3    | —                  | —                     | Weatherproof | Crimp             | Silver       | 2.453 [62.31] | 225            |

### Panel Mount Receptacles

| TE Part No. | Reference Part No. | Interface | Termination Style |
|-------------|--------------------|-----------|-------------------|
| 1057275-1   | 3051-0000-10       | Plug      | solder cup        |
| 1057284-1   | 3052-0000-10       | Jack      | solder cup        |
| 1057279-1   | 3051-1201-10       | Plug      | straight post     |
| 1057290-1   | 3052-1201-10       | Jack      | straight post     |
| 1057293-1   | 3052-1648-10       | Jack      | contact tab       |

## BNC Connectors (MIL-PRF-39012)

### Product Facts

- Dual "O" Crimp Connectors are MIL-PRF-39012, Class II, Category A or B qualified
- COTS equivalent parts available
- Bayonet lock coupling for quick connect/disconnect
- Various connectors available in 50 ohm versions
- Fully intermateable with comparable BNC UG/U connectors
- Low VSWR

### Related Product Data

#### Performance Specifications —

See chart below

#### Material Specifications —

See chart below

**Military Category** — All MIL type "O" crimp connectors are Category B Type (TE Connectivity Crimp Tooling), unless otherwise noted.

**Packaging** — All connectors are packaged individually.

The TE Connectivity BNC RF connector family with bayonet locking coupling provides highly reliable, quick connect/disconnect coaxial connections. Exclusive "O" crimp terminations allow positive insulation grip and require no soldering, providing terminations at a very low overall applied cost.

Available in 50 ohm versions, these connectors feature numerous styles including cable plugs and jacks. These connectors accept a wide range of coaxial cables and are intermateable with industry standard connectors designed to MIL-PRF-39012 specifications.



| Characteristics                                         | Category B<br>"O" Crimp (MIL Type)                 |
|---------------------------------------------------------|----------------------------------------------------|
| <b>Electrical</b>                                       |                                                    |
| Impedance, Nom. (Ohms)                                  | 50                                                 |
| Working Voltage (Volts RMS)                             | 500                                                |
| Contact Resistance (Milliohms)                          | Inner: 1.5<br>Outer: 2.0                           |
| Initial Insulation Resistance (Megohms)                 | 5000                                               |
| Dielectric Withstanding Voltage (VAC)                   | 1500                                               |
| Corona Level at 70,000 ft. (Volts, RMS)                 | 375                                                |
| RF Leakage, Max. (dB)                                   | -55 at 2-3 GHz                                     |
| RF Insertion Loss, Max. (dB)                            | 0.2 at 3 GHz                                       |
| Frequency Range (GHz)                                   | 0-4                                                |
| VSWR in Frequency Range Max.                            | 1.30                                               |
| <b>Mechanical</b>                                       |                                                    |
| Force to Engage (lbs. [N])/couple, (in-lbs. [N-M]) max. | 13.3/11.12<br>[3/2.5]                              |
| Coupling Nut Retention, Min. N [lbs.]                   | 444.8<br>[100]                                     |
| Cable Retention, N [lbs.]                               | 266.9 [60]<br>(RG58C/U)                            |
| Durability (Cycles)                                     | 500                                                |
| Jam Nut Mounting Torque, Max. [N•m] (in. lbs.)          | 25<br>[2.8]                                        |
| <b>Environmental</b>                                    |                                                    |
| Temperature Range, Operating (C°)                       | -65 to +165 <sup>1</sup> / -55 to +85 <sup>2</sup> |
| Vibration                                               | MIL-STD-202<br>Method 204 Cond. B                  |
| Physical Shock                                          | MIL-STD-202<br>Method 213 Cond. G, 50 G's          |
| Thermal Shock                                           | MIL-STD-202<br>Method 107                          |
| Moisture Resistance                                     | MIL-STD-202<br>Method 106                          |
| Salt Spray                                              | MIL-STD-202<br>Method 101 Cond. B                  |
| Product Specification                                   | 108-12020                                          |

<sup>1</sup> Assembled to cable with polytetrafluoroethylene dielectric.

<sup>2</sup> Assembled to cable with polyethylene dielectric.

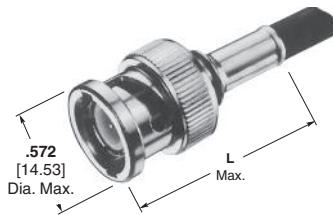
| Connector Component                           | Category A & B<br>"O" Crimp (MIL Type)      |
|-----------------------------------------------|---------------------------------------------|
| <b>Connector Material</b>                     |                                             |
| Collar                                        | Brass, QQ-B-626                             |
| Outer Contact (Plug)                          | Phos. Bronze, QQ-B-750                      |
| Shell (Jack)                                  | Brass, QQ-B-626                             |
| Dielectric                                    | PTFE, MIL-P-19468                           |
| Center Contact (Plug)                         | Brass, QQ-B-626                             |
| Center Contact (Jack)                         | Beryl. Copper, ASTM-B-643<br>QQ-C-530       |
| Gasket                                        | Silicon Rubber, QQ-R-765                    |
| Ferrule                                       | Copper, QQ-C-576                            |
| <b>Connector Primary Finishes<sup>1</sup></b> |                                             |
| Collar                                        | Silver, QQ-S-365<br>Bright Nickel, QQ-N-290 |
| Outer Contacts (Plug & Jack)                  | Silver, QQ-S-365<br>Bright Nickel, QQ-N-290 |
| Center Contacts (Plug & Jack)                 | Gold<br>MIL-G-45204                         |
| Ferrule <sup>2</sup>                          | Silver, QQ-S-365<br>Tin Lead, ASTM-B-545    |

<sup>1</sup> If more than one finish is listed, refer to individual catalog page(s) or customer drawings for exact specification.

<sup>2</sup> Ferrules with tin-lead finish are used with nickel plated outer contacts.

## BNC Connectors (MIL-PRF-39012) (Continued)

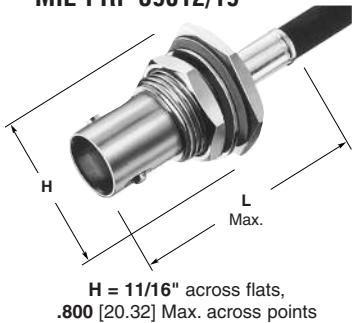
### Plugs MIL-PRF-39012/16



### Jacks MIL-PRF-39012/17



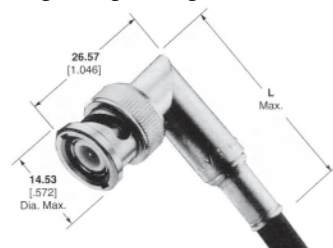
### Bulkhead Jacks MIL-PRF-39012/19



### Field Serviceable Bulkhead Jack MIL-PRF-39012/19



### Right Angle Plugs



### Plugs

| TE Part No. | Military PN<br>M39012/16 | Termination<br>Style | Body Plating | Dim L                | RG/U Cable                                                         |
|-------------|--------------------------|----------------------|--------------|----------------------|--------------------------------------------------------------------|
| 8-331350-0  | —                        | Crimp                | Silver       | <b>1.188</b> [30.18] | 174, 188, 316                                                      |
| 5225395-7   | —                        | Crimp                | Nickel       | <b>1.188</b> [30.18] | 174, 188, 316                                                      |
| 9-331350-3  | —                        | Crimp                | Silver       | <b>1.188</b> [30.18] | 179, 187                                                           |
| 5225395-8   | —                        | Crimp                | Nickel       | <b>1.188</b> [30.18] | 179, 187                                                           |
| 2-331350-1  | B0004                    | Crimp                | Silver       | <b>1.188</b> [30.18] | 58, 58A, 58B, 58C                                                  |
| 5225395-1   | —                        | Crimp                | Nickel       | <b>1.188</b> [30.18] | 58, 58A, 58B, 58C                                                  |
| 5225395-3   | —                        | Crimp                | Nickel       | <b>1.188</b> [30.18] | 55, 223                                                            |
| 5225395-5   | —                        | Crimp                | Nickel       | <b>1.188</b> [30.18] | 141                                                                |
| 2-331350-9  | B0007                    | Crimp                | Silver       | <b>1.188</b> [30.18] | 142, 400                                                           |
| 5225395-6   | —                        | Crimp                | Nickel       | <b>1.188</b> [30.18] | 142, 400                                                           |
| 331350      | B0008                    | Crimp                | Silver       | <b>1.188</b> [30.18] | 59, 59A, 59B, 62, 62A, 62B, 124, 140, 210, Belden 9291, 9209, 9269 |
| 5225395-2   | —                        | Crimp                | Nickel       | <b>1.188</b> [30.18] | 59, 59A, 59B, 62, 62A, 62B, 124, 140, 210, Belden 9291, 9209, 9269 |
| 221265-1    | —                        | Solder/clamp         | Silver       | <b>1.250</b> [31.75] | 58, 141, 142, 55, 223, 400                                         |
| 1-221265-0  | —                        | Solder/clamp         | Nickel       | <b>1.250</b> [31.75] | 58, 141, 142, 55, 223, 400                                         |
| 221265-2    | —                        | Solder/clamp         | Silver       | <b>1.250</b> [31.75] | 59, 62, 71, 210                                                    |
| 1-221265-1  | —                        | Solder/clamp         | Nickel       | <b>1.250</b> [31.75] | 59, 62, 71, 210                                                    |

### Jacks

| TE Part No. | Military PN<br>M39012/17 | Termination<br>Style | Body Plating | Dim L                | RG/U Cable                                                         |
|-------------|--------------------------|----------------------|--------------|----------------------|--------------------------------------------------------------------|
| 2-331351-4  | —                        | Crimp                | Silver       | <b>1.200</b> [30.48] | 174, 188, 316                                                      |
| 5225396-7   | —                        | Crimp                | Nickel       | <b>1.200</b> [30.48] | 174, 188, 316                                                      |
| 2-331351-1  | B0004                    | Crimp                | Silver       | <b>1.200</b> [30.48] | 58, 58A, 58B, 58C                                                  |
| 5225396-1   | —                        | Crimp                | Nickel       | <b>1.200</b> [30.48] | 58, 58A, 58B, 58C                                                  |
| 331351      | B0008                    | Crimp                | Silver       | <b>1.200</b> [30.48] | 59, 59A, 59B, 62, 62A, 62B, 124, 140, 210, Belden 9291, 9209, 9269 |
| 5225396-2   | —                        | Crimp                | Nickel       | <b>1.200</b> [30.48] | 59, 59A, 59B, 62, 62A, 62B, 124, 140, 210, Belden 9291, 9209, 9269 |

### Bulkhead Jacks

| TE Part No. | Military PN<br>M39012/19 | Termination<br>Style | Body Plating | Dim L                | RG/U Cable                                                         |
|-------------|--------------------------|----------------------|--------------|----------------------|--------------------------------------------------------------------|
| 1-331693-2  | —                        | Crimp                | Silver       | <b>1.406</b> [35.71] | 174, 188, 316                                                      |
| 5225398-7   | —                        | Crimp                | Nickel       | <b>1.375</b> [34.93] | 174, 188, 316                                                      |
| 5225398-8   | —                        | Crimp                | Nickel       | <b>1.375</b> [34.93] | 179, 187                                                           |
| 1-331693-1  | B0003                    | Crimp                | Silver       | <b>1.406</b> [35.71] | 58, 58A, 58B, 58C                                                  |
| 5225398-1   | —                        | Crimp                | Nickel       | <b>1.375</b> [34.93] | 58, 58A, 58B, 58C                                                  |
| 331693      | B0007                    | Crimp                | Silver       | <b>1.406</b> [35.71] | 59, 59A, 59B, 62, 62A, 62B, 124, 140, 210, Belden 9291, 9209, 9269 |
| 5225398-3   | —                        | Crimp                | Nickel       | <b>1.500</b> [38.10] | 55, 223                                                            |
| 5225398-6   | —                        | Crimp                | Nickel       | <b>1.500</b> [38.10] | 142, 400                                                           |

### Right Angle Plugs

| TE Part No. | Military PN<br>M39012/ | Termination<br>Style | Body Plating | Dim L                | RG/U Cable                                                         |
|-------------|------------------------|----------------------|--------------|----------------------|--------------------------------------------------------------------|
| 5225974-1   | —                      | Crimp                | Nickel       | <b>1.540</b> [39.12] | 58                                                                 |
| 5225974-5   | —                      | Crimp                | Nickel       | <b>1.468</b> [37.29] | 59, 59A, 59B, 62, 62A, 62B, 124, 140, 210, Belden 9291, 9209, 9269 |



## TNC Connectors (MIL-PRF-39012)

### Product Facts

- Dual “O” Crimp Connectors are MIL-PRF-39012, Class II, Category B qualified
- COTS equivalent parts available
- Provides excellent performance at frequencies up to 11 GHz
- Standard and weatherproof versions available
- Plugs available for high temperature cable

### Related Product Data

**Military Category**—All crimp connectors are Category B Type (TE Connectivity Crimp Tooling), unless otherwise noted.

**Packaging**—All connectors are packaged individually.

The TE Connectivity TNC RF connector family, with 7/16-28 threaded couplings, provides low noise levels and optimum stability, and can withstand the shock and vibration often present in harsh environments.

Available in 50 ohm versions, these connectors feature cable plugs and jacks. These connectors accept a wide range of coaxial cables and are interchangeable with industry standard connectors designed to MIL-PRF-39012 specifications.



| Characteristics                           | Category B<br>“O” Crimp (MIL Type)                 |
|-------------------------------------------|----------------------------------------------------|
| <b>Electrical</b>                         |                                                    |
| Impedance, Nom. (Ohms)                    | 50                                                 |
| Working Voltage (Volts RMS)               | 500                                                |
| Contact Resistance (Milliohms)            | Inner: 1.5<br>Outer: 0.2                           |
| Initial Insulation Resistance (Megohms)   | 5000                                               |
| Dielectric Withstanding Voltage (VAC)     | 1500                                               |
| Corona Level at 70,000 ft. (Picocoulombs) | 5 max. @375 VRMS                                   |
| RF Leakage, Max. (dB)                     | 60 at 2-3 GHz                                      |
| RF Insertion Loss, Max. (dB)              | 0.18 at 9 GHz                                      |
| Frequency Range (GHz)                     | 0-11                                               |
| VSWR in Frequency Range Max.              | 1.3                                                |
| <b>Mechanical</b>                         |                                                    |
| Force to Engage/Couple, lbs. [N]          | 2/2<br>[8.9/8.9]                                   |
| Coupling Nut Retention, Min. lbs. [N]     | 100<br>[444.8]                                     |
| Cable Retention, lbs. [N]                 | 60 [266.9]<br>RG58C/U                              |
| Durability (Cycles)                       | 500                                                |
| Jam Nut Mounting Torque, Max. lbs. [N•m]  | 25<br>[2.8]                                        |
| <b>Environmental</b>                      |                                                    |
| Temperature Range, Operating (C°)         | -65 to +165 <sup>1</sup> / -55 to +85 <sup>2</sup> |
| Vibration                                 | MIL-STD-202<br>Method 204 Cond. B                  |
| Physical Shock                            | MIL-STD-202<br>Method 213 Cond. I, (100 G's)       |
| Thermal Shock                             | MIL-STD-202<br>Method 107 Cond. B                  |
| Moisture Resistance                       | MIL-STD-202<br>Method 106                          |
| Salt Spray                                | MIL-STD-202<br>Method 101 Cond. B                  |
| Product Specification                     | 108-12001                                          |

<sup>1</sup> Assembled to cable with polytetrafluoroethylene dielectric.

<sup>2</sup> Assembled to cable with polyethylene dielectric.

| Characteristics                               | Category B<br>“O” Crimp (MIL Type)                |
|-----------------------------------------------|---------------------------------------------------|
| <b>Connector Material</b>                     |                                                   |
| Collar                                        | Brass, QQ-B-626                                   |
| Outer Contact (Plug)                          | Phos. Bronze, QQ-B-750<br>Beryl. Copper, QQ-C-530 |
| Outer Contact (Jack)                          | Brass, QQ-B-626                                   |
| Dielectric                                    | PTFE, MIL-P-19468                                 |
| Center Contact (Plug)                         | Brass, QQ-B-626                                   |
| Center Contact (Jack)                         | Beryl. Copper, ASTM-B-643<br>QQ-C-530             |
| Gasket                                        | Silicon Rubber, QQ-R-765                          |
| Ferrule                                       | Copper, QQ-C-576                                  |
| <b>Connector Primary Finishes<sup>1</sup></b> |                                                   |
| Collar                                        | Silver, QQ-S-365                                  |
| Outer Contact (Plug & Jack)                   | Bright Nickel, QQ-N-290                           |
| Center Contact (Plug & Jack)                  | Silver, QQ-S-365                                  |
| Ferrule                                       | Gold, MIL-G-45204                                 |

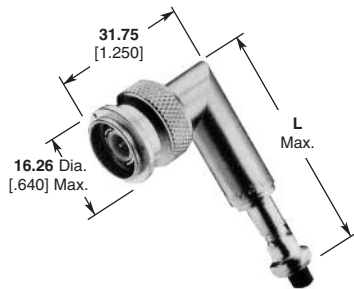
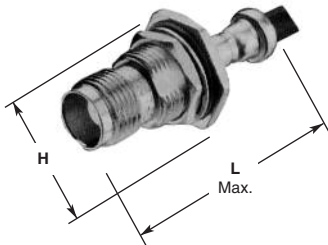
<sup>1</sup> If several finishes are listed, refer to individual catalog page(s) or customer drawings for exact specification.

## TNC Connectors (MIL-PRF-39012) (Continued)

### Plugs MIL-PRF-39012/26 (Weatherproof)



### Jacks MIL-PRF-39012/27 (Weatherproof)



### Panel Jack MIL-PRF-39012/29



### Plugs

| TE Part No. | Reference Part No. | Military PN M39012/26 | Notes        | Termination Style | Body Plating     | Dim L                | RG/U Cable                                                         |
|-------------|--------------------|-----------------------|--------------|-------------------|------------------|----------------------|--------------------------------------------------------------------|
| 225550-2    | —                  | B0005                 | Weatherproof | Crimp             | Silver           | <b>1.375</b> [34.93] | 58, 58A, 58B, 58C                                                  |
| 5225555-2   | —                  | —                     | Weatherproof | Crimp             | Nickel           | <b>1.375</b> [34.93] | 58, 58A, 58B, 58C                                                  |
| 225550-1    | —                  | B0016                 | Weatherproof | Crimp             | Silver           | <b>1.375</b> [34.93] | 55, 55A, 55B, 223                                                  |
| 225550-6    | —                  | B0006                 | Weatherproof | Crimp             | Silver           | <b>1.375</b> [34.93] | 142, 142A, 142B, 400                                               |
| 225345-6    | —                  | B0006                 | —            | Crimp             | Silver           | <b>1.343</b> [34.11] | 142, 142A, 142B, 400                                               |
| 5-225345-6  | —                  | —                     | —            | Crimp             | Silver           | <b>1.343</b> [34.11] | 142, 142A, 142B, 400                                               |
| 5225555-6   | —                  | —                     | Weatherproof | Crimp             | Nickel           | <b>1.375</b> [34.93] | 142, 142A, 142B, 400                                               |
| 225550-3    | —                  | B0007                 | Weatherproof | Crimp             | Silver           | <b>1.375</b> [34.93] | 59, 59A, 59B, 62, 62A, 62B, 124, 140, 210, Belden 9291, 9209, 9269 |
| 5225555-5   | —                  | —                     | Weatherproof | Crimp             | Nickel           | <b>1.375</b> [34.93] | 141                                                                |
| 1-225550-2  | —                  | —                     | Weatherproof | Crimp             | Silver           | <b>2.000</b> [50.80] | 225                                                                |
| 1-225550-3  | —                  | —                     | Weatherproof | Crimp             | Silver           | <b>1.995</b> [50.67] | 393                                                                |
| 5225555-7   | —                  | —                     | Weatherproof | Crimp             | Nickel           | <b>2.000</b> [50.80] | 8, 213                                                             |
| 5225555-8   | —                  | —                     | Weatherproof | Crimp             | Nickel           | <b>2.000</b> [50.80] | 9, 214                                                             |
| 1057635-1   | 3101-7985-00       | —                     | —            | Solder            | Passivate / Gold | <b>0.770</b> [19.60] | 405 semirigid (.086 dia)                                           |
| 1057631-1   | 3101-7941-00       | —                     | —            | Solder            | Passivate / Gold | <b>0.770</b> [19.60] | 402 semirigid (.141 dia)                                           |

### Jacks

| TE Part No. | Reference Part No. | Military PN M39012/27 | Notes        | Termination Style | Body Plating | Dim L                | RG/U Cable           |
|-------------|--------------------|-----------------------|--------------|-------------------|--------------|----------------------|----------------------|
| 225551-2    | —                  | B0005                 | Weatherproof | Crimp             | Silver       | <b>1.406</b> [35.72] | 58, 58A, 58B, 58C    |
| 225551-5    | —                  | B0015                 | Weatherproof | Crimp             | Silver       | <b>1.406</b> [35.72] | 141, 141A, 303       |
| 225551-1    | —                  | B0016                 | Weatherproof | Crimp             | Silver       | <b>1.406</b> [35.72] | 55, 55A, 55B, 223    |
| 225551-6    | —                  | B0006                 | Weatherproof | Crimp             | Silver       | <b>1.406</b> [35.72] | 142, 142A, 142B, 400 |

### Bulkhead Jacks

| TE Part No. | Reference Part No. | Military PN M39012/ | Notes        | Termination Style | Body Plating     | Dim L                | RG/U Cable               |
|-------------|--------------------|---------------------|--------------|-------------------|------------------|----------------------|--------------------------|
| 5225557-2   | —                  | —                   | Weatherproof | Crimp             | Nickel           | <b>1.500</b> [38.10] | 58, 58A, 58B, 58C        |
| 5225557-6   | —                  | —                   | Weatherproof | Crimp             | Nickel           | <b>1.500</b> [38.10] | 142, 142A, 142B, 400     |
| 1057679-1   | 3104-7985-00       | —                   | —            | Solder            | Passivate / Gold | <b>1.200</b> [30.50] | 405 semirigid (.086 dia) |
| 1057676-1   | 3104-7941-00       | —                   | —            | Solder            | Passivate / Gold | <b>1.200</b> [30.50] | 402 semirigid (.141 dia) |

### Right Angle Plugs

| TE Part No. | Reference Part No. | Military PN M39012/ | Notes        | Termination Style | Body Plating | Dim L                | RG/U Cable           |
|-------------|--------------------|---------------------|--------------|-------------------|--------------|----------------------|----------------------|
| 5225554-2   | —                  | —                   | Weatherproof | Crimp             | Silver       | <b>2.500</b> [63.50] | 58, 58A, 58B, 58C    |
| 5225559-2   | —                  | —                   | Weatherproof | Crimp             | Nickel       | <b>2.500</b> [63.50] | 58, 58A, 58B, 58C    |
| 5225554-6   | —                  | —                   | Weatherproof | Crimp             | Silver       | <b>2.500</b> [63.50] | 142, 142A, 142B, 400 |
| 1-5225554-1 | —                  | —                   | Weatherproof | Crimp             | Silver       | <b>2.500</b> [63.50] | 393                  |
| 5225559-8   | —                  | —                   | Weatherproof | Crimp             | Nickel       | <b>2.500</b> [63.50] | 8, 213               |
| 5225554-9   | —                  | —                   | Weatherproof | Crimp             | Silver       | <b>2.500</b> [63.50] | 9, 214               |

### Flange Mount Cable Jacks

| TE Part No. | Reference Part No. | Military PN M39012/29 | Notes | Termination Style | Body Plating     | Dim L                | RG/U Cable               |
|-------------|--------------------|-----------------------|-------|-------------------|------------------|----------------------|--------------------------|
| 225348-2    | —                  | B0005                 | —     | Crimp             | Solder           | <b>1.375</b> [34.93] | 58, 58A, 58B, 58C        |
| 1057699-1   | 3106-7985-00       | ----                  | —     | Solder            | Passivate / Gold | <b>0.900</b> [22.90] | 405 semirigid (.086 dia) |
| 1057697-1   | 3106-7941-00       | ----                  | —     | Solder            | Passivate / Gold | <b>0.900</b> [22.90] | 402 semirigid (.141 dia) |

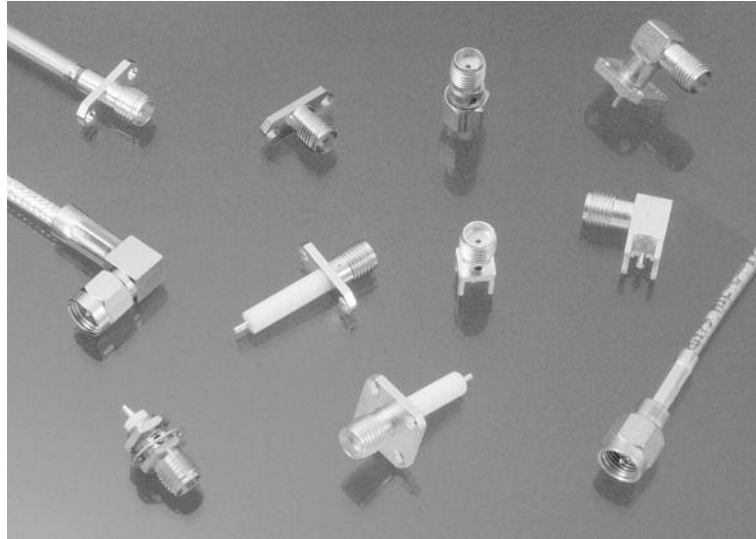
### Panel Mount Receptacles

| TE Part No. | Reference Part No. | Interface | Termination Style |
|-------------|--------------------|-----------|-------------------|
| 1057775-1   | 3152-0000-10       | TNC jack  | solder cup        |
| 1057780-1   | 3152-1201-10       | TNC jack  | solder post       |



**SMA Connectors (MIL-PRF-39012) — Introduction****Product Facts**

- Performance to 18 GHz
- Uses industry standard crimp tools and processes
- Qualified to MIL-PRF-39012
- COTS equivalent parts available



TE Connectivity offers a complete line of SMA connectors. To satisfy the broad range of applications, SMA connectors are available in a broad range of standard configurations including; straight and right-angle cable applied plugs,

bulkhead cable jacks, two and four hole flange mount panel jacks, straight and right-angle pcb mount jacks and various between and in-series adapters, including connectors for semi-rigid cable and micro-strip applications.

## SMA Connectors (MIL-PRF-39012) — Introduction (Continued)

### Electrical Properties

| MIL Type                       | Cable<br>Military<br>Slash Sheet<br>M17/                   | Frequency<br>Max.<br>(GHz) | VSWR<br>(fGHz) | Contact Resistance<br>(milliohms max.) |                  | Insulation<br>Resistance<br>(megohms<br>min.) | Dielectric<br>Withstanding<br>Voltage<br>(Volts RMS) | Corona<br>Extinction<br>Voltage at<br>70,000 Ft.<br>(V RMS min.) | RF<br>Transmission<br>Loss<br>(GHz) | RF High<br>Potential<br>at 5 MHz<br>(V RMS) | RF<br>Leakage<br>(dB min.) |
|--------------------------------|------------------------------------------------------------|----------------------------|----------------|----------------------------------------|------------------|-----------------------------------------------|------------------------------------------------------|------------------------------------------------------------------|-------------------------------------|---------------------------------------------|----------------------------|
|                                |                                                            |                            |                | Center<br>Contact                      | Outer<br>Contact |                                               |                                                      |                                                                  |                                     |                                             |                            |
| MIL-PRF-39012/55               | 93-RG178                                                   | 12.4                       | 1.20+0.025     | 3                                      | 2                | 5,000                                         | 500                                                  | 125                                                              | 0.06 x sqrt (freq)                  | 335                                         | -60                        |
|                                | 54-RG122, 119-RG174,<br>94-RG179, 113-RG316,<br>152-       | 12.4                       | 1.15+0.02      | 3                                      | 2                | 5,000                                         | 750                                                  | 190                                                              | 0.06 x sqrt (freq)                  | 500                                         | -60                        |
|                                | 28-RG058, 60-RG142,<br>84-RG223, 111-RG303,<br>128-RG400   | 12.4                       | 1.15+0.01      | 3                                      | 2                | 5,000                                         | 1000                                                 | 250                                                              | 0.06 x sqrt (freq)                  | 670                                         | -60                        |
|                                | 169-00001                                                  | 12.4                       | 1.15+0.01      | 3                                      | 2                | 5,000                                         | 500                                                  | 125                                                              | 0.06 x sqrt (freq)                  | 335                                         | -60                        |
|                                | 173-00001, 172-00001,<br>157-00001                         | 12.4                       | 1.15+0.01      | 3                                      | 2                | 5,000                                         | 750                                                  | 190                                                              | 0.06 x sqrt (freq)                  | 500                                         | -60                        |
|                                | 155-0001, 158-00001,<br>167-00001, 170-00001,<br>175-00001 | 12.4                       | 1.15+0.01      | 3                                      | 2                | 5,000                                         | 1000                                                 | 250                                                              | 0.06 x sqrt (freq)                  | 670                                         | -60                        |
| MIL-PRF-39012/56               | 93-RG178                                                   | 12.4                       | 1.20+0.03      | 4                                      | 2                | 5,000                                         | 500                                                  | 125                                                              | 0.15 x sqrt (freq)                  | 335                                         | -60                        |
|                                | 54-RG122, 119-RG174,<br>94-RG179, 113-RG316,<br>152-00001  | 12.4                       | 1.15+0.03      | 4                                      | 2                | 5,000                                         | 750                                                  | 190                                                              | 0.15 x sqrt (freq)                  | 500                                         | -60                        |
|                                | 28-RG058, 60-RG142,<br>84-RG223, 111-RG303,<br>128-RG400   | 12.4                       | 1.15+0.02      | 4                                      | 2                | 5,000                                         | 1000                                                 | 250                                                              | 0.15 x sqrt (freq)                  | 670                                         | -60                        |
|                                | 169-00001                                                  | 12.4                       | 1.15+0.02      | 4                                      | 2                | 5,000                                         | 500                                                  | 125                                                              | 0.15 x sqrt (freq)                  | 335                                         | -60                        |
|                                | 173-00001, 172-00001,<br>157-00001                         | 12.4                       | 1.15+0.02      | 4                                      | 2                | 5,000                                         | 750                                                  | 190                                                              | 0.15 x sqrt (freq)                  | 500                                         | -60                        |
|                                | 155-0001, 158-00001,<br>167-00001, 170-00001,<br>175-00001 | 12.4                       | 1.15+0.02      | 4                                      | 2                | 5,000                                         | 1000                                                 | 250                                                              | 0.15 x sqrt (freq)                  | 670                                         | -60                        |
| MIL-PRF-39012/57,<br>/58 & /59 | 93-RG178                                                   | 12.4                       | 1.20+0.025     | 3                                      | 2                | 5,000                                         | 500                                                  | 125                                                              | 0.06 x sqrt (freq)                  | 335                                         | -60                        |
|                                | 54-RG122, 119-RG174,<br>113-RG316                          | 12.4                       | 1.15+0.02      | 3                                      | 2                | 5,000                                         | 750                                                  | 190                                                              | 0.06 x sqrt (freq)                  | 500                                         | -60                        |
|                                | 28-RG058, 60-RG142,<br>84-RG223, 111-RG303,<br>128-RG400   | 12.4                       | 1.15+0.01      | 3                                      | 2                | 5,000                                         | 1000                                                 | 250                                                              | 0.06 x sqrt (freq)                  | 670                                         | -60                        |
|                                | 169-00001                                                  | 12.4                       | 1.15+0.01      | 3                                      | 2                | 5,000                                         | 500                                                  | 125                                                              | 0.06 x sqrt (freq)                  | 335                                         | -60                        |
|                                | 173-00001, 172-00001,<br>157-00001                         | 12.4                       | 1.15+0.01      | 3                                      | 2                | 5,000                                         | 750                                                  | 190                                                              | 0.06 x sqrt (freq)                  | 500                                         | -60                        |
|                                | 155-0001, 158-00001,<br>167-00001, 170-00001,<br>175-00001 | 12.4                       | 1.15+0.01      | 3                                      | 2                | 5,000                                         | 1000                                                 | 250                                                              | 0.06 x sqrt (freq)                  | 670                                         | -60                        |
| MIL-PRF-39012/60,<br>& /61     | —                                                          | N/A                        | N/A            | 3                                      | 2                | 5,000                                         | 1000                                                 | 250                                                              | N/A                                 | 670                                         | N/A                        |
| MIL-PRF-39012/79               | 133-RG405, 133-00001<br>Thru 133-00011 Captive             | 18                         | 1.07+0.01      | 3                                      | 2                | 5,000                                         | 1000                                                 | 250                                                              | 0.03 x sqrt (freq)                  | 670                                         | -90                        |
|                                | 130-RG402, 130-00001<br>Thru 133-00007 Captive             | 18                         | 1.05+0.01      | 3                                      | 2                | 5,000                                         | 1500                                                 | 375                                                              | 0.03 x sqrt (freq)                  | 1000                                        | -90                        |
|                                | 133-RG405, 133-00001<br>Thru 133-00011<br>Non-Captive      | 18                         | 1.07+0.008     | 3                                      | 2                | 5,000                                         | 1000                                                 | 250                                                              | 0.03 x sqrt (freq)                  | 670                                         | -90                        |
|                                | 130-RG402, 130-00001<br>Thru 130-00007<br>Non-Captive      | 18                         | 1.05+0.008     | 3                                      | 2                | 5,000                                         | 1500                                                 | 375                                                              | 0.03 x sqrt (freq)                  | 1000                                        | -90                        |
| MIL-PRF-39012/80               | 133-RG405, 133-00001<br>Thru 133-00011                     | 18                         | 1.10+0.01      | 4                                      | 2                | 5,000                                         | 1000                                                 | 250                                                              | 0.05 x sqrt (freq)                  | 670                                         | -90                        |
|                                | 130-RG402, 130-00001<br>Thru 130-00007                     | 18                         | 1.10+0.01      | 4                                      | 2                | 5,000                                         | 1500                                                 | 375                                                              | 0.05 x sqrt (freq)                  | 1000                                        | -90                        |
| MIL-PRF-39012/81,<br>/82 & /83 | 133-RG405, 133-00001<br>Thru 133-00011 Captive             | 18                         | 1.07+0.01      | 3                                      | 2                | 5,000                                         | 1000                                                 | 250                                                              | 0.03 x sqrt (freq)                  | 670                                         | -90                        |
|                                | 130-RG402, 130-00001<br>Thru 133-00007 Captive             | 18                         | 1.05+0.01      | 3                                      | 2                | 5,000                                         | 1500                                                 | 375                                                              | 0.03 x sqrt (freq)                  | 1000                                        | -90                        |
|                                | 133-RG405, 133-00001<br>Thru 133-00011<br>Non-Captive      | 18                         | 1.07+0.008     | 3                                      | 2                | 5,000                                         | 1000                                                 | 250                                                              | 0.03 x sqrt (freq)                  | 670                                         | -90                        |
|                                | 130-RG402, 130-00001<br>Thru 130-00007<br>Non-Captive      | 18                         | 1.05+0.008     | 3                                      | 2                | 5,000                                         | 1500                                                 | 375                                                              | 0.03 x sqrt (freq)                  | 1000                                        | -90                        |
| MIL-PRF-39012/92               | —                                                          | 18                         | 1.035+0.005    | N/A                                    | 2                | 5,000                                         | N/A                                                  | 250                                                              | 0.03 x sqrt (freq)                  | 670                                         | -90                        |
| MIL-PRF-39012/93<br>& /94      | —                                                          | 18                         | N/A            | 3                                      | 2                | 5,000                                         | 1000                                                 | 250                                                              | N/A                                 | 670                                         | N/A                        |

## SMA Connectors (MIL-PRF-39012) — Introduction (Continued)

### Mechanical and Environmental Properties

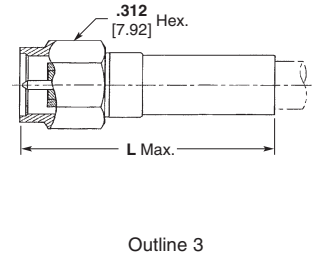
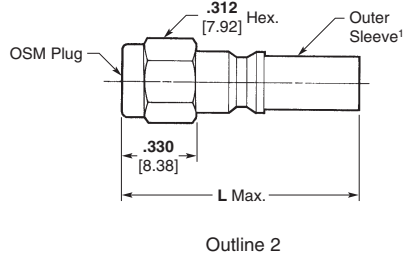
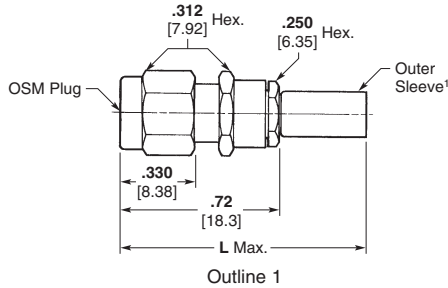
| MIL Type                    | Force to Engage (in-lbs) | Coupling Nut Retention (lbs.) | Coupling Proof Torque (in-lbs) | Cable Retention                                              |                      |            | Insertion                     | Withdrawal                   | Connector Durability | Recommended Mating Torque (in lbs.) |
|-----------------------------|--------------------------|-------------------------------|--------------------------------|--------------------------------------------------------------|----------------------|------------|-------------------------------|------------------------------|----------------------|-------------------------------------|
|                             |                          |                               |                                | Dia.                                                         | Lbs. Min.            | In.-Ounces |                               |                              |                      |                                     |
| MIL-PRF-39012/55            | 2 max.                   | 60                            | 15 min.                        | 0.036 [0.91]<br>0.067 [1.70]<br>0.110 [2.79]<br>0.122 [3.10] | 10<br>20<br>30<br>40 | N/A        | N/A                           | N/A                          | 500 cycles min.      | 7-10                                |
| MIL-PRF-39012/56            | 2 max.                   | 60                            | 15 min.                        | 0.036 [0.91]<br>0.067 [1.70]<br>0.110 [2.79]<br>0.122 [3.10] | 10<br>20<br>30<br>40 | N/A        | N/A                           | N/A                          | 500 cycles min.      | 7-10                                |
| MIL-PRF-39012/57, /58 & /59 | 2 max.                   | N/A                           | N/A                            | 0.036 [0.91]<br>0.067 [1.70]<br>0.110 [2.79]<br>0.122 [3.10] | 10<br>20<br>30<br>40 | N/A        | 2 lbs. max. w/ .0370 dia. pin | 1 oz. min. w/ .0355 dia. pin | 500 cycles min.      | 7-10                                |
| MIL-PRF-39012/60, & /61     | 2 max.                   | N/A                           | N/A                            | N/A                                                          | N/A                  | N/A        | 2 lbs. max. w/ .0370 dia. pin | 1 oz. min. w/ .0355 dia. pin | 500 cycles min.      | 7-10                                |
| MIL-PRF-39012/79            | 2 max.                   | 60                            | 15 min.                        | 133-RG405, 133-00001 Thru 133-00011                          | 30                   | 16         | N/A                           | N/A                          | 500 cycles min.      | 7-10                                |
|                             |                          |                               |                                | 130-RG402, 130-00001 Thru 130-00007                          | 60                   | 55         |                               |                              |                      |                                     |
| MIL-PRF-39012/80            | 2 max.                   | 60                            | 15 min.                        | 133-RG405, 133-00001 Thru 133-00011                          | 30                   | 16         | N/A                           | N/A                          | 500 cycles min.      | 7-10                                |
|                             |                          |                               |                                | 130-RG402, 130-00001 Thru 130-00007                          | 60                   | 55         |                               |                              |                      |                                     |
| MIL-PRF-39012/81, /82 & /83 | 2 max.                   | N/A                           | N/A                            | 133-RG405, 133-00001 Thru 133-00011                          | 30                   | 16         | 2 lbs. max. w/ .0370 dia. pin | 1 oz. min. w/ .0355 dia. pin | 500 cycles min.      | 7-10                                |
|                             |                          |                               |                                | 130-RG402, 130-00001 Thru 130-00007                          | 60                   | 55         |                               |                              |                      |                                     |
| MIL-PRF-39012/92            | 2 max.                   | 60                            | 15 min.                        | N/A                                                          | N/A                  | N/A        | N/A                           | N/A                          | 100 cycles min.      | 7-10                                |
| MIL-PRF-39012/93 & /94      | 2 max.                   | N/A                           | N/A                            | N/A                                                          | N/A                  | N/A        | 2 lbs. max. w/ .0370 dia. pin | 1 oz. min. w/ .0355 dia. pin | 500 cycles min.      | 7-10                                |

### Environmental

| MIL Type                    | Vibration                                             | Shock                                                | Thermal Shock                                                   | Corrosion (Salt Spray)           | Moisture Resistance                                                                                                                             |
|-----------------------------|-------------------------------------------------------|------------------------------------------------------|-----------------------------------------------------------------|----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|
| MIL-PRF-39012/55            | MIL-STD-202 Method 204 Cond. D<br>No Discontinuity    | MIL-STD-202 Method 213 Cond. 1<br>No Discontinuity   | MIL-STD-202 Method 107 Cond. B<br>Except T <sub>HI</sub> 85C    | MIL-STD-202 Method 101 Cond. B   | MIL-STD-202, Method 106<br>No Measurement @ High Humidity<br>Insulation Resistance 200 Megaohms with 5 min. of removal from humidity            |
| MIL-PRF-39012/56            | MIL-STD-202 Method 204 Cond. D<br>No Discontinuity    | MIL-STD-202 Method 213 Cond. 1<br>No Discontinuity   | MIL-STD-202 Method 107 Cond. B<br>Except T <sub>HI</sub> 85C    | MIL-STD-202 Method 101 Cond. B   | MIL-STD-202, Method 106<br>No Measurement @ High Humidity<br>Insulation Resistance 200 Megaohms with 5 min. of removal from humidity            |
| MIL-PRF-39012/57, /58 & /59 | MIL-STD-202 Method 204 Cond. D<br>No Discontinuity    | MIL-STD-202 Method 213 Cond. 1<br>No Discontinuity   | MIL-STD-202 Method 107 Cond. B<br>Except T <sub>HI</sub> 85C    | MIL-STD-202 Method 101 Cond. B   | MIL-STD-202, Method 106<br>No Measurement @ High Humidity<br>Insulation Resistance 200 Megaohms with 5 min. of removal from humidity            |
| MIL-PRF-39012/60, & /61     | MIL-STD-1344 Method 2005 Cond. IV<br>No Discontinuity | MIL-STD-1344 Method 2004 Cond. G<br>No Discontinuity | MIL-STD-1344 Method 1003 Cond. A<br>Except T <sub>HI</sub> 200C | MIL-STD-1344 Method 1001 Cond. B | MIL-STD-1344, Method 1002, Type II<br>No Measurement @ High Humidity<br>Insulation Resistance 200 Megaohms with 5 min. of removal from humidity |
| MIL-PRF-39012/79            | MIL-STD-202 Method 204 Cond. D<br>No Discontinuity    | MIL-STD-202 Method 213 Cond. 1<br>No Discontinuity   | MIL-STD-202 Method 107 Cond. B<br>Except T <sub>HI</sub> 115C   | MIL-STD-202 Method 101 Cond. B   | MIL-STD-202, Method 106<br>No Measurement @ High Humidity<br>Insulation Resistance 200 Megaohms with 5 min. of removal from humidity            |
| MIL-PRF-39012/80            | MIL-STD-202 Method 204 Cond. D<br>No Discontinuity    | MIL-STD-202 Method 213 Cond. 1<br>No Discontinuity   | MIL-STD-202 Method 107 Cond. B<br>Except T <sub>HI</sub> 115C   | MIL-STD-202 Method 101 Cond. B   | MIL-STD-202, Method 106<br>No Measurement @ High Humidity<br>Insulation Resistance 200 Megaohms with 5 min. of removal from humidity            |
| MIL-PRF-39012/81, /82 & /83 | MIL-STD-202 Method 204 Cond. D<br>No Discontinuity    | MIL-STD-202 Method 213 Cond. 1<br>No Discontinuity   | MIL-STD-202 Method 107 Cond. B<br>Except T <sub>HI</sub> 115C   | MIL-STD-202 Method 101 Cond. B   | MIL-STD-202, Method 106<br>No Measurement @ High Humidity<br>Insulation Resistance 200 Megaohms with 5 min. of removal from humidity            |
| MIL-PRF-39012/92            | MIL-STD-202 Method 204 Cond. D<br>No Discontinuity    | MIL-STD-202 Method 213 Cond. 1<br>No Discontinuity   | MIL-STD-202 Method 107 Cond. B<br>Except T <sub>HI</sub> 115C   | MIL-STD-202 Method 101 Cond. B   | MIL-STD-202, Method 106<br>No Measurement @ High Humidity<br>Insulation Resistance 200 Megaohms with 5 min. of removal from humidity            |
| MIL-PRF-39012/93 & /94      | MIL-STD-202 Method 204 Cond. D<br>No Discontinuity    | MIL-STD-202 Method 213 Cond. 1<br>No Discontinuity   | MIL-STD-202 Method 107 Cond. B<br>Except T <sub>HI</sub> 125C   | MIL-STD-202 Method 101 Cond. B   | MIL-STD-202, Method 106<br>No Measurement @ High Humidity<br>Insulation Resistance 200 Megaohms with 5 min. of removal from humidity            |

## SMA Connectors (MIL-PRF-39012) — For Flexible Cable

### Straight Plugs



| Military Part No.<br>M39012/55 | TE Part No. | Reference³<br>Part No.<br>(Ref. Only) | Outline | Cat.¹ | RG/U<br>Cable                         | Dim. L               | COTS<br>Part No.       | Reference³<br>Part No.<br>(Ref. Only) |
|--------------------------------|-------------|---------------------------------------|---------|-------|---------------------------------------|----------------------|------------------------|---------------------------------------|
| -3006                          | 1051757-1   | 2031-8006-92                          | 1       | A     | 178                                   | <b>1.030</b> [26.16] | —                      | —                                     |
| -3007                          | 1051759-1   | 2031-8007-92                          | 1       | A     | 174, 316                              | <b>1.030</b> [26.16] | —                      | —                                     |
| -3009                          | 1051762-1   | 2031-8009-92                          | 2       | A     | 58, 142, 223                          | <b>1.030</b> [26.16] | —                      | —                                     |
| B3011                          | 1051764-1   | 2031-8011-92                          | 1       | B     | 178                                   | <b>1.250</b> [31.75] | 1051687-1<br>1051686-1 | 2031-5102-02<br>2031-5102-00          |
| B3012                          | 1051766-1   | 2031-8012-92                          | 2       | B     | 174, 316                              | <b>1.250</b> [31.75] | 1051665-1<br>1051664-1 | 2031-5012-02<br>2031-5012-00          |
| B3014                          | 1051768-1   | 2031-8014-92                          | 2       | B     | 58                                    | <b>1.250</b> [31.75] | 1051678-1              | 2031-5055-00                          |
| B3015                          | 1051769-1   | 2031-8015-92                          | 2       | B     | 142                                   | <b>1.250</b> [31.75] | 1051651-1<br>1051650-1 | 2031-5005-02<br>2031-5005-00          |
| B3016                          | 1051770-1   | 2031-8016-92                          | 2       | B     | 223                                   | <b>1.250</b> [31.75] | 1051651-1<br>1051650-1 | 2031-5005-02<br>2031-5005-00          |
| B3019                          | 1056413-1   | 2031-8019-92                          | 1       | B     | 174, 316                              | <b>1.375</b> [34.93] | 1051665-1<br>1051664-1 | 2031-5012-02<br>2031-5012-00          |
| B3019                          | 225532-4²   | —                                     | 3       | B     | 174, 188,<br>188A, 316                | <b>.950</b> [24.13]  | 221117-2               | —                                     |
| B3021                          | 225532-1²   | —                                     | 3       | B     | 58, 58A,<br>58B, 58C                  | <b>1.030</b> [26.16] | —                      | —                                     |
| —                              | —           | —                                     | 2       | B     | 142                                   | <b>1.375</b> [34.93] | 1051661-1<br>1051660-1 | 2031-5011-02<br>2031-5011-00          |
| B3022                          | 225532-3²   | —                                     | 4       | B     | 142, 142A, 142B,<br>400, Belden 84142 | <b>1.030</b> [26.16] | 221117-1               | —                                     |
| —                              | —           | —                                     | 2       | B     | 223                                   | <b>1.375</b> [34.93] | 1051661-1<br>1051660-1 | 2031-5011-02<br>2031-5011-00          |
| B3023                          | 1-225532-0² | —                                     | 4       | B     | 223, 55,<br>55A, 55B                  | <b>1.030</b> [26.16] | —                      | —                                     |
| B3024                          | 225532-9²   | —                                     | 4       | B     | 141, 141A,<br>303                     | <b>1.030</b> [26.16] | —                      | —                                     |
| -3025                          | 1051780-1   | 2031-8025-92                          | 1       | C     | 178                                   | <b>1.250</b> [31.75] | 1051687-1<br>1051686-1 | 2031-5102-02<br>2031-5102-00          |
| -3026                          | 1051782-1   | 2031-8026-92                          | 1       | C     | 174, 316                              | <b>1.250</b> [31.75] | 1051665-1<br>1051664-1 | 2031-5012-02<br>2031-5012-00          |

\* No safety wire holes.

¹ Category A: solder sleeve; Categories B, C and D: crimp sleeve.

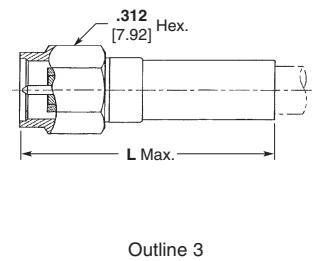
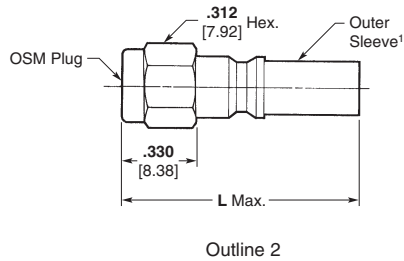
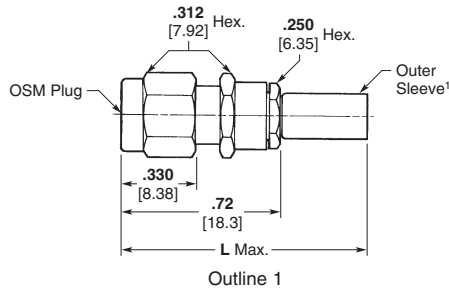
² Use Integral Die Crimp Tool Part Number 220061-1.

³ -92 and -02 indicate passivated stainless steel finish. -00 indicates gold plated finish.

See page 2-4 for description of categories and pages 2-82 to 2-87 for tooling (unless noted otherwise).

## SMA Connectors (MIL-PRF-39012) — For Flexible Cable (Continued)

### Straight Plugs (Continued)



| Military Part No.<br>M39012/55 | TE Part No. | Reference <sup>3</sup><br>Part No.<br>(Ref. Only) | Outline | Cat. <sup>1</sup> | RG/U<br>Cable | Dim. L               | COTS<br>Part No.       | Reference <sup>3</sup><br>Part No.<br>(Ref. Only) |
|--------------------------------|-------------|---------------------------------------------------|---------|-------------------|---------------|----------------------|------------------------|---------------------------------------------------|
| -3028                          | 1051785-1   | 2031-8028-92                                      | 2       | C                 | 142, 223      | <b>1.250</b> [31.75] | 1051661-1<br>1051660-1 | 2031-5011-02<br>2031-5011-00                      |
| -3029                          | 1051787-1   | 2031-8029-92                                      | 2       | C                 | 58, 303       | <b>1.250</b> [31.75] | —                      | —                                                 |
| *-3106                         | 1051789-1   | 2031-8106-92                                      | 1       | A                 | 178           | <b>1.030</b> [26.16] | —                      | —                                                 |
| *-3107                         | 1051791-1   | 2031-8107-92                                      | 1       | A                 | 174, 316      | <b>1.030</b> [26.16] | —                      | —                                                 |
| *-3109                         | 1051794-1   | 2031-8109-92                                      | 2       | A                 | 58, 142, 223  | <b>1.030</b> [26.16] | —                      | —                                                 |
| *B3112                         | 1051797-1   | 2031-8112-92                                      | 2       | B                 | 174, 316      | <b>1.250</b> [31.75] | 1051665-1<br>1051664-1 | 2031-5012-02<br>2031-5012-00                      |
| *B3113                         | 1051798-1   | 2031-8113-92                                      | 2       | B                 | 122           | <b>1.250</b> [31.75] | —                      | —                                                 |
| *B3114                         | 1051799-1   | 2031-8114-92                                      | 2       | B                 | 58            | <b>1.250</b> [31.75] | 1051678-1              | 2031-5055-00                                      |
| *B3115                         | 1051800-1   | 2031-8115-92                                      | 2       | B                 | 142           | <b>1.250</b> [31.75] | 1051651-1<br>1051650-1 | 2031-5005-02<br>2031-5005-00                      |
| *B3116                         | 1051801-1   | 2031-8116-92                                      | 2       | B                 | 223           | <b>1.250</b> [31.75] | 1051651-1<br>1051650-1 | 2031-5005-02<br>2031-5005-00                      |
| *B3119                         | 1051804-1   | 2031-8119-92                                      | 1       | B                 | 174, 316      | <b>1.375</b> [34.93] | 1051665-1<br>1051664-1 | 2031-5012-02<br>2031-5012-00                      |
| —                              | —           | —                                                 | 2       | B                 | 142           | <b>1.375</b> [34.93] | 1051661-1<br>1051660-1 | 2031-5011-02<br>2031-5011-00                      |
| —                              | —           | —                                                 | 2       | B                 | 223           | <b>1.375</b> [34.93] | 1051661-1<br>1051660-1 | 2031-5011-02<br>2031-5011-00                      |
| *-3125                         | 1051810-1   | 2031-8125-92                                      | 1       | C                 | 178           | <b>1.250</b> [31.75] | 1051687-1<br>1051686-1 | 2031-5102-02<br>2031-5102-00                      |
| *-3126                         | 1051812-1   | 2031-8126-92                                      | 1       | C                 | 174, 316      | <b>1.250</b> [31.75] | 1051665-1<br>1051664-1 | 2031-5012-02<br>2031-5012-00                      |
| *-3128                         | 1051815-1   | 2031-8128-92                                      | 2       | C                 | 142, 223      | <b>1.250</b> [31.75] | 1051661-1<br>1051660-1 | 2031-5011-02<br>2031-5011-00                      |
| *-3129                         | 1051816-1   | 2031-8129-92                                      | 2       | C                 | 58, 303       | <b>1.250</b> [31.75] | —                      | —                                                 |
| -3502                          | 1051788-1   | 2031-8052-92                                      | 2       | D                 | 142, 400      | <b>1.250</b> [31.75] | 1051661-1<br>1051660-1 | 2031-5011-02<br>2031-5011-00                      |
| *-3602                         | 1051817-1   | 2031-8162-92                                      | 2       | D                 | 142, 400      | <b>1.250</b> [31.75] | 1051661-1<br>1051660-1 | 2031-5011-02<br>2031-5011-00                      |

\* No safety wire holes.

<sup>1</sup> Category A: solder sleeve; Categories B, C and D: crimp sleeve.

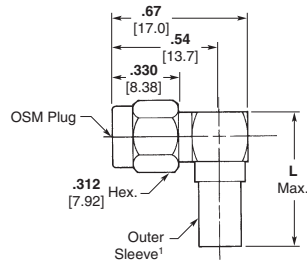
<sup>2</sup> Use Integral Die Crimp Tool Part Number 220061-1.

<sup>3</sup> -92 and -02 indicate passivated stainless steel finish. -00 indicates gold plated finish.

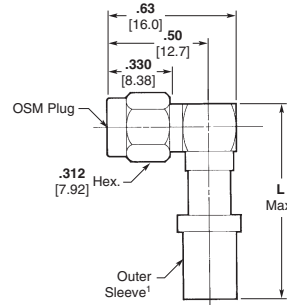
See page 2-4 for description of categories and pages 2-82 to 2-87 for tooling (unless noted otherwise).

## SMA Connectors (MIL-PRF-39012) — For Flexible Cable (Continued)

### Right Angle Plugs



Outline 1



Outline 2

| Military Part No.<br>M39012/56 | TE Part No. | Reference² Part No.<br>(Ref. Only) | Outline | Cat.¹ | RG/U Cable   | Dim. L               | COTS Part No.          | Reference² Part No.<br>(Ref. Only) |
|--------------------------------|-------------|------------------------------------|---------|-------|--------------|----------------------|------------------------|------------------------------------|
| -3006                          | 1052149-1   | 2037-8006-92                       | 1       | A     | 178          | <b>1.125</b> [28.58] | —                      | —                                  |
| -3007                          | 1052151-1   | 2037-8007-92                       | 1       | A     | 174, 316     | <b>1.125</b> [28.58] | 1052067-1<br>1052066-1 | 2037-5006-02<br>2037-5006-00       |
| -3008                          | 1052152-1   | 2037-8008-92                       | 1       | A     | 122          | <b>1.125</b> [28.58] | —                      | —                                  |
| -3009                          | 1052154-1   | 2037-8009-92                       | 1       | A     | 58, 142, 223 | <b>1.125</b> [28.58] | 1052063-1<br>1052062-1 | 2037-5005-02<br>2037-5005-00       |
| -3010                          | 1052155-1   | 2037-8010-92                       | 1       | A     | 303          | <b>1.125</b> [28.58] | 1052063-1<br>1052062-1 | 2037-5005-02<br>2037-5005-00       |
| B3011                          | 1052156-1   | 2037-8011-92                       | 1       | B     | 178          | <b>1.250</b> [31.75] | 1052098-1<br>1052097-1 | 2037-5100-02<br>2037-5100-00       |
| B3012                          | 1052157-1   | 2037-8012-92                       | 1       | B     | 174, 316     | <b>1.250</b> [31.75] | 1052076-1<br>1052075-1 | 2037-5008-02<br>2037-5008-00       |
| B3013                          | 1052158-1   | 2037-8013-92                       | 1       | B     | 122          | <b>1.250</b> [31.75] | —                      | —                                  |
| B3014                          | 1052159-1   | 2037-8014-92                       | 1       | B     | 58           | <b>1.250</b> [31.75] | 1052092-1              | 2037-5056-00                       |
| B3015                          | 1052160-1   | 2037-8015-92                       | 1       | B     | 142          | <b>1.250</b> [31.75] | 1052072-1<br>1052071-1 | 2037-5007-02<br>2037-5007-00       |
| B3016                          | 1052161-1   | 2037-8016-92                       | 1       | B     | 223          | <b>1.250</b> [31.75] | 1052072-1<br>1052071-1 | 2037-5007-02<br>2037-5007-00       |
| B3017                          | 1052162-1   | 2037-8017-92                       | 1       | B     | 303          | <b>1.250</b> [31.75] | 1052092-1              | 2037-5056-00                       |
| B3018                          | 1052163-1   | 2037-8018-92                       | 1       | B     | 178          | <b>1.375</b> [34.93] | 1052098-1<br>1052097-1 | 2037-5100-02<br>2037-5100-00       |
| B3019                          | 1052165-1   | 2037-8019-92                       | 1       | B     | 174, 316     | <b>1.375</b> [34.93] | 1052076-1<br>1052075-1 | 2037-5008-02<br>2037-5008-00       |
| B3020                          | 1052166-1   | 2037-8020-92                       | 1       | B     | 122          | <b>1.375</b> [34.93] | —                      | —                                  |
| B3021                          | 1052167-1   | 2037-8021-92                       | 1       | B     | 58           | <b>1.375</b> [34.93] | 1052092-1              | 2037-5056-00                       |
| B3022                          | 1052168-1   | 2037-8022-92                       | 1       | B     | 142          | <b>1.375</b> [34.93] | 1052072-1<br>1052071-1 | 2037-5007-02<br>2037-5007-00       |
| B3023                          | 1052169-1   | 2037-8023-92                       | 1       | B     | 223          | <b>1.375</b> [34.93] | 1052072-1<br>1052071-1 | 2037-5007-02<br>2037-5007-00       |
| B3024                          | 1052170-1   | 2037-8024-92                       | 1       | B     | 303          | <b>1.375</b> [34.93] | 1052092-1              | 2037-5056-00                       |
| -3025                          | 1052171-1   | 2037-8025-92                       | 1       | C     | 178          | <b>1.375</b> [34.93] | 1052098-1<br>1052097-1 | 2037-5100-02<br>2037-5100-00       |
| -3026                          | 1052173-1   | 2037-8026-92                       | 1       | C     | 174, 316     | <b>1.375</b> [34.93] | 1052076-1<br>1052075-1 | 2037-5008-02<br>2037-5008-00       |
| -3027                          | 1052174-1   | 2037-8027-92                       | 1       | C     | 122          | <b>1.375</b> [34.93] | —                      | —                                  |
| -3028                          | 1052176-1   | 2037-8028-92                       | 1       | C     | 142, 223     | <b>1.375</b> [34.93] | 1052072-1<br>1052071-1 | 2037-5007-02<br>2037-5007-00       |

\* No safety wire holes.

¹ Category A: solder sleeve; Categories B, C and D: crimp sleeve.

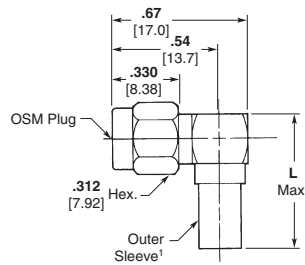
² -92 and -02 indicate passivated stainless steel finish. -00 indicates gold plated finish.

See page 2-4 for description of categories and pages 2-82 to 2-87 for tooling (unless noted otherwise).

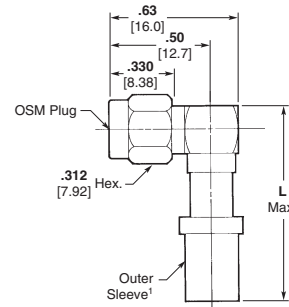


## SMA Connectors (MIL-PRF-39012) — For Flexible Cable (Continued)

### Right Angle Plugs (Continued)



Outline 1



Outline 2

| Military Part No.<br>M39012/56 | TE Part No. | Reference <sup>2</sup><br>Part No.<br>(Ref. Only) | Outline | Cat. <sup>1</sup> | RG/U<br>Cable | Dim. L               | COTS<br>Part No.       | Reference <sup>2</sup><br>Part No.<br>(Ref. Only) |
|--------------------------------|-------------|---------------------------------------------------|---------|-------------------|---------------|----------------------|------------------------|---------------------------------------------------|
| -3029                          | 1052177-1   | 2037-8029-92                                      | 1       | C                 | 58, 303       | <b>1.375</b> [34.93] | 1052092-1              | 2037-5056-00                                      |
| *-3106                         | 1052179-1   | 2037-8106-92                                      | 1       | A                 | 178           | <b>1.125</b> [28.58] | —                      | —                                                 |
| *-3107                         | 1052181-1   | 2037-8107-92                                      | 1       | A                 | 174, 316      | <b>1.125</b> [28.58] | 1052067-1<br>1052066-1 | 2037-5006-02<br>2037-5006-00                      |
| *-3108                         | 1052182-1   | 2037-8108-92                                      | 1       | A                 | 122           | <b>1.125</b> [28.58] | —                      | —                                                 |
| *-3109                         | 1052184-1   | 2037-8109-92                                      | 1       | A                 | 58, 142, 223  | <b>1.125</b> [28.58] | 1052063-1<br>1052062-1 | 2037-5005-02<br>2037-5005-00                      |
| *-3110                         | 1052185-1   | 2037-8110-92                                      | 1       | A                 | 303           | <b>1.125</b> [28.58] | 1052063-1<br>1052062-1 | 2037-5005-02<br>2037-5005-00                      |
| *B3111                         | 1052186-1   | 2037-8111-92                                      | 1       | B                 | 178           | <b>1.250</b> [31.75] | 1052098-1<br>1052097-1 | 2037-5100-02<br>2037-5100-00                      |
| *B3112                         | 1052187-1   | 2037-8112-92                                      | 1       | B                 | 174, 316      | <b>1.250</b> [31.75] | 1052076-1<br>1052075-1 | 2037-5008-02<br>2037-5008-00                      |
| *B3113                         | 1052188-1   | 2037-8113-92                                      | 1       | B                 | 122           | <b>1.250</b> [31.75] | —                      | —                                                 |
| *B3114                         | 1052189-1   | 2037-8114-92                                      | 1       | B                 | 58            | <b>1.250</b> [31.75] | 1052092-1              | 2037-5056-00                                      |
| *B3115                         | 1052190-1   | 2037-8115-92                                      | 1       | B                 | 142           | <b>1.250</b> [31.75] | 1052072-1<br>1052071-1 | 2037-5007-02<br>2037-5007-00                      |
| *B3116                         | 1052191-1   | 2037-8116-92                                      | 1       | B                 | 223           | <b>1.250</b> [31.75] | 1052072-1<br>1052071-1 | 2037-5007-02<br>2037-5007-00                      |
| *B3117                         | 1052192-1   | 2037-8117-92                                      | 1       | B                 | 303           | <b>1.250</b> [31.75] | 1052092-1              | 2037-5056-00                                      |
| *B3118                         | 1052193-1   | 2037-8118-92                                      | 1       | B                 | 178           | <b>1.375</b> [34.93] | 1052098-1<br>1052097-1 | 2037-5100-02<br>2037-5100-00                      |
| *B3119                         | 1052194-1   | 2037-8119-92                                      | 1       | B                 | 174, 316      | <b>1.375</b> [34.93] | 1052076-1<br>1052075-1 | 2037-5008-02<br>2037-5008-00                      |
| *B3120                         | 1052195-1   | 2037-8120-92                                      | 1       | B                 | 122           | <b>1.375</b> [34.93] | —                      | —                                                 |
| *B3121                         | 1052196-1   | 2037-8121-92                                      | 1       | B                 | 58            | <b>1.375</b> [34.93] | 1052092-1              | 2037-5056-00                                      |
| *B3122                         | 1052197-1   | 2037-8122-92                                      | 1       | B                 | 142           | <b>1.375</b> [34.93] | 1052072-1<br>1052071-1 | 2037-5007-02<br>2037-5007-00                      |
| *B3123                         | 1052198-1   | 2037-8123-92                                      | 1       | B                 | 223           | <b>1.375</b> [34.93] | 1052072-1<br>1052071-1 | 2037-5007-02<br>2037-5007-00                      |
| *B3124                         | 1052199-1   | 2037-8124-92                                      | 1       | B                 | 303           | <b>1.375</b> [34.93] | 1052092-1              | 2037-5056-00                                      |
| *-3125                         | 1052201-1   | 2037-8125-92                                      | 1       | C                 | 178           | <b>1.375</b> [34.93] | 1052098-1<br>1052097-1 | 2037-5100-02<br>2037-5100-00                      |
| *-3126                         | 1052203-1   | 2037-8126-92                                      | 1       | C                 | 174, 316      | <b>1.375</b> [34.93] | 1052076-1<br>1052075-1 | 2037-5008-02<br>2037-5008-00                      |
| *-3127                         | 1052204-1   | 2037-8127-92                                      | 1       | C                 | 122           | <b>1.375</b> [34.93] | —                      | —                                                 |
| *-3128                         | 1052206-1   | 2037-8128-92                                      | 1       | C                 | 142, 223      | <b>1.375</b> [34.93] | 1052072-1<br>1052071-1 | 2037-5007-02<br>2037-5007-00                      |
| *-3129                         | 1052207-1   | 2037-8129-92                                      | 1       | C                 | 58, 303       | <b>1.375</b> [34.93] | 1052092-1              | 2037-5056-00                                      |
| -3502                          | 1052178-1   | 2037-8052-92                                      | 2       | D                 | 142, 400      | <b>1.375</b> [34.93] | 1052072-1<br>1052071-1 | 2037-5007-02<br>2037-5007-00                      |
| *-3602                         | 1086723-1   | 2037-8162-92                                      | 2       | D                 | 142, 400      | <b>1.375</b> [34.93] | 1052072-1<br>1052071-1 | 2037-5007-02<br>2037-5007-00                      |

\* No safety wire holes.

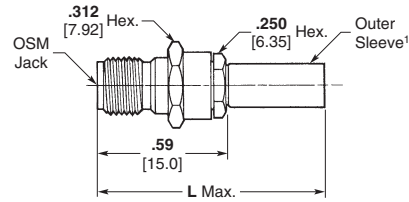
<sup>1</sup> Category A: solder sleeve; Categories B, C and D: crimp sleeve.

<sup>2</sup> -92 and -02 indicate passivated stainless steel finish. -00 indicates gold plated finish.

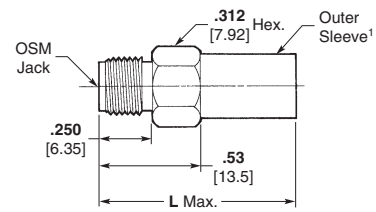
See page 2-4 for description of categories and pages 2-82 to 2-87 for tooling (unless noted otherwise).

## SMA Connectors (MIL-PRF-39012) — For Flexible Cable (Continued)

### Straight Jacks



Outline 1



Outline 2

| Military Part No.<br>M39012/57 | TE Part No. | Reference <sup>2</sup> Part No.<br>(Ref. Only) | Outline | Cat. <sup>1</sup> | RG/U Cable | Dim. L               | COTS Part No.          | Reference <sup>2</sup> Part No.<br>(Ref. Only) |
|--------------------------------|-------------|------------------------------------------------|---------|-------------------|------------|----------------------|------------------------|------------------------------------------------|
| B3011                          | 1051904-1   | 2032-8011-92                                   | 1       | B                 | 178        | <b>1.265</b> [32.13] | 1051869-1<br>1051868-1 | 2032-5026-02<br>2032-5026-00                   |
| B3012                          | 1051905-1   | 2032-8012-92                                   | 1       | B                 | 174, 316   | <b>1.265</b> [32.13] | 1051855-1              | 2032-5003-02                                   |
| B3013                          | 1051906-1   | 2032-8013-92                                   | 2       | B                 | 122        | <b>1.265</b> [32.13] | —                      | —                                              |
| B3014                          | 1051907-1   | 2032-8014-92                                   | 2       | B                 | 58         | <b>1.265</b> [32.13] | 1051866-1              | 2032-5021-00                                   |
| B3015                          | 1051908-1   | 2032-8015-92                                   | 2       | B                 | 142        | <b>1.265</b> [32.13] | 1051861-1              | 2032-5007-00                                   |
| B3016                          | 1051909-1   | 2032-8016-92                                   | 2       | B                 | 223        | <b>1.265</b> [32.13] | 1051861-1              | 2032-5007-00                                   |
| B3017                          | 1051910-1   | 2032-8017-92                                   | 2       | B                 | 303        | <b>1.265</b> [32.13] | 1051866-1              | 2032-5021-00                                   |
| B3018                          | 1051911-1   | 2032-8018-92                                   | 1       | B                 | 178        | <b>1.265</b> [32.13] | 1 -1<br>1051868-1      | 2032-5026-02<br>2032-5026-00                   |
| B3019                          | 1051912-1   | 2032-8019-92                                   | 1       | B                 | 174, 316   | <b>1.265</b> [32.13] | 1051855-1              | 2032-5003-02                                   |
| B3020                          | 1051913-1   | 2032-8020-92                                   | 2       | B                 | 122        | <b>1.265</b> [32.13] | —                      | —                                              |
| B3021                          | 1051914-1   | 2032-8021-92                                   | 2       | B                 | 58         | <b>1.265</b> [32.13] | 1051866-1              | 2032-5021-00                                   |
| B3022                          | 1051915-1   | 2032-8022-92                                   | 2       | B                 | 142        | <b>1.265</b> [32.13] | 1051861-1              | 2032-5007-00                                   |
| B3023                          | 1051916-1   | 2032-8023-92                                   | 2       | B                 | 223        | <b>1.265</b> [32.13] | 1051861-1              | 2032-5007-00                                   |
| B3024                          | 1051917-1   | 2032-8024-92                                   | 2       | B                 | 303        | <b>1.265</b> [32.13] | 1051866-1              | 2032-5021-00                                   |
| -3025                          | 1051918-1   | 2032-8025-92                                   | 1       | C                 | 178        | <b>1.265</b> [32.13] | 1051869-1<br>1051868-1 | 2032-5026-02<br>2032-5026-00                   |
| -3026                          | 1051919-1   | 2032-8026-92                                   | 1       | C                 | 174, 316   | <b>1.265</b> [32.13] | 1051855-1              | 2032-5003-02                                   |
| -3027                          | 1051920-1   | 2032-8027-92                                   | 2       | C                 | 122        | <b>1.265</b> [32.13] | —                      | —                                              |
| -3028                          | 1051921-1   | 2032-8028-92                                   | 2       | C                 | 142, 223   | <b>1.265</b> [32.13] | 1051861-1              | 2032-5007-00                                   |
| -3029                          | 1051922-1   | 2032-8029-92                                   | 2       | C                 | 58, 303    | <b>1.265</b> [32.13] | 1051866-1              | 2032-5021-00                                   |
| -3502                          | 1051923-1   | 2032-8052-92                                   | 2       | D                 | 142, 400   | <b>1.265</b> [32.13] | 1051861-1              | 2032-5007-00                                   |

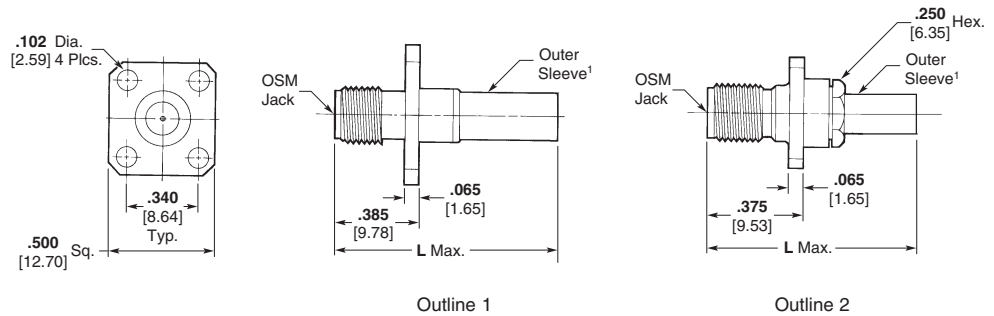
<sup>1</sup> Category A: solder sleeve; Categories B, C and D: crimp sleeve.

<sup>2</sup> -92 and -02 indicate passivated stainless steel finish. -00 indicates gold plated finish.

See page 2-4 for description of categories and pages 2-82 to 2-87 for tooling (unless noted otherwise).

## SMA Connectors (MIL-PRF-39012) — For Flexible Cable (Continued)

### Panel Mount Jacks



| Military Part No. M39012/58 | TE Part No. | Reference² Part No. (Ref. Only) | Outline | Cat.¹ | RG/U Cable | Dim. L               | COTS Part No. | Reference² Part No. (Ref. Only) |
|-----------------------------|-------------|---------------------------------|---------|-------|------------|----------------------|---------------|---------------------------------|
| B3011                       | 1052042-1   | 2036-8011-92                    | 2       | B     | 178        | <b>1.265</b> [32.13] | 1052024-1     | 2036-5004-02                    |
| B3012                       | 1254028-1   | 2036-8012-92                    | 2       | B     | 174, 316   | <b>1.265</b> [32.13] | 1052024-1     | 2036-5004-02                    |
| B3013                       | 1484499-1   | 2036-8013-92                    | 1       | B     | 122        | <b>1.265</b> [32.13] | —             | —                               |
| B3014                       | 1484500-1   | 2036-8014-92                    | 1       | B     | 58         | <b>1.265</b> [32.13] | —             | —                               |
| B3015                       | 1052043-1   | 2036-8015-92                    | 1       | B     | 142        | <b>1.265</b> [32.13] | —             | —                               |
| B3016                       | 1484501-1   | 2036-8016-92                    | 1       | B     | 223        | <b>1.265</b> [32.13] | —             | —                               |
| B3017                       | 1484502-1   | 2036-8017-92                    | 1       | B     | 303        | <b>1.265</b> [32.13] | 1087843-1     | 2036-5014-02                    |
| B3018                       | 1052044-1   | 2036-8018-92                    | 2       | B     | 178        | <b>1.265</b> [32.13] | 1052030-1     | 2036-5016-00                    |
| B3019                       | 1484503-1   | 2036-8019-92                    | 2       | B     | 174, 316   | <b>1.265</b> [32.13] | 1052024-1     | 2036-5004-02                    |
| B3020                       | 1484504-1   | 2036-8020-92                    | 1       | B     | 122        | <b>1.265</b> [32.13] | —             | —                               |
| B3021                       | 1484505-1   | 2036-8021-92                    | 1       | B     | 58         | <b>1.265</b> [32.13] | 1087843-1     | 2036-5014-02                    |
| B3022                       | 1052045-1   | 2036-8022-92                    | 1       | B     | 142        | <b>1.265</b> [32.13] | —             | —                               |
| B3023                       | 1484506-1   | 2036-8023-92                    | 1       | B     | 223        | <b>1.265</b> [32.13] | —             | —                               |
| B3024                       | 1484507-1   | 2036-8024-92                    | 1       | B     | 303        | <b>1.265</b> [32.13] | 1087843-1     | 2036-5014-02                    |
| -3025                       | 1052046-1   | 2036-8025-92                    | 2       | C     | 178        | <b>1.125</b> [28.58] | 1052030-1     | 2036-5016-00                    |
| -3026                       | 1052047-1   | 2036-8026-92                    | 2       | C     | 174, 316   | <b>1.125</b> [28.58] | 1052024-1     | 2036-5004-02                    |
| -3027                       | 1052048-1   | 2036-8027-92                    | 1       | C     | 122        | <b>1.125</b> [28.58] | —             | —                               |
| -3028                       | 1052049-1   | 2036-8028-92                    | 1       | C     | 142, 223   | <b>1.125</b> [28.58] | —             | —                               |
| -3029                       | 1052050-1   | 2036-8029-92                    | 1       | C     | 58, 303    | <b>1.125</b> [28.58] | —             | —                               |
| -3502                       | 1052051-1   | 2036-8052-92                    | 1       | D     | 142, 400   | <b>1.125</b> [28.58] | —             | —                               |

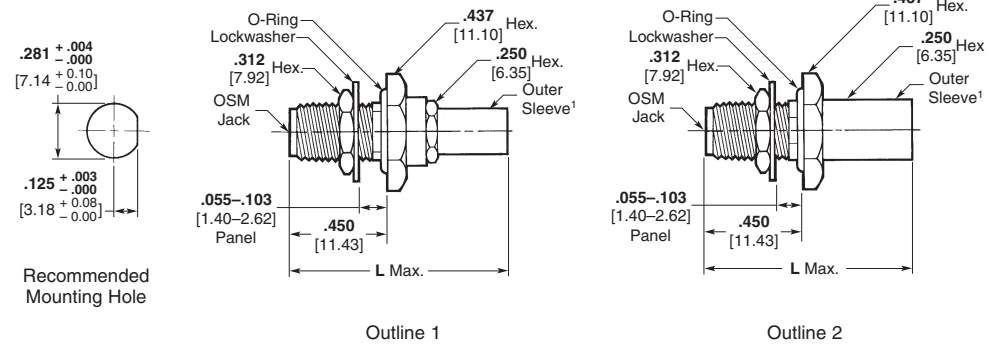
¹ Category A: solder sleeve; Categories B, C and D: crimp sleeve.

² -92 and -02 indicate passivated stainless steel finish. -00 indicates gold plated finish.

See page 2-4 for description of categories and pages 2-82 to 2-87 for tooling (unless noted otherwise).

## SMA Connectors (MIL-PRF-39012) — For Flexible Cable (Continued)

### Bulkhead Jacks



| Military Part No.<br>M39012/59 | TE Part No. | Reference² Part No.<br>(Ref. Only) | Outline | Cat.¹ | RG/U Cable | Dim. L               | COTS Part No.          | Reference² Part No.<br>(Ref. Only) |
|--------------------------------|-------------|------------------------------------|---------|-------|------------|----------------------|------------------------|------------------------------------|
| B3011                          | 1362216-1   | 2034-8011-92                       | 1       | B     | 178        | <b>1.265</b> [32.13] | 1051951-1<br>1051950-1 | 2034-5031-02<br>2034-5031-00       |
| B3012                          | 1051986-1   | 2034-8012-92                       | 1       | B     | 174, 316   | <b>1.265</b> [32.13] | 1051933-1              | 2034-5005-00                       |
| B3013                          | 1083993-1   | 2034-8013-92                       | 2       | B     | 122        | <b>1.265</b> [32.13] | —                      | —                                  |
| B3014                          | 1331293-1   | 2034-8014-92                       | 2       | B     | 58         | <b>1.265</b> [32.13] | —                      | —                                  |
| B3015                          | 1253627-1   | 2034-8015-92                       | 2       | B     | 142        | <b>1.265</b> [32.13] | —                      | —                                  |
| B3016                          | 1221165-1   | 2034-8016-92                       | 2       | B     | 223        | <b>1.265</b> [32.13] | —                      | —                                  |
| B3017                          | 1484542-1   | 2034-8017-92                       | 2       | B     | 303        | <b>1.265</b> [32.13] | —                      | —                                  |
| B3018                          | 1051987-1   | 2034-8018-92                       | 1       | B     | 178        | <b>1.265</b> [32.13] | 1051951-1<br>1051950-1 | 2034-5031-02<br>2034-5031-00       |
| B3019                          | 1051988-1   | 2034-8019-92                       | 1       | B     | 174, 316   | <b>1.265</b> [32.13] | 1051933-1              | 2034-5005-00                       |
| B3020                          | 1484543-1   | 2034-8020-92                       | 2       | B     | 122        | <b>1.265</b> [32.13] | —                      | —                                  |
| B3021                          | 1087842-1   | 2034-8021-92                       | 2       | B     | 58         | <b>1.265</b> [32.13] | —                      | —                                  |
| B3022                          | 1051989-1   | 2034-8022-92                       | 2       | B     | 142        | <b>1.265</b> [32.13] | —                      | —                                  |
| B3023                          | 1051990-1   | 2034-8023-92                       | 2       | B     | 223        | <b>1.265</b> [32.13] | —                      | —                                  |
| B3024                          | 1051991-1   | 2034-8024-92                       | 2       | B     | 303        | <b>1.265</b> [32.13] | —                      | —                                  |
| -3025                          | 1051992-1   | 2034-8025-92                       | 1       | C     | 178        | <b>1.125</b> [28.58] | 1051951-1<br>1051950-1 | 2034-5031-02<br>2034-5031-00       |
| -3026                          | 1051994-1   | 2034-8026-92                       | 1       | C     | 174, 316   | <b>1.125</b> [28.58] | 1051933-1              | 2034-5005-00                       |
| -3027                          | 1051995-1   | 2034-8027-92                       | 2       | C     | 122        | <b>1.125</b> [28.58] | —                      | —                                  |
| -3028                          | 1051996-1   | 2034-8028-92                       | 2       | C     | 142, 223   | <b>1.125</b> [28.58] | —                      | —                                  |
| -3029                          | 1051997-1   | 2034-8029-92                       | 2       | C     | 58, 303    | <b>1.125</b> [28.58] | —                      | —                                  |
| -3502                          | 1051998-1   | 2034-8052-92                       | 2       | D     | 142, 400   | <b>1.265</b> [32.13] | —                      | —                                  |

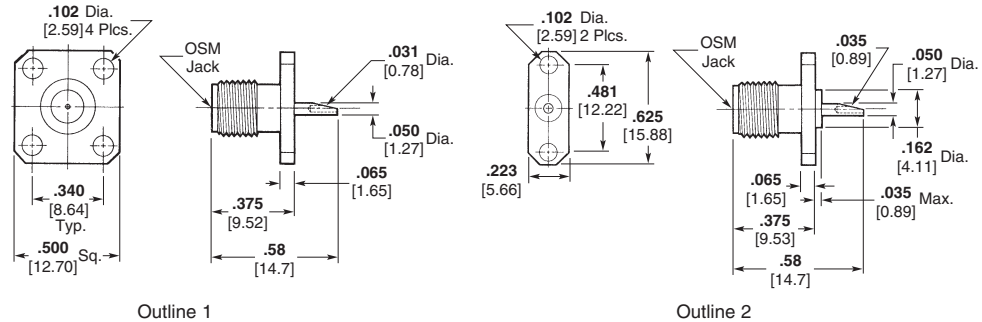
¹ Category A: solder sleeve; Categories B, C and D: crimp sleeve.

² -92 and -02 indicate passivated stainless steel finish. -00 indicates gold plated finish.

See page 2-4 for description of categories and pages 2-82 to 2-87 for tooling (unless noted otherwise).

## SMA Connectors (MIL-PRF-39012) — Panel Mount

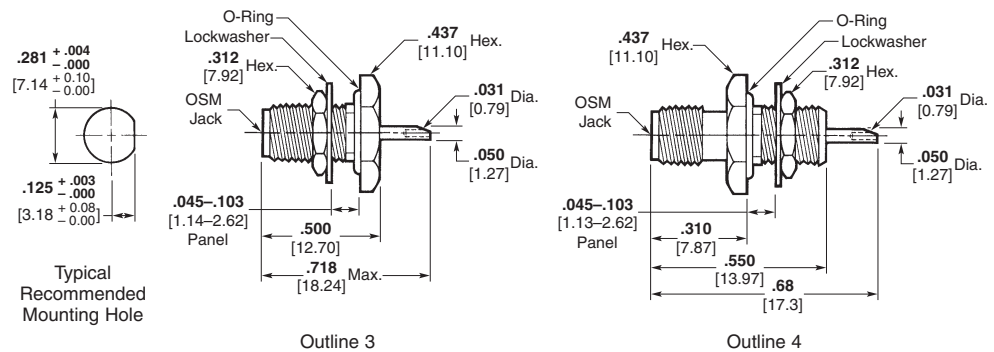
### Panel Mount Receptacles



| Military Part No.<br>M39012/60 | TE Part No. | Reference <sup>1</sup> Part No.<br>(Ref. Only) | Outline | COTS Part No.          | Reference <sup>1</sup> Part No.<br>(Ref. Only) |
|--------------------------------|-------------|------------------------------------------------|---------|------------------------|------------------------------------------------|
| -3001                          | 1052924-1   | 2052-8001-92                                   | 1       | 1052422-1<br>1052421-1 | 2052-0000-02<br>2052-0000-00                   |
| -3002                          | 1052926-1   | 2052-8002-92                                   | 2       | 1052534-1<br>1052533-1 | 2052-1300-02<br>2052-1300-00                   |

<sup>1</sup> -92 and -02 indicate passivated stainless steel finish. -00 indicates gold plated finish.

### Bulkhead Mount Receptacles

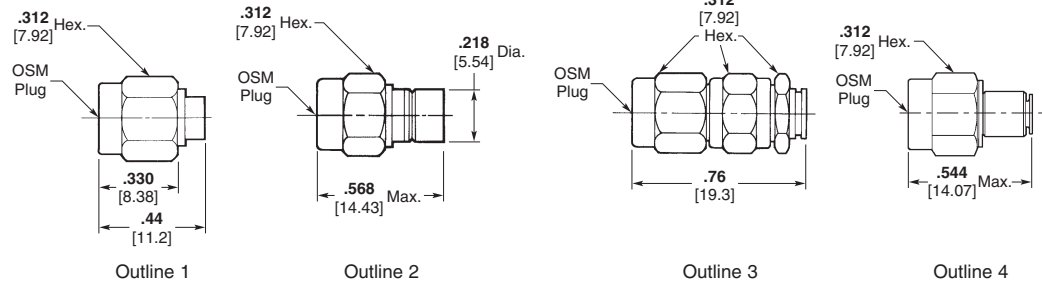


| Military Part No.<br>M39012/61 | TE Part No. | Reference <sup>1</sup> Part No.<br>(Ref. Only) | Outline | COTS Part No. | Reference <sup>1</sup> Part No.<br>(Ref. Only) |
|--------------------------------|-------------|------------------------------------------------|---------|---------------|------------------------------------------------|
| -3001                          | 1053118-1   | 2056-8011-92                                   | 3       | —             | —                                              |
| -3002                          | 1484516-1   | 2058-8012-92                                   | 4       | 1053133-1     | 2058-0000-00                                   |

<sup>1</sup> -92 and -02 indicate passivated stainless steel finish. -00 indicates gold plated finish.

## SMA Connectors (MIL-PRF-39012) — For Semi-Rigid Cable

### Straight Plugs



| Military Part No.<br>M39012/79 | TE Part No.            | Reference <sup>4</sup> Part No.<br>(Ref. Only) | Outline        | Category | RG/U Cable | COTS Part No.          | Reference <sup>4</sup> Part No.<br>(Ref. Only) |
|--------------------------------|------------------------|------------------------------------------------|----------------|----------|------------|------------------------|------------------------------------------------|
| B3001                          | 1050774-1              | 2001-8001-92                                   | 1              | B        | 405        | 1050548-1<br>1050547-1 | 2001-5032-02<br>2001-5032-00                   |
| B3002                          | 1050776-1              | 2001-8002-92                                   | 1              | B        | 402        | 1050525-1<br>1050524-1 | 2001-5003-02<br>2001-5003-00                   |
| B3003                          | 1050777-1              | 2001-8003-92                                   | 3              | B        | 405        | —                      | —                                              |
| B3003                          | 1050813-1              | 2001-8991-92                                   | 2 <sup>1</sup> | B        | 405        | 1050598-1              | 2001-5385-02                                   |
| B3003                          | 1089686-1 <sup>2</sup> | 2001-8203-92                                   | 2              | B        | 405        | —                      | —                                              |
| B3004                          | 1050779-1              | 2001-8004-92                                   | 3              | B        | 402        | —                      | —                                              |
| B3004                          | 1050792-1 <sup>2</sup> | 2001-8204-92                                   | 2              | B        | 402        | —                      | —                                              |
| -3007                          | 1050781-1              | 2001-8007-92                                   | 3              | E        | 405        | —                      | —                                              |
| -3008                          | 1050783-1              | 2001-8008-92                                   | 3              | E        | 402        | —                      | —                                              |
| *B3101                         | 1050785-1              | 2001-8101-92                                   | 1              | B        | 405        | 1050548-1<br>1050547-1 | 2001-5032-02<br>2001-5032-00                   |
| *B3102                         | 1050786-1              | 2001-8102-92                                   | 1              | B        | 402        | 1050525-1<br>1050524-1 | 2001-5003-02<br>2001-5003-00                   |
| *B3103                         | 1050787-1              | 2001-8103-92                                   | 3              | B        | 405        | —                      | —                                              |
| *B3103                         | 1050797-1 <sup>2</sup> | 2001-8303-92                                   | 2              | B        | 405        | 1050744-1              | 2001-7685-02                                   |
| *B3103                         | 1050812-1              | 2001-8981-92                                   | 2 <sup>1</sup> | B        | 405        | 1050598-1              | 2001-5385-02                                   |
| *B3103                         | 227868-1 <sup>3</sup>  | —                                              | 4              | B        | 405        | —                      | —                                              |
| *B3104                         | 1050788-1              | 2001-8104-92                                   | 3              | B        | 402        | —                      | —                                              |
| *B3104                         | 1050799-1              | 2001-8304-92                                   | 2              | B        | 402        | —                      | —                                              |
| *B3104                         | 227743-1 <sup>3</sup>  | —                                              | 4              | B        | 402        | —                      | —                                              |
| *-3107                         | 1050789-1              | 2001-8107-92                                   | 3              | E        | 405        | —                      | —                                              |
| *-3108                         | 1050790-1              | 2001-8108-92                                   | 3              | E        | 402        | —                      | —                                              |
| -3207                          | 228639-3 <sup>3</sup>  | —                                              | 4              | F        | 405        | —                      | —                                              |
| *-3307                         | 228639-1 <sup>3</sup>  | —                                              | 4              | F        | 405        | —                      | —                                              |
| *-3308                         | 228634-1 <sup>3</sup>  | —                                              | 4              | F        | 402        | —                      | —                                              |
| AF8627286-2                    | 221447-1               | —                                              | 4              | —        | 405        | —                      | —                                              |

\* No safety wire holes.

<sup>1</sup> Low profile version; overall length .393 [9.98] max.

<sup>2</sup> OSCC solderless compression crimp version.

<sup>3</sup> Use Hand Tool Kit Part Number 59981-1 which includes Die Set Part Number 312253-2 and Locator Part Number 220221-2.

<sup>4</sup> -92 and -02 indicate passivated stainless steel finish. -00 indicates gold plated finish.

See page 2-4 for description of categories and pages 2-82 to 2-87 for tooling (unless noted otherwise).

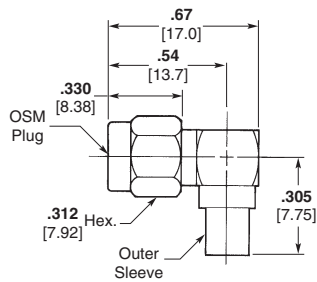
| DSCC Part Number | TE Part No. | Reference <sup>1</sup> Part No.<br>Part No. | Outline | RG/U Cable | COTS Part No.          | Reference <sup>1</sup> Part No.<br>Part No. |
|------------------|-------------|---------------------------------------------|---------|------------|------------------------|---------------------------------------------|
| 84149SSG         | 1050605-1   | 2001-5397-02                                | 1       | 402        | —                      | —                                           |
| 84149SSG-1       | 1050629-1   | 2001-5557-02                                | 1       | 402        | 1050525-1<br>1050524-1 | 2001-5003-02<br>2001-5003-00                |
| 84149SSGA        | 1050609-1   | 2001-5431-02                                | 1       | 405        | —                      | —                                           |
| 84149SSGA-1      | 1050631-1   | 2001-5558-02                                | 1       | 405        | 1050770-1<br>1050769-1 | 2001-7985-02<br>2001-7985-00                |

<sup>1</sup> -02 indicates passivated stainless steel finish. -00 indicates gold plated finish.

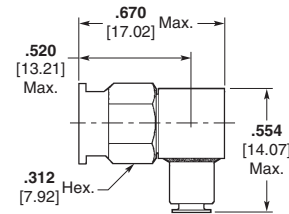


## SMA Connectors (MIL-PRF-39012) — For Semi-Rigid Cable (Continued)

### Right Angle Plugs



Outline 1



Outline 2

| Military Part No.<br>M39012/80 | TE Part No. | Reference <sup>2</sup> Part No.<br>(Ref. Only) | Outline | Category | RG/U Cable | COTS Part No.          | Reference <sup>2</sup> Part No.<br>(Ref. Only) |
|--------------------------------|-------------|------------------------------------------------|---------|----------|------------|------------------------|------------------------------------------------|
| B3003                          | 1051163-1   | 2007-8003-92                                   | 1       | B        | 405        | —                      | —                                              |
| B3004                          | 1051164-1   | 2007-8004-92                                   | 1       | B        | 402        | —                      | —                                              |
| -3005                          | 1051165-1   | 2007-8005-92                                   | 1       | E        | 405        | 1051114-1<br>1051113-1 | 2007-5055-02<br>2007-5055-00                   |
| -3006                          | 1051166-1   | 2007-8006-92                                   | 1       | E        | 402        | 1051110-1<br>1051109-1 | 2007-5054-02<br>2007-5054-00                   |
| -3007                          | 1051168-1   | 2007-8007-92                                   | 1       | E        | 405        | 1051114-1<br>1051113-1 | 2007-5055-02<br>2007-5055-00                   |
| -3008                          | 1051170-1   | 2007-8008-92                                   | 1       | E        | 402        | 1051110-1<br>1051109-1 | 2007-5054-02<br>2007-5054-00                   |
| *B3103                         | 1051173-1   | 2007-8103-92                                   | 1       | B        | 405        | 1051114-1<br>1051113-1 | 2007-5055-02<br>2007-5055-00                   |
| *B3104                         | 1051174-1   | 2007-8104-92                                   | 1       | B        | 402        | 1051110-1<br>1051109-1 | 2007-5054-02<br>2007-5054-00                   |
| *-3105                         | 1051175-1   | 2007-8105-92                                   | 1       | E        | 405        | 1051114-1<br>1051113-1 | 2007-5055-02<br>2007-5055-00                   |
| *-3106                         | 1051176-1   | 2007-8106-92                                   | 1       | E        | 402        | 1051110-1<br>1051109-1 | 2007-5054-02<br>2007-5054-00                   |
| *-3107                         | 1051177-1   | 2007-8107-92                                   | 1       | E        | 405        | 1051114-1<br>1051113-1 | 2007-5055-02<br>2007-5055-00                   |
| *-3108                         | 1051178-1   | 2007-8108-92                                   | 1       | E        | 402        | 1051110-1<br>1051109-1 | 2007-5054-02<br>2007-5054-00                   |
| -3207                          | 228583-3    | —                                              | 2       | F        | 405        | —                      | —                                              |
| *-3307                         | 228583-1    | —                                              | 2       | F        | 405        | —                      | —                                              |
| -3308                          | 228626-1    | —                                              | 2       | F        | 402        | —                      | —                                              |

\* No safety wire holes.

<sup>1</sup> Use Hand Tool Kit Part Number 59981-1 which includes Die Set Part Number 312253-1 and Locator Part Number 312173-1

<sup>2</sup> -92 and -02 indicate passivated stainless steel finish. -00 indicates gold plated finish.

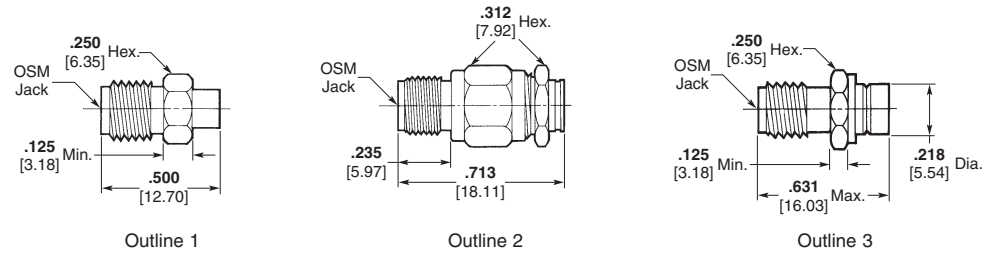
See page 2-4 for description of categories and pages 2-82 to 2-87 for tooling (unless noted otherwise).

| DSCC Part Number | TE Part No. | Reference <sup>1</sup> Part No.<br>Part No. | Outline | RG/U Cable | COTS Part No.          | Reference <sup>1</sup> Part No.<br>Part No. |
|------------------|-------------|---------------------------------------------|---------|------------|------------------------|---------------------------------------------|
| 85037SSG         | 1051119-1   | 2007-5115-02                                | 1       | 402        | 1051110-1<br>1051109-1 | 2007-5054-02<br>2007-5054-00                |
| 85037SSGA        | 1051120-1   | 2007-5116-02                                | 1       | 405        | 1051114-1<br>1051113-1 | 2007-5055-02<br>2007-5055-00                |

<sup>1</sup> -02 indicates passivated stainless steel finish. -00 indicates gold plated finish.

## SMA Connectors (MIL-PRF-39012) — For Semi-Rigid Cable (Continued)

### Straight Jacks



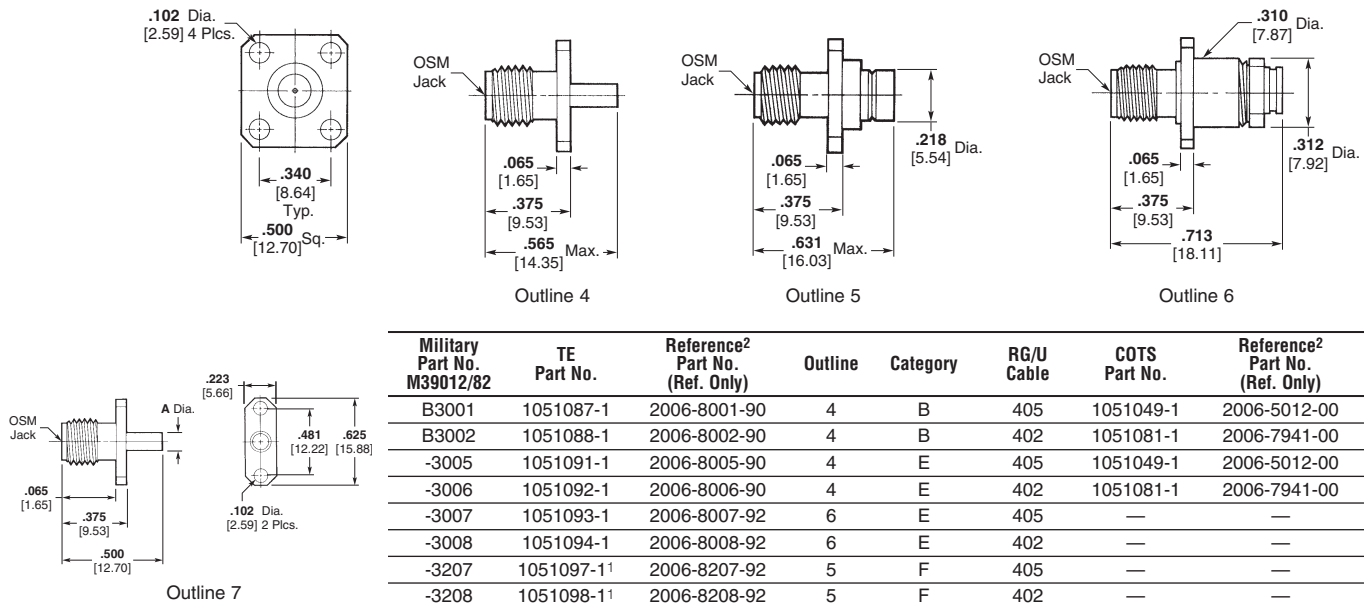
| Military Part No.<br>M39012/81 | TE Part No.            | Reference <sup>2</sup> Part No.<br>(Ref. Only) | Outline | Category | RG/U Cable | COTS Part No. | Reference <sup>2</sup> Part No.<br>(Ref. Only) |
|--------------------------------|------------------------|------------------------------------------------|---------|----------|------------|---------------|------------------------------------------------|
| B3001                          | 1050923-1              | 2002-8001-90                                   | 1       | B        | 405        | 1050859-1     | 2002-5016-00                                   |
| B3002                          | 1050924-1              | 2002-8002-90                                   | 1       | B        | 402        | 1050854-1     | 2002-5015-00                                   |
| -3005                          | 1050926-1              | 2002-8005-90                                   | 1       | E        | 405        | 1050859-1     | 2002-5016-00                                   |
| -3006                          | 1050928-1              | 2002-8006-90                                   | 1       | E        | 402        | 1050854-1     | 2002-5015-00                                   |
| -3007                          | 1050929-1              | 2002-8007-92                                   | 2       | E        | 405        | —             | —                                              |
| -3008                          | 1050931-1              | 2002-8008-92                                   | 2       | E        | 402        | —             | —                                              |
| -3207                          | 1050934-1 <sup>1</sup> | 2002-8207-92                                   | 3       | F        | 405        | —             | —                                              |
| -3208                          | 1050935-1 <sup>1</sup> | 2002-8208-92                                   | 3       | F        | 402        | —             | —                                              |

<sup>1</sup> OSCC solderless compression crimp version.

<sup>2</sup> -92 indicates passivated stainless steel finish. -90 and -00 indicate gold plated finish.

See page 2-4 for description of categories and pages 2-82 to 2-87 for tooling.

### Panel Mount Jacks



| Military Part No.<br>M39012/82 | TE Part No.            | Reference <sup>2</sup> Part No.<br>(Ref. Only) | Outline | Category | RG/U Cable | COTS Part No. | Reference <sup>2</sup> Part No.<br>(Ref. Only) |
|--------------------------------|------------------------|------------------------------------------------|---------|----------|------------|---------------|------------------------------------------------|
| B3001                          | 1051087-1              | 2006-8001-90                                   | 4       | B        | 405        | 1051049-1     | 2006-5012-00                                   |
| B3002                          | 1051088-1              | 2006-8002-90                                   | 4       | B        | 402        | 1051081-1     | 2006-7941-00                                   |
| -3005                          | 1051091-1              | 2006-8005-90                                   | 4       | E        | 405        | 1051049-1     | 2006-5012-00                                   |
| -3006                          | 1051092-1              | 2006-8006-90                                   | 4       | E        | 402        | 1051081-1     | 2006-7941-00                                   |
| -3007                          | 1051093-1              | 2006-8007-92                                   | 6       | E        | 405        | —             | —                                              |
| -3008                          | 1051094-1              | 2006-8008-92                                   | 6       | E        | 402        | —             | —                                              |
| -3207                          | 1051097-1 <sup>1</sup> | 2006-8207-92                                   | 5       | F        | 405        | —             | —                                              |
| -3208                          | 1051098-1 <sup>1</sup> | 2006-8208-92                                   | 5       | F        | 402        | —             | —                                              |

<sup>1</sup> OSCC solderless compression crimp version.

<sup>2</sup> -92 indicates passivated stainless steel finish. -90 and -00 indicate gold plated finish.

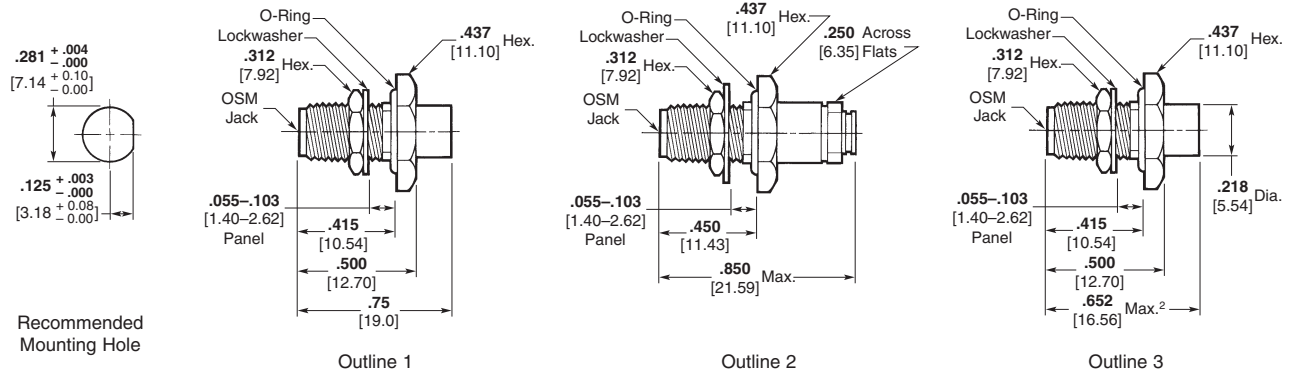
See page 2-4 for description of categories and pages 2-82 to 2-87 for tooling.

| DSCC Part Number | TE Part No. | Reference <sup>1</sup> Part No.<br>Part No. | Outline | RG/U Cable | COTS Part No. | Reference <sup>1</sup> Part No.<br>Part No. |
|------------------|-------------|---------------------------------------------|---------|------------|---------------|---------------------------------------------|
| 85022SSG         | 1051063-1   | 2006-5151-00                                | 7       | 402        | —             | —                                           |
| 85022SSG-1       | 1221162-1   | 2006-5192-00                                | 7       | 402        | 1051052-1     | 2006-5013-00                                |
| 85022SSGA        | 1051062-1   | 2006-5150-00                                | 7       | 405        | —             | —                                           |
| 85022SSGA-1      | 1051067-1   | 2006-5193-00                                | 7       | 405        | 1051046-1     | 2006-5010-00                                |

<sup>1</sup> -02 indicates passivated stainless steel finish. -00 indicates gold plated finish.

## SMA Connectors (MIL-PRF-39012) — For Semi-Rigid Cable (Continued)

### Bulkhead Mount Jacks



| Military Part No.<br>M39012/83 | TE Part No.               | Reference <sup>3</sup><br>Part No.<br>(Ref. Only) | Outline | Category | RG/U<br>Cable | COTS<br>Part No. | Reference <sup>3</sup><br>Part No.<br>(Ref. Only) |
|--------------------------------|---------------------------|---------------------------------------------------|---------|----------|---------------|------------------|---------------------------------------------------|
| B3001                          | 1051022-1                 | 2004-8001-90                                      | 1       | B        | 405           | 1051018-1        | 2004-7985-00                                      |
| B3002                          | 1051023-1                 | 2004-8002-90                                      | 1       | B        | 402           | 1051013-1        | 2004-7941-00                                      |
| -3005                          | 1051026-1                 | 2004-8005-90                                      | 1       | E        | 405           | 1051018-1        | 2004-7985-00                                      |
| -3006                          | 1051027-1                 | 2004-8006-90                                      | 1       | E        | 402           | 1051013-1        | 2004-7941-00                                      |
| -3007                          | 1051028-1                 | 2004-8007-92                                      | 2       | E        | 405           | —                | —                                                 |
| -3008                          | 1051029-1                 | 2004-8008-92                                      | 2       | E        | 402           | —                | —                                                 |
| -3207                          | 1051032-1 <sup>1, 2</sup> | 2004-8207-92                                      | 3       | F        | 405           | —                | —                                                 |
| -3208                          | 1051033-1 <sup>1, 2</sup> | 2004-8208-92                                      | 3       | F        | 402           | 1051005-1        | 2004-7641-02                                      |

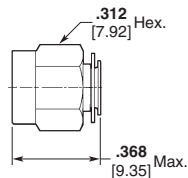
<sup>1</sup> OSCC Solderless Compression Crimp version.

<sup>2</sup> Category F Only: Overall Length; .620 [15.75] Max.

<sup>3</sup> -92 and -02 indicate passivated stainless steel finish. -90 and -00 indicate gold plated finish.

See page 2-4 for description of categories and pages 2-82 to 2-87 for tooling.

### Straight Plugs, without Contact



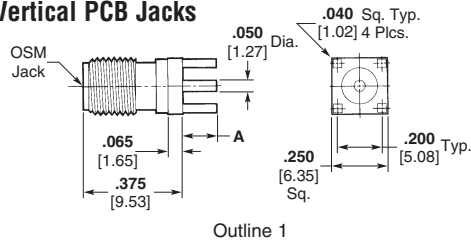
| Military Part No.<br>M39012/92 | TE Part No.           | Reference<br>Part No.<br>(Ref. Only) | Outline | Category | RG/U<br>Cable |
|--------------------------------|-----------------------|--------------------------------------|---------|----------|---------------|
| B3101                          | 227531-1 <sup>2</sup> | —                                    | 4       | B        | 402           |
| -3301                          | 228635-1              | —                                    | 4       | F        | 402           |

<sup>2</sup> Use Hand Tool Kit Part Number 59981-1 which includes Die Set Part Number 312253-1 and Locator Part Number 220220-2.

See page 2-4 for description of categories and pages 2-82 to 2-87 for tooling.

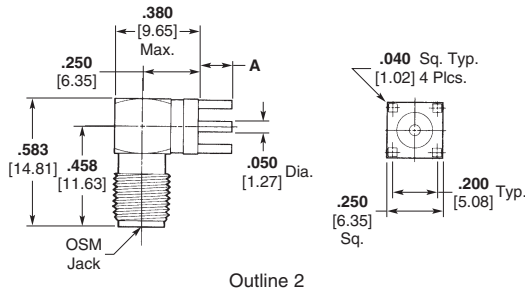
## SMA Connectors (MIL-PRF-39012) — Printed Circuit Board Mount

### Vertical PCB Jacks



| Military Part No.<br>M39012/93 | TE Part No. | Reference <sup>1</sup> Part No.<br>(Ref. Only) | Outline | Dimension A  | COTS Part No. | Reference <sup>1</sup> Part No.<br>(Ref. Only) |
|--------------------------------|-------------|------------------------------------------------|---------|--------------|---------------|------------------------------------------------|
| -3001                          | 1053372-1   | 2062-8001-90                                   | 1       | .155<br>3.94 | 1053354-1     | 2062-0000-00                                   |
| -3002                          | 1053374-1   | 2062-8002-90                                   | 1       | .125<br>3.18 | —             | —                                              |
| -3003                          | 1053376-1   | 2062-8003-90                                   | 1       | .093<br>2.36 | —             | —                                              |

### Right Angle PCB Jacks

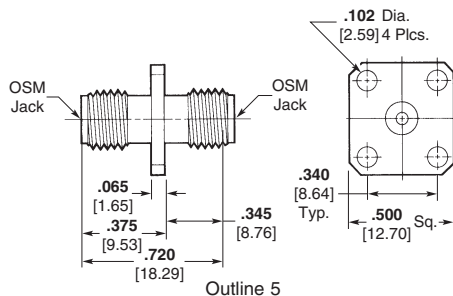
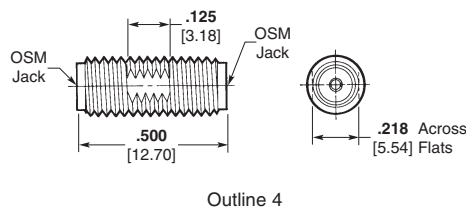
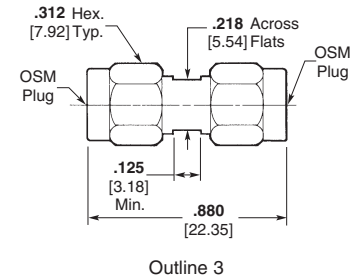
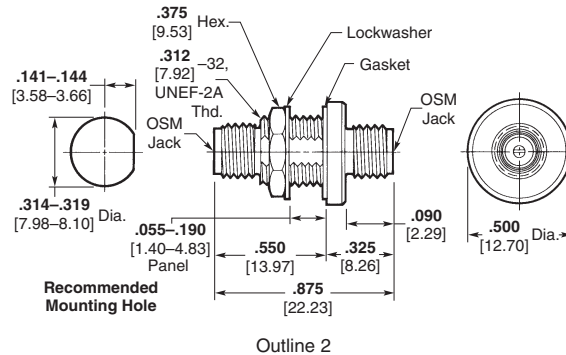
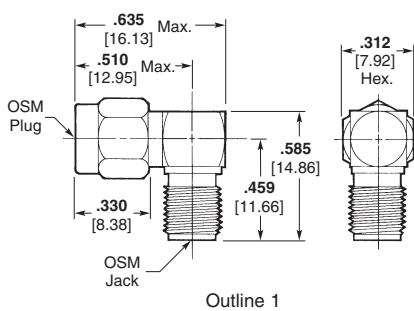


| Military Part No.<br>M39012/94 | TE Part No. | Reference <sup>1</sup> Part No.<br>(Ref. Only) | Outline | Dimension A  | COTS Part No. | Reference <sup>1</sup> Part No.<br>(Ref. Only) |
|--------------------------------|-------------|------------------------------------------------|---------|--------------|---------------|------------------------------------------------|
| -3001                          | 1053396-1   | 2064-8001-90                                   | 2       | .155<br>3.94 | 1053378-1     | 2064-0000-00                                   |
| -3002                          | 1053398-1   | 2064-8002-90                                   | 2       | .125<br>3.18 | —             | —                                              |
| -3003                          | 1053400-1   | 2064-8003-90                                   | 2       | .093<br>2.36 | —             | —                                              |

<sup>1</sup> -90 and -00 indicate gold plated finish.

## SMA In-Series Adapters (MIL-A-55339)

### MIL-A-55339



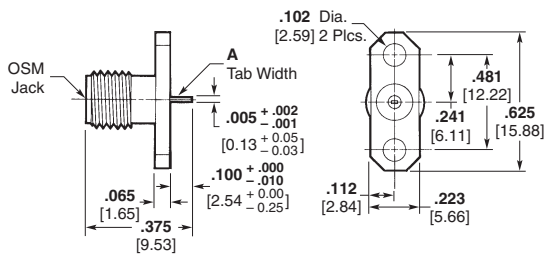
| Military Part No.<br>M55339 | TE Part No. | Reference <sup>1</sup> Part No.<br>(Ref. Only) | Outline | COTS Part No.          | Reference <sup>1</sup> Part No.<br>(Ref. Only) |
|-----------------------------|-------------|------------------------------------------------|---------|------------------------|------------------------------------------------|
| /02-30001                   | 1055091-1   | 2088-8001-92                                   | 1       | 1055065-1<br>1055064-1 | 2088-0000-02<br>2088-0000-00                   |
| /28-30001                   | 1054986-1   | 2084-8001-92                                   | 2       | 1054875-1<br>1054874-1 | 2084-1100-02<br>2084-1100-00                   |
| /28-30002                   | 1054988-1   | 2084-8002-92                                   | 5       | —                      | —                                              |
| /29-30001                   | 1053765-1   | 2081-8001-92                                   | 3       | 1053635-1<br>1053634-1 | 2081-0000-02<br>2081-0000-00                   |
| */29-30101                  | 1053767-1   | 2081-8101-92                                   | 3       | 1053635-1<br>1053634-1 | 2081-0000-02<br>2081-0000-00                   |
| /31-30001                   | 1053633-1   | 2080-8001-92                                   | 4       | 1053489-1<br>1053488-1 | 2080-0000-02<br>2080-0000-00                   |

\* No safety wire holes.

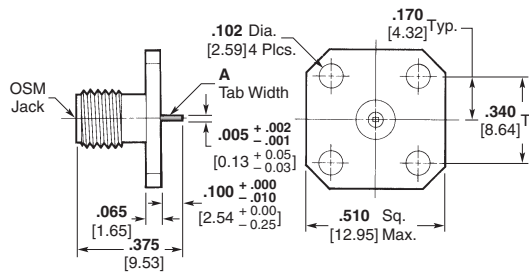
<sup>1</sup> -92 and -02 indicate passivated stainless steel finish. -00 indicates gold plated finish.

## SMA Receptacles (MIL-C-83517) — Panel Mount

### Panel Mount Jacks, Solder Tab



Outline 1

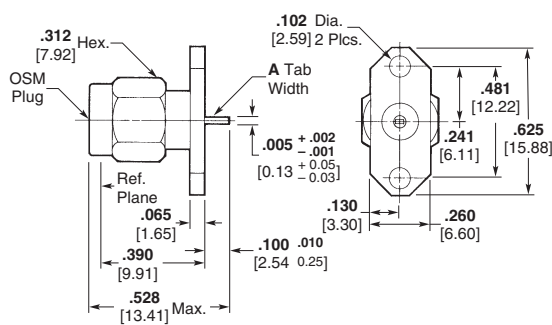


Outline 2

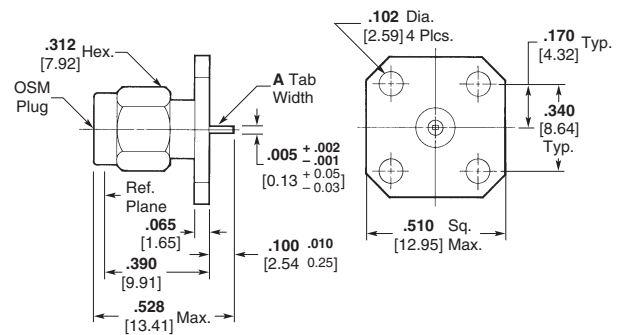
| Military Part No. M83517/1 | TE Part No. | Reference <sup>1</sup> Part No. (Ref. Only) | Outline | Dimension A              | COTS Part No.          | Reference <sup>1</sup> Part No. (Ref. Only) |
|----------------------------|-------------|---------------------------------------------|---------|--------------------------|------------------------|---------------------------------------------|
| -31001                     | 1052928-1   | 2052-8003-92                                | 1       | .020 ±.002<br>0.51 ±.051 | —                      | —                                           |
| -31002                     | 1052930-1   | 2052-8004-92                                | 1       | .050 ±.001<br>1.27 ±.025 | 1052577-1              | 2052-1658-02                                |
| -31003                     | 1052932-1   | 2052-8005-92                                | 2       | .020 ±.002<br>0.51 ±.051 | 1052898-1<br>1052897-1 | 2052-5636-02<br>2052-5636-00                |
| -31004                     | 1052934-1   | 2052-8006-92                                | 2       | .050 ±.001<br>1.27 ±.025 | 1052566-1<br>1052565-1 | 2052-1618-02<br>2052-1618-00                |
| -32001                     | 1052927-1   | 2052-8003-90                                | 1       | .020 ±.002<br>0.51 ±.051 | —                      | —                                           |
| -32002                     | 1052929-1   | 2052-8004-90                                | 1       | .050 ±.001<br>1.27 ±.025 | 1052577-1              | 2052-1658-02                                |
| -32003                     | 1052931-1   | 2052-8005-90                                | 2       | .020 ±.002<br>0.51 ±.051 | 1052898-1<br>1052897-1 | 2052-5636-02<br>2052-5636-00                |
| -32004                     | 1052933-1   | 2052-8006-90                                | 2       | .050 ±.001<br>1.27 ±.025 | 1052566-1<br>1052565-1 | 2052-1618-02<br>2052-1618-00                |

1 -92 and -02 indicate passivated stainless steel finish. -90 and -00 indicate gold plated finish.

### Panel Mount Plugs, Solder Tab



Outline 3



Outline 4

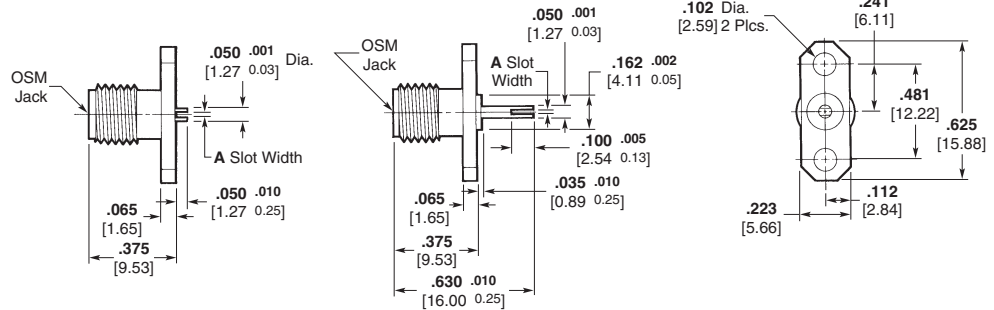
| Military Part No. M83517/2 | TE Part No. | Reference <sup>1</sup> Part No. (Ref. Only) | Outline | Dimension A              |
|----------------------------|-------------|---------------------------------------------|---------|--------------------------|
| -31001                     | 1052409-1   | 2051-8001-92                                | 3       | .020 ±.002<br>0.51 ±.051 |
| -31002                     | 1052411-1   | 2051-8002-92                                | 3       | .050 ±.001<br>1.27 ±.025 |
| -31003                     | 1052413-1   | 2051-8003-92                                | 4       | .020 ±.002<br>0.51 ±.051 |
| -31004                     | 1052415-1   | 2051-8004-92                                | 4       | .050 ±.001<br>1.27 ±.025 |

| Military Part No. M83517/2 | TE Part No. | Reference <sup>1</sup> Part No. (Ref. Only) | Outline | Dimension A              |
|----------------------------|-------------|---------------------------------------------|---------|--------------------------|
| -32001                     | 1052408-1   | 2051-8001-90                                | 3       | .020 ±.002<br>0.51 ±.051 |
| -32002                     | 1052410-1   | 2051-8002-90                                | 3       | .050 ±.001<br>1.27 ±.025 |
| -32003                     | 1052412-1   | 2051-8003-90                                | 4       | .020 ±.002<br>0.51 ±.051 |
| -32004                     | 1052414-1   | 2051-8004-90                                | 4       | .050 ±.001<br>1.27 ±.025 |

<sup>1</sup> -92 indicates passivated stainless steel finish.  
-90 indicates gold plated finish.

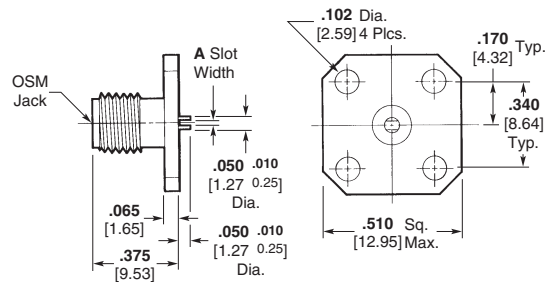
# SMA Receptacles (MIL-C-83517) — Panel Mount (Continued)

## Panel Mount Jacks, Slotted Contact



Outline 1

Outline 2



Outline 3

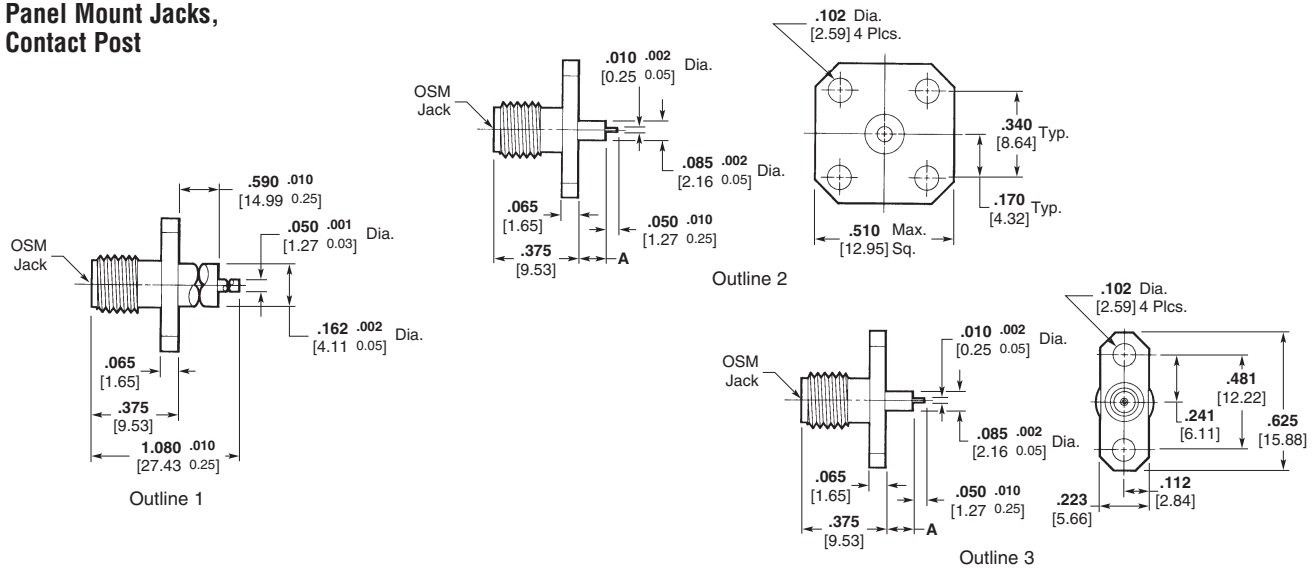
| Military Part No.<br>M83517/3 | TE Part No. | Reference <sup>1</sup><br>Part No.<br>(Ref. Only) | Outline | Dimension<br>A                        | COTS Part No. | Reference <sup>1</sup><br>Part No.<br>(Ref. Only) |
|-------------------------------|-------------|---------------------------------------------------|---------|---------------------------------------|---------------|---------------------------------------------------|
| -31001                        | 1052936-1   | 2052-8007-92                                      | 1       | .012 +.003/-0.001<br>0.30 +0.08/-0.03 | 1251095-1     | 2052-1650-02                                      |
| -31002                        | 1052938-1   | 2052-8008-92                                      | 1       | .018 +.003/-0.001<br>0.46 +0.08/-0.03 | —             | —                                                 |
| -31003                        | 1052940-1   | 2052-8009-92                                      | 1       | .028 +.003/-0.001<br>0.71 +0.08/-0.03 | —             | —                                                 |
| -31004                        | 1052942-1   | 2052-8010-92                                      | 3       | .012 +.003/-0.001<br>0.30 +0.08/-0.03 | —             | —                                                 |
| -31005                        | 1052944-1   | 2052-8011-92                                      | 3       | .018 +.003/-0.001<br>0.46 +0.08/-0.03 | 1052563-1     | 2052-1612-02                                      |
| -31006                        | 1052946-1   | 2052-8012-92                                      | 3       | .028 +.003/-0.001<br>0.71 +0.08/-0.03 | —             | —                                                 |
| -31007                        | 1052948-1   | 2052-8013-92                                      | 2       | .025 ±.002<br>0.64 ±0.05              | —             | —                                                 |
| -32001                        | 1052935-1   | 2052-8007-90                                      | 1       | .012 +.003/-0.001<br>0.30 +0.08/-0.03 | 1251095-1     | 2052-1650-02                                      |
| -32002                        | 1052937-1   | 2052-8008-90                                      | 1       | .018 +.003/-0.001<br>0.46 +0.08/-0.03 | —             | —                                                 |
| -32003                        | 1052939-1   | 2052-8009-90                                      | 1       | .028 +.003/-0.001<br>0.71 +0.08/-0.03 | —             | —                                                 |
| -32004                        | 1052941-1   | 2052-8010-90                                      | 3       | .012 +.003/-0.001<br>0.30 +0.08/-0.03 | —             | —                                                 |
| -32005                        | 1052943-1   | 2052-8011-90                                      | 3       | .018 +.003/-0.001<br>0.46 +0.08/-0.03 | 1052563-1     | 2052-1612-02                                      |
| -32006                        | 1052945-1   | 2052-8012-90                                      | 3       | .028 +.003/-0.001<br>0.71 +0.08/-0.03 | —             | —                                                 |
| -32007                        | 1052947-1   | 2052-8013-90                                      | 2       | .025 ±.002<br>0.64 ±0.05              | —             | —                                                 |

<sup>1</sup> -92 and -02 indicate passivated stainless steel finish. -90 indicates gold plated finish.



## SMA Receptacles (MIL-C-83517) — Panel Mount (Continued)

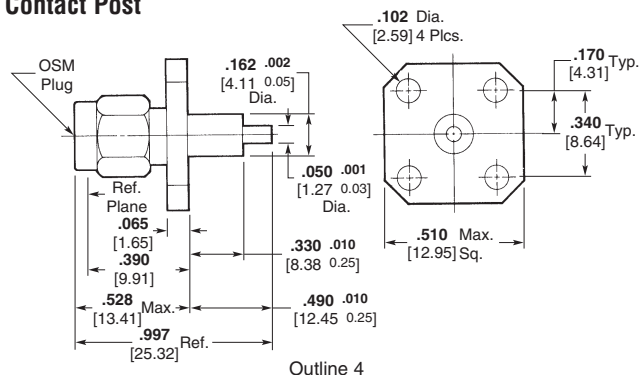
### Panel Mount Jacks, Contact Post



| Military Part No.<br>M83517/4 | TE Part No. | Reference <sup>1</sup> Part No.<br>(Ref. Only) | Outline | Dimension A              | COTS Part No.          | Reference <sup>1</sup> Part No.<br>(Ref. Only) |
|-------------------------------|-------------|------------------------------------------------|---------|--------------------------|------------------------|------------------------------------------------|
| -31001                        | 1052950-1   | 2052-8014-92                                   | 3       | .057 ±.003<br>1.45 ±.076 | —                      | —                                              |
| -31002                        | 1052952-1   | 2052-8015-92                                   | 3       | .125 ±.003<br>3.18 ±.076 | 1052902-1<br>1052901-1 | 2052-5674-02<br>2052-5674-00                   |
| -31003                        | 1052954-1   | 2052-8016-92                                   | 2       | .057 ±.003<br>1.45 ±.076 | —                      | —                                              |
| -31004                        | 1052956-1   | 2052-8017-92                                   | 2       | .125 ±.003<br>3.18 ±.076 | 1052528-1<br>1052527-1 | 2052-1215-02<br>2052-1215-00                   |
| -31005                        | 1052958-1   | 2052-8018-92                                   | 1       | N/A                      | 1052523-1<br>1052522-1 | 2052-1201-02<br>2052-1201-00                   |
| -32001                        | 1052949-1   | 2052-8014-90                                   | 3       | .057 ±.003<br>1.45 ±.076 | —                      | —                                              |
| -32002                        | 1052951-1   | 2052-8015-90                                   | 3       | .125 ±.003<br>3.18 ±.076 | 1052902-1<br>1052901-1 | 2052-5674-02<br>2052-5674-00                   |
| -32003                        | 1052953-1   | 2052-8016-90                                   | 2       | .057 ±.003<br>1.45 ±.076 | —                      | —                                              |
| -32004                        | 1052955-1   | 2052-8017-90                                   | 2       | .125 ±.003<br>3.18 ±.076 | 1052528-1<br>1052527-1 | 2052-1215-02<br>2052-1215-00                   |
| -32005                        | 1052957-1   | 2052-8018-90                                   | 1       | N/A                      | 1052523-1<br>1052522-1 | 2052-1201-02<br>2052-1201-00                   |

<sup>1</sup> -92 and -02 indicate passivated stainless steel finish. -90 and -00 indicate gold plated finish.

### Panel Mount Plugs, Contact Post

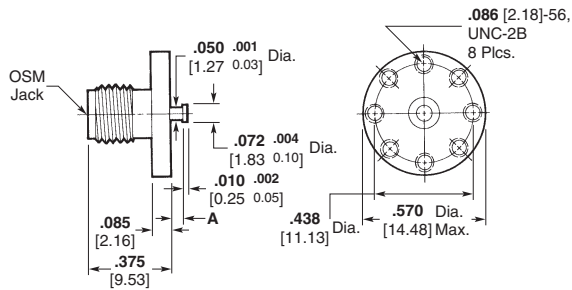


| Military Part No.<br>M83517/5 | TE Part No. | Reference <sup>1</sup> Part No.<br>(Ref. Only) | Outline |
|-------------------------------|-------------|------------------------------------------------|---------|
| -31001                        | 1052417-1   | 2051-8005-92                                   | 4       |
| -32001                        | 1052416-1   | 2051-8005-90                                   | 4       |

<sup>1</sup> -92 indicates passivated stainless steel finish.  
-90 indicates gold plated finish.

## SMA Receptacles (MIL-C-83517) — Surface Launch

### Surface Launch Jacks

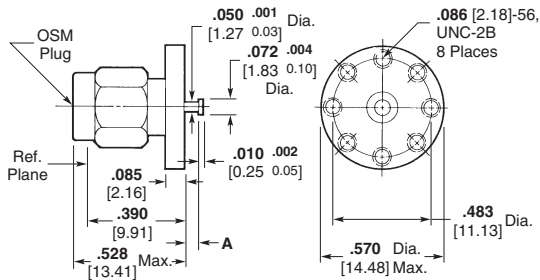


Outline 1

| Military Part No.<br>M83517/6 | TE Part No. | Reference <sup>1</sup><br>Part No.<br>(Ref. Only) | Outline | Dimension<br>A           | COTS<br>Part No. | Reference <sup>1</sup><br>Part No.<br>(Ref. Only) |
|-------------------------------|-------------|---------------------------------------------------|---------|--------------------------|------------------|---------------------------------------------------|
| -31001                        | 1053423-1   | 2066-8001-92                                      | 1       | .060 ±.003<br>1.52 ±0.08 | —                | —                                                 |
| -31002                        | 1053425-1   | 2066-8002-92                                      | 1       | .120 ±.003<br>3.05 ±0.08 | 1053415-1        | 2066-1403-00                                      |
| -32001                        | 1053422-1   | 2066-8001-90                                      | 1       | .060 ±.003<br>1.52 ±0.08 | —                | —                                                 |
| -32002                        | 1053424-1   | 2066-8002-90                                      | 1       | .120 ±.003<br>3.05 ±0.08 | 1053415-1        | 2066-1403-00                                      |

<sup>1</sup> -92 indicates passivated stainless steel finish. -90 and -00 indicate gold plated finish.

### Surface Launch Plugs

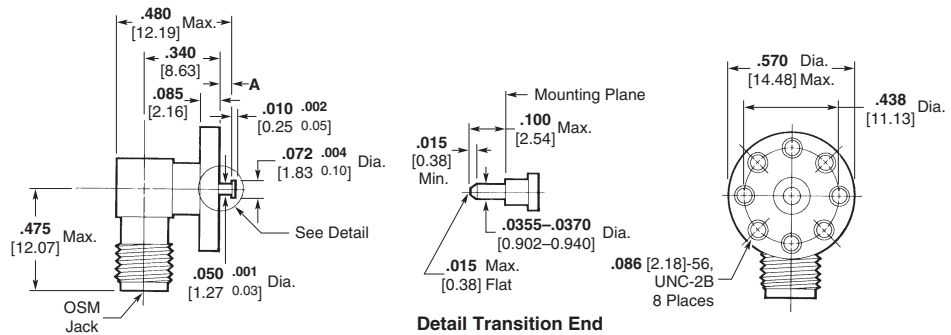


Outline 2

| Military Part No.<br>M83517/7 | TE Part No. | Reference <sup>1</sup><br>Part No.<br>(Ref. Only) | Outline | Dimension<br>A           |
|-------------------------------|-------------|---------------------------------------------------|---------|--------------------------|
| -31001                        | 1053429-1   | 2067-8001-92                                      | 2       | .060 ±.003<br>1.52 ±0.08 |
| -31002                        | 1053431-1   | 2067-8002-92                                      | 2       | .120 ±.003<br>3.05 ±0.08 |
| -32001                        | 1053428-1   | 2067-8001-90                                      | 2       | .060 ±.003<br>1.52 ±0.08 |
| -32002                        | 1053430-1   | 2067-8002-90                                      | 2       | .120 ±.003<br>3.05 ±0.08 |

<sup>1</sup> -92 indicates passivated stainless steel finish. -90 indicates gold plated finish.

### Surface Launch Right Angle Jacks



Detail Transition End

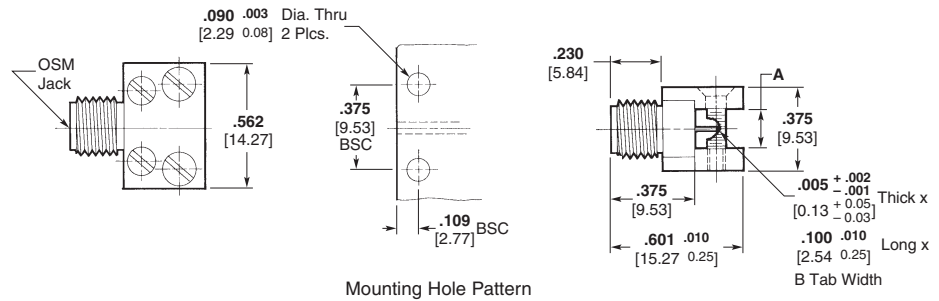
Outline 3

| Military Part No.<br>M83517/8 | TE Part No. | Reference <sup>1</sup><br>Part No.<br>(Ref. Only) | Outline | Dimension<br>A           | COTS<br>Part No. | Reference <sup>1</sup><br>Part No.<br>(Ref. Only) |
|-------------------------------|-------------|---------------------------------------------------|---------|--------------------------|------------------|---------------------------------------------------|
| -31001                        | 1053451-1   | 2068-8001-92                                      | 3       | .060 ±.003<br>1.52 ±0.08 | 1053438-1        | 2068-5156-00                                      |
| -31002                        | 1053453-1   | 2068-8002-92                                      | 3       | .120 ±.003<br>3.05 ±0.08 | —                | —                                                 |
| -32001                        | 1053450-1   | 2068-8001-90                                      | 3       | .060 ±.003<br>1.52 ±0.08 | 1053438-1        | 2068-5156-00                                      |
| -32002                        | 1053452-1   | 2068-8002-90                                      | 3       | .120 ±.003<br>3.05 ±0.08 | —                | —                                                 |

<sup>1</sup> -92 indicates passivated stainless steel finish. -90 and -00 indicate gold plated finish.

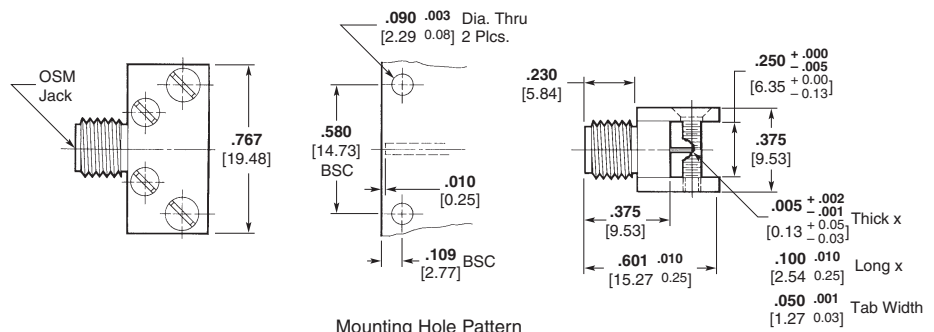
## SMA Receptacles (MIL-C-83517) — End Launch

### End Launch Jacks



Mounting Hole Pattern

Outline 1



Mounting Hole Pattern

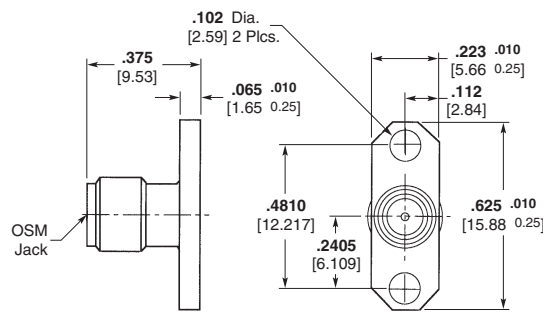
Outline 2

| Military Part No.<br>M83517/9 | TE Part No. | Reference <sup>1</sup> Part No.<br>(Ref. Only) | Outline | Dimension A            | Dimension B                | COTS Part No. | Reference <sup>1</sup> Part No.<br>(Ref. Only) |
|-------------------------------|-------------|------------------------------------------------|---------|------------------------|----------------------------|---------------|------------------------------------------------|
| -31001                        | 1053476-1   | 2070-8001-92                                   | 1       | .057-.064<br>1.45-1.63 | .025 ± .002<br>0.64 ± 0.05 | —             | —                                              |
| -31002                        | 1053478-1   | 2070-8002-92                                   | 1       | .120-.127<br>3.05-3.23 | .050 ± .001<br>1.27 ± 0.03 | 1053465-1     | 2070-5068-02                                   |
| -31003                        | 1053480-1   | 2070-8003-92                                   | 1       | .245-.250<br>6.22-6.35 | .050 ± .001<br>1.27 ± 0.03 | 1053467-1     | 2070-5069-02                                   |
| -31004                        | 1053482-1   | 2070-8004-92                                   | 2       | N/A                    | N/A                        | —             | —                                              |
| -32001                        | 1053475-1   | 2070-8001-90                                   | 1       | .057-.064<br>1.45-1.63 | .025 ± .002<br>0.64 ± 0.05 | —             | —                                              |
| -32002                        | 1053477-1   | 2070-8002-90                                   | 1       | .120-.127<br>3.05-3.23 | .050 ± .001<br>1.27 ± 0.03 | 1053465-1     | 2070-5068-02                                   |
| -32003                        | 1053479-1   | 2070-8003-90                                   | 1       | .245-.250<br>6.22-6.35 | .050 ± .001<br>1.27 ± 0.03 | 1053467-1     | 2070-5069-02                                   |
| -32004                        | 1053481-1   | 2070-8004-90                                   | 2       | N/A                    | N/A                        | —             | —                                              |

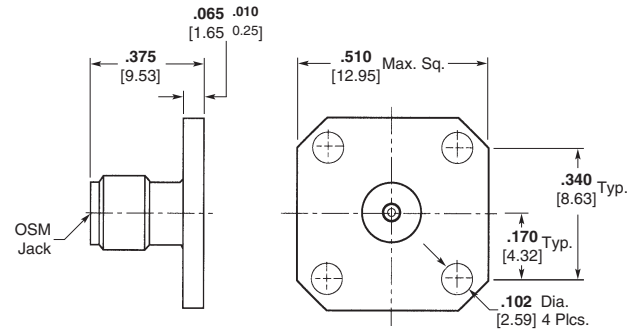
<sup>1</sup> -92 and -02 indicate passivated stainless steel finish. -90 indicates gold plated finish.

## SMA Receptacles (MIL-C-83517) — Field Replaceable Launchers

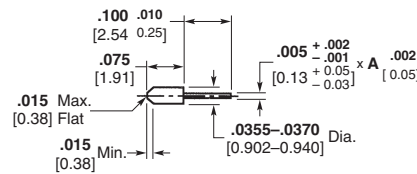
### Field Replaceable Launchers



Outline 1



Outline 2

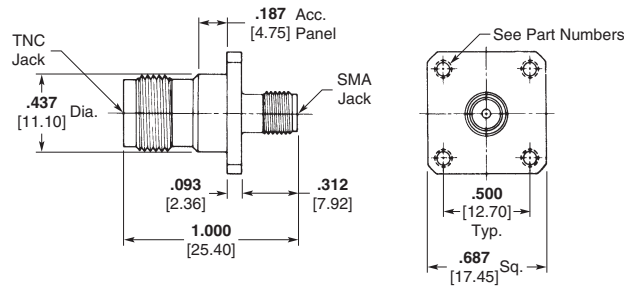


Transition Pin Detail

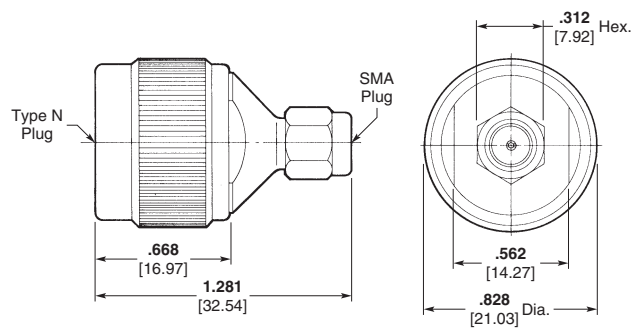
| Military Part No.<br>M83517/10 | TE Part No. | Reference <sup>1</sup> Part No.<br>(Ref. Only) | Outline | Dimension A                | COTS Part No. | Reference <sup>1</sup> Part No.<br>(Ref. Only) |
|--------------------------------|-------------|------------------------------------------------|---------|----------------------------|---------------|------------------------------------------------|
| -31001                         | 1052959-1   | 2052-8019-92                                   | 1       | —                          | 1052646-1     | 2052-3359-02                                   |
| -31003                         | 1052962-1   | 2052-8021-92                                   | 2       | —                          | 1052643-1     | 2052-3358-02                                   |
| -31005                         | 1052963-1   | 2052-8023-92                                   | 1       | .020 ± .002<br>0.51 ± 0.05 | —             | —                                              |
| -31006                         | 1484518-1   | 2052-8024-92                                   | 1       | .050 ± .002<br>1.27 ± 0.05 | —             | —                                              |
| -31015                         | 1484519-1   | 2052-8033-92                                   | 2       | .020 ± .002<br>0.51 ± 0.05 | 1052643-1     | 2052-3358-02                                   |
| -31016                         | 1484520-1   | 2052-8034-92                                   | 2       | .050 ± .002<br>1.27 ± 0.05 | —             | —                                              |
| -32001                         | 1484521-1   | 2052-8019-90                                   | 1       | —                          | 1052646-1     | 2052-3359-02                                   |
| -32003                         | 1052961-1   | 2052-8021-90                                   | 2       | —                          | 1052643-1     | 2052-3358-02                                   |
| -32005                         | 1484522-1   | 2052-8023-90                                   | 1       | .020 ± .002<br>0.51 ± 0.05 | —             | —                                              |
| -32006                         | 1484523-1   | 2052-8024-90                                   | 1       | .050 ± .002<br>1.27 ± 0.05 | —             | —                                              |
| -32015                         | 1484524-1   | 2052-8033-90                                   | 2       | .020 ± .002<br>0.51 ± 0.05 | —             | —                                              |
| -32016                         | 1484525-1   | 2052-8034-90                                   | 2       | .050 ± .002<br>1.27 ± 0.05 | —             | —                                              |

<sup>1</sup> -92 and -02 indicate passivated stainless steel finish. -90 indicates gold plated finish.

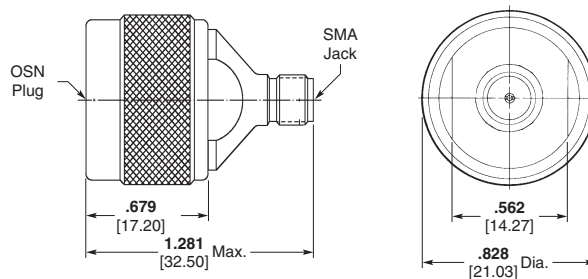
## Between Series Adapters



Outline 78



Outline 80



Outline 83

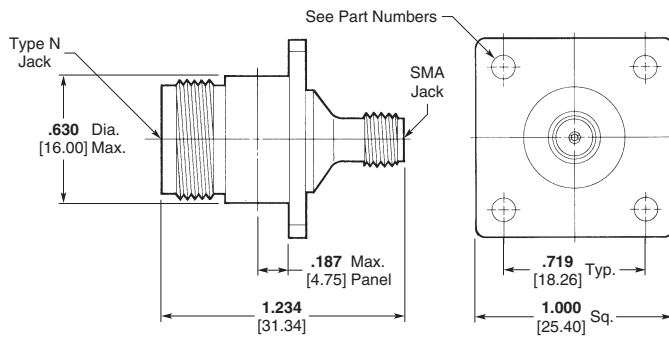
| DSCC Part Number         | Reference Part Number (Ref. Only) | Outline | Description             | TE Part Number |
|--------------------------|-----------------------------------|---------|-------------------------|----------------|
| 8501814FP-1 <sup>1</sup> | 3180-4034-02 <sup>1</sup>         | 78      | SMA Jack to TNC Jack    | 1057848-1      |
| 8501814FP-2 <sup>2</sup> | 3180-4036-02 <sup>2</sup>         | 78      | SMA Jack to TNC Jack    | 1080294-1      |
| 8604412SP-1              | 3081-4002-02                      | 80      | SMA Plug to Type N Plug | 1057371-1      |
| 8604412SP-4              | 3082-4031-02                      | 83      | Type N Plug to SMA Jack | 1057403-1      |

<sup>1</sup> .125 [3.20] Dia. Typ. (4 Plcs.)

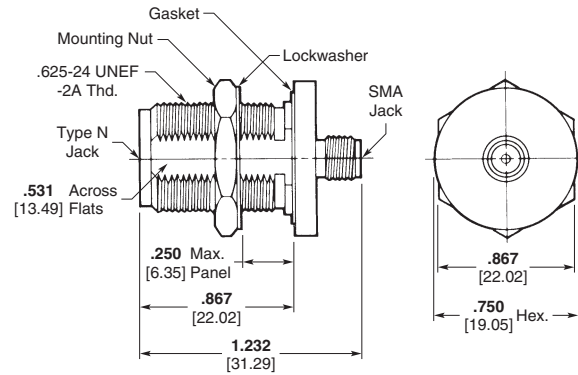
<sup>2</sup> Tapped holes to accommodate 3-56 UNF mounting screws.

\* Defense Electronics Supply Center, Dayton, Ohio

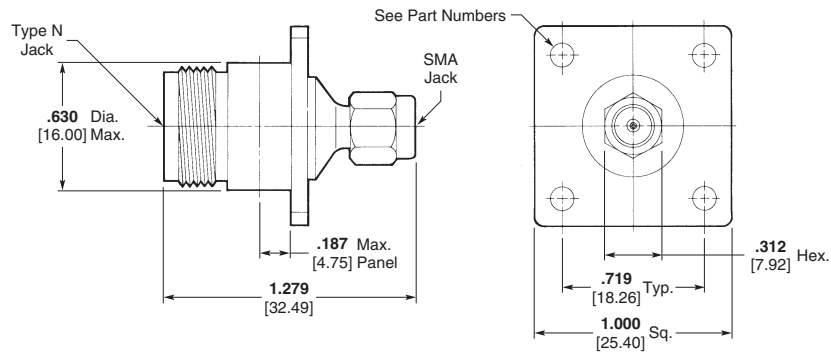
## Between Series Adapters (Continued)



Outline 84



Outline 85



Outline 86

| DSCC Part Number         | Reference Part Number (Ref. Only) | Outline | Description             | TE Part Number |
|--------------------------|-----------------------------------|---------|-------------------------|----------------|
| 8503812FP-1 <sup>1</sup> | 3080-4010-02 <sup>1</sup>         | 84      | SMA Jack to Type N Jack | 1057354-1      |
| 8503812FP-2 <sup>2</sup> | 3080-4015-02 <sup>2</sup>         | 84      | SMA Jack to Type N Jack | 1057357-1      |
| 8503812FP-3              | 3084-4001-00                      | 85      | SMA Jack to Type N Jack | 1057465-1      |
| 8503812FP-4 <sup>1</sup> | 3082-4028-02 <sup>1</sup>         | 86      | SMA Plug to Type N Jack | 1057402-1      |
| 8503812FP-5 <sup>2</sup> | 3082-4029-02 <sup>2</sup>         | 86      | SMA Plug to Type N Jack | 1252992-1      |
| 8503812FP-6 <sup>1</sup> | 3080-4019-02 <sup>1</sup>         | 84      | SMA Jack to Type N Jack | 1057359-1      |
| 8503812FP-7 <sup>2</sup> | 3080-4020-02 <sup>2</sup>         | 84      | SMA Jack to Type N Jack | 1087866-1      |

<sup>1</sup> .125 [3.20] Dia. Typ. (4 Plcs.)

<sup>2</sup> Tapped holes to accommodate 3-56 UNF mounting screws.

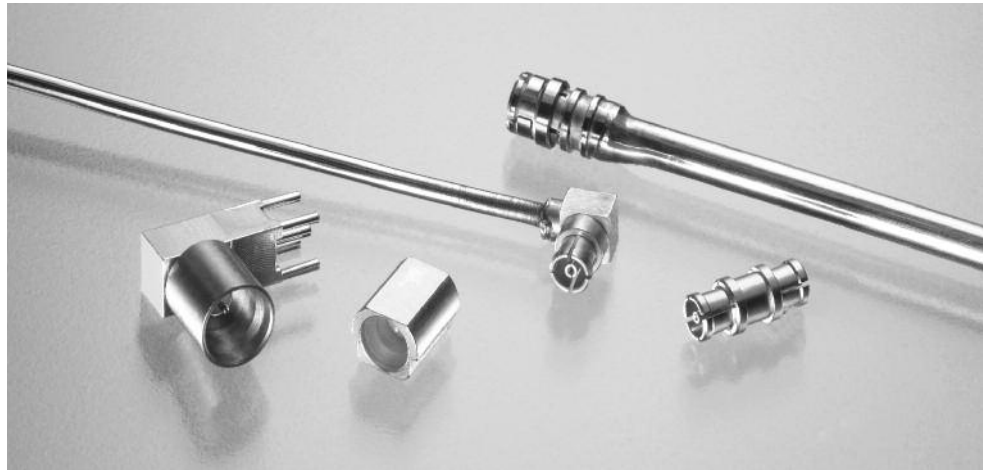
\* Defense Electronics Supply Center, Dayton, Ohio



## SMPM Micro-Miniature Push-on Coaxial Connectors

### Product Facts

- Push-on style interconnect, allowing control of the mating forces when mating multiple connectors
- 30% smaller than SMP interconnects
- Complies with MIL-STD-348A



### Description

A high performance micro-miniature, push-on coaxial interconnect system.

Extremely small size interconnection that offers a versatile solution for high density packaging, allowing center-to-center spacing of 0.135".

### Applications

Military and Aerospace applications for communications, radar systems, antennas.

Industrial applications that require a rugged, densely packaged RF interconnect system.

### Product Offering

- Shrouds; flange mount, thread-in and press-in (full detent and smooth bore)
- Hermetic shrouds (single and dual positions)
- Edge mount PCB shrouds
- Thru-hole mount PCB shrouds
- Surface mount PCB shrouds (full detent, smooth bore and catcher's mitt designs)
- Adapters, custom lengths and spring loaded options
- Straight and right-angle jacks for .047 cable

### Electrical Performance

**VSWR** — 1.50:1 max to 40 GHz

**Impedance** — 50 ohm

**Contact Resistance** — Center - 6 milliohms max, Outer - 2 milliohms max.

**Insulation Resistance** — 5000 megohms min.

**Dielectric Withstanding Voltage** — 225 Vrms min.

**Insertion Loss** — 0.12 dB max. typical

### Mechanical

**Force to Engage** — 4.5 lbs. typical full detent; 2.5 lbs. typical smooth bore

**Force to Disengage** — 6.5 lbs. typical full detent; 1.5 lbs. typical smooth bore

**Radial Misalignment** —  $\pm 0.10^\circ$

**Vibration** — EIA-364-28, Test condition III

**Mechanical Shock** — EIA-364-27, Method G

**Durability** — EIA-364-9, 100 cycles min.

### Material and Finish

**Housings and Center Contacts** — Beryllium Copper per ASTM-B-196; gold plate over nickel plate

**Dielectric** — PTFE Fluorocarbon per ASTM-D-1457

**Shrouds** — Stainless steel per ASTM-A582 Type 303; passivate per ASTM-A380

**Hermetic Seal** — Glass bead

### Standards and Specifications

MIL-STD-348A

### General Specifications

**Temperature Range** — -55 to +125 °C

**Voltage Rating** — 150 volts AC

### Environmental Performance

**Thermal Shock** — EIA-364-32, 5 cycles

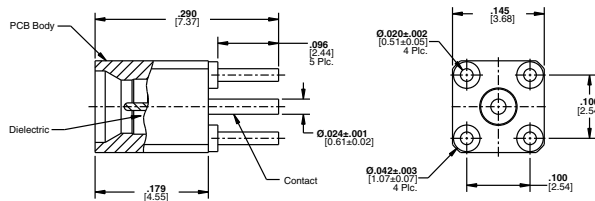
**Humidity-temperature** — EIA-364-31 Method III, 10 cycles

**Salt Spray Corrosion** — EIA-364-26, Condition B

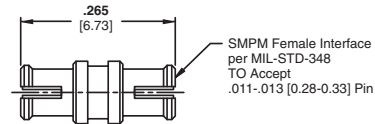
**Temperature Life** — EIA-364-17, Method A, test condition 5

## SMPM Micro-Miniature Push-on Coaxial Connectors (Continued)

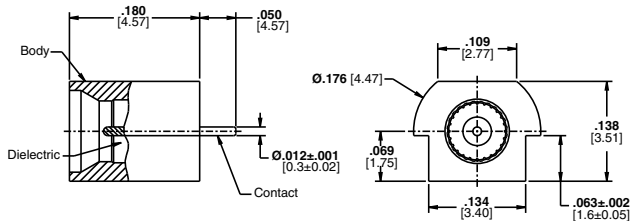
### Vertical Through-Hole PCB Mount — Part No. 1757644-1



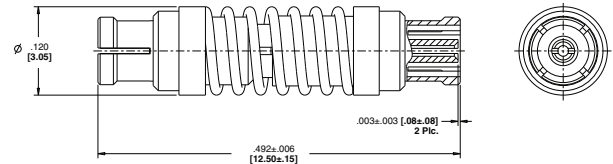
### Female Bullet Adapter — Part No. 1757256-1



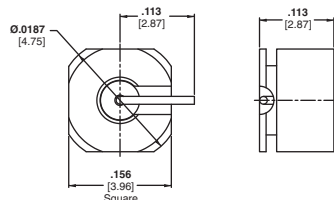
### PCB Edge Mount — Part No. 1757640-1 Full Detent 1757640-2 Smooth Bore



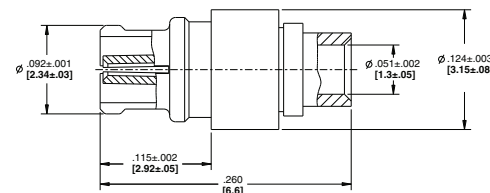
### Jack to Jack, Adapter, Spring Bullet — Part No. 1757257-1



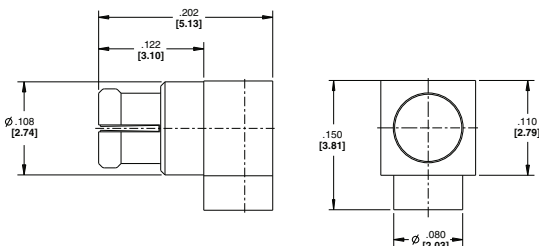
### PCB Surface Mount, Smooth Bore — Part No. 1757253-1 Smooth Bore 1757254-1 Full Detent



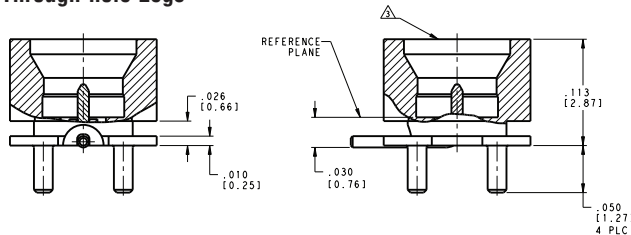
### Cable Jack, Straight — Part No. 1757642-1 — .047 dia. cable 1996328-1 — .086 dia. cable



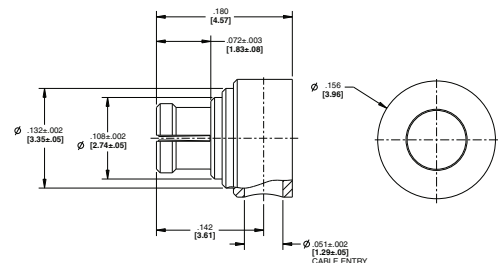
### Cable Jack, Right-Angle — Part No. 1757643-1 — .047 dia. cable



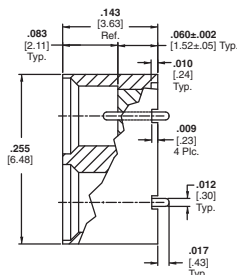
### PCB Surface Mount, — Part No. 1757639-1 Full Detent Through-hole Legs



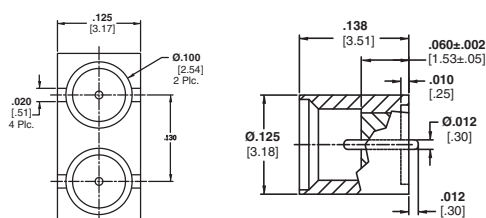
### Cable Jack, Right-Angle — Part No. 1757638-1 — .047 dia. cable



### Hermetic, Smooth Bore, 2 Pos. Part No. 1663434-1



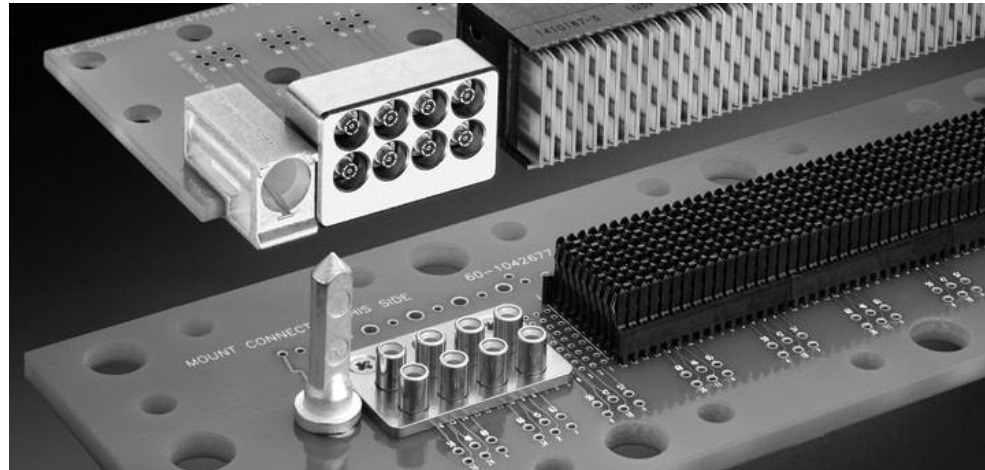
### Hermetic Smooth Bore Part No. 1663433-1



## Multi-position Backplane RF Modules

### Product Facts

- Modular design permits application specific configuration with high RF contact count
  - Float mounted jack maintains positive RF ground
  - .240 center-to-center spacing
  - High channel to channel isolation
  - 4 and 8 position modules are designed to meet the requirements of VITA 67.1 and VITA 67.2
  - RF contacts are available for a variety of low loss cables
- Compliant pin backplane contacts are available**
- RF cable assemblies



### Description

Modular, high density, blind-mate RF backplane connection system combining a high performance, broad bandwidth multi-position RF interconnect in a customer configurable platform.

### Applications

- Backplane/daughter card applications
- Electronic countermeasure systems
- Land & sea anti-ballistic signal processing
- UAV electronic sensing and processing
- Avionics & ground based radar systems
- Ground base stations & communication systems
- Central computing, satellite on-board & ship-board computing

### Standards & Specs

Materials and plating meet the requirements of MIL-PRF-39012

SMPPM RF contact interfaces IAW MIL-STD-348

Designed to meet the vibration, environmental and corrosion resistance requirements of ANSI/VITA 47

Designed and qualified IAW VITA 67.0; VITA 67.1 and VITA 67.2

Product Specification: 108-2443

IS Sheet: 408-10387

Test Report: 501-748

### Materials

Center Contacts: Beryllium copper, gold plated

Connector Housings: Beryllium copper, gold plated

Module Body: Type 303 Corrosion resistant steel, with passivation treatment and aluminum alloy 6061-T6, with Trivalent chromate conversion coating

Springs: Nickel plated music wire or Type 316 corrosion resistant steel, with passivation treatment

Insulators: PTFE

### Mechanical

Durability: EIA-364-9, 500 mating cycles (smooth bore)

Vibration: EIA-364-28, Test Condition III

Mechanical Shock: EIA-364-27, Method G

Operating Temperature: -55°C to +85°C

Humidity/Temperature Cycling: EIA-364-31, Method III

### Physical or Other Properties

Misalignment: Axial float: .079 (2.0mm) min.

Radial Misalignment: +/- .010 min.

Force to Engage: 18.75 N (4.2 lbf) typical

Force to Disengage: 3.25 N (0.73 lbf) typical

Float Mount Preload: 0.52 N (2.3 lbf) lbs. typical

Float Mount Force at Full Deflection: 20.0 N (5.0 lbf) lbs. typical

**Note:** all values are typical for a single RF contact.

## Multi-position Backplane RF Modules (Continued)

### Electrical

**Impedance** — 50 ohm

**Frequency** — P.C.B. Mounted

Contacts - DC — 6.0 GHz

Semi-Rigid Cable Contacts - DC — 26.5 GHz

Flexible Cable Contacts - DC — 20 GHz

**VSWR** — 1.15:1 to 20 GHz; 1.25 max. to 26.5 GHz

**Insertion Loss** — .12 sqrt f (GHz) dB max.

**Insulation Resistance** — 5000 megaohms min.

**DWV @ Sea Level** — 325 Vrms min.

**Contact Resistance** — Center 6 milliohms max., outer 2 milliohms max.

**Isolation (Channel to Channel)** —

SHF (3-30 GHz): >100 dB

VHF/UHF (30 MHz-3 GHz): >120 dB

HF (3-30 MHz): >140 dB

**RF Power @ 105 C (C.W. Ave.)** —

VHF/UHF/SHF (30 MHz-30GHz):

>20 dBm

HF (3-30 MHz): >30 dBm

**Note:** The maximum operating frequency is limited by the specifications of the selected cable.

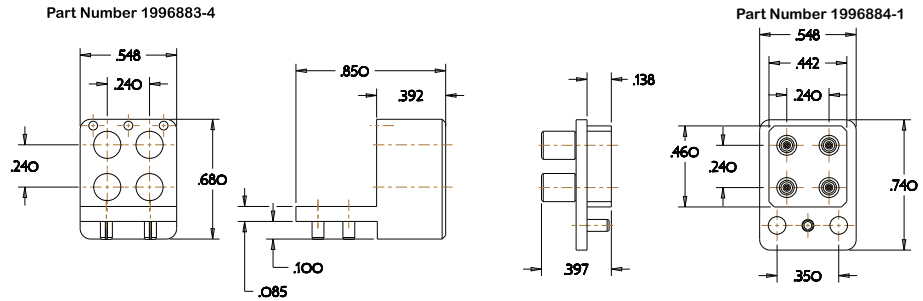
### Part Dimensions

Dimensions are in inches

#### 4 Position

Part Number 1996883-4 — VITA 67.1 Daughter Card Module

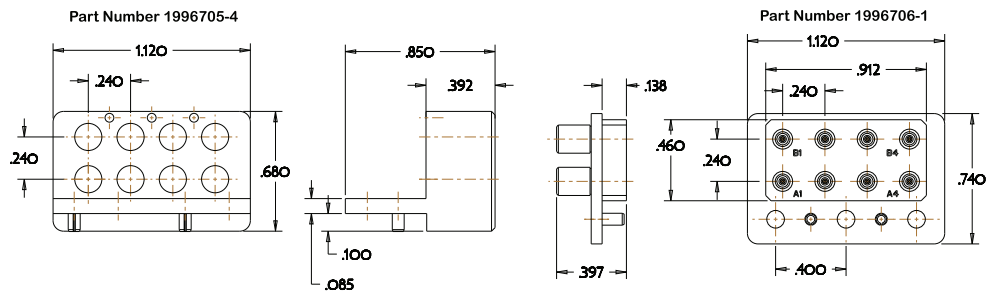
Part Number 1996884-1 — VITA 67.1 Backplane Module



#### 8 Position

Part Number 1996705-4 — VITA 67.2 Daughter Card Module

Part Number 1996706-1 — VITA 67.2 Backplane Module



SMPPM Contacts for Daughtercard modules:

.047 semi-rigid cable: 1996771-1

.086 semi-rigid cable: 1996390-1

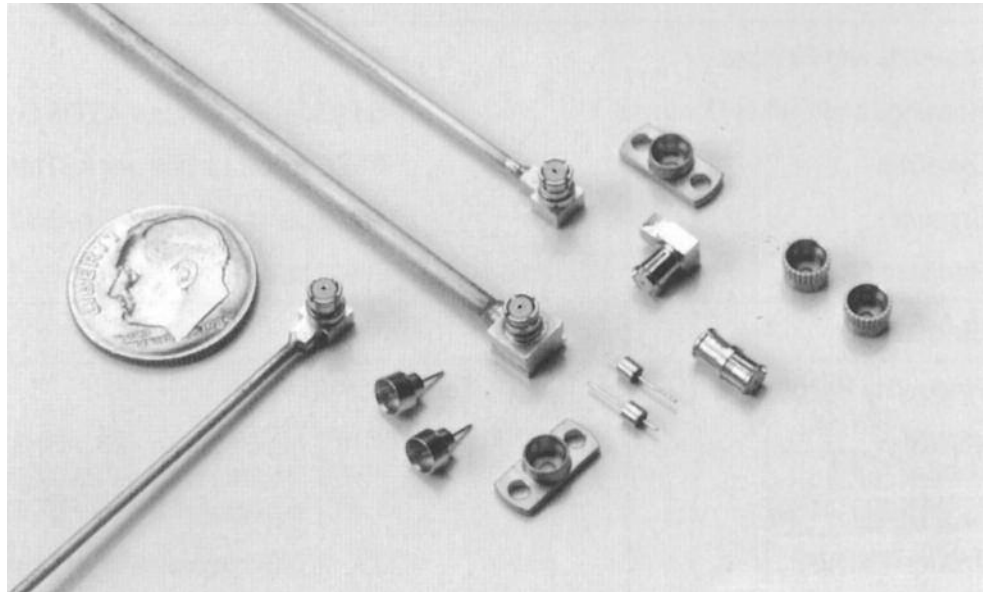
Consult TE for flexible cable/contact compatibility

**Note:** Other configurations and options are available, contact TE.

## SMP Micro-Miniature Push-On Coaxial Connectors

### Features

- Intermateable with Gilbert GPO™ Series
- Enhanced performance features
- Simplified Assembly
- DSCC Approved



SMP micro-miniature push-on coaxial connectors provide solutions for today's modular designs with denser packaging requirements. The extremely small size of the SMP offers a versatile solution for high density packaging allowing connector center-to-center spacing of 0.17 [4.32]. The push-on interface facilitates easier assembly and test with a positive snap-in feature to indicate a fully mated connection. The rugged SMP interface can better withstand harsh environments of mechanical shock and vibration, typically found in military or aerospace related applications. This SMP connector

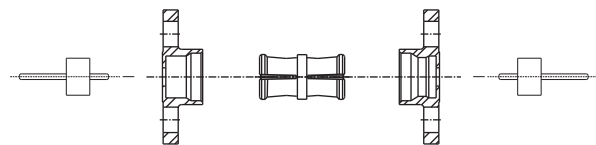
interface is the standard used by Defense Electronics Supply Center (DSCC) to generate the SMP push-on connector series. For DSCC Part Numbers, see page 2-31.

SMP connectors can be your design solution for mechanical packaging and frequency response. The SMP interface provides 0.010" of radial misalignment for critical blindmate applications. Mating forces are strictly controlled for reliable connections per mated pair or when simultaneously mating multiple connectors. Cable jacks include an anti-rocking ring for reliable mechanical performance for harsh

operating environments. SMP connectors offer enhanced broadband VSWR performance of 1.15:1 max thru 26.5GHz and 1.70:1 max thru 40GHz.

Standard design SMP configurations include cable connectors, straight and right-angle, for 0.047 and 0.085 semi-rigid cable, full detent, limited detent and smooth bore mating shrouds that can be bulk-head or flange mounted and glass feedthroughs for coax to circuit launchers. In-series adapters for module-to-module intermating and between series adapters for integrating or testing systems or components parameters.

### SMP Shroud and Jack-to-Jack Adapter Assembly



**Gilbert GPO Series** — Trademark of Corning Incorporated

## SMP Micro-Miniature Push-On Coaxial Connectors (Continued)

### Specifications

#### General

|                              |                                                                 |
|------------------------------|-----------------------------------------------------------------|
| Materials and Finishes       |                                                                 |
| Housings and Center Contacts | Beryllium Copper per ASTM-B-196; gold plate over nickel plate   |
| Dielectric                   | PTFE Fluorocarbon per ASTM-D-1457                               |
| Shrouds                      | Stainless steel per ASTM-A582 Type 303; passivate per ASTM-A380 |
| Hermetic Seal                | Glass bead                                                      |

#### Electrical

|                                 |                                                                                           |
|---------------------------------|-------------------------------------------------------------------------------------------|
| Frequency Range                 | dc - 40.0 GHz                                                                             |
| VSWR                            | 1.10:1 Maximum dc - 23.0 GHz<br>1.15:1 Maximum 23.0 - 26.5 GHz<br>1.70:1 Maximum 40.0 GHz |
| Voltage Rating                  | 335 Vrms maximum at sea level                                                             |
| Insertion Loss                  | $0.10 \sqrt{f \text{ (GHz)}}$ dB                                                          |
| Insulation Resistance           | 5000 megohms minimum                                                                      |
| Dielectric Withstanding Voltage | 500 volts (VRMS minimum)                                                                  |
| RF High Potential               | 325 volts (VRMS minimum) @ 5 MHz                                                          |
| Impedance                       | 50 ohms nominal                                                                           |
| RF Leakage                      | -80dB to 3 GHz, -65dB from 3 to 26.5 GHz minimum                                          |
| Contact Resistance              | Initial center contact 6.0 milliohms maximum<br>Outer contact 2.0 milliohms maximum       |

#### Mechanical

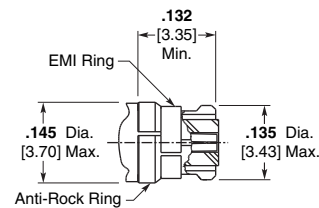
|                          |                                                                                                   |
|--------------------------|---------------------------------------------------------------------------------------------------|
| Durability               | 100 mating cycles minimum - (full detent)                                                         |
| Radial Misalignment      | ±0.010 minimum                                                                                    |
| Axial Misalignment       | .000/.010                                                                                         |
| Force to Engage          | full detent 15.0 lbs. maximum<br>limited detent 10.0 lbs. maximum<br>smooth bore 2.0 lbs. maximum |
| Force to Disengage       | full detent 5.0 lbs. minimum<br>limited detent 2.0 lbs. minimum<br>smooth bore 0.5 lbs. minimum   |
| Center Contact Retention | 1.5 lbs. minimum axial force                                                                      |

#### Environmental

|                       |                                                                                                                                              |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| Operating Temperature | -85°F to +329°F [-65°C to +165°C]                                                                                                            |
| Vibration             | per MIL-STD-202, method 204, test condition D                                                                                                |
| Shock                 | per MIL-STD-202, method 213, test condition I                                                                                                |
| Thermal Shock         | per MIL-STD-202, method 107, test condition B                                                                                                |
| Moisture Resistance   | per MIL-STD-202, method 106, except step 7b shall be omitted. Resistance shall be 1000 megohms within 5 minutes after removal from humidity. |

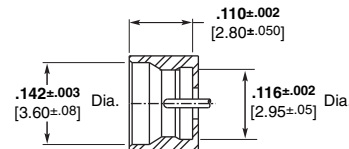
### Interface Dimensions

#### Jack

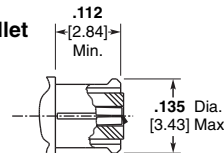


#### Shroud

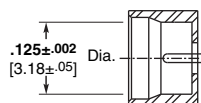
##### Full Detent



##### Bullet



##### Smooth Bore



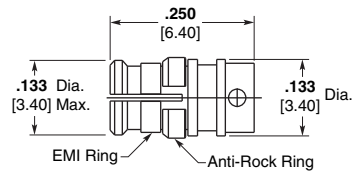
**Note:** These dimensions comply with MIL-STD-348.



## SMP Micro-Miniature Push-On Coaxial Connectors (Continued)

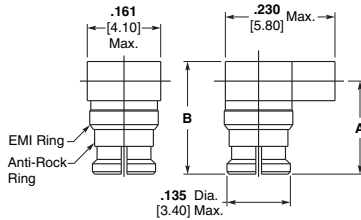
### Jacks (Continued)

#### Straight Cable Jack, Solder Attachment



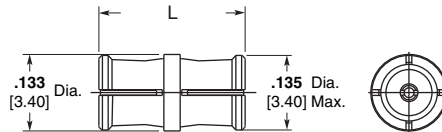
| Cable                    | Reference Part No. (Ref. only) | Part No.  | DSCC Part No. |
|--------------------------|--------------------------------|-----------|---------------|
| .047 Semi-Rigid          | 2902-5005-62                   | 1056521-1 | 94008ZCG-2    |
| .085 Semi-Rigid (RG-405) | 2902-5006-62                   | 1056522-1 | 94008ZCG-1    |

#### Right-Angle Cable Jack, Solder Attachment



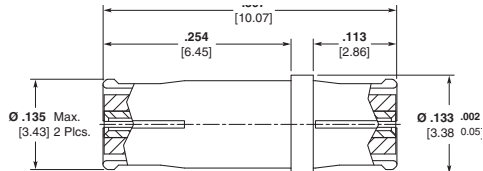
| Cable                    | Dim. A       | Dim. B       | Reference Part No. (Ref. only) | Part No.  | DSCC Part No. |
|--------------------------|--------------|--------------|--------------------------------|-----------|---------------|
| .047 Semi-Rigid          | .190<br>4.80 | .230<br>5.80 | 2908-5006-62                   | 1056550-1 | 94008ZCG-4    |
| .085 Semi-Rigid (RG-405) | .209<br>5.30 | .265<br>6.70 | 2908-5007-62                   | 1056551-1 | 94008ZCG-3    |

#### Jack to Jack Adapter (Bullet)



| Dim. L        | Reference Part No. (Ref. only) | Part No.  | DSCC Part No. |
|---------------|--------------------------------|-----------|---------------|
| .254<br>6.45  | 2980-5004-62                   | 1056703-1 | 94007ZCG-1    |
| .397<br>10.07 | 2980-5005-62                   | 1757023-1 | 94007ZCG-2    |

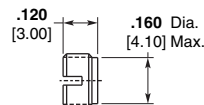
#### Jack to Jack Adapter (SMP)



| DSCC Part No. | RG/U Cable | Part No.  |
|---------------|------------|-----------|
| 94007ZCG-2    | —          | 1757023-1 |

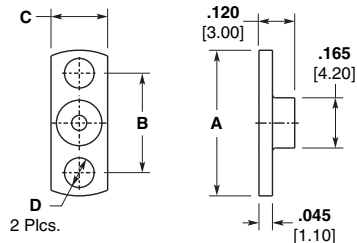
### Shrouds

#### Shroud — Threaded



| Description    | Reference Part No. (Ref. only) | Part No.  |
|----------------|--------------------------------|-----------|
| Full Detent    | 2998-5045-02                   | 1056745-1 |
| Limited Detent | 2998-5043-02                   | 1056743-1 |
| Smooth Bore    | 2998-5044-02                   | 1056744-1 |

#### Shroud — 2 Hole Flange Surface Mount

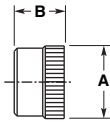


| TE Part No. | Dimension     |              |              |               | Shroud Design  | DSCC Part No. |
|-------------|---------------|--------------|--------------|---------------|----------------|---------------|
|             | A             | B            | C            | D             |                |               |
| 1056740-1   |               |              |              |               | Full Detent    | 94007ZSP-3    |
| 1757024-1   | .328<br>8.33  | .187<br>4.75 | .098<br>2.49 | .480<br>12.19 | Limited Detent | 94007ZSP-3L   |
| 1757025-1   |               |              |              |               | Smooth Bore    | 94007ZSP-3S   |
| 1056741-1   |               |              |              |               | Full Detent    | 94007ZSP-4    |
| 1757026-1   | .481<br>12.22 | .223<br>5.66 | .102<br>2.59 | .625<br>15.88 | Limited Detent | 94007ZSP-4L   |
| 1757027-1   |               |              |              |               | Smooth Bore    | 94007ZSP-4S   |
| 1056742-1   |               |              |              |               | Full Detent    | 94007ZSP-5    |
| 1757028-1   | .282<br>7.16  | .165<br>4.19 | .073<br>1.85 | .400<br>10.16 | Limited Detent | 94007ZSP-5L   |
| 1757029-1   |               |              |              |               | Smooth Bore    | 94007ZSP-5S   |
| 1757030-1   | .352<br>8.94  | .235<br>5.97 | .073<br>1.85 | .470<br>11.94 | Smooth Bore    | 94007ZSP-6SC  |

## SMP Micro-Miniature Push-On Coaxial Connectors (Continued)

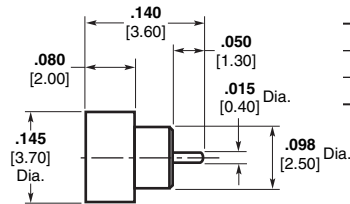
### Shrouds (Continued)

#### Shroud — Press Fit



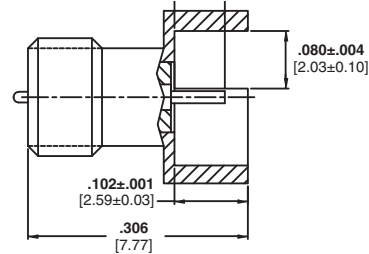
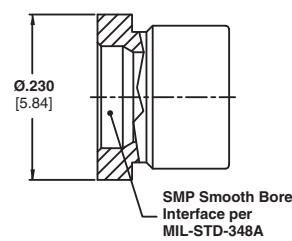
| Description    | Dim. A       | Dim. B       | Reference Part No. (Ref. only) | Part No.  |
|----------------|--------------|--------------|--------------------------------|-----------|
| Full Detent    | .182<br>4.60 | .115<br>2.90 | 2998-5005-02                   | 1056726-1 |
| Limited Detent | .174<br>4.40 | .120<br>3.00 | 2998-5033-02                   | 1056734-1 |
|                | .154<br>3.90 | .080<br>2.00 | 2998-5035-02                   | 1056736-1 |

#### Shroud — Solder-In Hermetic



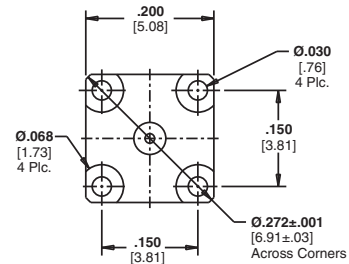
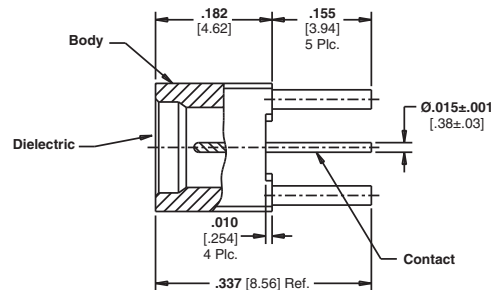
| Description    | Reference Part No. (Ref. only) | Part No.  |
|----------------|--------------------------------|-----------|
| Full Detent    | 2998-5054-94                   | 1056750-1 |
| Limited Detent | 2998-5055-94                   | 1056751-1 |
| Smooth Bore    | 2998-5056-94                   | 1056752-1 |

#### PCB Plug, Bulkhead Mount, Smooth Bore



Part No.  
1663678-1

#### PCB Thru-Hole Mount, Smooth Bore



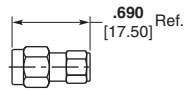
Part No.  
1663679-1

## SMP Micro-Miniature Push-On Coaxial Connectors (Continued)

### Between Series Adapters

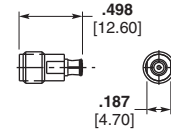
Between Series Coaxial Transmission Line Adapters provide convenient transitions between popular series coaxial connectors. The adapter design provides a minimum length consistent with good electrical performance. The small size, low VSWR, and broad frequency coverage permits a wide range of applications in both measurement and systems use.

#### SMA Plug – SMP Plug



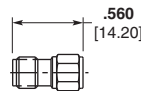
**Part Number 1056706-1**  
Reference Part No. (Ref. only)  
2981-2241-00

#### SMA Jack – SMP Jack



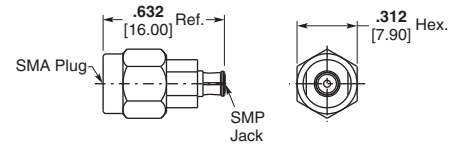
**Part Number 1056702-1**  
Reference Part No. (Ref. only)  
2980-2240-00

#### SMA Jack – OSMP Plug



**Part Number 1056707-1**  
Reference Part No. (Ref. only)  
2982-2240-00

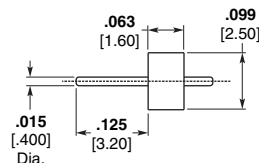
#### SMP Jack – SMA Plug



**Part Number 1056708-1**  
Reference Part No. (Ref. only)  
2982-2241-00

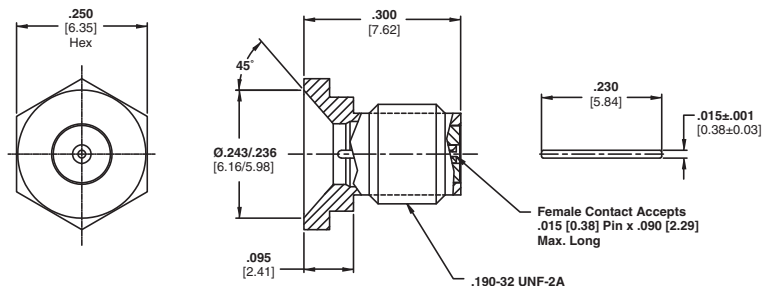
### Miscellaneous

#### Glass Bead Assembly



| Reference Part No. (Ref. only) | Part No.  |
|--------------------------------|-----------|
| 2998-5022-94                   | 1056728-1 |

#### Plug Assembly, Thread-In with Sliding Pin



| Part No.  |
|-----------|
| 1663670-1 |

## OSSP Subminiature Modular Blind Mate Connectors

### Features

- Subminiature version of OSP (BMA) Blind Mate Connectors
- For space savings
- Family of connectors and adapters



## METRIC

Dimensions in this OSSP section are millimeters over inches. All other pages are inches over millimeters.

OSSP connectors are a subminiature version of the OSP (BMA) blind mate series. Connectors in this series incorporate the design elements of the OSP (BMA) interface including the float and mismatch features. OSSP blind mates are about 40% smaller than OSP (BMA) connectors and

are designed to be used in applications where space is at a premium.

A complete family of OSSP connectors and adapters is available including cable connectors, fixed and float mount panel connectors and hermetic connectors. Rigid mount units will func-

tion to specifications up to  $\pm .064$  [ $\pm .0025$ ] radial misalignment with the mating plug connector.

Applications requiring greater than  $\pm .064$  [ $\pm .0025$ ] radial misalignment can use either the float design or floating connector plates with guide pins.

### Engineering Data

|                      |                |
|----------------------|----------------|
| Impedance —          | 50 ohms        |
| Frequency —          | dc to 28.0 GHz |
| Temperature Rating — | -65° to 125° C |

### Electrical

|                         |                         |
|-------------------------|-------------------------|
| VSWR —                  | 1.05 + .01f (GHz)       |
| RF Transmission Loss —  | .040 x $\sqrt{f}$ (GHz) |
| Insulation Resistance — | 5,000 megohms min.      |

|                        |                    |
|------------------------|--------------------|
| Contact Resistance —   |                    |
| Center Contact         | 6.0 milliohms max. |
| Outer Contact          | 3.0 milliohms max. |
| Outer Contact to Cable | 0.5 milliohms max. |

|                                          |                                                |
|------------------------------------------|------------------------------------------------|
| Dielectric Withstanding Voltage —        | 675 volts RMS                                  |
| Corona Extinction Voltage at 70,000 Ft.— | 250 volts min.                                 |
| RF High Potential at 5 MHz —             | 675 volts RMS                                  |
| RF Leakage Interface Only —              | -(90-fGHz) dB min. (fully mated)               |
| Power Handling —                         | 300W at 3 GHz (sea level) and room temperature |

### Environmental

|                       |                                              |
|-----------------------|----------------------------------------------|
| Corrosion —           | Method 101, Condition B, MIL-STD-202         |
| Vibration —           | Method 204, Condition D, 20G's, MIL-STD-202  |
| Shock —               | Method 213, Condition I, 100G's, MIL-STD-202 |
| Temperature Cycling — | Method 107, Condition B, MIL-STD-202         |
| Moisture Resistance — | Method 106, MIL-STD-202                      |

### Material

|                   |                                                                       |
|-------------------|-----------------------------------------------------------------------|
| Housing —         | Corrosion resistant steel Type 303 (stainless) per ASTM A484 and A582 |
| Center Contact —  | Beryllium copper per ASTM-B-196                                       |
| Dielectric —      | TFE fluorocarbon per ASTM-D-1457                                      |
| Gasket (O'Ring) — | MIL-P-25732                                                           |

### RG-405 (.085) Semi-Rigid

### Mechanical

|                            |                           |
|----------------------------|---------------------------|
| Force to Engage —          | 3 pounds max.             |
| Force to Disengage —       | 1.5 pounds max.           |
| Center Contact Retention — | 4 pounds min.             |
| Durability —               | 1,000 Cycles              |
| Radial Misalignment —      |                           |
| Rigid Mount                | $\pm .06$ [ $\pm .0025$ ] |
| Float Mount                | $\pm .51$ [ $\pm .020$ ]  |

### Mating Characteristics

|                        |                                                                                                                                                                                                                                                                                        |                     |                                  |                   |                    |                   |                       |                        |                |
|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------|----------------------------------|-------------------|--------------------|-------------------|-----------------------|------------------------|----------------|
| Jack Connector —       |                                                                                                                                                                                                                                                                                        |                     |                                  |                   |                    |                   |                       |                        |                |
| Center Contact Socket  | <table> <tr> <td>Oversize test Pin —</td><td>.533 + .003 [.0210 + .0001] dia.</td></tr> <tr> <td>Test Pin Finish —</td><td>16 micro inch max.</td></tr> <tr> <td>Insertion Depth —</td><td>.76/1.14 [.030/.045]</td></tr> <tr> <td>Number of Insertions —</td><td>3</td></tr> </table> | Oversize test Pin — | .533 + .003 [.0210 + .0001] dia. | Test Pin Finish — | 16 micro inch max. | Insertion Depth — | .76/1.14 [.030/.045]  | Number of Insertions — | 3              |
| Oversize test Pin —    | .533 + .003 [.0210 + .0001] dia.                                                                                                                                                                                                                                                       |                     |                                  |                   |                    |                   |                       |                        |                |
| Test Pin Finish —      | 16 micro inch max.                                                                                                                                                                                                                                                                     |                     |                                  |                   |                    |                   |                       |                        |                |
| Insertion Depth —      | .76/1.14 [.030/.045]                                                                                                                                                                                                                                                                   |                     |                                  |                   |                    |                   |                       |                        |                |
| Number of Insertions — | 3                                                                                                                                                                                                                                                                                      |                     |                                  |                   |                    |                   |                       |                        |                |
| Insertion Force        | <table> <tr> <td>Test Pin —</td><td>.528 + .003 [.0208 + .0001] dia.</td></tr> <tr> <td>Test Pin Finish —</td><td>16 micro inch</td></tr> <tr> <td>Insertion Force —</td><td>3 pounds max.</td></tr> </table>                                                                          | Test Pin —          | .528 + .003 [.0208 + .0001] dia. | Test Pin Finish — | 16 micro inch      | Insertion Force — | 3 pounds max.         |                        |                |
| Test Pin —             | .528 + .003 [.0208 + .0001] dia.                                                                                                                                                                                                                                                       |                     |                                  |                   |                    |                   |                       |                        |                |
| Test Pin Finish —      | 16 micro inch                                                                                                                                                                                                                                                                          |                     |                                  |                   |                    |                   |                       |                        |                |
| Insertion Force —      | 3 pounds max.                                                                                                                                                                                                                                                                          |                     |                                  |                   |                    |                   |                       |                        |                |
| Withdrawal Force       | <table> <tr> <td>Test Pin —</td><td>.495 + .003 [.0195 - .0001] dia.</td></tr> <tr> <td>Test Pin Finish —</td><td>16 micro inch max.</td></tr> <tr> <td>Insertion Depth —</td><td>1.27/1.91 [.050/.075]</td></tr> <tr> <td>Withdrawal —</td><td>1/2 ounce min.</td></tr> </table>      | Test Pin —          | .495 + .003 [.0195 - .0001] dia. | Test Pin Finish — | 16 micro inch max. | Insertion Depth — | 1.27/1.91 [.050/.075] | Withdrawal —           | 1/2 ounce min. |
| Test Pin —             | .495 + .003 [.0195 - .0001] dia.                                                                                                                                                                                                                                                       |                     |                                  |                   |                    |                   |                       |                        |                |
| Test Pin Finish —      | 16 micro inch max.                                                                                                                                                                                                                                                                     |                     |                                  |                   |                    |                   |                       |                        |                |
| Insertion Depth —      | 1.27/1.91 [.050/.075]                                                                                                                                                                                                                                                                  |                     |                                  |                   |                    |                   |                       |                        |                |
| Withdrawal —           | 1/2 ounce min.                                                                                                                                                                                                                                                                         |                     |                                  |                   |                    |                   |                       |                        |                |

### Finish

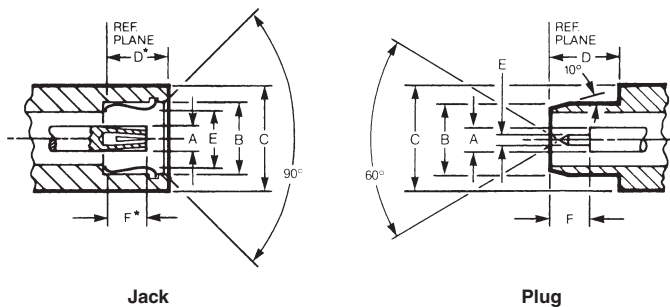
|                  |                                                                                                                 |
|------------------|-----------------------------------------------------------------------------------------------------------------|
| Center Contact — | Gold plate per MIL-G-45204, Type II, Class 0 over nickel plate per QQ-N-290, Class 2 or passivate per ASTM-A380 |
| Housing —        | Gold plate per MIL-G-45204, Type II, Class 0 over nickel plate per QQ-N-290, Class 2 or passivate per ASTM-A380 |

## OSSP Subminiature Modular Blind Mate Connectors (Continued)

### Interface Mating Dimensions

The connector interface, specifically designed for multiple interconnects, maintains reliable performance over the typical mechanical tolerance required in cost effective packaging.

The interface test data shows excellent performance is maintained with mating gaps up to .015 inch.



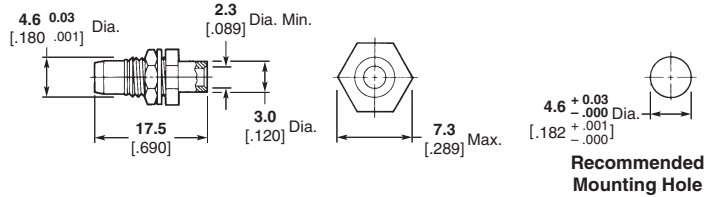
| Description | Dimensions        |                   |                   |                    |                   |                    |
|-------------|-------------------|-------------------|-------------------|--------------------|-------------------|--------------------|
|             | A                 | B                 | C                 | D                  | E                 | F                  |
| Jack        | 1.22<br>0.48 Nom. | 3.91<br>.154 Min. | 5.33<br>.210 Ref. | 5.00<br>.197 Nom.* | 3.35<br>.132 Max. | 3.23<br>.127 Max.* |
| Plug        | 1.22<br>0.48 Nom. | 3.56<br>.140 Nom. | 5.33<br>.210 Ref. | 5.00<br>.199 Min.  | 0.51<br>.020 Nom. | 3.25<br>.128 Min.  |

\*With spring bottomed.

## OSSP Subminiature Modular Blind Mate Connectors (Continued)

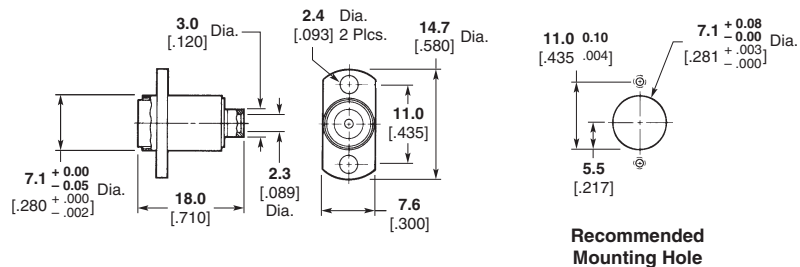
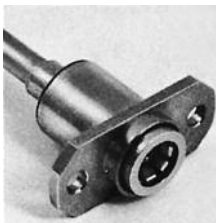
For Semi-Rigid Cable, 2.16 [.085] Dia.,  
Direct Solder Attachment

### Bulkhead Feedthrough Cable Plug — Rear Mount



| Cable                       | Plating | Reference Part No. | Part No.  |
|-----------------------------|---------|--------------------|-----------|
| RG-405/U,<br>2.16<br>[.085] | Gold    | 4703-7985-00       | 1255511-1 |

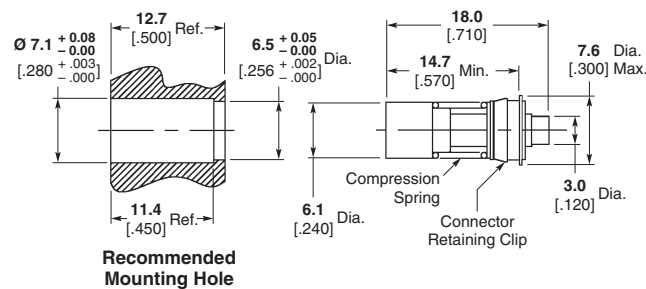
### Flange Mount Cable Jack — Floating Rear Mount



| Cable                       | Reference Part No. | Part No.  |
|-----------------------------|--------------------|-----------|
| RG-405/U,<br>2.16<br>[.085] | 4706-7985-02       | 1059868-1 |

Finish: Inner housing that is soldered to cable is gold plated. Outer housing is passivated stainless steel.  
When using semi-rigid cable, it is recommended that a service loop be used to facilitate the float features of the connector.

### Feedthru Snap-In



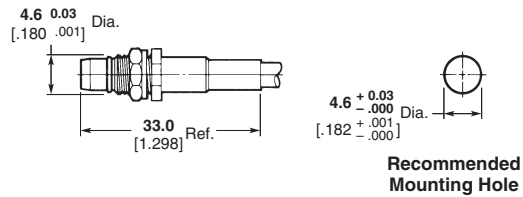
| Cable                       | Reference Part No. | Part No.  |
|-----------------------------|--------------------|-----------|
| RG-405/U,<br>2.16<br>[.085] | 4710-7985-00       | 1059874-1 |



## OSSP Subminiature Modular Blind Mate Connectors (Continued)

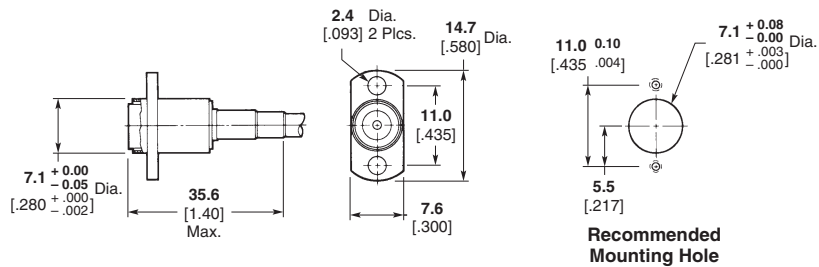
For Flexible Cable,  
Crimp Attachment

### Bulkhead Feedthrough Cable Plug — Rear Mount



| Cable                    | Plating                    | Reference Part No. (Ref. Only) | Part No.  |
|--------------------------|----------------------------|--------------------------------|-----------|
| RG-174/U,<br>188/U, 316U | Passivated Stainless Steel | 4733-7388-02                   | 1059886-1 |

### Flange Mount Cable Jack — Floating Rear Mount



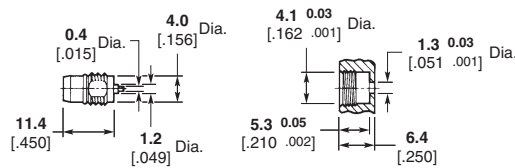
| Cable                                | Plating                    | Reference Part No. (Ref. Only) | Part No.  |
|--------------------------------------|----------------------------|--------------------------------|-----------|
| RG-188/U,<br>316 Double Braided Only | Passivated Stainless Steel | 4736-7316-02                   | 1059888-1 |
| RG-174/U,<br>188/U, 316U             | Passivated Stainless Steel | 4736-5001-02                   | 1059887-1 |

## OSSP Subminiature Modular Blind Mate Connectors (Continued)

### For Panel Mount

#### Straight Terminal

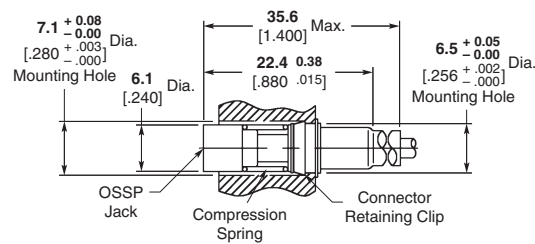
#### Threaded Installation — Panel Feedthrough Plug Receptacle



**Recommended  
Mounting Hole**

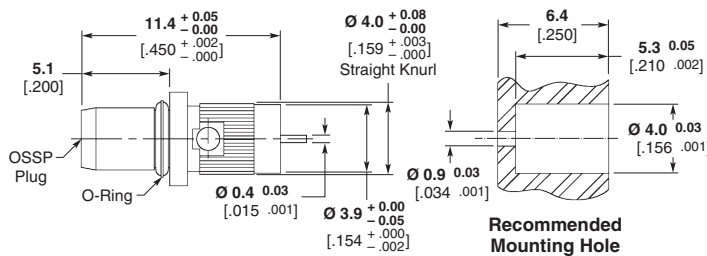
| Plating                    | Reference Part No. (Ref. Only) | Part No.  |
|----------------------------|--------------------------------|-----------|
| Passivated Stainless Steel | 4757-5006-02                   | 1059903-1 |

#### Feedthru Snap-In Cable Jack



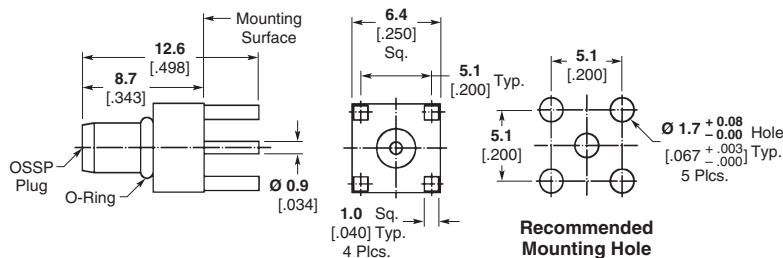
| Reference Part No. (Ref. Only) | Part No.  |
|--------------------------------|-----------|
| 4740-7388-00                   | 1059889-1 |

#### PCB Vertical Plug



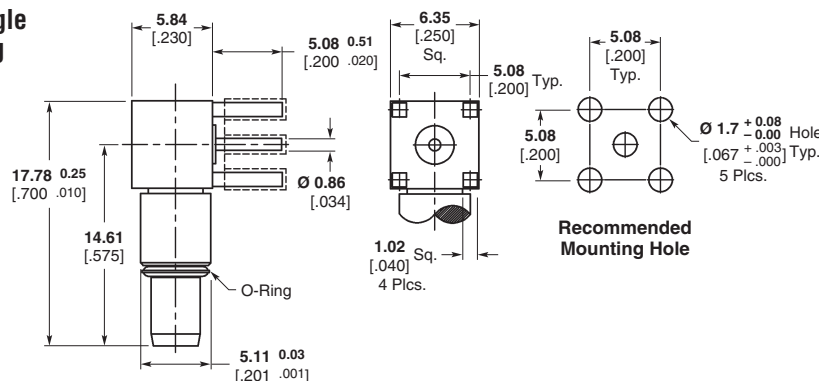
| Reference Part No. (Ref. Only) | Part No.  |
|--------------------------------|-----------|
| 4757-1154-02                   | 1059901-1 |

#### Press-In Plug



| Reference Part No. (Ref. Only) | Part No.  |
|--------------------------------|-----------|
| 4763-0000-00                   | 1059919-1 |

#### PCB Right Angle Bulkhead Plug



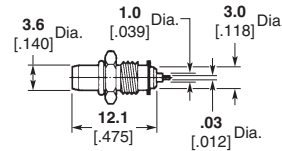
| Part No.  |
|-----------|
| 1484546-1 |

## OSSP Subminiature Modular Blind Mate Connectors (Continued)

### Hermetically Sealed

#### Metal to Metal

#### Formable Gasket — Panel Feedthrough Plug Receptacle

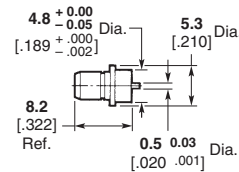


| VSWR (GHz)  | RF Leakage (dB) | Plating | Reference Part No. (Ref. Only) | Part No.  |
|-------------|-----------------|---------|--------------------------------|-----------|
| 1.06 + .01f | -(85-fGHz)      | Gold    | 4757-5014-00                   | 1059905-1 |

Recommended Mounting Hole Detail A at bottom of this page.

#### Solder and Braze-In

#### Panel Feedthrough Plug Receptacle

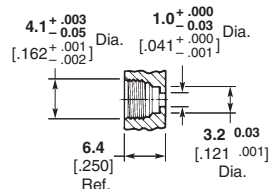


| VSWR (GHz)  | RF Leakage (dB) | Plating | Reference Part No. (Ref. Only) | Part No.  |
|-------------|-----------------|---------|--------------------------------|-----------|
| 1.06 + .01f | -(85-fGHz)      | Gold    | 4757-3204-00                   | 1059902-1 |

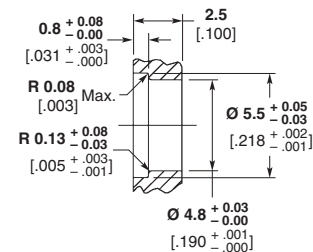
Recommended Mounting Hole Detail B at bottom of this page.

#### Recommended Mounting Hole Detail for Hermetically Sealed

##### Detail A\*



##### Detail B\*

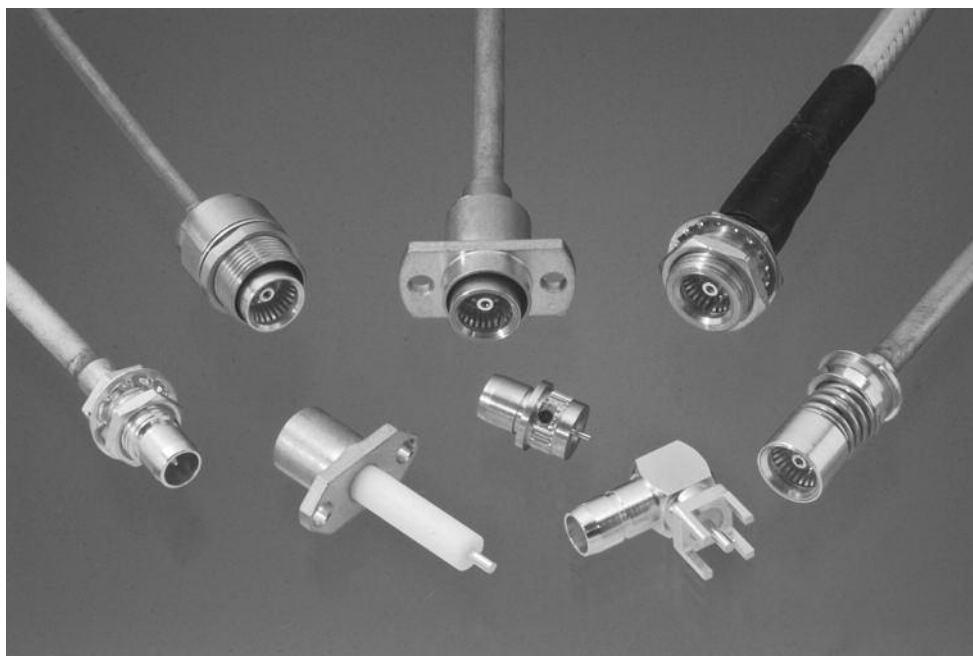


\*Consult appropriate Instruction Sheet for complete mounting procedure.

## OSP (BMA) Miniature Modular Blind Mate Connectors

### Features

- Interface designed for multiple interconnects
- For high performance microwave system requirements
- Bulkhead or panel mount
- For semi-rigid cable



OSP (BMA) miniature connectors for semi-rigid cable meet high performance requirements for microwave multiple interconnects. Standard units are available in bulkhead or panel mount designs for either direct solder or OSCC solderless compression crimp attachment. Complete tooling for both versions is located in the Tool Section of this catalog.

Jack connectors are available in either float or rigid mount. Rigid mount units will function to specifications up to  $\pm .10$  [.004] radial misalignment with the mating plug connector. Applications requiring greater than  $\pm .10$  [.004] radial misalignment can use either the float design or floating connector plates with guide pins.

The OSCC Solderless Compression Crimp attach-

ment meets high performance requirements for microwave system applications. The cable attachment is permanent and highly reliable.

Ease of assembly permits users unskilled in soldering techniques to rapidly produce cable assemblies with consistently excellent mechanical and electrical performance.

## METRIC

Dimensions in this OSP (BMA) section are millimeters over inches. All other pages are inches over millimeters.

## OSP (BMA) Miniature Modular Blind Mate Connectors (Continued)

The specifications given refer specifically to mated pair of Part Numbers 1059410-1 and 1059402-1 (RG 402) and 1059412-1 and 1059404-1 (RG 405). Specifications on other connectors are available on request.

The general electrical, mechanical and environmental specifications in the following table are recommended for procurement documents or drawings.

### Engineering Data

|                      |                |
|----------------------|----------------|
| Impedance —          | 50 ohms        |
| Frequency —          | dc to 22.0 GHz |
| Temperature Rating — | -65° to 125° C |

### Electrical

| VSWR —                                   | RG 402 (.141) Semi-Rigid                       | RG 405 (.085) Semi-Rigid         |
|------------------------------------------|------------------------------------------------|----------------------------------|
| dc - 18.0 GHz                            | 1.02 + .005f (GHz)                             | 1.05 + .005f (GHz)               |
| 18.0 - 22.0 GHz                          | 1.02 + .008f (GHz)                             | 1.05 + .009f (GHz)               |
| RF Transmission Loss —                   | .03 x $\sqrt{f}$ (GHz)                         | .03 x $\sqrt{f}$ (GHz)           |
| Insulation Resistance —                  | 5,000 megohms min.                             | 5,000 megohms min.               |
| Contact Resistance —                     |                                                |                                  |
| Center Contact                           | 2.0 milliohms max.                             | 2.0 milliohms max.               |
| Outer Contact                            | 2.0 milliohms max.                             | 2.0 milliohms max.               |
| Outer Contact to Cable                   | 0.5 milliohms max.                             | 0.5 milliohms max.               |
| Dielectric Withstanding Voltage —        | 1500 volts RMS                                 | 1000 volts RMS                   |
| Corona Extinction Voltage at 70,000 Ft.— | 375 volts min.                                 | 335 volts min.                   |
| RF High Potential at 5 MHz —             | 1,000 volts RMS                                | 670 volts RMS                    |
| RF Leakage Interface Only —              | -(90-fGHz) dB min. (fully mated)               | -(90-fGHz) dB min. (fully mated) |
| Power Handling —                         | 300W at 3 GHz (sea level) and room temperature |                                  |

### Environmental

|                       |                                              |
|-----------------------|----------------------------------------------|
| Corrosion —           | Method 101, Condition B, MIL-STD-202         |
| Vibration —           | Method 204, Condition D, 20G's, MIL-STD-202  |
| Shock —               | Method 213, Condition I, 100G's, MIL-STD-202 |
| Temperature Cycling — | Method 107, Condition B, MIL-STD-202         |
| Moisture Resistance — | Method 106, MIL-STD-202                      |

### Material

|                   |                                                                       |
|-------------------|-----------------------------------------------------------------------|
| Housing —         | Corrosion resistant steel Type 303 (stainless) per ASTM A484 and A582 |
| Center Contact —  | Beryllium copper per ASTM-B-196                                       |
| Dielectric —      | TFE fluorocarbon per ASTM-D-1457                                      |
| Gasket (O'Ring) — | MIL-P-25732                                                           |

### Mechanical

|                            |                 |
|----------------------------|-----------------|
| Force to Engage —          | 3 pounds max.   |
| Force to Disengage —       | 1.5 pounds max. |
| Center Contact Retention — | 6 pounds min.   |
| Durability —               | 5,000 Cycles    |
| Radial Misalignment —      |                 |
| Rigid Mount                | ±.10 [±.004]    |
| Float Mount                | ±.51 [±.020]    |

### Mating Characteristics

| Jack Connector —      |                        |                                  |
|-----------------------|------------------------|----------------------------------|
| Center Contact Socket | Oversize test Pin —    | .945 + .003 [.0372 + .0001] dia. |
|                       | Test Pin Finish —      | 16 micro inch                    |
|                       | Insertion Depth —      | .76/1.14 [.030/.045]             |
|                       | Number of Insertions — | 3                                |
| Insertion Force       | Test Pin —             | .940 + .003 [.0370 + .0001] dia. |
|                       | Test Pin Finish —      | 16 micro inch                    |
|                       | Insertion Depth —      | 1.27/1.91 [.050/.075]            |
|                       | Insertion Force —      | 3 pounds max.                    |
| Withdrawal Force      | Test Pin —             | .90 + .003 [.0355 - .0001] dia.  |
|                       | Test Pin Finish —      | 16 micro inch                    |
|                       | Insertion Depth —      | 1.27/1.91 [.050/.075]            |
|                       | Withdrawal —           | 1 ounce min.                     |

### Finish

|                  |                                                                                                                |
|------------------|----------------------------------------------------------------------------------------------------------------|
| Center Contact — | Gold plate per MIL-G-45204, Type II, Class 1 over copper plate per MIL-C-14550                                 |
| Housing —        | Gold plate per MIL-G-45204, Typ II, Class 0 over nickel plate per QQ-N-290, Class 2 or passivate per ASTM-A380 |

All dimensions shown are nominal.  
Contact the factory for specific tolerances.

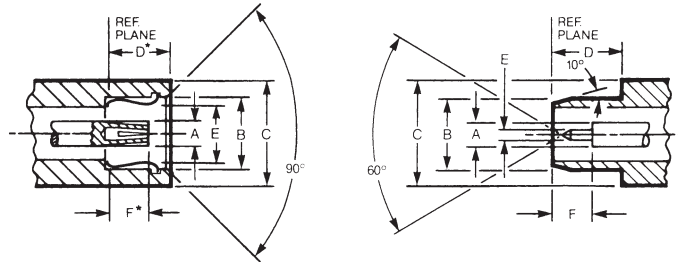
## OSP (BMA) Miniature Modular Blind Mate Connectors (Continued)

### Interface Mating Dimensions

The connector interface, specifically designed for multiple interconnects, maintains reliable performance over the typical mechanical tolerance required in cost effective packaging.

The interface test data shows excellent performance is maintained with mating gaps up to 0.38 [.015].

Meets MIL-STD-348 Figure 321. Intermateable to BMA Connectors.



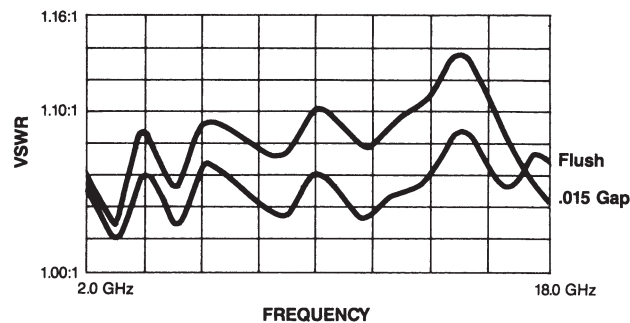
Jack

| Letter | Dimensions         |
|--------|--------------------|
| A      | 1.78<br>.070 Nom.  |
| B      | 5.72<br>.225 Min.  |
| C      | 7.62<br>.300 Ref.  |
| D      | 5.00<br>.197 Nom.* |
| E      | 5.08<br>.200 Max.  |
| F      | 3.23<br>.127 Max.* |

Plug

| Letter | Dimensions        |
|--------|-------------------|
| A      | 1.78<br>.070 Nom. |
| B      | 5.33<br>.210 Nom. |
| C      | 7.62<br>.300 Ref. |
| D      | 5.05<br>.199 Min. |
| E      | 0.91<br>.036 Nom. |
| F      | 3.25<br>.128 Min. |

\*With spring bottomed

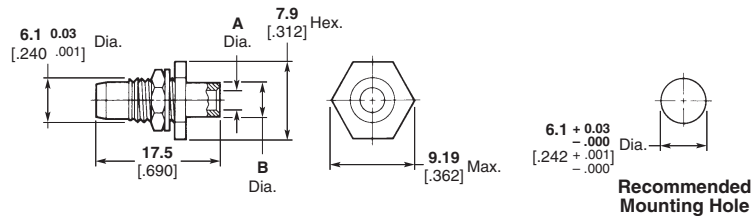




## OSP (BMA) Miniature Modular Blind Mate Connectors (Continued)

For Semi-Rigid Cable, 2.16 [.085] and 3.58 [.141] Dia., Direct Solder Attachment

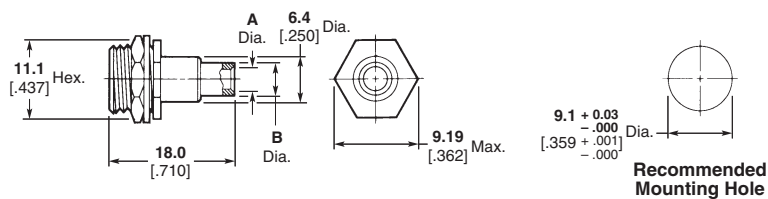
### Bulkhead Feedthrough Cable Plug Rear Mount



| Cable                    | Plating | Dimensions  |             | Reference Part No. (Ref. Only) | Part No.   |
|--------------------------|---------|-------------|-------------|--------------------------------|------------|
|                          |         | A           | B           |                                |            |
| RG-402/U<br>3.58<br>.141 | Gold    | 3.7<br>.144 | 4.6<br>.180 | 4503-7941-00                   | 1059402-1  |
| RG-405/U<br>2.16<br>.085 | Gold    | 2.3<br>.089 | 3.0<br>.120 | 4503-7985-00                   | 1059404-1* |

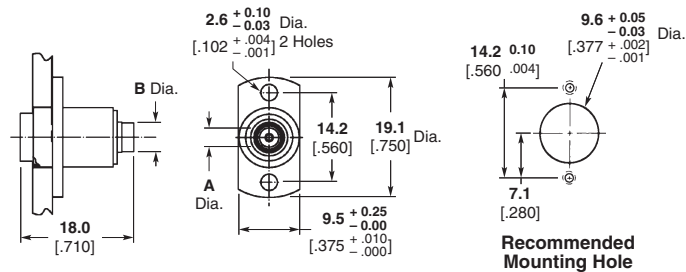
\*Non-SCD.

### Bulkhead Feedthrough Cable Jack Rigid Rear Mount



| Cable                    | Plating | Dimensions  |             | Reference Part No. (Ref. Only) | Part No.  |
|--------------------------|---------|-------------|-------------|--------------------------------|-----------|
|                          |         | A           | B           |                                |           |
| RG-402/U<br>3.58<br>.141 | Gold    | 3.7<br>.144 | 4.6<br>.180 | 4504-7941-00                   | 1059410-1 |
| RG-405/U<br>2.16<br>.085 | Gold    | 2.3<br>.089 | 3.0<br>.120 | 4504-7985-00                   | 1059412-1 |

### Flange Mount Cable Jack Floating Rear Mount



| Cable                    | Dimensions  |             | Reference Part No. (Ref. Only) | Part No.  |
|--------------------------|-------------|-------------|--------------------------------|-----------|
|                          | A           | B           |                                |           |
| RG-402/U<br>3.58<br>.141 | 3.7<br>.144 | 4.6<br>.180 | 4506-7941-02                   | 1059453-1 |
| RG-405/U<br>2.16<br>.085 | 2.3<br>.089 | 3.0<br>.120 | 4506-7985-02                   | 1059456-1 |

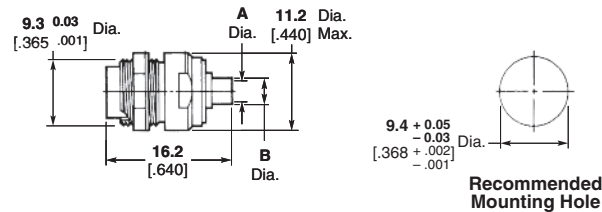
Finish: Inner housing that is soldered to cable is gold plated. Outer housing is passivated stainless steel.

When using semi-rigid cable, it is recommended that a service loop be used to facilitate the float features of the connector.

## OSP (BMA) Miniature Modular Blind Mate Connectors (Continued)

For Semi-Rigid Cable, 2.16 [.085] and 3.58 [.141] Dia., Direct Solder Attachment (Continued)

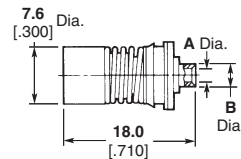
### Low Profile – Bulkhead Feedthrough Cable Jack – Floating Rear Mount



| Cable                    | Plating | Dimensions  |             | Reference Part No. (Ref. Only) | Part No.  |
|--------------------------|---------|-------------|-------------|--------------------------------|-----------|
|                          |         | A           | B           |                                |           |
| RG-402/U<br>3.58<br>.141 | Gold    | 3.7<br>.144 | 4.6<br>.180 | 4522-7941-02                   | 1059505-1 |
| RG-405/U<br>2.16<br>.085 | Gold    | 2.3<br>.089 | 3.0<br>.120 | 4522-7985-02                   | 1059506-1 |

When using semi-rigid cable, it is recommended that a service loop be used to facilitate the float features of the connector.

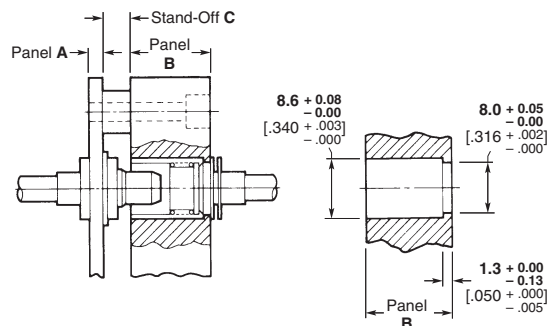
### Low Profile – Panel Feedthrough Cable Jack – Floating Rear Mount



| Cable                    | Plating | Dimensions  |             | Reference Part No. (Ref. Only) | Part No.  |
|--------------------------|---------|-------------|-------------|--------------------------------|-----------|
|                          |         | A           | B           |                                |           |
| RG-402/U<br>3.58<br>.141 | Gold    | 3.7<br>.144 | 4.6<br>.180 | 4510-7941-00                   | 1059465-1 |
| RG-405/U<br>2.16<br>.085 | Gold    | 2.3<br>.089 | 3.0<br>.120 | 4510-7985-00                   | 1059467-1 |

Recommended removal tool part number 1059774-1 is described in Tool Section.

When using semi-rigid cable, it is recommended that a service loop be used to facilitate the float features of the connector.



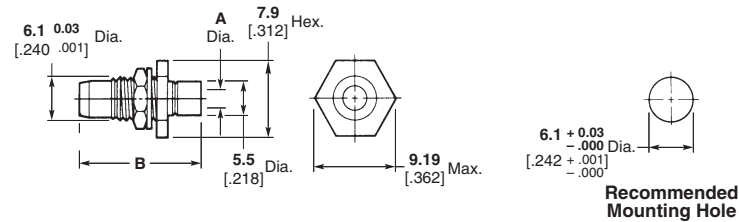
Recommended Mounting Detail

| Panel A ±.003 | Panel B ±.003 | Stand-Off Panel C ±.050/-.000 |
|---------------|---------------|-------------------------------|
| 2.3<br>.090   | 9.5<br>.375   | 7.2<br>.285                   |
| 2.3<br>.090   | 11.1<br>.438  | 5.6<br>.222                   |
| 2.3<br>.090   | 12.7<br>.500  | 4.1<br>.160                   |
| 3.2<br>.125   | 9.5<br>.375   | 6.4<br>.250                   |
| 3.2<br>.125   | 11.1<br>.438  | 4.7<br>.187                   |
| 3.2<br>.125   | 12.7<br>.500  | 3.2<br>.125                   |

## OSP (BMA) Miniature Modular Blind Mate Connectors (Continued)

For Semi-Rigid Cable, 2.16 [.085] and 3.58 [.141] Dia.,  
OSCC Solderless Compression Crimp Attachment

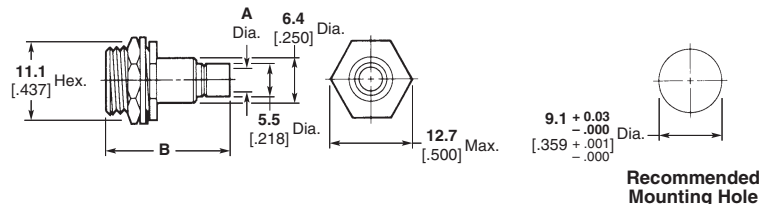
### Bulkhead Feedthrough Cable Plug Fixed Rear Mount



| Cable                    | Plating                          | Dim. A      | Dim. B          |                | Reference Part No. (Ref. Only) | Part No.  |
|--------------------------|----------------------------------|-------------|-----------------|----------------|--------------------------------|-----------|
|                          |                                  |             | Before Crimping | After Crimping |                                |           |
| RG-405/U<br>2.16<br>.085 | Passivated<br>Stainless<br>Steel | 2.2<br>.088 | 19.8<br>.782    | 17.2<br>.677   | 4503-7685-02                   | 1059399-1 |

Outline drawing shows after crimp dimensions.

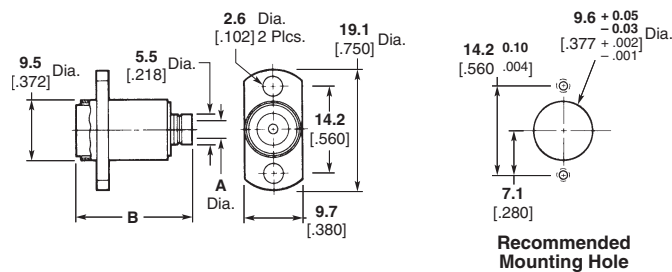
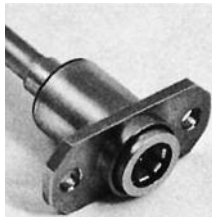
### Bulkhead Feedthrough Cable Jack Fixed Rear Mount



| Cable                    | Plating                          | Dim. A      | Dim. B          |                | Reference Part No. (Ref. Only) | Part No.  |
|--------------------------|----------------------------------|-------------|-----------------|----------------|--------------------------------|-----------|
|                          |                                  |             | Before Crimping | After Crimping |                                |           |
| RG-402/U<br>3.58<br>.141 | Passivated<br>Stainless<br>Steel | 3.6<br>.143 | 21.1<br>.830    | 18.2<br>.715   | 4504-7641-02                   | 1059408-1 |

Outline drawing shows after crimp dimensions.

### Flange Mount Cable Jack Floating Rear Mount



| Cable                    | Plating                          | Dim. A      | Dim. B          |                | Reference Part No. (Ref. Only) | Part No.  |
|--------------------------|----------------------------------|-------------|-----------------|----------------|--------------------------------|-----------|
|                          |                                  |             | Before Crimping | After Crimping |                                |           |
| RG-402/U<br>3.58<br>.141 | Passivated<br>Stainless<br>Steel | 3.6<br>.143 | 22.6<br>.891    | 19.8<br>.780   | 4506-7641-02                   | 1059451-1 |
| RG-405/U<br>2.16<br>.085 | Passivated<br>Stainless<br>Steel | 2.2<br>.088 | 22.6<br>.891    | 19.8<br>.780   | 4506-7685-02                   | 1059452-1 |

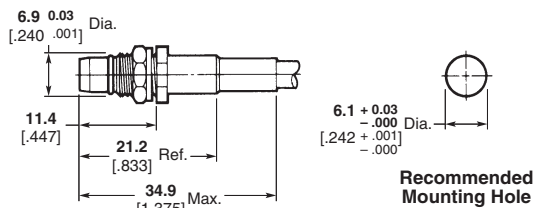
Outline drawing shows after crimp dimensions.

When using semi-rigid cable, it is recommended that a service loop be used to facilitate the float features of the connector.

## OSP (BMA) Miniature Modular Blind Mate Connectors (Continued)

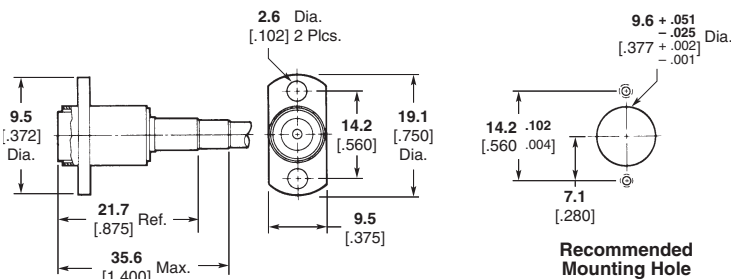
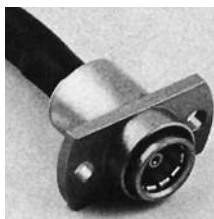
For Flexible Cable,  
Crimp Attachment

### Bulkhead Feedthrough Cable Plug Rear Mount



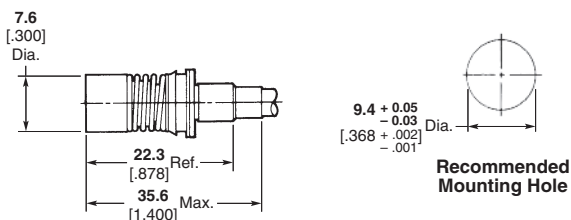
| Cable                              | Plating                    | Reference Part No. (Ref. Only) | Part No.  |
|------------------------------------|----------------------------|--------------------------------|-----------|
| RG-174/U,<br>179, 187,<br>188, 316 | Passivated Stainless Steel | 4533-7388-02                   | 1059523-1 |

### Flange Mount Cable Jack Floating Rear Mount



| Cable                              | Plating                    | Reference Part No. (Ref. Only) | Part No.  |
|------------------------------------|----------------------------|--------------------------------|-----------|
| RG-55/U,<br>142, 223,<br>400       | Passivated Stainless Steel | 4536-7341-02                   | 1059540-1 |
| RG-174/U,<br>179, 187,<br>188, 316 | Passivated Stainless Steel | 4536-7388-02                   | 1059541-1 |
| RG-178,<br>Double<br>Braid         | Passivated Stainless Steel | 4536-5014-02                   | 1058572-1 |

### Low Profile – Panel Feedthrough Cable Jack – Rear Mount



| Cable                              | Plating                    | Reference Part No. (Ref. Only) | Part No.  |
|------------------------------------|----------------------------|--------------------------------|-----------|
| RG-174/U,<br>179, 187,<br>188, 316 | Passivated Stainless Steel | 4540-7388-02                   | 1059551-1 |

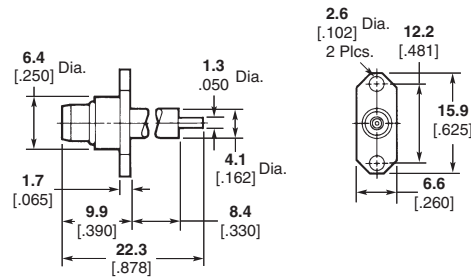
Refer to Recommended Mounting Hole Detail for Semi-Rigid Cable Low Profile Feedthrough Cable Jack. Recommended removal tool part number 1059774-1 is described in Tool Section.

## OSP (BMA) Miniature Modular Blind Mate Connectors (Continued)

### Panel Mount

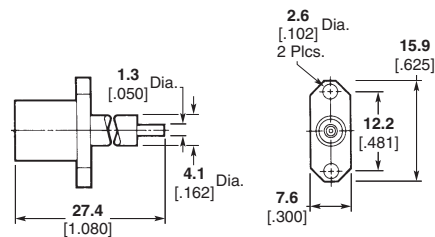
#### Straight Terminal

#### 2-Hole Flange Mount Plug Receptacle



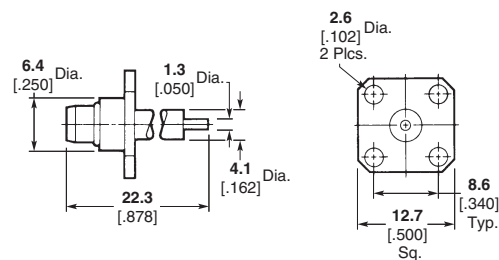
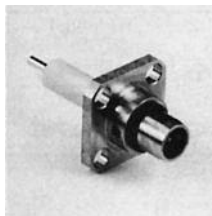
| Plating                    | Reference Part No. (Ref. Only) | Part No.  |
|----------------------------|--------------------------------|-----------|
| Passivated Stainless Steel | 4551-1352-02                   | 1049678-1 |

#### 2-Hole Flange Mount Jack Receptacle



| Plating                    | Reference Part No. (Ref. Only) | Part No.  |
|----------------------------|--------------------------------|-----------|
| Passivated Stainless Steel | 4552-1352-02                   | 1059596-1 |

#### 4-Hole Flange Mount Plug Receptacle



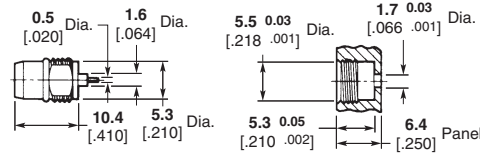
| Plating                    | Reference Part No. (Ref. Only) | Part No.  |
|----------------------------|--------------------------------|-----------|
| Passivated Stainless Steel | 4551-1201-02                   | 1329846-1 |

## OSP (BMA) Miniature Modular Blind Mate Connectors (Continued)

### Panel Mount (Continued)

#### Straight Terminal

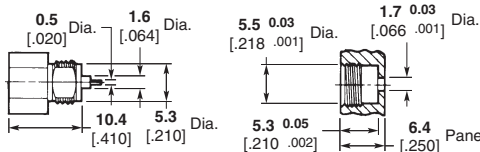
#### Threaded Installation – Panel Feedthrough Plug Receptacle



Recommended  
Mounting Hole

| Plating                    | Reference Part No. (Ref. Only) | Part No.  |
|----------------------------|--------------------------------|-----------|
| Passivated Stainless Steel | 4557-5009-02                   | 1059617-1 |

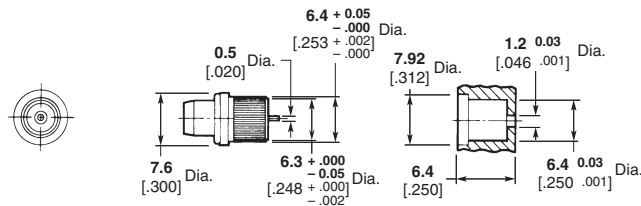
#### Threaded Installation – Panel Feedthrough Jack Receptacle



Recommended  
Mounting Hole

| Plating                    | Reference Part No. (Ref. Only) | Part No.  |
|----------------------------|--------------------------------|-----------|
| Passivated Stainless Steel | 4558-5009-02                   | 1059657-1 |

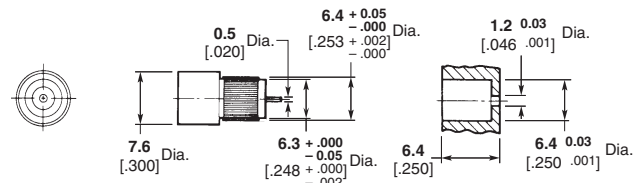
#### Press Fit Installation – Panel Feedthrough Plug Receptacle



Recommended  
Mounting Hole

| Plating                    | Reference Part No. (Ref. Only) | Part No.  |
|----------------------------|--------------------------------|-----------|
| Passivated Stainless Steel | 4557-5368-02                   | 1059651-1 |

#### Press Fit Installation – Panel Feedthrough Jack Receptacle



Recommended  
Mounting Hole

| Plating                    | Reference Part No. (Ref. Only) | Part No.  |
|----------------------------|--------------------------------|-----------|
| Passivated Stainless Steel | 4558-1154-02                   | 1059654-1 |

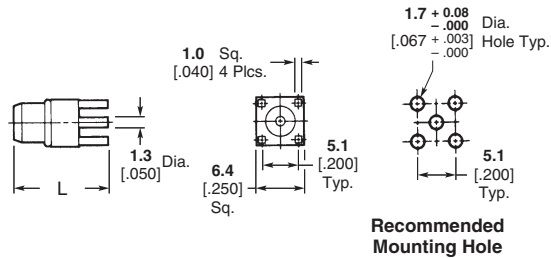


## OSP (BMA) Miniature Modular Blind Mate Connectors (Continued)

### Panel Mount (Continued)

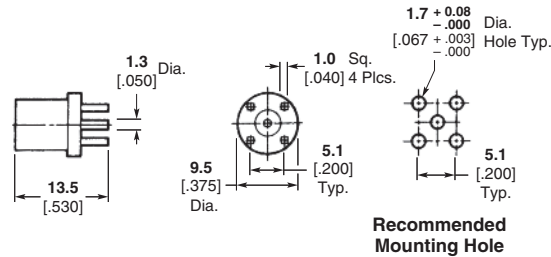
#### Straight Terminal Printed Circuit Board

#### Straight Plug Receptacle – Captured Contact



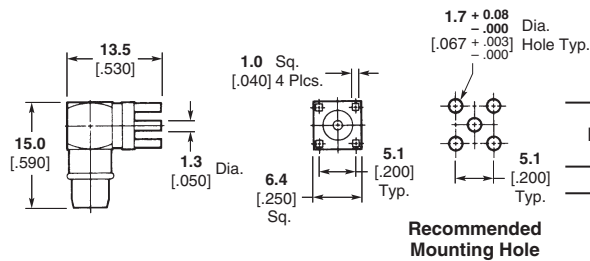
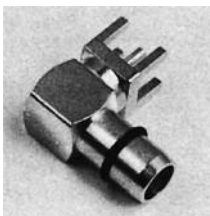
| Plating | Reference Part No. (Ref. Only) | Part No.  | Dim. L    |
|---------|--------------------------------|-----------|-----------|
| Gold    | 4563-0000-00                   | 1059684-1 | 12.7 .500 |
| Gold    | —                              | 1663572-1 | 21.9 .862 |

#### Straight Jack Receptacle – Captured Contact



| Plating | Reference Part No. (Ref. Only) | Part No.  |
|---------|--------------------------------|-----------|
| Gold    | 4562-0000-00                   | 1059681-1 |

#### Right Angle Plug Receptacle – Captured Contact



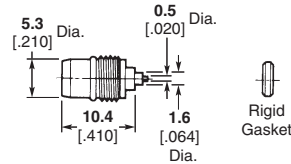
| Plating | Reference Part No. (Ref. Only) | Part No.  |
|---------|--------------------------------|-----------|
| Gold    | 4565-0000-00                   | 1059691-1 |

## OSP (BMA) Miniature Modular Blind Mate Connectors (Continued)

### Hermetically Sealed

#### Metal-To-Metal

#### Rigid Gasket Seal – Panel Feedthrough Plug Receptacle

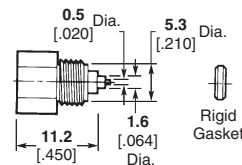
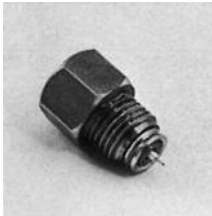


| VSWR<br>(GHz) | RF Leakage<br>(dB) | Plating                    | Reference<br>Part No.<br>(Ref. Only) | Part<br>No. |
|---------------|--------------------|----------------------------|--------------------------------------|-------------|
| 1.04 + .009f  | –(90-fGHz)         | Passivated stainless steel | 4557-5119-02                         | 1059632-1   |

Installation Thermal Limit: 250°C.

Recommended Mounting Hole Detail A follows, page 2-64.

#### Rigid Gasket Seal – Panel Feedthrough Jack Receptacle



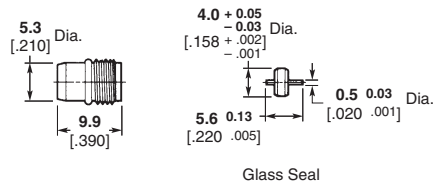
| VSWR<br>(GHz) | RF Leakage<br>(dB) | Plating                    | Reference<br>Part No.<br>(Ref. Only) | Part<br>No. |
|---------------|--------------------|----------------------------|--------------------------------------|-------------|
| 1.04 + .009f  | –(90-fGHz)         | Passivated stainless steel | 4558-5119-02                         | 1059665-1   |

Installation Thermal Limit: 250°C.

Recommended Mounting Hole Detail A follows, page 2-64.

#### Field Replaceable Solder and Braze-In

#### Panel Feedthrough Plug Receptacle



| VSWR<br>(GHz) | RF Leakage<br>(dB) | Plating                    | Reference<br>Part No.<br>(Ref. Only) | Part<br>No. |
|---------------|--------------------|----------------------------|--------------------------------------|-------------|
| 1.06 + .01f   | –(90-fGHz)         | Passivated stainless steel | 4557-5329-02                         | 1059637-1   |

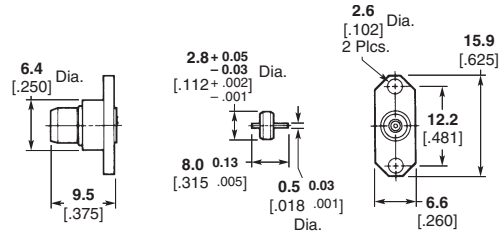
Recommended Mounting Detail B or E follows, page 2-64.

### OSP (BMA) Miniature Modular Blind Mate Connectors (Continued)

## Hermetically Sealed

(Continued)

## 2-Hole Flange Mount Plug Receptacle With EMI/RFI Gasket – 0.5 [.018] Dia. Contact

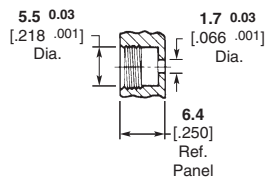


| VSWR<br>(GHz) | RF Leakage<br>(dB) | Plating                    | Reference<br>Part No.<br>(Ref. Only) | Part<br>No. |
|---------------|--------------------|----------------------------|--------------------------------------|-------------|
| 1.06 + .01f   | -(90-fGHz)         | Passivated stainless steel | 4551-3357-02                         | 1059572-1   |

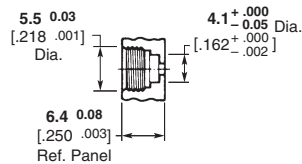
Recommended Mounting Detail D follows at bottom of this page.

### Recommended Mounting Hole Detail

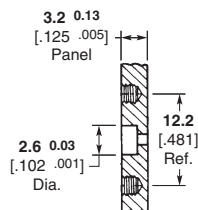
### Detail A\*



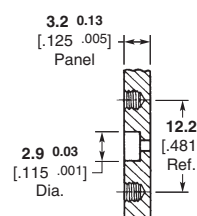
**Detail B\* (6.35 [.250] Panel Thickness)**



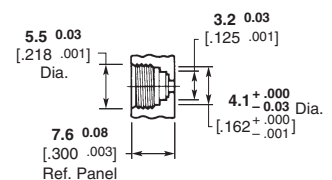
### Detail C\*



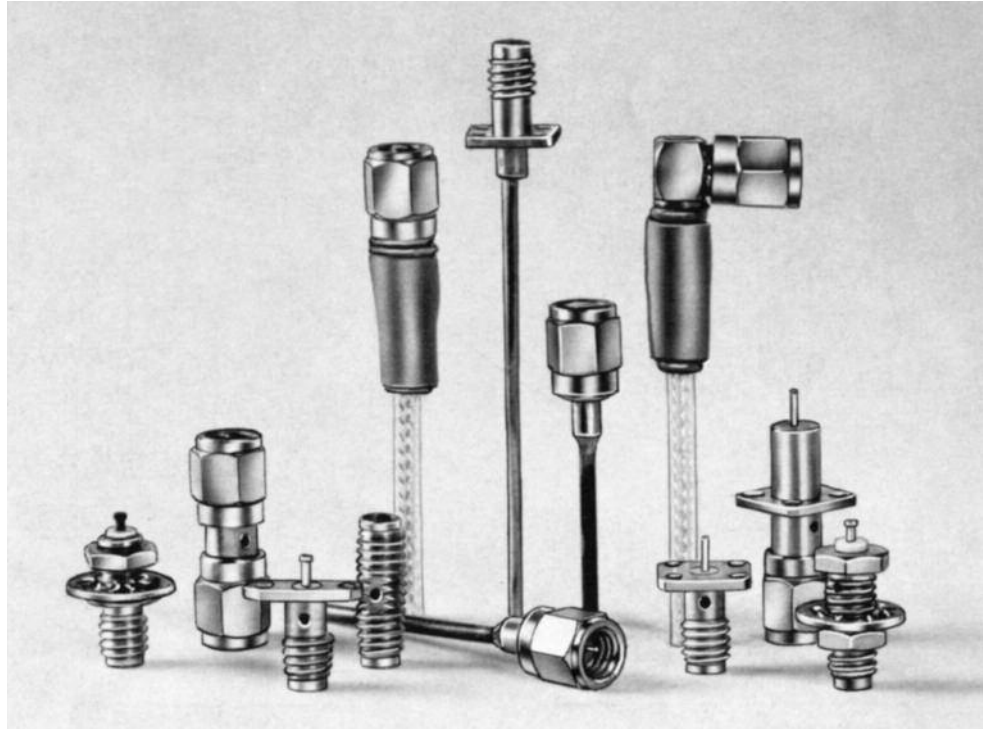
### Detail D\*



### Detail E\*



\*Consult appropriate Instruction Sheet for complete mounting details.

**OSMM Microminiature Connectors****Introduction**

The microminiature series has been developed to meet the increasing demand for smaller connector size. This series is small, but still very rugged for its relative size.

The interface mating design insures precise outer shell alignment before engagement of the inner contacts. The OSMM Series is compatible with smaller diameter semi-rigid cable.

**Design and Construction**

All shell and body parts are made of stainless steel for ruggedness and long life. The dielectric is PTFE fluorocarbon. The center contacts are made of beryllium copper, gold plated. The coupling thread is .138-40 UNF thread.

**Types**

The OSMM Series connectors are available for appro-

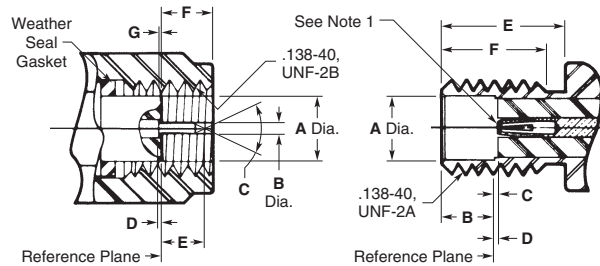
priate size semi-rigid and flexible coaxial cables. Panel and bulkhead mount are also available to provide complete flexibility to component and system design.

**Application**

Typical applications include requirements from low RF to high microwave frequencies. The higher order moding for this series is above 45.0 GHz, but the primary feature is the microminiature size.

## OSMM Microminiature Connectors (Continued)

### Interface Mating Dimensions



#### Plug

| Dim. | Min.          | Max.          |
|------|---------------|---------------|
| A    | .0930<br>2.36 | .0946<br>2.43 |
| B    | .0150<br>0.38 | .0163<br>0.42 |
| C    | 60°           | 90°           |
| D    | .000<br>0.00  | .010<br>0.25  |
| E    | .055<br>1.40  | .070<br>1.78  |
| F    | .065<br>1.65  | .099<br>2.29  |
| G    | .000<br>0.00  | .010<br>0.25  |

#### Jack

| Dim. | Min.         | Max.         |
|------|--------------|--------------|
| A    | .096<br>2.44 | .097<br>2.46 |
| B    | .076<br>1.98 | .082<br>2.08 |
| C    | .000<br>0.00 | .010<br>0.25 |
| D    | .000<br>0.00 | .010<br>0.25 |
| E    | .175<br>4.45 | —            |
| F    | .140<br>3.56 | —            |

1. ID to meet VSWR and contact resistance when mated with .0155 +.0008/-.0005 [0.0394 +.0203/-.0127] dia. pin.
2. When fully engaged, the two reference planes must coincide with metal to metal contact.

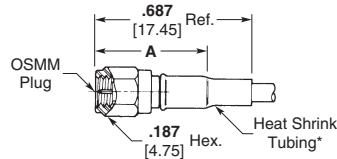
### Specifications

| Requirement                     | MIL-C-39012<br>Applicable Paragraph | Detail                                                                                                                                                                                                                                                       |
|---------------------------------|-------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>General</b>                  |                                     |                                                                                                                                                                                                                                                              |
| Material                        | 3.3                                 | Steel corrosion resistant per ASTM-A-582 and ASTM-A-484, Type 303. Beryllium copper per ASTM B 196. PTFE Fluorocarbon per ASTM-D-1457.                                                                                                                       |
| Finish which                    | 3.31                                | Center contacts shall be gold plated to a min. thickness of .00005 [0.0013] in accordance with MIL-G-45204, Typ I, Grade C. All other metal parts shall be finished as to provide a connector meets the corrosion requirements.                              |
| Design                          | 3.4                                 | The design shall be such that the outline shown in this catalog and the interface dimensions of MIL-STD-348A are met.                                                                                                                                        |
| <b>Electrical</b>               |                                     |                                                                                                                                                                                                                                                              |
| Insulation Resistance           | 3.11                                | The insulation resistance shall not be less than 5,000 megohms.                                                                                                                                                                                              |
| Corona Level                    | 3.22                                | The connector shall not exhibit breakdown when the voltage is 150 volts rms at 70,000 ft.                                                                                                                                                                    |
| Dielectric Withstanding Voltage | 3.17                                | The magnitude of the test voltage shall be 500 volts rms at sea level.                                                                                                                                                                                       |
| RF High Potential               | 3.23                                | The withstanding voltage is 375 volts rms at 5 MHz. Leakage current is not applicable.                                                                                                                                                                       |
| Contact Resistance              | 3.16                                | Center contact resistance: 3.5 milliohms max.<br>Outer contact resistance: 2.8 milliohms max.                                                                                                                                                                |
| VSWR                            | 3.14                                | No military slash sheet applies. Consult factory. Frequency range dependent on cable used.                                                                                                                                                                   |
| RF Leakage                      | 3.26                                | No military slash sheet applies. Consult factory.                                                                                                                                                                                                            |
| Insertion Loss                  | 3.27                                | No military slash sheet applies. Consult factory. Frequency range dependent on cable used.                                                                                                                                                                   |
| <b>Mechanical</b>               |                                     |                                                                                                                                                                                                                                                              |
| Force to Engage                 | 3.5.1                               | The torque required to engage and disengage shall not exceed 1 in.-lbs. The longitudinal force is not applicable.                                                                                                                                            |
| Coupling Nut Retention          | 3.25                                | 40 lbs. min. Applicable for plug connectors only.                                                                                                                                                                                                            |
| Coupling Proof Torque           | 3.6                                 | 4 in.-lbs. min. Applicable for plug connectors only.                                                                                                                                                                                                         |
| Cable Retention                 | 3.24                                | No military slash sheet applies. Consult factory.                                                                                                                                                                                                            |
| Mating Characteristics          | 3.7                                 | Applicable to jack connectors only. Oversize pin .0165 [0.419] min. dia., .045 [1.14] deep; insertion force 3 lbs. max. with .0163 [0.414] min. dia. pin; withdrawal force 0.5 oz. min. with .015 [0.38] max. dia. pin.                                      |
| Connector Durability            | 3.15                                | The connector to be tested and its mating connector shall be subjected to 500 insertion and withdrawal cycles at 12 cycles per minute max. The connector shall show no evidence of mechanical failure and shall meet the mating characteristic requirements. |
| Recommended Mating Torque       | —                                   | 2 in.-lbs.                                                                                                                                                                                                                                                   |
| <b>Environmental</b>            |                                     |                                                                                                                                                                                                                                                              |
| Vibration                       | 3.18                                | Specification MIL-STD-202, method 204, test condition D.                                                                                                                                                                                                     |
| Shock                           | 3.19                                | Specification MIL-STD-202, method 213, test condition I.                                                                                                                                                                                                     |
| Thermal Shock                   | 3.20                                | No military slash sheet applies. Consult factory.                                                                                                                                                                                                            |
| Corrosion (Salt Spray)          | 3.13                                | Specification MIL-STD-202, method 101, test condition B.                                                                                                                                                                                                     |
| Moisture Resistance             | 3.21                                | Specification MIL-STD-202, method 106. No measurements at high humidity. Insulation resistance shall be at least 200 megohms within 5 minutes of removal from humidity.                                                                                      |

## OSMM Microminiature Connectors (Continued)

### For Flexible and Semi-Rigid Cables

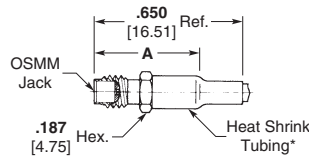
#### Straight Cable Plug



| Cable                 | Attachment    | Dim. A        | Reference Part No. (Ref. only) | Part Number |
|-----------------------|---------------|---------------|--------------------------------|-------------|
| RG 196/U Flexible     | Crimp         | .450<br>11.40 | Ref. 4031-7196-00              | 1059057-1   |
| .047 Dia.* Semi-Rigid | Direct Solder | .360<br>9.20  | Ref. 4001-7947-00              | 1058955-1   |

\* Semi-rigid versions do not use heat shrink tubing.  
Finish: Gold plate.

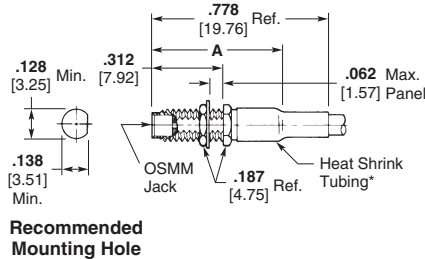
#### Straight Cable Jack



| Cable                 | Attachment    | Dim. A       | Reference Part No. (Ref. only) | Part Number |
|-----------------------|---------------|--------------|--------------------------------|-------------|
| .047 Dia.* Semi-Rigid | Direct Solder | .330<br>8.40 | Ref. 4002-7947-00              | —           |

\* Semi-rigid versions do not use heat shrink tubing.  
Finish: Gold plate.

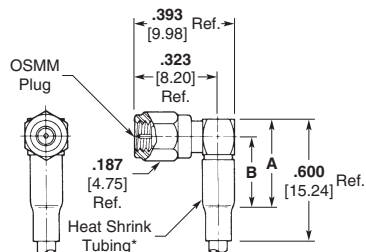
#### Bulkhead Feedthrough Cable Jack



| Cable                 | Attachment    | Dim. A        | Reference Part No. (Ref. only) | Part Number |
|-----------------------|---------------|---------------|--------------------------------|-------------|
| RG 196/U Flexible     | Crimp         | .565<br>14.40 | Ref. 4034-7196-00              | 1059060-1   |
| .047 Dia.* Semi-Rigid | Direct Solder | .458<br>11.60 | Ref. 4004-7947-00              | 1058990-1   |

\* Semi-rigid versions do not use heat shrink tubing.  
Finish: Gold plate.

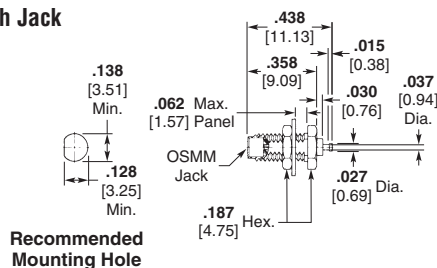
#### Right-Angle Cable Plug



| Cable                 | Attachment    | Dim. A       | Dim. B            | Reference Part No. (Ref. only) | Part Number |
|-----------------------|---------------|--------------|-------------------|--------------------------------|-------------|
| .047 Dia.* Semi-Rigid | Direct Solder | .256<br>6.50 | Ref. .178<br>4.50 | Ref. 4007-7947-00              | 1058993-1   |

\* Semi-rigid versions do not use heat shrink tubing.  
Finish: Gold plate.

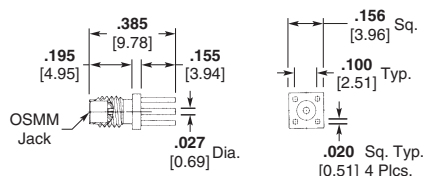
#### Bulkhead Feedthrough Jack



| Description                                         | Reference Part No. (Ref. only) | Part Number |
|-----------------------------------------------------|--------------------------------|-------------|
| Captured Center Contact* Turret Terminal Rear Mount | 4056-0000-00                   | —           |

\* Contact captivation per U.S. patent number 3,292,117.  
Finish: Gold plate.

#### Printed Circuit Board Straight Jack



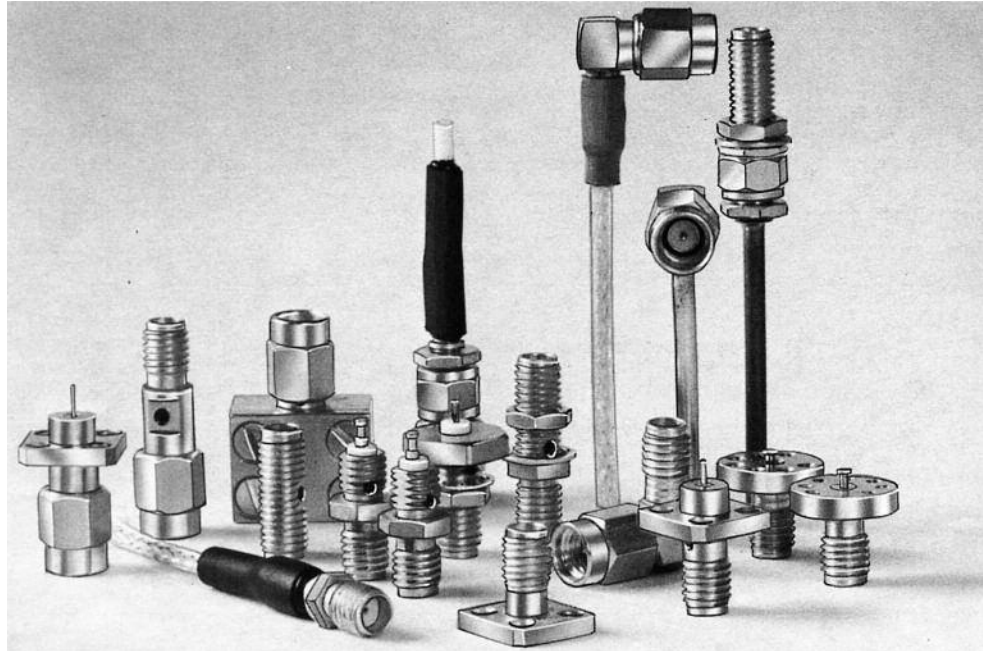
| Description                                | Reference Part No. (Ref. only) | Part Number |
|--------------------------------------------|--------------------------------|-------------|
| Captured Center Contact* Straight Terminal | 4062-0000-00                   | 1059081-1   |

\* Contact captivation per U.S. patent number 3,292,117.  
Finish: Gold plate.



## SSMA Subminiature Coaxial Connectors

### Introduction



The success of the SMA connector created a need for a smaller version for reduced packaging requirements. The SSMA series was designed to a size compatible with smaller diameter semi-rigid cable. The coupling thread is 10-36 UNS thread.

#### Design and Construction

As with the SMA series, all shell and body parts are made of stainless steel for ruggedness and long life. The dielectric is solid PTFE fluorocarbon. The center contacts are made of beryllium copper, gold plated.

#### Types

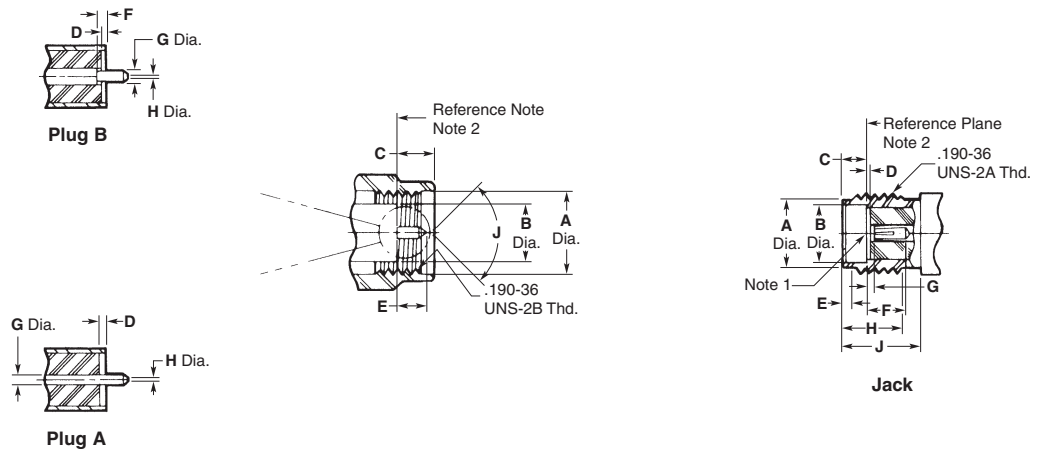
SSMA connectors are available for both semi-rigid and flexible coaxial cable. Panel and bulkhead mount, strip transmission line type, microstrip transmission type and hermetically sealed connectors and in-series adapters give designers complete flexibility for component and system design.

#### Upper Operating Frequency Limits

The standard SSMA series allows operation to 38.0 GHz. The extended frequency SSMA series allows high order mode free operation beyond 40.0 GHz. The extended frequency series directly mates with the standard SSMA series with minimum discontinuity.

## SSMA Subminiature Coaxial Connectors (Continued)

### Interface Mating Dimensions



#### Plug

| Dim. | Min.         | Max.         |
|------|--------------|--------------|
| A    | .196<br>4.98 | .202<br>5.13 |
| B    | .124<br>3.15 | .127<br>3.22 |
| C    | .100<br>2.54 | .133<br>3.38 |
| D    | .000<br>0.00 | .007<br>0.25 |
| E    | .050<br>1.27 | .065<br>1.65 |
| F    | .000<br>0.00 | .010<br>0.25 |
| G    | .020<br>0.50 | .021<br>0.53 |
| H    | .000<br>0.00 | .010<br>0.25 |
| J    | 70°          | 95°          |

#### Jack

| Dim. | Min.         | Max.         |
|------|--------------|--------------|
| A    | .153<br>3.89 | .160<br>4.06 |
| B    | .127<br>3.23 | .130<br>3.30 |
| C    | .075<br>1.91 | .077<br>1.96 |
| D    | .000<br>0.00 | .007<br>0.25 |
| E    | .020<br>0.51 | .040<br>1.02 |
| F    | .075<br>1.91 | —            |
| G    | .000<br>0.00 | .010<br>0.25 |
| H    | .190<br>4.83 | .210<br>5.33 |
| J    | .230<br>5.84 | —            |

1. ID to meet VSWR and contact resistance when mated with .020 +.0008/-.0005 [0.51 +.0203/-.0127] dia. pin.
2. When fully engaged, the two reference planes must coincide with metal to metal contact.

## SSMA Subminiature Coaxial Connectors (Continued)

### Specifications

#### General

|                |                                                                                                                                                                                                                                 |
|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Materials      | Steel corrosion resistant per ASTM-A-582 and ASTM-A-484, Type 303. Beryllium copper per ASTM B 196. PTFE Fluorocarbon per ASTM-D-1457.                                                                                          |
| Finishes which | Center contacts shall be gold plated to a min. thickness of .00005 [0.0013] in accordance with MIL-G-45204, Typ I, Grade C. All other metal parts shall be finished as to provide a connector meets the corrosion requirements. |
| Design         | The design shall be such that the outline shown in this catalog and the interface dimensions of MIL-STD-348A are met.                                                                                                           |

#### Electrical

|                                 |                                                                                                       |
|---------------------------------|-------------------------------------------------------------------------------------------------------|
| Insulation Resistance           | The insulation resistance shall not be less than 5,000 megohms.                                       |
| Corona Level                    | The connector shall not exhibit breakdown when the voltage is 190 volts rms at 70,000 ft.             |
| Dielectric Withstanding Voltage | The magnitude of the test voltage shall be 750 volts rms at sea level.                                |
| RF High Potential               | The withstanding voltage is 500 volts rms at 5 MHz. Leakage current is not applicable.                |
| Contact Resistance              | Center contact resistance: 2 milliohms max.<br>Outer contact resistance: 2 milliohms max.             |
| VSWR                            | Refer to applicable military slash sheet or consult factory. Frequency range dependent on cable used. |
| RF Leakage                      | Refer to applicable military slash sheet or consult factory.                                          |
| Insertion Loss                  | Refer to applicable military slash sheet or consult factory. Frequency range dependent on cable use.  |

#### Mechanical

|                           |                                                                                                                                                                                                                                                              |
|---------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Force to Engage           | The torque required to engage and disengage shall not exceed 2 in.-lbs. The longitudinal force is not applicable.                                                                                                                                            |
| Coupling Nut Retention    | 60 lbs. min. Applicable for plug connectors only.                                                                                                                                                                                                            |
| Coupling Proof Torque     | 5 in.-lbs. min. Applicable for plug connectors only.                                                                                                                                                                                                         |
| Cable Retention           | Refer to applicable military slash sheet or consult factory.                                                                                                                                                                                                 |
| Mating Characteristics    | Applicable to jack connectors only. Reference MIL-STD-348A for dimensions; oversize pin .021 [0.53] min. dia., .045 [1.14] deep; insertion force 3 lbs. max. with .0208 [0.528] min. dia. pin; withdrawal force 1 oz. min. with .0195 [0.495] max. dia. pin. |
| Connector Durability      | The connector to be tested and its mating connector shall be subjected to 500 insertion and withdrawal cycles at 12 cycles per minute max. The connector shall show no evidence of mechanical failure and shall meet the mating characteristic requirements. |
| Recommended Mating Torque | 5 in.-lbs.                                                                                                                                                                                                                                                   |

#### Environmental

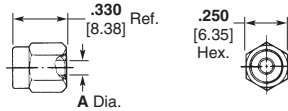
|                        |                                                                                                                                                                         |
|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Vibration              | Specification MIL-STD-202, method 204, test condition D.                                                                                                                |
| Shock                  | Specification MIL-STD-202, method 213, test condition I.                                                                                                                |
| Thermal Shock          | Refer to applicable military slash sheet or consult factory.                                                                                                            |
| Corrosion (Salt Spray) | Specification MIL-STD-202, method 101, test condition B.                                                                                                                |
| Moisture Resistance    | Specification MIL-STD-202, method 106. No measurements at high humidity. Insulation resistance shall be at least 200 megohms within 5 minutes of removal from humidity. |

## SSMA Subminiature Coaxial Connectors (Continued)

### For Semi-Rigid Cable

#### .085 [2.16] Dia. Direct Solder Attachment

##### Straight Cable Plug (Without Center Contact)

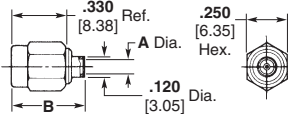


| Part No.  | Reference Part No. (Ref. Only) | Dim. A         | RG/U Cable |
|-----------|--------------------------------|----------------|------------|
| 1045370-1 | 1001-7985-02                   | .088 2.22 Min. | 405        |

#### Electrical

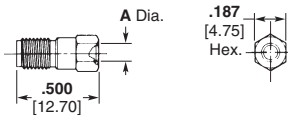
DC — 40.0 GHz

##### Straight Cable Plug (With Center Contact)



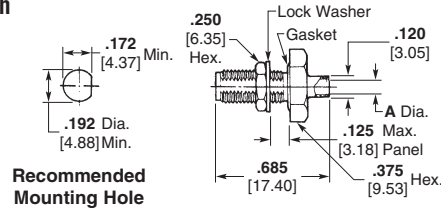
| Part No.  | Reference Part No. (Ref. Only) | Dim. A         | Dim. B          | RG/U Cable | DSCC Part No. |
|-----------|--------------------------------|----------------|-----------------|------------|---------------|
| 1045351-1 | 1001-5004-02                   | .088 2.22 Min. | .447 11.35 Ref. | 405        | —             |
| 1045358-1 | 1001-5045-92                   | .088 2.22 Min. | .467 11.86 Ref. | 405        | 86116ZSG      |

##### Straight Cable Jack (With Center Contact)



| Part No.  | Reference Part No. (Ref. Only) | Dim. A         | RG/U Cable |
|-----------|--------------------------------|----------------|------------|
| 1045381-1 | 1002-7985-00                   | .088 2.22 Min. | 405        |

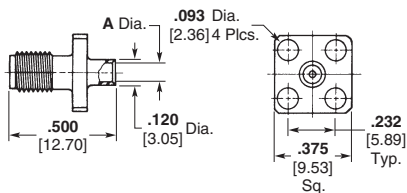
##### Bulkhead Feed-through Cable Jack



Recommended Mounting Hole

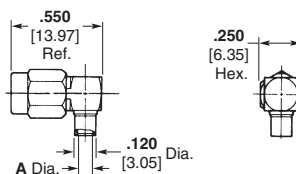
| Part No.  | Reference Part No. (Ref. Only) | Dim. A         | RG/U Cable | DSCC Part No. |
|-----------|--------------------------------|----------------|------------|---------------|
| 1045401-1 | 1004-7985-00                   | .088 2.22 Min. | 405        | —             |
| 1045398-1 | 1004-5005-90                   | .088 2.22 Min. | 405        | 86117ZSG      |

##### Flange Mount Cable Jack



| Part No.  | Reference Part No. (Ref. Only) | Dim. A         | RG/U Cable |
|-----------|--------------------------------|----------------|------------|
| 1045410-1 | 1006-7985-00                   | .088 2.22 Min. | 405        |

##### Right-Angle Cable Plug



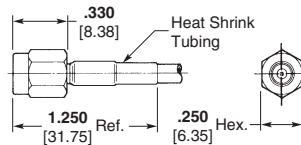
| Part No.  | Reference Part No. (Ref. Only) | Dim. A         | RG/U Cable | DSCC Part No. |
|-----------|--------------------------------|----------------|------------|---------------|
| 1045423-1 | 1007-7985-02                   | .088 2.22 Min. | 405        | —             |
| 1045418-1 | 1007-5015-92                   | .088 2.22 Min. | 405        | 86118ZSG      |

Finish: Passivated stainless steel, -02. For gold plated coupling nut, change the Part Number suffix from -02 to -00.  
Inner housing that is soldered to cable is gold plated.  
Refer to recommended assembly tools in Application Tooling Section.

## SSMA Subminiature Coaxial Connectors (Continued)

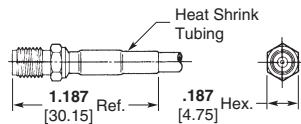
### For Flexible Cable — Solder Attachment

#### Straight Cable Plug<sup>1</sup>



| Part No.  | Reference Part No. (Ref. Only) | RG/U Cable                |
|-----------|--------------------------------|---------------------------|
| 1045477-1 | 1031-5001-02                   | 178/U, 196                |
| 1045482-1 | 1031-5002-02                   | 174/U, 179, 187, 188, 316 |

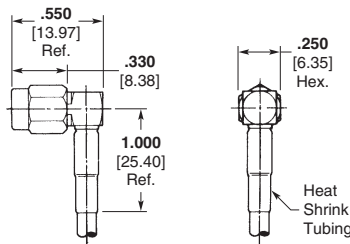
#### Straight Cable Jack



| Part No.  | Reference Part No. (Ref. Only) | RG/U Cable                |
|-----------|--------------------------------|---------------------------|
| 1045496-1 | 1032-5001-00                   | 178/U, 196                |
| 1045497-1 | 1032-5002-00                   | 174/U, 179, 187, 188, 316 |

Finish: Gold plated. Inner housing that is soldered to cable is gold plated.

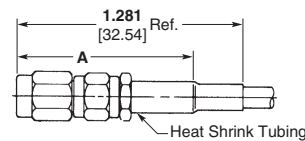
#### Right-Angle Cable Plug<sup>1</sup>



| Part No.  | Reference Part No. (Ref. Only) | RG/U Cable                |
|-----------|--------------------------------|---------------------------|
| 1045507-1 | 1037-5001-00                   | 178/U, 196                |
| 1045508-1 | 1037-5001-02                   | 178/U, 196                |
| 1045511-1 | 1037-5002-02                   | 174/U, 179, 187, 188, 316 |

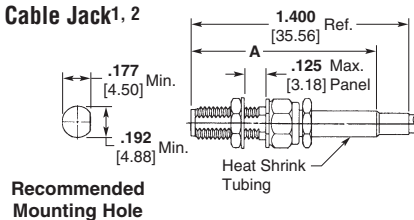
### For Flexible Cable — Crimp Attachment

#### Straight Cable Plug<sup>1, 2</sup>



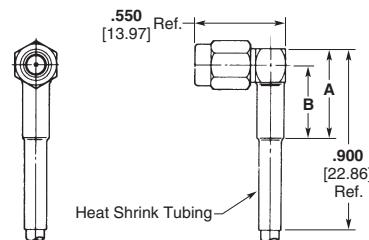
| Part No.  | Reference Part No. (Ref. Only) | Dim. A             | RG/U Cable                | DSCC Part No. |
|-----------|--------------------------------|--------------------|---------------------------|---------------|
| 1045489-1 | 1031-7188-02                   | 1.062 [26.97] Ref. | 174/U, 179, 187, 188, 316 | —             |
| 1045486-1 | 1031-5031-92                   | 1.062 [26.97] Ref. | 174, 316, 179             | 86119ZSG      |

#### Bulkhead Feed-through Cable Jack<sup>1, 2</sup>



| Part No.  | Reference Part No. (Ref. Only) | Dim. A             | RG/U Cable                |
|-----------|--------------------------------|--------------------|---------------------------|
| 1045506-1 | 1034-7196-02                   | 1.050 [26.67] Ref. | 178/U, 196                |
| 1045503-1 | 1034-7188-02                   | 1.180 [29.97] Ref. | 174/U, 179, 187, 188, 316 |

#### Right-Angle Cable Plug<sup>1, 2</sup>



| Part No.  | Reference Part No. (Ref. Only) | Dim. A            | Dim. B            | RG/U Cable                | DSCC Part No. |
|-----------|--------------------------------|-------------------|-------------------|---------------------------|---------------|
| 1045520-1 | 1037-7188-02                   | .625 [15.88] Ref. | .525 [13.34] Ref. | 174/U, 179, 187, 188, 316 | —             |
| 1045517-1 | 1037-5032-92                   | .625 [15.88] Ref. | .525 [13.34] Ref. | 174, 316, 179             | 86120ZSG      |

Refer to recommended assembly tools in Application Tooling Section.

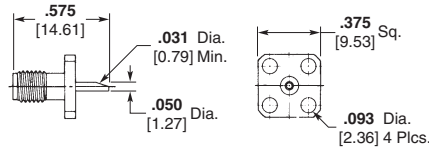
1. Finish: Passivated stainless steel, -02. For gold plated coupling nut, change the Part Number suffix from -02 to -00. Inner housing that is soldered to cable is gold plated.
2. Captured contact.
3. Non-captured contact

## SSMA Subminiature Coaxial Connectors (Continued)

### Panel Mount Receptacles

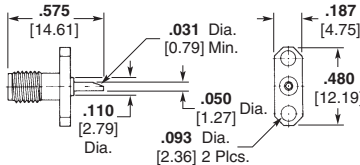
#### Solder Pot Terminals

#### Flange Mount Jack Receptacle<sup>1</sup>



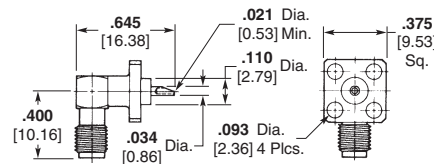
| Reference Part No. (Ref. Only) | Part No.  |
|--------------------------------|-----------|
| 1052-0000-00                   | 1045568-1 |

#### Flange Mount Jack Receptacle<sup>1</sup>



| Reference Part No. (Ref. Only) | Part No.  |
|--------------------------------|-----------|
| 1052-1300-02                   | 1045582-1 |

#### Flange Mount Jack Receptacle<sup>1</sup>



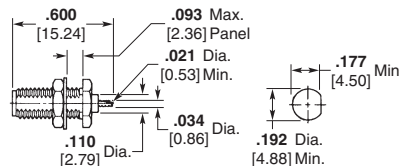
| Reference Part No. (Ref. Only) | Part No.  |
|--------------------------------|-----------|
| 1054-5005-02                   | 1045621-1 |

### Bulkhead Mount Receptacles

#### Solder Pot Terminals

#### Bulkhead Feed-through Jack Receptacles<sup>1</sup>

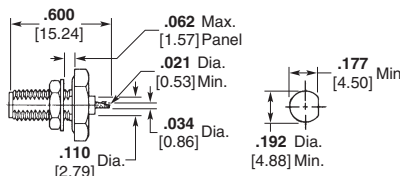
#### Rear Mount



**Recommended Mounting Hole**

| Reference Part No. (Ref. Only) | Part No.  |
|--------------------------------|-----------|
| 1056-0000-02                   | 1045630-1 |

#### Rear Mount (With "O" Ring)



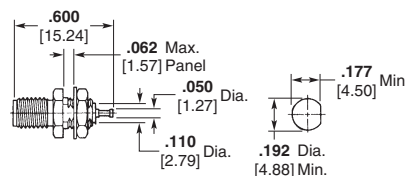
**Recommended Mounting Hole**

| Reference Part No. (Ref. Only) | Part No.  |
|--------------------------------|-----------|
| 1056-1100-02                   | 1045632-1 |

#### Turret Terminal

#### Bulkhead Feed-through Jack Receptacle<sup>1</sup>

#### Front Mount



**Recommended Mounting Hole**

| Reference Part No. (Ref. Only) | Part No.  |
|--------------------------------|-----------|
| 1058-0000-02                   | 1045637-1 |

Finish: Passivated stainless steel, -02. For gold plate, change the Part Number suffix from -02 to -00.  
1. Captured Center Contact.

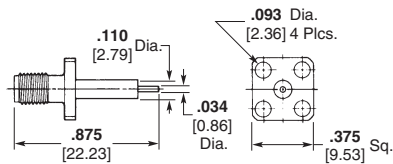


## SSMA Subminiature Coaxial Connectors (Continued)

### Panel Mount Receptacles

#### Straight Terminal

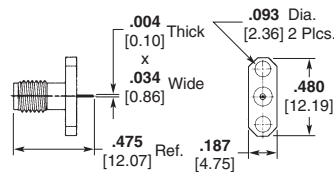
#### Flange Mount Jack Receptacle<sup>2</sup>



| Reference Part No. (Ref. Only) | Part No.  |
|--------------------------------|-----------|
| 1052-1200-02                   | 1045576-1 |
| 1052-1201-02                   | 1045578-1 |

#### Tab Terminal

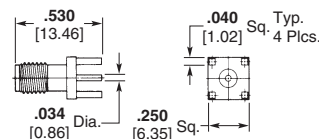
#### Flange Mount Jack Receptacle<sup>2</sup>



| Reference Part No. (Ref. Only) | Part No.  |
|--------------------------------|-----------|
| 1052-1302-02                   | 1045586-1 |

### Printed Circuit Boards

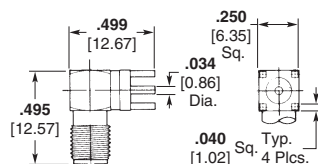
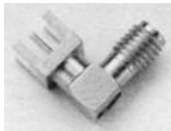
#### Straight Jack



| Reference Part No. (Ref. Only) | Part No.  |
|--------------------------------|-----------|
| 1062-0000-00                   | 1045672-1 |

Finish: Gold plate.

#### Right-Angle Jack

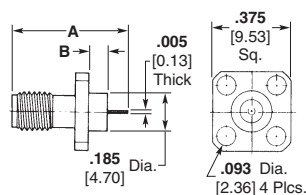


| Reference Part No. (Ref. Only) | Part No.  |
|--------------------------------|-----------|
| 1064-0000-00                   | 1045677-1 |

### Circuits

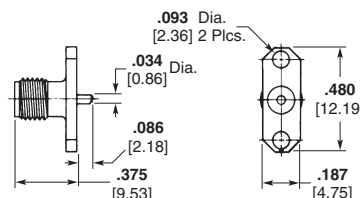
#### Microstrip Transmission Line Circuits, Flange Mount Jack<sup>1</sup>

#### Tab Terminal



| Reference Part No. (Ref. Only) | Part No.  | Dim. A          | Dim. B         |
|--------------------------------|-----------|-----------------|----------------|
| 1052-1132-00                   | 1045573-1 | .600 Ref. 15.24 | .125 Ref. 3.18 |

#### Solderless Compression Terminal



| Reference Part No. (Ref. Only) | Part No.  |
|--------------------------------|-----------|
| 1052-5013-00                   | 1045607-1 |

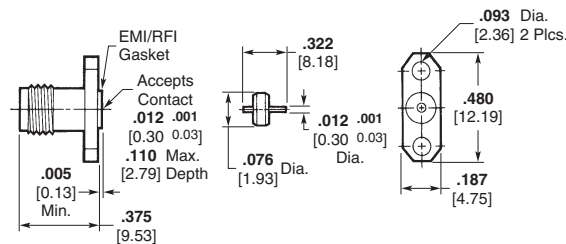
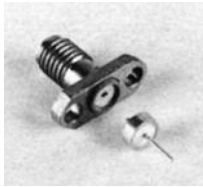
Finish: Passivated stainless steel, -02. For gold plate, change the Part Number suffix from -02 to -00.

1. Captured center contact.

2. Non-captured center contact.

## SSMA Subminiature Coaxial Connectors (Continued)

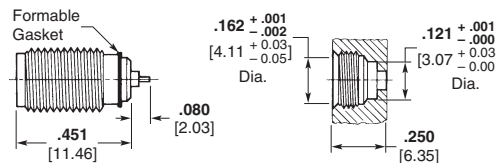
### Hermetically Sealed Metal-To-Metal Hermetic Seal Jack Receptacle With EMI/RFI Gasket, Field Replaceable Solder and Braze-In<sup>1, 4</sup>



| Reference Part No. (Ref. Only) | Part No.  |
|--------------------------------|-----------|
| 1052-3355-02                   | 1045598-1 |

**Electrical**  
VSWR (GHz) — 1.07 + .011f  
RF Leakage (dB) — -(100 - fGHz)

### Feed-through Jack Receptacle, Formable Gasket<sup>2, 4</sup>

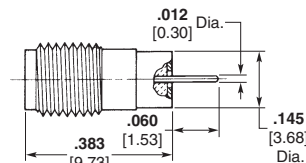


| Reference Part No. (Ref. Only) | Part No.  |
|--------------------------------|-----------|
| 1058-5014-00                   | 1045651-1 |

**Electrical**  
VSWR (GHz) — 1.05 + .01f  
RF Leakage (dB) — -(100 - fGHz)  
**Mechanical**  
Installation Thermal Limit — 250°C

**Recommended  
Mounting Hole**

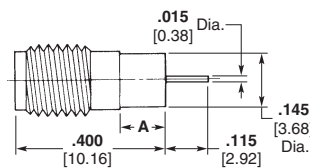
### Feed-through Jack Receptacle, Solder and Braze-In<sup>3</sup>



| Reference Part No. (Ref. Only) | Part No.  |
|--------------------------------|-----------|
| 1058-3203-00                   | 1045647-1 |

**Electrical**  
VSWR (GHz) — 1.05 + .014f  
RF Leakage (dB) — -(100 - fGHz)

### Panel Feed-through Jack Receptacle, Solder and Braze-In



| Reference Part No. (Ref. Only) | Part No.  | Dim. A       |
|--------------------------------|-----------|--------------|
| 1058-3121-00                   | 1045643-1 | .093<br>2.36 |
| 1058-3123-00                   | 1045646-1 | .187<br>4.75 |

Finish: Gold plate.

**Electrical**  
VSWR (GHz) — 1.05 + .014f  
RF Leakage (dB) — -(70 - fGHz)

1. Finish: Passivated stainless steel, -02. For gold plate, change the Part Number suffix from -02 to -00.
2. Finish: Gold plate, -00. For passivated stainless steel, change the Part Number suffix from -00 to -02. For nickel plate, change the suffix from -00 to -10.
3. Finish: Gold plate, -00. This unit has a unique self-matching compensation step, allowing direct attachment to the substrate, resulting in minimal package size.
4. Refer to recommended assembly tools in Application Tooling section.

## SSMA Subminiature Coaxial Connectors (Continued)

### Hermetically Sealed

(Continued)

#### Panel Feed-through Hermetic Adapter

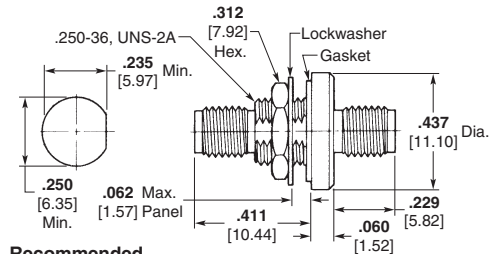
##### Jack to Jack<sup>1</sup>



#### Electrical

VSWR (GHz) — 1.10 + .01f

RF Leakage (dB) — -(100 - fGHz)



**Recommended  
Mounting Hole**

| Reference<br>Part No.<br>(Ref. Only) | Part No.  |
|--------------------------------------|-----------|
| 1084-1100-00                         | 1045725-1 |

### O-Ring Gasket Hermetic Seal

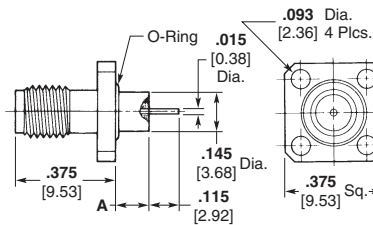
#### Flange Mount Jack Receptacle<sup>1, 2</sup>



#### Electrical

VSWR (GHz) — 1.05 + .01f

RF Leakage (dB) — -(70 - fGHz)



**Recommended  
Mounting Hole**

| Reference<br>Part No.<br>(Ref. Only) | Part No.  | Dim.<br>A    |
|--------------------------------------|-----------|--------------|
| 1052-3121-00                         | 1045593-1 | .093<br>2.36 |

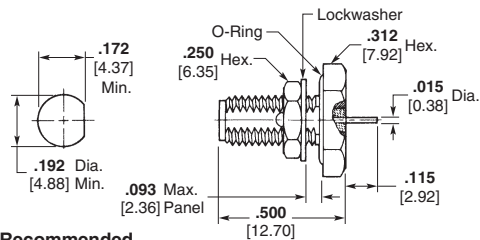
### Rear Mount Jack Receptacle<sup>1, 2</sup>



#### Electrical

VSWR (GHz) — 1.05 + .014f

RF Leakage (dB) — -(70 - fGHz)



**Recommended  
Mounting Hole**

| Reference<br>Part No.<br>(Ref. Only) | Part No.  |
|--------------------------------------|-----------|
| 1056-3100-00                         | 1045633-1 |

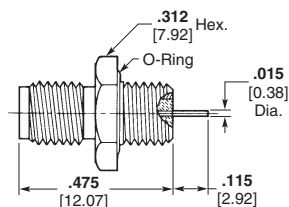
### Bulkhead Feed-through Front Mount Jack Receptacle



#### Electrical

VSWR (GHz) — 1.05 + .01f

RF Leakage (dB) — -(70 - fGHz)



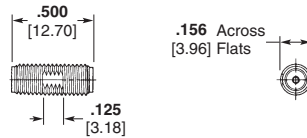
| Reference<br>Part No.<br>(Ref. Only) | Part No.  |
|--------------------------------------|-----------|
| 1058-3100-00                         | 1045642-1 |

1. Finish: Gold plate, -00. For passivated stainless steel, change the Part Number suffix from -00 to -02.
2. On passivated versions (-02), pins are pre-tinned using Sn60 solder.

## SSMA Subminiature Coaxial Connectors (Continued)

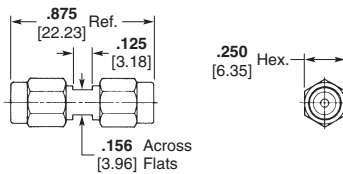
### In-Series Adapters

#### Jack to Jack Adapter



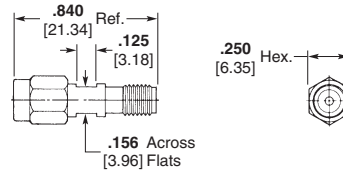
| Reference Part No. (Ref. Only) | Part No.  |
|--------------------------------|-----------|
| 1080-0000-02                   | 1045701-1 |

#### Plug to Plug Adapter



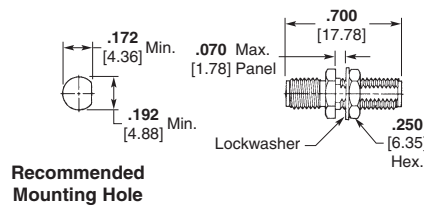
| Reference Part No. (Ref. Only) | Part No.  |
|--------------------------------|-----------|
| 1081-0000-02                   | 1045704-1 |

#### Plug to Jack Adapter (Connector Saver)



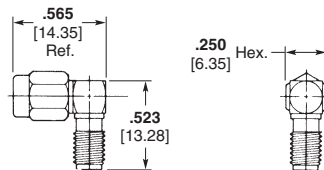
| Reference Part No. (Ref. Only) | Part No.  |
|--------------------------------|-----------|
| 1082-0000-02                   | 1045708-1 |

#### Bulkhead Mount Jack to Jack Adapter



| Reference Part No. (Ref. Only) | Part No.  |
|--------------------------------|-----------|
| 1084-0000-02                   | 1045723-1 |

#### Right-Angle Plug to Jack Adapter



| Reference Part No. (Ref. Only) | Part No.  |
|--------------------------------|-----------|
| 1088-0000-02                   | 1045747-1 |

Finish: Passivated stainless steel, -02. For gold plate, change the Part Number suffix from -02 to -00.

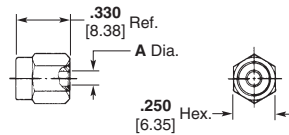
## SSMA Subminiature Coaxial Connectors (Continued)

### High Frequency For Semi-Rigid Cable

.085 [2.16] and .070 [1.78]

Dia. — Direct Solder Attachment

Straight Cable Plug  
(Without Center Contact)<sup>1, 3</sup>



#### Specifications

**Nominal Impedance** — 50 ohms

**Frequency Range** — dc to 40 GHz

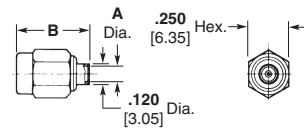
**Voltage Standing Wave Ratio** —  
1.07 + .010 f (GHz)

**Insertion Loss** — .04 x  $\sqrt{f}$  (GHz) =  
dB max.

**Voltage Rating** — 250 volts RMS  
max. working voltage

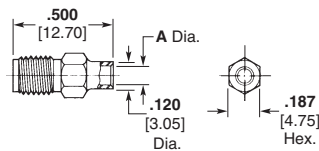
| Reference Part No.<br>(Ref. Only) | Part No.  | Dim.<br>A   | RG/U<br>Cable | Cable<br>Dielectric |
|-----------------------------------|-----------|-------------|---------------|---------------------|
| 1001-7985-00                      | 1045369-1 | .087<br>2.2 | 405           | Solid<br>PTFE       |

### Straight Cable Plug Center Contact<sup>1, 3</sup>



| Reference Part No.<br>(Ref. Only) | Part No.  | Dim.<br>A    | Dim.<br>B     | RG/U<br>Cable | Cable<br>Dielectric |
|-----------------------------------|-----------|--------------|---------------|---------------|---------------------|
| 1401-7985-00                      | 1046477-1 | .088<br>2.22 | .447<br>11.35 | 405           | Solid<br>PTFE       |

### Straight Cable Jack<sup>3</sup>

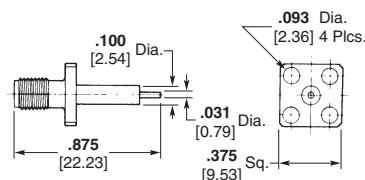


| Reference Part No.<br>(Ref. Only) | Part No.  | Dim.<br>A    | RG/U<br>Cable | Cable<br>Dielectric |
|-----------------------------------|-----------|--------------|---------------|---------------------|
| 1402-7985-00                      | 1046479-1 | .088<br>2.22 | 405           | Solid<br>PTFE       |

Finish: Gold plate.

### Panel Mount — Straight Terminal

Flange Mount Jack Receptacle<sup>2, 4</sup>



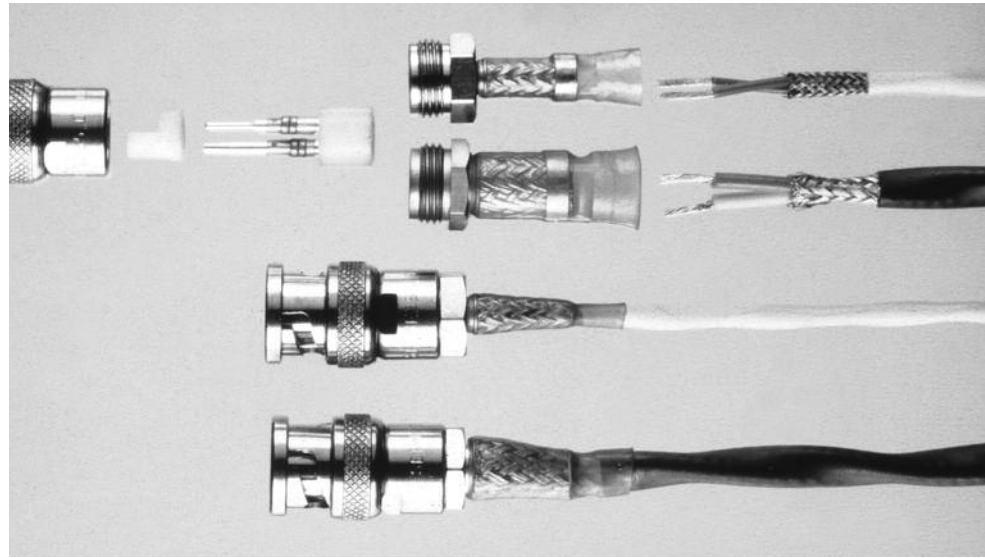
| Reference Part No.<br>(Ref. Only) | Part No.  |
|-----------------------------------|-----------|
| 1452-1201-02                      | 1086451-1 |

1. Finish: Gold plated, -00. For passivated stainless steel coupling nut, change the Part Number suffix from -00 to -02. Inner housing that is soldered to cable is gold plated.
2. Finish: Passivated stainless steel, -02. For gold plate, change the Part Number suffix from -02 to -00.
3. Refer to recommended assembly tools in Application Tooling Section.
4. Captured center contact.

## RF One-Step BNC/TNC Connectors

### Product Facts

- Easy, quick installation
- Outstanding cable-retention force
- Solder-solder connection type (center conductor and braid)
- One-step termination for easy, quick installation and lower installed cost
- Exceptional cable retention force to withstand high vibration and frequent mates and unmates
- Fully soldered center conductor and braid
- Excellent built-in strain relief against vibration and excessive handling
- Long-term reliability
- Controlled soldering termination
- Use with standard RG/U cables and Raychem brand Cheminax cables
- Three product sizes to accommodate a wide range of cables
- Meets performance requirements of MIL-PRF-39012 up to 2.8 GHz



### Applications

One-Step BNC/TNC connectors are single-piece assemblies for terminating the center conductor and the braid of a broad range of coaxial cables.

The connectors are fully intermateable with MIL-PRF-39012 connectors and are available in 50-ohm and 75-ohm versions.

| Specifications            | Installation                                                                                                                                                                                                                                                                                                                                                          |
|---------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| TE Connectivity<br>RB-115 | <p>For proper installation of these devices, the correct heating tool and reflector attachment must be used.</p> <p>Any one of the following Raychem heating tools is recommended:</p> <ul style="list-style-type: none"> <li>• Steinel® Model HL1802E</li> <li>• CV-1981</li> </ul> <p>Refer to TE installation procedure RPIP 683-00 for detailed instructions.</p> |



## RF One-Step BNC/TNC Connectors (Continued)

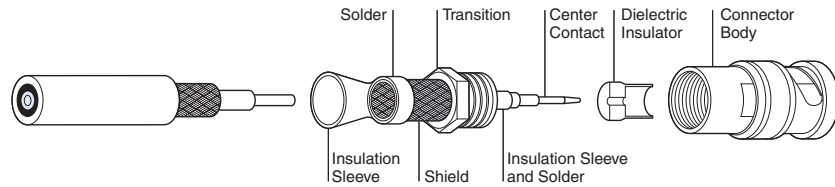
### Product Options and Part Numbering System

| RXX - XX - X - XX                                             | Connector Style |                        | Connector Type  |                 |
|---------------------------------------------------------------|-----------------|------------------------|-----------------|-----------------|
|                                                               | Dash No.<br>-XX | Style                  | TNC             | BNC             |
|                                                               | -00             | Straight plug          |                 |                 |
|                                                               | -01             | Right-angle plug       |                 |                 |
|                                                               | -02             | Straight bulkhead jack |                 |                 |
|                                                               | -03             | Straight jack          |                 |                 |
|                                                               | -04             | Straight panel jack    |                 |                 |
|                                                               |                 |                        | 4 x M2.5 x 0.45 | 4 x M2.5 x 0.45 |
|                                                               |                 |                        |                 |                 |
| Male                                                          |                 |                        |                 |                 |
|                                                               |                 |                        |                 |                 |
| Female                                                        |                 |                        |                 |                 |
| <b>Connector size</b><br>L = Large<br>M = Medium<br>S = Small |                 |                        |                 |                 |
| 50 = 50 ohms<br>75 = 75 ohms                                  |                 |                        |                 |                 |
| D = Nickel-plated brass body, gold-plated brass pin           |                 |                        |                 |                 |
| B = BNC<br>T = TNC                                            |                 |                        |                 |                 |

Example: RBD-50-L-00 is a BNC connector, 50 ohms, large size, with straight plug body.

## RF One-Step BNC/TNC Connectors (Continued)

### Product Characteristics



#### Material

|                              |                                                                                  |
|------------------------------|----------------------------------------------------------------------------------|
| Center contact               | Gold-plated beryllium copper (female)                                            |
| Dielectric insulator         | Gold-plated brass (male)                                                         |
| Transition                   | PTFE                                                                             |
| Connector body               | Silver-plated brass                                                              |
| Solder and flux              | Nickel-plated brass                                                              |
| Braided shield               | Sn63Pb37, RMA flux                                                               |
| Insulation sleeve            | Tin-plated copper wire per ASTM B3                                               |
| Strain relief/sealing sleeve | Radiation-crosslinked, heat-shrinkable polyvinylidene fluoride, transparent blue |
|                              | Radiation-crosslinked, heat-shrinkable modified polyolefin with adhesive, black  |

#### Typical Performance

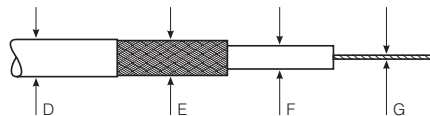
|                                  |                                              |
|----------------------------------|----------------------------------------------|
| Dielectric withstand voltage     | 1500 V                                       |
| Insulation resistance            | 5000 megohms                                 |
| Temperature rating               | -55°C to 150°C [-67°F to 302°F]              |
| Contact resistance-straight      | Inner = 1.5 milliohms, outer = 1.0 milliohm  |
| Contact resistance — right-angle | Inner = 2.5 milliohms, outer = 1.5 milliohms |
| Cable retention force            | 295N (66 lb) to 822N (196 lb)                |
| Voltage rating                   | 500 V RMS                                    |
| Connector durability             | 500 mating cycles minimum                    |

#### Electrical Performance

|                   |                |
|-------------------|----------------|
| Nominal impedance | 50 and 75 ohms |
| Frequency range   | Up to 2.8 GHz  |

### Part Selection Process

1. From Product Options and Part Numbering System on page 2-35, select the connector style you need (BNC or TNC, plug or jack, male or female contacts).
2. From the tables that follow, find the appropriate table for the connector style you selected.
3. From the appropriate table, select the connector part number based on the RG cable type or Raychem cable part number. For cable types not shown use the cable dimensions.  
Note: The cable dimensions in each table are keyed to the diagram below.



## RF One-Step BNC/TNC Connectors (Continued)

| Impedance<br>(ohms)                          | Cable Type                                  |                                    | Cable Dimensions          |                            |                |                | Part<br>No. |
|----------------------------------------------|---------------------------------------------|------------------------------------|---------------------------|----------------------------|----------------|----------------|-------------|
|                                              | RG Cables                                   | Raychem Cables                     | D<br>(Min.–Max.)          | E<br>(Min.–Max.)           | F<br>(Max.)    | G<br>(Max.)    |             |
| BNC Straight Plugs, Male Contacts            |                                             |                                    |                           |                            |                |                |             |
| 50                                           | RG-174, RG-178, RG-188,<br>RG-196,RG-316    | 5026A1311, 5028A1317,<br>5030A1317 | 1.50–5.50<br>[.060–.217]  | 0.90–3.00<br>[.035–.118]   | 1.55<br>[.060] | 0.65<br>[.025] | RBD-50-S-00 |
| 50                                           | RG-58, RG-141, RG-142,<br>RG-303, RG-400    | 5019D3318, 5021D1331,<br>5020A1311 | 3.50–7.00<br>[.138–.276]  | 2.10–5.00<br>[.083–.197]   | 3.00<br>[.118] | 1.25<br>[.050] | RBD-50-M-00 |
| 50                                           | RG-165, RG-215, RG-213,<br>RG-225, RG-214   | 5012F3332, 5012A3311               | 5.00–12.50<br>[.197–.500] | 4.10–9.50<br>[.161–.375]   | 7.30<br>[.287] | 2.45<br>[.100] | RBD-50-L-00 |
| 75                                           | RG-179, RG-187                              | 7530A1317                          | 1.50–5.00<br>[.060–.217]  | 5 0.90-3.00<br>[.035–.118] | 1.55<br>[.060] | 0.65<br>[.025] | RBD-75-S-00 |
| 75                                           | —                                           | 7524A1311, 7528A1317               | 3.50–7.00<br>[.138–.276]  | 2.10–5.00<br>[.083–.197]   | 3.70<br>[.126] | 1.25<br>[.050] | RBD-75-M-00 |
| 75                                           | RG-6, RG-11, RG-12, RG-59<br>RG-144, RG-216 | —                                  | 5.00–12.50<br>[.197–.500] | 4.10–9.50<br>[.161–.375]   | 7.3<br>[.287]  | 2.45<br>[.100] | RBD-75-L-00 |
| BNC Right-Angle Plugs, Male Contacts         |                                             |                                    |                           |                            |                |                |             |
| 50                                           | RG-174, RG-178, RG-188,<br>RG-196,RG-316    | 5026A1311, 5028A1317,<br>5030A1317 | 1.50–5.50<br>[.060–.217]  | 0.90–3.00<br>[.035–.118]   | 1.55<br>[.060] | 0.65<br>[.025] | RBD-50-S-01 |
| 50                                           | RG-58, RG-141, RG-142,<br>RG-303, RG-400    | 5019D3318, 5021D1331,<br>5020A1311 | 3.50–7.00<br>[.138–.276]  | 2.10–5.00<br>[.083–.197]   | 3.00<br>[.118] | 1.25<br>[.050] | RBD-50-M-01 |
| 50                                           | RG-165, RG-215, RG-213,<br>RG-225, RG-214   | 5012F3332, 5012A3311               | 5.00–12.50<br>[.197–.500] | 4.1–9.50<br>[.161–.375]    | 7.30<br>[.287] | 2.45<br>[.100] | RBD-50-L-01 |
| 75                                           | RG-179, RG-187                              | 7530A1317                          | 1.50–5.50<br>[.060–.217]  | 0.9-3.00<br>[.035–.118]    | 1.55<br>[.060] | 0.65<br>[.025] | RBD-75-S-01 |
| 75                                           | —                                           | 524A1311, 7528A1317                | 3.50–7.00<br>[.138–.276]  | 2.1–5.00<br>[.083–.197]    | 3.70<br>[.146] | 1.25<br>[.050] | RBD-75-M-01 |
| 75                                           | RG-6, RG-11, RG-12, RG-59<br>RG-144, RG-216 | —                                  | 5.00–12.50<br>[.197–.500] | 4.1–9.50<br>[.161–.375]    | 7.30<br>[.287] | 2.45<br>[.100] | RBD-75-L-01 |
| BNC Straight Bulkhead Jacks, Female Contacts |                                             |                                    |                           |                            |                |                |             |
| 50                                           | RG-174, RG-178, RG-188,<br>RG-196,RG-316    | 5026A1311, 5028A1317,<br>5030A1317 | 1.50–5.50<br>[.060–.217]  | 0.90–3.00<br>[.035–.118]   | 1.55<br>[.060] | 0.65<br>[.025] | RBD-50-S-02 |
| 50                                           | RG-58, RG-141, RG-142,<br>RG-303, RG-400    | 5019D3318, 5021D1331,<br>5020A1311 | 3.50–7.00<br>[.138–.276]  | 2.10–5.00<br>[.083–.197]   | 3.00<br>[.118] | 1.25<br>[.050] | RBD-50-M-02 |
| 50                                           | RG-165, RG-215, RG-213,<br>RG-225, RG-214   | 5012F3332, 5012A3311               | 5.00–12.50<br>[.197–.500] | 4.10–9.50<br>[.161–.375]   | 7.30<br>[.287] | 2.45<br>[.100] | RBD-50-L-02 |
| 75                                           | RG-179, RG-187                              | 7530A1317                          | 1.50–5.00<br>[.060–.217]  | 5 0.90-3.00<br>[.035–.118] | 1.55<br>[.060] | 0.65<br>[.025] | RBD-75-S-02 |
| 75                                           | —                                           | 75 7524A1311, 7528A1317            | 3.50–7.00<br>[.138–.276]  | 2.10–5.00<br>[.083–.197]   | 3.70<br>[.146] | 1.25<br>[.050] | RBD-75-M-02 |
| 75                                           | RG-6, RG-11, RG-12, RG-59<br>RG-144, RG-216 | —                                  | 5.00–12.50<br>[.197–.500] | 4.10–9.50<br>[.161–.375]   | 7.30<br>[.287] | 2.45<br>[.100] | RBD-75-L-02 |
| BNC Straight Jacks, Female Contacts          |                                             |                                    |                           |                            |                |                |             |
| 50                                           | RG-174, RG-178, RG-188,<br>RG-196,RG-316    | 5026A1311, 5028A1317,<br>5030A1317 | 1.50–5.50<br>[.060–.217]  | 0.90–3.00<br>[.035–.118]   | 1.55<br>[.060] | 0.65<br>[.025] | RBD-50-S-03 |
| 50                                           | RG-58, RG-141, RG-142,<br>RG-303, RG-400    | 5019D3318, 5021D1331,<br>5020A1311 | 3.50–7.00<br>[.138–.276]  | 2.10–5.00<br>[.083–.197]   | 3.00<br>[.118] | 1.25<br>[.050] | RBD-50-M-03 |
| 50                                           | RG-165, RG-215, RG-213,<br>RG-225, RG-214   | 5012F3332, 5012A3311               | 5.00–12.50<br>[.197–.500] | 4.10–9.50<br>[.161–.375]   | 7.30<br>[.287] | 2.45<br>[.100] | RBD-50-L-03 |
| 75                                           | RG-179, RG-187                              | 7530A1317                          | 1.50–5.50<br>[.060–.217]  | 0.90–3.00<br>[.035–.118]   | 1.55<br>[.060] | 0.65<br>[.025] | RBD-75-S-03 |
| 75                                           | —                                           | 75 7524A1311, 7528A1317            | 3.50–7.00<br>[.138–.276]  | 2.10–5.00<br>[.083–.197]   | 3.70<br>[.146] | 1.25<br>[.050] | RBD-75-M-03 |
| 75                                           | RG-6, RG-11, RG-12, RG-59<br>RG-144, RG-216 | —                                  | 5.00–12.50<br>[.197–.500] | 4.10–9.50<br>[.161–.375]   | 7.30<br>[.287] | 2.45<br>[.100] | RBD-75-L-03 |
| BNC Straight Panel Jacks, Female Contacts    |                                             |                                    |                           |                            |                |                |             |
| 50                                           | RG-174, RG-178, RG-188,<br>RG-196,RG-316    | 5026A1311, 5028A1317,<br>5030A1317 | 1.50–5.50<br>[.060–.217]  | 0.90–3.00<br>[.035–.118]   | 1.55<br>[.060] | 0.65<br>[.025] | RBD-50-S-04 |
| 50                                           | RG-58, RG-141, RG-142,<br>RG-303, RG-400    | 5019D3318, 5021D1331,<br>5020A1311 | 3.50–7.00<br>[.138–.276]  | 2.10–5.00<br>[.083–.197]   | 3.00<br>[.118] | 1.25<br>[.050] | RBD-50-M-04 |
| 50                                           | RG-165, RG-215, RG-213,<br>RG-225, RG-214   | 5012F3332, 5012A3311               | 5.00–12.50<br>[.197–.500] | 4.10–9.50<br>[.161–.375]   | 7.30<br>[.287] | 2.45<br>[.100] | RBD-50-L-04 |
| 75                                           | RG-179, RG-187                              | 7530A1317                          | 1.50–5.50<br>[.060–.217]  | 0.90–3.00<br>[.035–.118]   | 1.55<br>[.060] | 0.65<br>[.025] | RBD-75-S-04 |
| 75                                           | —                                           | 7524A1311, 7528A1317               | 3.50–7.00<br>[.138–.276]  | 2.10–5.00<br>[.083–.197]   | 3.70<br>[.146] | 1.25<br>[.050] | RBD-75-M-04 |
| 75                                           | RG-6, RG-11, RG-12, RG-59<br>RG-144, RG-216 | —                                  | 5.00–12.50<br>[.197–.500] | 4.10–9.50<br>[.161–.375]   | 7.30<br>[.287] | 2.45<br>[.100] | RBD-75-L-04 |

## RF One-Step BNC/TNC Connectors (Continued)

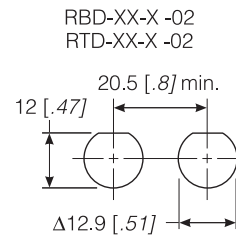
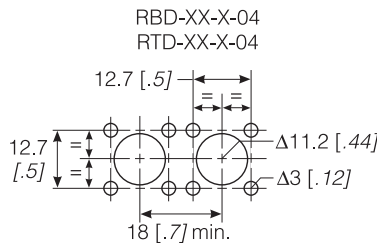
### TNC Coaxial Connectors

| Impedance<br>(ohms)                       | Cable Type                                  |                                    | Cable Dimensions          |                          |                |                | Part<br>No. |
|-------------------------------------------|---------------------------------------------|------------------------------------|---------------------------|--------------------------|----------------|----------------|-------------|
|                                           | RG Cables                                   | Raychem Cables                     | D<br>(Min.–Max.)          | E<br>(Min.–Max.)         | F<br>(Max.)    | G<br>(Max.)    |             |
| TNC Straight Plugs, Male Contacts         |                                             |                                    |                           |                          |                |                |             |
| 50                                        | RG-174, RG-178, RG-188,<br>RG-196, RG-316   | 5026A1311, 5028A1317,<br>5030A1317 | 1.50–5.50<br>[.060–.217]  | 0.90–3.00<br>[.035–.118] | 1.55<br>[.060] | 0.65<br>[.025] | RTD-50-S-00 |
| 50                                        | RG-58, RG-141, RG-142,<br>RG-303, RG-400    | 5019D3318, 5021D1331,<br>5020A1311 | 3.50–7.00<br>[.138–.276]  | 2.10–5.00<br>[.083–.197] | 3.00<br>[.118] | 1.25<br>[.050] | RTD-50-M-00 |
| 50                                        | RG-165, RG-215, RG-213,<br>RG-225, RG-214   | 5012F3332, 5012A3311               | 5.00–12.50<br>[.197–.500] | 4.10–9.50<br>[.161–.375] | 7.30<br>[.287] | 2.45<br>[.100] | RTD-50-L-00 |
| 75                                        | RG-179, RG-187                              | 7530A1317                          | 1.50–5.50<br>[.060–.217]  | 0.90–3.00<br>[.035–.118] | 1.55<br>[.060] | 0.65<br>[.025] | RTD-75-S-00 |
| 75                                        | —                                           | 7524A1311, 7528A1317               | 3.50–7.00<br>[.138–.276]  | 2.10–5.00<br>[.083–.197] | 3.70<br>[.146] | 1.25<br>[.050] | RTD-75-M-00 |
| 75                                        | RG-6, RG-11, RG-12, RG-59<br>RG-144, RG-216 | —                                  | 5.00–12.50<br>[.197–.500] | 4.10–9.50<br>[.161–.375] | 7.30<br>[.287] | 2.45<br>[.100] | RTD-75-L-00 |
| TNC Straight Jacks, Female Contacts       |                                             |                                    |                           |                          |                |                |             |
| 50                                        | RG-174, RG-178, RG-188,<br>RG-196, RG-316   | 5026A1311, 5028A1317,<br>5030A1317 | 1.5–5.5<br>[.060–.217]    | 0.9–3.0<br>[.035–.118]   | 1.55<br>[.060] | 0.65<br>[.025] | RTD-50-S-03 |
| 50                                        | RG-58, RG-141, RG-142,<br>RG-303, RG-400    | 5019D3318, 5021D1331,<br>5020A1311 | 3.5–7.0<br>[.138–.276]    | 2.1–5.0<br>[.083–.197]   | 3.0<br>[.118]  | 1.25<br>[.050] | RTD-50-M-03 |
| 50                                        | RG-165, RG-215, RG-213,<br>RG-225, RG-214   | 5012F3332, 5012A3311               | 5.0–12.5<br>[.197–.500]   | 4.1–9.5<br>[.161–.375]   | 7.3<br>[.287]  | 2.45<br>[.100] | RTD-50-L-03 |
| 75                                        | RG-179, RG-187                              | 7530A1317                          | 1.5–5.5<br>[.060–.217]    | 0.9–3.0<br>[.035–.118]   | 1.55<br>[.060] | 0.65<br>[.025] | RTD-75-S-03 |
| 75                                        | —                                           | 7524A1311, 7528A1317               | 3.5–7.0<br>[.138–.276]    | 2.1–5.0<br>[.083–.197]   | 3.7<br>[.146]  | 1.25<br>[.050] | RTD-75-M-03 |
| 75                                        | RG-6, RG-11, RG-12, RG-59<br>RG-144, RG-216 | —                                  | 5.0–12.5<br>[.197–.500]   | 4.1–9.5<br>[.161–.375]   | 7.3<br>[.287]  | 2.45<br>[.100] | RTD-75-L-03 |
| TNC Straight Panel Jacks, Female Contacts |                                             |                                    |                           |                          |                |                |             |
| 50                                        | RG-174, RG-178, RG-188,<br>RG-196, RG-316   | 5026A1311, 5028A1317,<br>5030A1317 | 1.5–5.5<br>[.060–.217]    | 0.9–3.0<br>[.035–.118]   | 1.55<br>[.060] | 0.65<br>[.025] | RTD-50-S-04 |
| 50                                        | RG-58, RG-141, RG-142,<br>RG-303, RG-400    | 5019D3318, 5021D1331,<br>5020A1311 | 3.5–7.0<br>[.138–.276]    | 2.1–5.0<br>[.083–.197]   | 3.0<br>[.118]  | 1.25<br>[.050] | RTD-50-M-04 |
| 50                                        | RG-165, RG-215, RG-213,<br>RG-225, RG-214   | 5012F3332, 5012A3311               | 5.0–12.5<br>[.197–.500]   | 4.1–9.5<br>[.161–.375]   | 7.3<br>[.287]  | 2.45<br>[.100] | RTD-50-L-04 |
| 75                                        | RG-179, RG-187                              | 7530A1317                          | 1.5–5.5<br>[.060–.217]    | 0.9–3.0<br>[.035–.118]   | 1.55<br>[.060] | 0.65<br>[.025] | RTD-75-S-04 |
| 75                                        | —                                           | 7524A1311, 7528A1317               | 3.5–7.0<br>[.138–.276]    | 2.1–5.0<br>[.083–.197]   | 3.7<br>[.146]  | 1.25<br>[.050] | RTD-75-M-04 |
| 75                                        | RG-6, RG-11, RG-12, RG-59<br>RG-144, RG-216 | —                                  | 5.0–12.5<br>[.197–.500]   | 4.1–9.5<br>[.161–.375]   | 7.3<br>[.287]  | 2.45<br>[.100] | RTD-75-L-04 |

## RF One-Step BNC/TNC Connectors (Continued)

### TNC Coaxial Connectors

Panel thickness: 3.2 [.125] max.



| Cable Type                                   |                                          |                                 | Cable Dimensions          |                          |                |                | Part No.    |
|----------------------------------------------|------------------------------------------|---------------------------------|---------------------------|--------------------------|----------------|----------------|-------------|
| Impedance (ohms)                             | RG Cables                                | Raychem Cables                  | D (Min.–Max.)             | E (Min.–Max.)            | F (Max.)       | G (Max.)       |             |
| TNC Straight Bulkhead Jacks, Female Contacts |                                          |                                 |                           |                          |                |                |             |
| 50                                           | RG-174, RG-178, RG-188, RG-196, RG-316   | 5026A1311, 5028A1317, 5030A1317 | 1.50–5.50<br>[.060–.217]  | 0.90–3.00<br>[.035–.118] | 1.55<br>[.060] | 0.65<br>[.025] | RTD-50-S-02 |
| 50                                           | RG-58, RG-141, RG-142, RG-303, RG-400    | 5019D3318, 5021D1331, 5020A1311 | 3.5–7.0<br>[.138–.276]    | 2.10–5.00<br>[.083–.197] | 3.00<br>[.118] | 1.25<br>[.050] | RTD-50-M-02 |
| 50                                           | RG-165, RG-215, RG-213, RG-225, RG-214   | 5012F3332, 5012A3311            | 5.0–12.5<br>[.197–.500]   | 4.10–9.50<br>[.161–.375] | 7.30<br>[.287] | 2.45<br>[.100] | RTD-50-L-02 |
| 75                                           | RG-179, RG-187                           | 7530A1317                       | 1.5–5.5<br>[.060–.217]    | 0.90–3.00<br>[.035–.118] | 1.55<br>[.060] | 0.65<br>[.025] | RTD-75-S-02 |
| 75                                           | —                                        | 7524A1311, 7528A1317            | 3.5–7.0<br>[.138–.276]    | 2.10–5.00<br>[.083–.197] | 3.70<br>[.146] | 1.25<br>[.050] | RTD-75-M-02 |
| 75                                           | RG-6, RG-11, RG-12, RG-59 RG-144, RG-216 | —                               | 5.0–12.5<br>[.197–.500]   | 4.10–9.50<br>[.161–.375] | 7.30<br>[.287] | 2.45<br>[.100] | RTD-75-L-02 |
| TNC Right-Angle Plugs, Male Contacts         |                                          |                                 |                           |                          |                |                |             |
| 50                                           | RG-174, RG-178, RG-188, RG-196, RG-316   | 5026A1311, 5028A1317, 5030A1317 | 1.50–5.50<br>[.060–.217]  | 0.90–3.00<br>[.035–.118] | 1.55<br>[.060] | 0.65<br>[.025] | RTD-50-S-01 |
| 50                                           | RG-58, RG-141, RG-142, RG-303, RG-400    | 5019D3318, 5021D1331, 5020A1311 | 3.50–7.00<br>[.138–.276]  | 2.10–5.00<br>[.083–.197] | 3.00<br>[.118] | 1.25<br>[.050] | RTD-50-M-01 |
| 50                                           | RG-165, RG-215, RG-213, RG-225, RG-214   | 5012F3332, 5012A3311            | 5.00–12.50<br>[.197–.500] | 4.10–9.50<br>[.161–.375] | 7.30<br>[.287] | 2.45<br>[.100] | RTD-50-L-01 |
| 75                                           | RG-179, RG-187                           | 7530A1317                       | 1.50–5.50<br>[.060–.217]  | 0.90–3.00<br>[.035–.118] | 1.55<br>[.060] | 0.65<br>[.025] | RTD-75-S-01 |
| 75                                           | —                                        | 7524A1311, 7528A1317            | 3.50–7.00<br>[.138–.276]  | 2.10–5.00<br>[.083–.197] | 3.70<br>[.146] | 1.25<br>[.050] | RTD-75-M-01 |
| 75                                           | RG-6, RG-11, RG-12, RG-59 RG-144, RG-216 | —                               | 5.0–12.5<br>[.197–.500]   | 4.10–9.50<br>[.161–.375] | 7.30<br>[.287] | 2.45<br>[.100] | RTD-75-L-01 |

## Application Tooling

### Hand Tools

TE Connectivity CERTI-CRIMP Hand Tools are our top-of-the-line crimping tools featuring the original ratcheted crimp control. All tools are designed to exacting specifications, and manufactured using high quality materials to provide long service life. Recommended for low production runs, repairs and prototype work, and applications requiring consistent, highly-reliable terminations. See Catalog 65780 for further information.

#### Typical CERTI-CRIMP Hand Tools with Integral (Non-Interchangeable) Dies



**Part Number 58537-1**  
(used with PRO-CRIMPER  
Tool Frame 354940-1)  
for 50 Ohm BNC Dual Crimp  
MIL Type Connectors



**Part Number 220015-1**  
for 50 Ohm N Connectors



**CERTI-CRIMP Hand Tool  
with Interchangeable Dies**



**Part Number 69710**

### Hand Tool Kit for SMA and Blindmate Connectors

**Part Number 59981-1**



| Item Description                                           | Part Numbers |                    |
|------------------------------------------------------------|--------------|--------------------|
|                                                            | TE           | Military (M22520/) |
| Hand Tool                                                  | 59980-1      | 36-01              |
| Plug Locator<br>(without Center Contact)                   | 220220-2     | 36-06              |
| Plug Locator<br>(with Center Contact)                      | 220221-2     | 36-04              |
| Jack Locator                                               | 220222-2     | 36-05              |
| Die Set for RG-402/U Cable<br>(.141 [3.58] O.D.)           | 312253-1     | 36-03              |
| Die Set for RG-405/U Cable<br>(.086 [2.18] O.D.)           | 312253-2     | 36-02              |
| Cutoff Fixture                                             | 311395-1     | 36-09              |
| Cable Dressing Fixture                                     | 311396-1     | 36-07              |
| Trimmer Tool                                               | 312317-1     | 36-08              |
| Cable Bend Fixture Assembly<br>Includes following 6 items: | 220224-1     | 36-10              |
| Bend Segment, RG-402/U<br>(.125 [3.18] Radius)             | 311386-1     | 36-11              |
| Bend Segment, RG-402/U<br>(.250 [6.35] Radius)             | 311386-2     | 36-12              |
| Bend Segment, RG-405/U                                     | 311386-3     | 36-13              |
| Tool Holder                                                | 311392-1     | —                  |
| Limiting Pin                                               | 307581-1     | —                  |
| Conforming Block                                           | 312067-1     | —                  |
| Hex Wrench                                                 | 21027-6      | —                  |
| Carrying Case                                              | 13126-1      | —                  |
| Insert, Case                                               | 13127-1      | —                  |

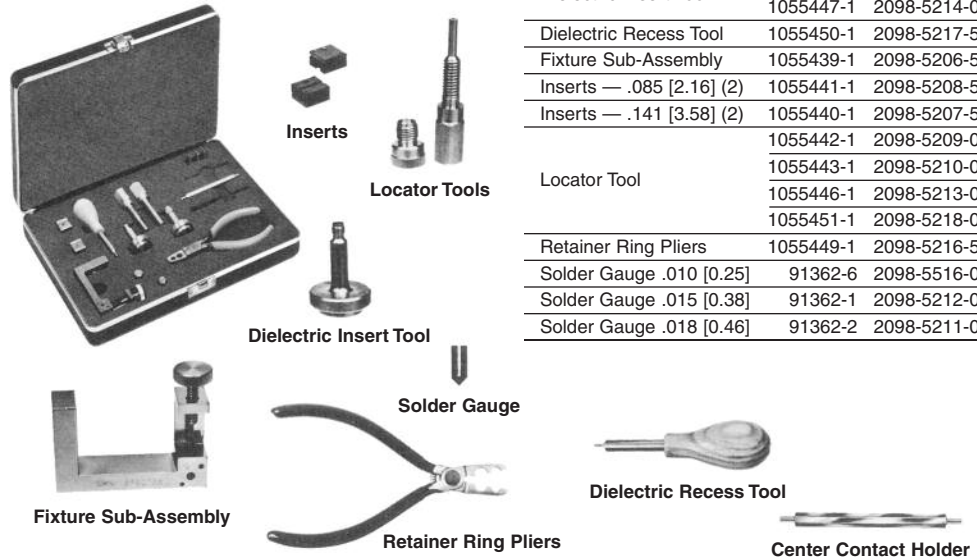
## Application Tooling (Continued)

### Solder Assembly Kit Brass SMA Connectors

Kit Part Number 1055420-1

(Reference Kit Part Number  
2098-5066-54)

For installation of SMA  
connectors to .035 [0.89]  
and .141 [3.58] diameter  
semi-rigid cable



| Item Description          | Part No.  | Reference Part No. (Ref. Only) |
|---------------------------|-----------|--------------------------------|
| Center Contact Holder     | 1055454-1 | 2098-5221-10                   |
| Dielectric Insert Tool    | 1055448-1 | 2098-5215-02                   |
| Dielectric Insert Tool    | 1055447-1 | 2098-5214-02                   |
| Dielectric Recess Tool    | 1055450-1 | 2098-5217-54                   |
| Fixture Sub-Assembly      | 1055439-1 | 2098-5206-54                   |
| Inserts — .085 [2.16] (2) | 1055441-1 | 2098-5208-54                   |
| Inserts — .141 [3.58] (2) | 1055440-1 | 2098-5207-54                   |
| Locator Tool              | 1055442-1 | 2098-5209-02                   |
|                           | 1055443-1 | 2098-5210-02                   |
|                           | 1055446-1 | 2098-5213-02                   |
| Locator Tool              | 1055451-1 | 2098-5218-02                   |
|                           | 1055449-1 | 2098-5216-54                   |
| Retainer Ring Pliers      | 1055449-1 | 2098-5216-54                   |
| Solder Gauge .010 [0.25]  | 91362-6   | 2098-5516-02                   |
| Solder Gauge .015 [0.38]  | 91362-1   | 2098-5212-02                   |
| Solder Gauge .018 [0.46]  | 91362-2   | 2098-5211-02                   |

### Universal Compression Crimp Tool

Kit Part Number 1055835-1

(Reference Kit Part Number  
2598-5200-54)

TE Connectivity Universal Compression Crimp Tool offers the ability to rapidly produce cable assemblies using solderless compression crimp connectors with semi-rigid cables. This universal assembly tool kit will attach SMA, OSP (BMA), N and TNC series connectors to .141 [3.58], .085 [2.16] and .250 [6.35] cable quickly and consistently with excellent mechanical and electrical results.

The tool kit permits single hand assembly. Anvils and cable supports can be quickly changed. Crimp lengths can be adjusted from .001 [.025] to 1.000 [25.4] in increments of .001 [.025]. Sharp radius bends in cables are easily accommodated. The kit contains:



| Description               | Part No.  | Reference Part No. (Ref. Only) |
|---------------------------|-----------|--------------------------------|
| Crimp Frame               | 1055831-1 | 2598-5196-54                   |
| Calibration Gauge         | 1055832-1 | 2598-5197-54                   |
| .141 [3.58] Cable Support | 1055833-1 | 2598-5198-54                   |
| .085 [2.16] Cable Support | 1055834-1 | 2598-5199-54                   |
| SMA Plug Anvil            | 1055836-1 | 2598-5201-54                   |
| SMA Jack Anvil            | 1055837-1 | 2598-5202-54                   |
| Type N Plug Anvil         | 1055838-1 | 2598-5203-54                   |
| Type N Jack Anvil         | 1055839-1 | 2598-5204-54                   |
| TNC Plug Anvil            | 1055840-1 | 2598-5205-54                   |
| TNC Jack Anvil            | 1055841-1 | 2598-5206-54                   |
| OSP (BMA) Plug Anvil      | 1055842-1 | 2598-5207-54                   |
| OSP (BMA) Jack Anvil      | 1055843-1 | 2598-5208-54                   |

All tools may be purchased separately.



## Application Tooling (Continued)

### MIL-C-22520/10-01 Equivalent Hex Crimp Kit Kit Part Number 1055236-1 (Reference Kit Part Number 2098-0105-54)

For military specified applications requiring quick and efficient cable to connector attachment. Five popular hex die sizes are available to crimp the outer cable conductor to connector housings.



#### The kit contains:

| Description       | Part Number | Reference Part Number (Ref. Only) |
|-------------------|-------------|-----------------------------------|
| Crimp Tool        | 1060713-1   | 9098-5105-54                      |
| Die Change Tool   | 1060716-1   | 5698-5014-54                      |
| Hex Die — A, B, C | 1060714-1   | 5698-5015-54                      |
| Hex Die — D, E    | 1060715-1   | 5698-5016-54                      |

All tools may be purchased separately.  
For the assembly of SMA connectors,  
Accessory Kit Part Number 1055421-1 is required.

#### A basic instruction sheet, included with the kit, aids in proper die selection

| Hex Die Part Number | Reference Hex Die Part Number (Ref. Only) | Die | Hex Size $\pm.003$ [0.08] | For Use With RG/U Cable               |
|---------------------|-------------------------------------------|-----|---------------------------|---------------------------------------|
| 1060714-1           | 5698-5015-54                              | A   | .105<br>2.67              | 178B & 196A                           |
|                     |                                           | B   | .213<br>5.41              | 55B, 58C, 141A, 142B, 223, 303, & 400 |
|                     |                                           | C   | .128<br>3.25              | 174, 174B, 179, 187A, 188A, & 316     |
| 1060715-1           | 5698-5016-54                              | D   | .178<br>4.52              | 180B, 195A, & 122                     |
|                     |                                           | E   | .255<br>6.48              | 59, 62A, 71B, 210, & 302              |

#### Additional Dies Available

| Hex Die Part Number | Reference Hex Die Part Number (Ref. Only) | Hex Size $\pm.003$ [0.08] | For Use With RG/U Cable |
|---------------------|-------------------------------------------|---------------------------|-------------------------|
| 1055270-1           | 2098-0323-54                              | .151<br>3.84              | RD316 Double Braid      |

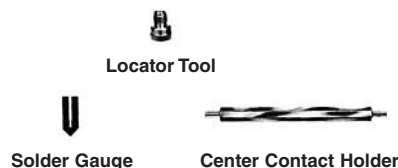
### SMA Crimp Tool Accessory Kit Kit Part Number 1055421-1 (Reference Kit Part Number 2098-5067-54)

For installation of SMA connectors to flexible braided cable. Crimp type SMA connectors require Hex Crimp Kit Part Number 1055236-1.

#### The kit contains:

| Description              | Part Number | Reference Part Number (Ref. Only) |
|--------------------------|-------------|-----------------------------------|
| Center Contact Holder    | 1055454-1   | 2098-5221-10                      |
| Locator Tool             | 1055446-1   | 2098-5213-02                      |
| Locator Tool             | 1055451-1   | 2098-5218-02                      |
| Solder Gauge .015 [0.38] | 91362-1     | 2098-5212-02                      |

All tools may be purchased separately.



## Application Tooling (Continued)

### Stripping Tools

The hand-operated TE Connectivity Coaxial Cable Stripper features interchangeable, color-coded blade cassettes and V-blocks to accommodate 2- or 3-step stripping for cable diameters ranging from 2.54 [.10] through 7.62 [.30]. You strip cable by simply clamping and rotating the tool around the cable. See Instruction Sheet IS 2766 for further information.



| For Use With<br>Connector Type      | Tool No. |
|-------------------------------------|----------|
| BNC Single Crimp                    | 603995-1 |
| BNC Commercial and<br>UHF Miniature | 603995-2 |
| UHF Standard                        | 603995-3 |
| BNC MIL Type Dual Crimp             | 603995-5 |
| BNC Commercial Dual Crimp           | 603995-6 |

### Manual Trim and Point Tool

TE offers a manual tool that performs both trimming and pointing operations. Tools are available for .141 [3.58] and .085 [2.16] diameter semi-rigid cable. These hand-operated tools are ideally suited for engineering, small production runs or field use. They feature tungsten carbide cutters for durability up to 30 times longer than the life of a high speed steel cutter. Replacement cutters are interchangeable and may be purchased separately.



### Replacement Cutters

**Trimmer: Part Number 1055813-1**

**Pointer: Part Number 1055814-1**

### Semi-Rigid Cable Tooling

The tools listed here are designed specifically to strip and terminate semi-rigid cable. These tools operate basically the same as the flexible cable tools, in that they produce uniform terminations time after time, without heat damage from soldering.

#### Hand Tool for BNC and TNC Semi-Rigid Cable Connectors



**Part Number 59980-1**  
**Frame only — does not include dies and locator**

| Tool<br>Part Number | Reference Tool<br>Part Number<br>(Ref. Only) | Cable                     | Trim Length               |
|---------------------|----------------------------------------------|---------------------------|---------------------------|
| 1055811-1           | 2598-5116-54                                 | RG-402/U<br>(.141 [3.58]) | <b>.085</b><br>2.16 Fixed |
| 1055815-1           | 2598-5120-54                                 | RG-405/U<br>(.085 [2.16]) | <b>.070</b><br>1.78 Fixed |
| 1055823-1           | 2598-5137-54                                 | RG-402/U<br>(.141 [3.58]) | Adjustable*               |
| 1055824-1           | 2598-5138-54                                 | RG-405/U<br>(.085 [2.16]) | Adjustable*               |

\*Adjustable trim length from .050 [1.27] to .140 [3.56].

### Replacement Collets

| Part Number | Reference Part Number<br>(Ref. Only) | Cable                     |
|-------------|--------------------------------------|---------------------------|
| 1055825-1   | 2598-5145-54                         | RG-402/U<br>(.141 [3.58]) |
| 1055827-1   | 2598-5167-54                         | RG-405/U<br>(.085 [2.16]) |

### Cable Benders for Semi-Rigid Cable



Cable Bender

| Description                                | Part Number | Reference Part Number<br>(Ref. Only) | Bend Radius*         |
|--------------------------------------------|-------------|--------------------------------------|----------------------|
| Cable Bender for<br>RG-405/U (.085 [2.16]) | 1055479-1   | 2098-5287-54                         | 1/4 [6.4] 3/8 [9.8]  |
| Cable Bender for<br>RG-402/U (.141 [3.58]) | 1055478-1   | 2098-5286-54                         | 3/8 [9.8] 1/2 [12.7] |

\*Radius of the bend is measured from the centerline of the cable.

### Trimming Tools for Semi-Rigid Cable

For soldered semi-rigid cable connectors using the cable center conductor as its contact. These tools are optional for most installations but recommended for optimum connector performance.



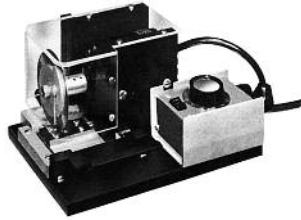
Trim Tool

| Description                                             | Part Number | Reference<br>Part Number<br>(Ref. Only) |
|---------------------------------------------------------|-------------|-----------------------------------------|
| Trim Tool for SMA Connectors<br>RG-402/U (.141 [3.58])  | 1055455-1   | 2098-5272-02                            |
| Trim Tool for SSMA Connectors<br>RG-405/U (.085 [2.16]) | 1055465-1   | 2098-5269-02                            |

## Application Tooling (Continued)

### Cable Trimmers for Production

TE Connectivity cable trimmers are designed for production trimming of RG-402/U (.141 [3.58]) and RG-405/U (.085 [2.16]) coaxial cables in preparation for connector installation. The trimming operation produces an unusually clean, burr-free cut with minimum smear. The length and depth of cut are adjustable. Replacement hardware can be used with either tool.



### Cable Trimmers

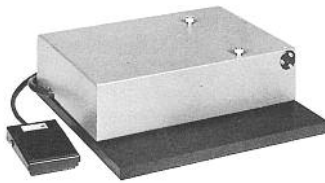
| Description            | Part Number | Reference Part Number (Ref. Only) |
|------------------------|-------------|-----------------------------------|
| RG-402/U (.141 [3.58]) | 1055526-1   | 2098-5676-54                      |
| RG-405/U (.085 [2.16]) | 1055530-1   | 2098-5686-54                      |

### Replacement Hardware

| Description                  | Part Number | Reference Part Number (Ref. Only) |
|------------------------------|-------------|-----------------------------------|
| Saw Blade                    | 1055524-1   | 2098-5674-54                      |
| Trim Saw Block (.141 [3.58]) | 1055527-1   | 2098-5678-54                      |
| Trim Saw Block (.085 [2.16]) | 1055528-1   | 2098-5679-54                      |

### Cable Pointers for Production

TE cable pointers are designed to point straight and bent cables and are adjustable for desired center conductor length. The cable pointers cut 90° point on copper as well as copper-clad center conductors.



### Cable Pointers

| Description    | Part Number | Reference Part Number (Ref. Only) | Cable                  | Replacement Cutter Part Number | Reference Replacement Cutter Part Number (Ref. Only) |
|----------------|-------------|-----------------------------------|------------------------|--------------------------------|------------------------------------------------------|
| Single Pointer | 1055525-1   | 2098-5675-54                      | RG-402/U (.141 [3.58]) | 1055529-1                      | 2098-5681-54                                         |
| Single Pointer | 1080269-1   | 2098-5685-54                      | RG-405/U (.085 [2.16]) |                                |                                                      |

### Interface Inspection Gauges

TE offers Connector Interface Gauges. They have shock proof and fully jeweled dial indicators. The rugged construction of the dial mechanism minimizes the need for repair or replacement.

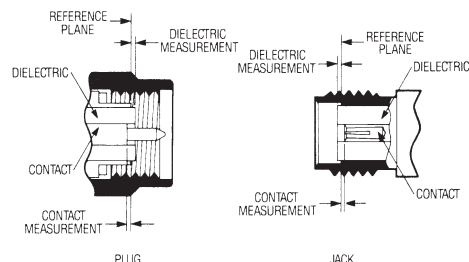
The gauge heads are manufactured from a corrosion resistant, hardening stainless steel which is heat treated for longer life. All critical surfaces are ground and lapped for precision fit and superior surface finish. The heads are securely fastened onto the dial indicator for no movement between the gauge head and the dial indicator

spindle allowing for precise measurements.

Like the gauge heads, the plungers are specially designed to provide strength and durability.



| Connector | Type | Gauge Kit Part Number | Reference Gauge Kit Part Number (Ref. Only) |
|-----------|------|-----------------------|---------------------------------------------|
| SMA       | Jack | 1055496-1             | 2098-5455-54                                |
|           | Plug | 1055497-1             | 2098-5456-54                                |



SMA Interface Example

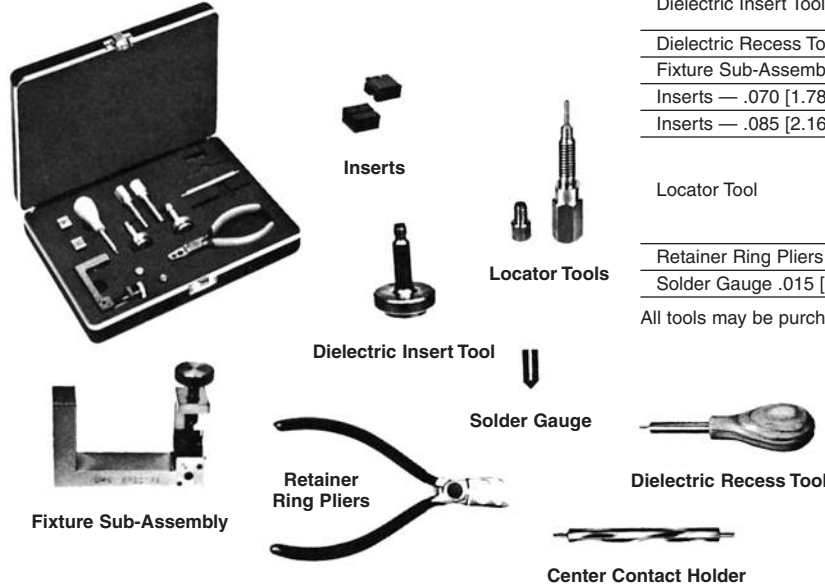
## Application Tooling (Continued)

### SSMA Connectors

Kit Part Number 1055466-1

(Reference Kit Part Number 2098-5270-54)

For installation of SSMA connectors to .070 [1.78] and .085 [2.16] diameter semi-rigid cable.



| Item Description          | Part No.  | Reference Part No. (Ref. Only) |
|---------------------------|-----------|--------------------------------|
| Center Contact Holder     | 1055463-1 | 2098-5237-10                   |
| Dielectric Insert Tool    | 1055458-1 | 2098-5233-02                   |
|                           | 1055459-1 | 2098-5234-02                   |
| Dielectric Recess Tool    | 1055460-1 | 2098-5235-54                   |
| Fixture Sub-Assembly      | 1055439-1 | 2098-5206-54                   |
| Inserts — .070 [1.78] (2) | 1055547-1 | 2098-5831-54                   |
| Inserts — .085 [2.16] (2) | 1055441-1 | 2098-5208-54                   |
|                           | 1055461-1 | 2098-5236-02                   |
| Locator Tool              | 1055464-1 | 2098-5238-02                   |
|                           | 1055456-1 | 2098-5231-02                   |
|                           | 1055457-1 | 2098-5232-02                   |
| Retainer Ring Pliers      | 1055449-1 | 2098-5216-54                   |
| Solder Gauge .015 [0.38]  | 91362-1   | 2098-5212-02                   |

All tools may be purchased separately.

### Econo-Crimp Assembly Kit

Kit Part Number 1055779-1

(Reference Kit Part Number 2598-5005-54)

For quick and efficient cable to connector attachment. Five popular hex die sizes are available to crimp the outer cable conductor to connector housings.



| Item Description  | Part No.  | Reference Part No. (Ref. Only) |
|-------------------|-----------|--------------------------------|
| Crimp Tool        | 1055780-1 | 2598-5006-54                   |
| Hex Die — A, B, C | 1055781-1 | 2598-5007-54                   |
| Hex Die — D, E    | 1055782-1 | 2598-5008-54                   |

All tools may be purchased separately.

For the assembly of SMA connectors, Accessory Kit Part Number 2098-5067-54 is required. For SSMA connectors, Accessory Kit Part Number 2098-5272-54 is required.

| Hex Die Part Number | Reference Hex Die Part Number (Ref. Only) | Die | Hex Size ±.003 [0.08] | For Use With RG/U Cable               |
|---------------------|-------------------------------------------|-----|-----------------------|---------------------------------------|
| 1055781-1           | 2598-5007-54                              | A   | .105<br>2.67          | 178B & 196A                           |
|                     |                                           | B   | .213<br>5.41          | 55B, 58C, 141A, 142B, 223, 303, & 400 |
|                     |                                           | C   | .128<br>3.25          | 174, 174B, 179, 187A, 188A, & 316     |
| 1055782-1           | 2598-5008-54                              | D   | .178<br>4.52          | 180B, 195A, & 122                     |
|                     |                                           | E   | .255<br>6.48          | 59, 62A, 71B, 210, & 302              |

### SSMA Crimp Tool Accessories

Kit Part Number 1055467-1

(Reference Kit Model Number T-550)

For installation of SSMA connectors to flexible braided cable. Crimp type SSMA connectors require Hex Crimp Kit Part Number 1055779-1.



| Description           | Part Number | Reference Part Number (Ref. Only) |
|-----------------------|-------------|-----------------------------------|
| Center Contact Holder | 1055463-1   | 2098-5237-10                      |
| Locator Tool          | 1055461-1   | 2098-5236-02                      |
|                       | 1055464-1   | 2098-5238-02                      |

All tools may be purchased separately.

## Cross Reference

| Military Part Number | Reference Part Number (Ref. Only)            | TE Part No. | COTS Part No.          |
|----------------------|----------------------------------------------|-------------|------------------------|
|                      | 2031-5011-00<br>2031-5011-02                 |             | 1051660-1<br>1051661-1 |
| M39012/01B0012       |                                              | 225092-7    |                        |
| M39012/01B0013       |                                              | 51692-4     |                        |
| M39012/01B007        |                                              | 225092-2    |                        |
| M39012/01B008        |                                              | 225092-1    |                        |
| M39012/02B008        |                                              | 225093-2    |                        |
| M39012/03B0004       |                                              | 225094-2    |                        |
| M39012/03B0005       |                                              | 225094-1    |                        |
| M39012/05B0002       |                                              | 225014-2    |                        |
| M39012/05B0002       |                                              | 225389-2    |                        |
| M39012/05B0003       |                                              | 225014-3    |                        |
| M39012/16B0004       |                                              | 2-331350-1  |                        |
| M39012/16B0007       |                                              | 2-331350-9  |                        |
| M39012/16B0008       |                                              | 331350      |                        |
| M39012/17B0004       |                                              | 2-331351-1  |                        |
| M39012/17B0008       |                                              | 331351      |                        |
| M39012/19-0102       |                                              | 221313-2    |                        |
| M39012/19B0003       |                                              | 1-331693-1  |                        |
| M39012/19B0007       |                                              | 331693      |                        |
| M39012/26B0005       |                                              | 225550-2    |                        |
| M39012/26B0006       |                                              | 225550-6    |                        |
| M39012/26B0007       |                                              | 225550-3    |                        |
| M39012/26B0016       |                                              | 225550-1    |                        |
| M39012/27B0005       |                                              | 225551-2    |                        |
| M39012/27B0006       |                                              | 225551-6    |                        |
| M39012/27B0015       |                                              | 225551-5    |                        |
| M39012/27B0016       |                                              | 225551-1    |                        |
| M39012/29B0005       |                                              | 225348-2    |                        |
| M39012/55-3006       | 2031-8006-92                                 | 1051757-1   |                        |
| M39012/55-3007       | 2031-8007-92                                 | 1051759-1   |                        |
| M39012/55-3009       | 2031-8009-92                                 | 1051762-1   |                        |
| M39012/55-3025       | 2031-5102-00<br>2031-5102-02<br>2031-8025-92 | 1051780-1   | 1051686-1<br>1051687-1 |
| M39012/55-3026       | 2031-5012-00<br>2031-5012-02<br>2031-8026-92 | 1051782-1   | 1051664-1<br>1051665-1 |
| M39012/55-3028       | 2031-5011-00<br>2031-5011-02<br>2031-8028-92 | 1051785-1   | 1051660-1<br>1051661-1 |
| M39012/55-3029       | 2031-8029-92                                 | 1051787-1   |                        |
| M39012/55-3106       | 2031-8106-92                                 | 1051789-1   |                        |
| M39012/55-3107       | 2031-8107-92                                 | 1051791-1   |                        |
| M39012/55-3109       | 2031-8109-92                                 | 1051794-1   |                        |
| M39012/55-3125       | 2031-5102-00<br>2031-5102-02<br>2031-8125-92 | 1051810-1   | 1051686-1<br>1051687-1 |
| M39012/55-3126       | 2031-5012-00<br>2031-5012-02<br>2031-8126-92 | 1051812-1   | 1051664-1<br>1051665-1 |
| M39012/55-3128       | 2031-5011-00<br>2031-5011-02<br>2031-8128-92 | 1051815-1   | 1051660-1<br>1051661-1 |
| M39012/55-3129       | 2031-8129-92                                 | 1051816-1   |                        |
| M39012/55-3502       | 2031-5011-00<br>2031-5011-02<br>2031-8052-92 | 1051788-1   | 1051660-1<br>1051661-1 |
| M39012/55-3602       | 2031-5011-00<br>2031-5011-02<br>2031-8162-92 | 1051817-1   | 1051660-1<br>1051661-1 |
| M39012/55B3011       | 2031-5102-00<br>2031-5102-02<br>2031-8011-92 | 1051764-1   | 1051686-1<br>1051687-1 |
| M39012/55B3012       | 2031-5102-00<br>2031-5102-02<br>2031-8012-92 | 1051766-1   | 1051664-1<br>1051665-1 |

| Military Part Number | Reference Part Number (Ref. Only)            | TE Part No.                         | COTS Part No.          |
|----------------------|----------------------------------------------|-------------------------------------|------------------------|
| M39012/55B3014       | 2031-5055-00<br>2031-8014-92                 | 1051768-1                           | 1051678-1              |
| M39012/55B3015       | 2031-5005-00<br>2031-5005-02<br>2031-8015-92 | 1051769-1                           | 1051650-1<br>1051651-1 |
| M39012/55B3016       | 2031-5005-00<br>2031-5005-02<br>2031-8016-92 | 1051770-1                           | 1051650-1<br>1051651-1 |
| M39012/55B3019       |                                              | 225532-4                            | 221117-2               |
| M39012/55B3019       | 2031-5012-00<br>2031-5012-02<br>2031-8019-92 | 1056413-1                           | 1051664-1<br>1051665-1 |
| M39012/55B3021       |                                              | 225532-1                            |                        |
| M39012/55B3022       |                                              | 225532-3                            | 221117-1               |
| M39012/55B3023       |                                              | 1-225532-0                          |                        |
| M39012/55B3024       |                                              | 225532-9                            |                        |
| M39012/55B3112       | 2031-5012-00<br>2031-5012-02<br>2031-8112-92 | 1051664-1<br>1051665-1<br>1051797-1 |                        |
| M39012/55B3113       | 2031-8113-92                                 | 1051798-1                           |                        |
| M39012/55B3114       | 2031-5055-00<br>2031-8114-92                 | 1051678-1<br>1051799-1              |                        |
| M39012/55B3115       | 2031-5005-00<br>2031-5005-02<br>2031-8115-92 | 1051650-1<br>1051651-1<br>1051800-1 |                        |
| M39012/55B3116       | 2031-5005-00<br>2031-5005-02<br>2031-8116-92 | 1051650-1<br>1051651-1<br>1051801-1 |                        |
| M39012/55B3119       | 2031-5012-00<br>2031-5012-02<br>2031-8119-92 | 1051804-1                           | 1051664-1<br>1051665-1 |
| M39012/56-3006       | 2037-8006-92                                 | 1052149-1                           |                        |
| M39012/56-3007       | 2037-5006-00<br>2037-5006-02<br>2037-8007-92 | 1052151-1                           | 1052066-1<br>1052067-1 |
| M39012/56-3008       | 2037-8008-92                                 | 1052152-1                           |                        |
| M39012/56-3009       | 2037-5005-00<br>2037-5005-02<br>2037-8009-92 | 1052154-1                           | 1052062-1<br>1052063-1 |
| M39012/56-3010       | 2037-5005-00<br>2037-5005-02<br>2037-8010-92 | 1052155-1                           | 1052062-1<br>1052063-1 |
| M39012/56-3025       | 2037-5100-00<br>2037-5100-02<br>2037-8025-92 | 1052171-1                           | 1052097-1<br>1052098-1 |
| M39012/56-3026       | 2037-5008-00<br>2037-5008-02<br>2037-8026-92 | 1052173-1                           | 1052075-1<br>1052076-1 |
| M39012/56-3027       | 2037-8027-92                                 | 1052174-1                           |                        |
| M39012/56-3028       | 2037-5007-00<br>2037-5007-02<br>2037-8028-92 | 1052176-1                           | 1052071-1<br>1052072-1 |
| M39012/56-3029       | 2037-5056-00<br>2037-8029-92                 | 1052177-1                           | 1052092-1              |
| M39012/56-3106       | 2037-8106-92                                 | 1052179-1                           |                        |
| M39012/56-3107       | 2037-5006-00<br>2037-5006-02<br>2037-8107-92 | 1052181-1                           | 1052066-1<br>1052067-1 |
| M39012/56-3108       | 2037-8108-92                                 | 1052182-1                           |                        |
| M39012/56-3109       | 2037-5005-00<br>2037-5005-02<br>2037-8109-92 | 1052184-1                           | 1052062-1<br>1052063-1 |
| M39012/56-3110       | 2037-5005-00<br>2037-5005-02<br>2037-8110-92 | 1052185-1                           | 1052062-1<br>1052063-1 |
| M39012/56-3125       | 2037-5100-00<br>2037-5100-02<br>2037-8125-92 | 1052201-1                           | 1052097-1<br>1052098-1 |
| M39012/56-3126       | 2037-5008-00<br>2037-5008-02<br>2037-8126-92 | 1052203-1                           | 1052075-1<br>1052076-1 |
| M39012/56-3127       | 2037-8127-92                                 | 1052204-1                           |                        |

COTS part numbers are commercial equivalents and are not military qualified.



## Cross Reference (Continued)

| Military Part Number | Reference Part Number (Ref. Only)            | TE Part No. | COTS Part No.          |
|----------------------|----------------------------------------------|-------------|------------------------|
| M39012/56-3128       | 2037-5007-00<br>2037-5007-02<br>2037-8128-92 | 1052206-1   | 1052071-1<br>1052072-1 |
| M39012/56-3129       | 2037-5056-00<br>2037-8129-92                 | 1052207-1   | 1052092-1              |
| M39012/56-3502       | 2037-5007-00<br>2037-5007-02<br>2037-8052-92 | 1052178-1   | 1052071-1<br>1052072-1 |
| M39012/56-3602       | 2037-5007-00<br>2037-5007-02<br>2037-8162-92 | 1086723-1   | 1052071-1<br>1052072-1 |
| M39012/56B3011       | 2037-5008-00<br>2037-5008-02<br>2037-8011-92 | 1052156-1   | 1052075-1<br>1052076-1 |
| M39012/56B3012       | 2037-8012-92                                 | 1052157-1   |                        |
| M39012/56B3013       | 2037-8013-92                                 | 1052158-1   |                        |
| M39012/56B3014       | 2037-5056-00<br>2037-8014-92                 | 1052159-1   | 1052092-1              |
| M39012/56B3015       | 2037-5007-00<br>2037-5007-02<br>2037-8015-92 | 1052160-1   | 1052071-1<br>1052072-1 |
| M39012/56B3016       | 2037-5007-00<br>2037-5007-02<br>2037-8016-92 | 1052161-1   | 1052071-1<br>1052072-1 |
| M39012/56B3017       | 2037-5056-00<br>2037-8017-92                 | 1052162-1   | 1052092-1              |
| M39012/56B3018       | 2037-5100-00<br>2037-5100-02<br>2037-8018-92 | 1052163-1   | 1052097-1<br>1052098-1 |
| M39012/56B3019       | 2037-5008-00<br>2037-5008-02<br>2037-8019-92 | 1052165-1   | 1052075-1<br>1052076-1 |
| M39012/56B3020       | 2037-8020-92                                 | 1052166-1   |                        |
| M39012/56B3021       | 2037-5056-00<br>2037-8021-92                 | 1052167-1   | 1052092-1              |
| M39012/56B3022       |                                              | 225609-3    |                        |
| M39012/56B3022       | 2037-5007-00<br>2037-5007-02<br>2037-8022-92 | 1052168-1   | 1052071-1<br>1052072-1 |
| M39012/56B3023       | 2037-5007-00<br>2037-5007-02<br>2037-8023-92 | 1052169-1   | 1052071-1<br>1052072-1 |
| M39012/56B3024       | 2037-5056-00<br>2037-8024-92                 | 1052170-1   | 1052092-1              |
| M39012/56B3111       | 2037-5100-00<br>2037-5100-02<br>2037-8111-92 | 1052186-1   | 1052097-1<br>1052098-1 |
| M39012/56B3112       | 2037-5008-02<br>2037-5008-00<br>2037-8112-92 | 1052187-1   | 1052076-1<br>1052075-1 |
| M39012/56B3113       | 2037-8113-92                                 | 1052188-1   |                        |
| M39012/56B3114       | 2037-5056-00<br>2037-8114-92                 | 1052189-1   | 1052092-1              |
| M39012/56B3115       | 2037-5007-00<br>2037-5007-02<br>2037-8115-92 | 1052190-1   | 1052071-1<br>1052072-1 |
| M39012/56B3116       | 2037-5007-00<br>2037-5007-02<br>2037-8116-92 | 1052191-1   | 1052071-1<br>1052072-1 |
| M39012/56B3117       | 2037-5056-00<br>2037-8117-92                 | 1052192-1   | 1052092-1              |
| M39012/56B3118       | 2037-5008-00<br>2037-5008-02<br>2037-8118-92 | 1052193-1   | 1052075-1<br>1052076-1 |
| M39012/56B3119       | 2037-5008-00<br>2037-5008-02<br>2037-8119-92 | 1052194-1   | 1052075-1<br>1052076-1 |
| M39012/56B3120       | 2037-8120-92                                 | 1052195-1   |                        |
| M39012/56B3121       | 2037-5056-00<br>2037-8121-92                 | 1052196-1   | 1052092-1              |
| M39012/56B3122       | 2037-5007-00<br>2037-5007-02<br>2037-8122-92 | 1052197-1   | 1052071-1<br>1052072-1 |

COTS part numbers are commercial equivalents and are not military qualified.

| Military Part Number | Reference Part Number (Ref. Only)            | TE Part No. | COTS Part No.          |
|----------------------|----------------------------------------------|-------------|------------------------|
| M39012/56B3123       | 2037-5007-00<br>2037-5007-02<br>2037-8123-92 | 1052198-1   | 1052071-1<br>1052072-1 |
| M39012/56B3124       | 2037-5056-00<br>2037-8124-92                 | 1052199-1   | 1052092-1              |
| M39012/57-3025       | 2032-5026-00<br>2032-5026-02<br>2032-8025-92 | 1051918-1   | 1051868-1<br>1051869-1 |
| M39012/57-3026       | 2032-5003-02<br>2032-8026-92                 | 1051919-1   | 1051855-1              |
| M39012/57-3027       | 2032-8027-92                                 | 1051920-1   |                        |
| M39012/57-3028       | 2032-5007-00<br>2032-8028-92                 | 1051921-1   | 1051861-1              |
| M39012/57-3029       | 2032-5021-00<br>2032-8029-92                 | 1051922-1   | 1051866-1              |
| M39012/57-3502       | 2032-5007-00<br>2032-8052-92                 | 1051923-1   | 1051861-1              |
| M39012/57B3011       | 2032-5026-00<br>2032-5026-02<br>2032-8011-92 | 1051904-1   | 1051868-1<br>1051869-1 |
| M39012/57B3012       | 2032-5003-02<br>2032-8012-92                 | 1051905-1   | 1051855-1              |
| M39012/57B3013       | 2032-8013-92                                 | 1051906-1   |                        |
| M39012/57B3014       | 2032-5021-00<br>2032-8014-92                 | 1051907-1   | 1051866-1              |
| M39012/57B3015       | 2032-5007-00<br>2032-8015-92                 | 1051908-1   | 1051861-1              |
| M39012/57B3016       | 2032-8016-92                                 | 1051909-1   | 1051861-1              |
| M39012/57B3017       | 2032-5021-00<br>2032-8017-92                 | 1051910-1   | 1051866-1              |
| M39012/57B3018       | 2032-5026-00<br>2032-5026-02<br>2032-8018-92 | 1051911-1   | 1051868-1<br>1051869-1 |
| M39012/57B3019       | 2032-5003-02<br>2032-8019-92                 | 1051912-1   | 1051855-1              |
| M39012/57B3020       | 2032-8020-92                                 | 1051913-1   |                        |
| M39012/57B3021       | 2032-5021-00<br>2032-8021-92                 | 1051914-1   | 1051866-1              |
| M39012/57B3022       | 2032-5007-00<br>2032-8022-92                 | 1051915-1   | 1051861-1              |
| M39012/57B3023       | 2032-5007-00<br>2032-8023-92                 | 1051916-1   | 1051861-1              |
| M39012/57B3024       | 2032-5021-00<br>2032-8024-92                 | 1051917-1   | 1051866-1              |
| M39012/58-3025       | 2036-5016-00<br>2036-8025-92                 | 1052046-1   | 1052030-1              |
| M39012/58-3026       | 2036-5004-02<br>2036-8026-92                 | 1052047-1   | 1052024-1              |
| M39012/58-3027       | 2036-8027-92                                 | 1052048-1   |                        |
| M39012/58-3028       | 2036-8028-92                                 | 1052049-1   |                        |
| M39012/58-3029       | 2036-8029-92                                 | 1052050-1   |                        |
| M39012/58-3502       | 2036-8052-92                                 | 1052051-1   |                        |
| M39012/58B3011       | 2036-5004-02<br>2036-8011-92                 | 1052042-1   | 1052024-1              |
| M39012/58B3012       | 2036-5004-02<br>2036-8012-92                 | 1254028-1   | 1052024-1              |
| M39012/58B3013       | 2036-8013-92                                 | 1484499-1   |                        |
| M39012/58B3014       | 2036-8014-92                                 | 1484500-1   |                        |
| M39012/58B3015       | 2036-8015-92                                 | 1052043-1   |                        |
| M39012/58B3016       | 2036-8016-92                                 | 1484501-1   |                        |
| M39012/58B3017       | 2036-5014-02<br>2036-8017-92                 | 1484502-1   | 1087843-1              |
| M39012/58B3018       | 2036-5016-00<br>2036-8018-92                 | 1052044-1   | 1052030-1              |
| M39012/58B3019       | 2036-5004-02<br>2036-8019-92                 | 1484503-1   | 1052024-1              |
| M39012/58B3020       | 2036-8020-92                                 | 1484504-1   |                        |
| M39012/58B3021       | 2036-5014-02<br>2036-8021-92                 | 1484505-1   | 1087843-1              |

## Cross Reference (Continued)

| Military Part Number | Reference Part Number (Ref. Only)            | TE Part No. | COTS Part No.          |
|----------------------|----------------------------------------------|-------------|------------------------|
| M39012/58B3022       | 2036-8022-92                                 | 1052045-1   |                        |
| M39012/58B3023       | 2036-8023-92                                 | 1484506-1   |                        |
| M39012/58B3024       | 2036-5014-02<br>2036-8024-92                 | 1484507-1   | 1087843-1              |
| M39012/59-3025       | 2034-5031-00<br>2034-5031-02<br>2034-8025-92 | 1051992-1   | 1051950-1<br>1051951-1 |
| M39012/59-3026       | 2034-5005-00<br>2034-8026-92                 | 1051994-1   | 1051933-1              |
| M39012/59-3027       | 2034-8027-92                                 | 1051995-1   |                        |
| M39012/59-3028       | 2034-8028-92                                 | 1051996-1   |                        |
| M39012/59-3029       | 2034-8029-92                                 | 1051997-1   |                        |
| M39012/59-3502       | 2034-8052-92                                 | 1051999-1   |                        |
| M39012/59B3011       | 2034-5031-00<br>2034-5031-02<br>2034-8011-92 | 1362216-1   | 1051950-1<br>1051951-1 |
| M39012/59B3012       | 2034-5005-00<br>2034-8012-92                 | 1051986-1   | 1051933-1              |
| M39012/59B3013       | 2034-8013-92                                 | 1083993-1   |                        |
| M39012/59B3014       | 2034-8014-92                                 | 1331293-1   |                        |
| M39012/59B3015       | 2034-8015-92                                 | 1253627-1   |                        |
| M39012/59B3016       | 2034-8016-92                                 | 1221165-1   |                        |
| M39012/59B3017       | 2034-8017-92                                 | 1484542-1   |                        |
| M39012/59B3018       | 2034-5031-00<br>2034-5031-02<br>2034-8018-92 | 1051987-1   | 1051950-1<br>1051951-1 |
| M39012/59B3019       | 2034-5005-00<br>2034-8019-92                 | 1051988-1   | 1051933-1              |
| M39012/59B3020       | 2034-8020-92                                 | 1484543-1   |                        |
| M39012/59B3021       | 2034-8021-92                                 | 1087842-1   |                        |
| M39012/59B3022       | 2034-8022-92                                 | 1051989-1   |                        |
| M39012/59B3023       | 2034-8023-92                                 | 1051990-1   |                        |
| M39012/59B3024       | 2034-8024-92                                 | 1051991-1   |                        |
| M39012/60-3001       | 2052-0000-00<br>2052-0000-02<br>2052-8001-92 | 1052924-1   | 1052421-1<br>1052422-1 |
| M39012/60-3002       | 2052-1300-00<br>2052-1300-02<br>2052-8002-92 | 1052926-1   | 1052533-1<br>1052534-1 |
| M39012/61-3001       | 2056-8011-92                                 | 1053118-1   |                        |
| M39012/61-3002       | 2058-0000-00<br>2058-8012-92                 | 1484516-1   | 1053133-1              |
| M39012/79-3007       | 2001-8007-92                                 | 1050781-1   |                        |
| M39012/79-3008       | 2001-8008-92                                 | 1050783-1   |                        |
| M39012/79-3107       | 2001-8107-92                                 | 1050789-1   |                        |
| M39012/79-3108       | 2001-8108-92                                 | 1050790-1   |                        |
| M39012/79-3207       |                                              | 228639-3    |                        |
| M39012/79-3307       |                                              | 228639-1    |                        |
| M39012/79-3308       |                                              | 228634-1    |                        |
| M39012/79-AF867286-2 |                                              | 221447-1    |                        |
| M39012/79B3001       | 2001-5032-00<br>2001-5032-02<br>2001-8001-92 | 1050774-1   | 1050547-1<br>1050548-1 |
| M39012/79B3002       | 2001-8002-92                                 | 1058590-1   |                        |
| M39012/79B3002       | 2001-5003-00<br>2001-5003-02<br>2001-8002-92 | 1050776-1   | 1050524-1<br>1050525-1 |
| M39012/79B3003       | 2001-8003-92                                 | 1050777-1   |                        |
| M39012/79B3003       | 2001-5385-02<br>2001-8991-92                 | 1050813-1   | 1050598-1              |
| M39012/79B3003       | 2001-8203-92                                 | 1089686-1   |                        |
| M39012/79B3004       | 2001-8004-92                                 | 1050779-1   |                        |
| M39012/79B3004       | 2001-8204-92                                 | 1050792-1   |                        |
| M39012/79B3101       | 2001-5032-00<br>2001-5032-02<br>2001-8101-92 | 1050785-1   | 1050547-1<br>1050548-1 |

| Military Part Number | Reference Part Number (Ref. Only)            | TE Part No. | COTS Part No.          |
|----------------------|----------------------------------------------|-------------|------------------------|
| M39012/79B3102       | 2001-5003-00<br>2001-5003-02<br>2001-8102-92 | 1050786-1   | 1050524-1<br>1050525-1 |
| M39012/79B3103       |                                              | 227868-1    |                        |
| M39012/79B3103       | 2001-8103-92                                 | 1050787-1   |                        |
| M39012/79B3103       | 2001-7685-02<br>2001-8303-92                 | 1050797-1   | 1050744-1              |
| M39012/79B3103       | 2001-5385-02<br>2001-8981-92                 | 1050812-1   | 1050598-1              |
| M39012/79B3104       |                                              | 227743-1    |                        |
| M39012/79B3104       | 2001-8104-92                                 | 1050788-1   |                        |
| M39012/79B3104       | 2001-8304-92                                 | 1050799-1   |                        |
| M39012/80-3005       | 2007-5055-00<br>2007-5055-02<br>2007-8005-92 | 1051165-1   | 1051113-1<br>1051114-1 |
| M39012/80-3006       | 2007-5054-00<br>2007-5054-02<br>2007-8006-92 | 1051166-1   | 1051109-1<br>1051110-1 |
| M39012/80-3007       | 2007-5055-00<br>2007-5055-02<br>2007-8007-92 | 1051168-1   | 1051113-1<br>1051114-1 |
| M39012/80-3008       | 2007-5054-00<br>2007-5054-02<br>2007-8008-92 | 1051170-1   | 1051109-1<br>1051110-1 |
| M39012/80-3105       | 2007-5054-00<br>2007-5054-02<br>2007-8105-92 | 1051175-1   | 1051109-1<br>1051110-1 |
| M39012/80-3106       | 2007-5055-00<br>2007-5055-02<br>2007-8106-92 | 1051176-1   | 1051113-1<br>1051114-1 |
| M39012/80-3107       | 2007-5054-00<br>2007-5054-02<br>2007-8107-92 | 1051177-1   | 1051109-1<br>1051110-1 |
| M39012/80-3108       | 2007-8108-92                                 | 1051178-1   |                        |
| M39012/80-3207       |                                              | 228583-3    |                        |
| M39012/80-3207       |                                              | 228583-5    |                        |
| M39012/80-3307       |                                              | 228583-1    |                        |
| M39012/80-3308       |                                              | 228626-1    |                        |
| M39012/80-3308       |                                              | 228626-5    |                        |
| M39012/80B3003       | 2007-8003-92                                 | 1051163-1   |                        |
| M39012/80B3004       | 2007-8004-92                                 | 1051164-1   |                        |
| M39012/80B3103       | 2007-5055-00<br>2007-5055-02<br>2007-8103-92 | 1051173-1   | 1051113-1<br>1051114-1 |
| M39012/80B3104       | 2007-5054-00<br>2007-5054-02<br>2007-8104-92 | 1051174-1   | 1051109-1<br>1051110-1 |
| M39012/81-3005       | 2002-5016-00<br>2002-8005-90                 | 1050926-1   | 1050859-1              |
| M39012/81-3006       | 2002-5015-00<br>2002-8006-90                 | 1050928-1   | 1050854-1              |
| M39012/81-3007       | 2002-8007-92                                 | 1050929-1   |                        |
| M39012/81-3008       | 2002-8008-92                                 | 1050931-1   |                        |
| M39012/81-3207       | 2002-8207-92                                 | 1050934-1   |                        |
| M39012/81-3208       | 2002-8208-92                                 | 1050935-1   |                        |
| M39012/81B3001       | 2002-5016-00<br>2002-8001-90                 | 1050923-1   | 1050859-1              |
| M39012/81B3002       | 2002-5015-00<br>2002-8002-90                 | 1050924-1   | 1050854-1              |
| M39012/82-3005       | 2006-5012-00<br>2006-8005-90                 | 1051091-1   | 1051049-1              |
| M39012/82-3006       | 2006-7941-00<br>2006-8006-90                 | 1051092-1   | 1051081-1              |
| M39012/82-3007       | 2006-8007-92                                 | 1051093-1   |                        |
| M39012/82-3008       | 2006-8008-92                                 | 1051094-1   |                        |
| M39012/82-3207       | 2006-8207-92                                 | 1051097-1   |                        |
| M39012/82-3208       | 2006-8208-92                                 | 1051098-1   |                        |

COTS part numbers are commercial equivalents and are not military qualified.



## Cross Reference (Continued)

| Military Part Number | Reference Part Number (Ref. Only)            | TE Part No. | COTS Part No.          |
|----------------------|----------------------------------------------|-------------|------------------------|
| M39012/82B3001       | 2006-5012-00<br>2006-8001-90                 | 1051087-1   | 1051049-1              |
| M39012/82B3002       | 2006-7941-00<br>2006-8002-90                 | 1051088-1   | 1051081-1              |
| M39012/83-3005       | 2004-7985-00<br>2004-8005-90                 | 1051026-1   | 1051018-1              |
| M39012/83-3006       | 2004-7941-00<br>2004-8006-90                 | 1051027-1   | 1051013-1              |
| M39012/83-3007       | 2004-8007-92                                 | 1051028-1   |                        |
| M39012/83-3008       | 2004-8008-92                                 | 1051029-1   |                        |
| M39012/83-3207       | 2004-8207-92                                 | 1051032-1   |                        |
| M39012/83-3208       | 2004-7641-02<br>2004-8208-92                 | 1051033-1   | 1051005-1              |
| M39012/83B3001       | 2004-7985-00<br>2004-8001-90                 | 1051022-1   | 1051018-1              |
| M39012/83B3002       | 2004-7941-00<br>2004-8002-90                 | 1051023-1   | 1051013-1              |
| M39012/92-3201       | 2001-8201-92                                 | 1050791-1   |                        |
| M39012/92-3301       |                                              | 228635-1    |                        |
| M39012/92-3301       |                                              | 228635-6    |                        |
| M39012/92-3301       | 2001-8301-92                                 | 1050796-1   |                        |
| M39012/92B3001       | 2001-8921-92                                 | 1050808-1   |                        |
| M39012/92B3001       | 2001-8901-92                                 | 1050805-1   |                        |
| M39012/92B3001       | 2001-8941-92                                 | 1484517-1   |                        |
| M39012/92B3101       |                                              | 227531-1    |                        |
| M39012/92B3101       | 2001-8911-92                                 | 1050807-1   |                        |
| M39012/92B3101       | 2001-8931-92                                 | 1050809-1   |                        |
| M39012/92B3101       | 2001-8951-92                                 | 1050810-1   |                        |
| M39012/93-3001       | 2062-0000-00<br>2062-8001-90                 | 1053372-1   | 1053354-1              |
| M39012/93-3002       | 2062-8002-90                                 | 1053374-1   |                        |
| M39012/93-3003       | 2062-8003-90                                 | 1053376-1   |                        |
| M39012/94-3001       | 2064-0000-00<br>2064-8001-90                 | 1053396-1   | 1053378-1              |
| M39012/94-3002       | 2064-8002-90                                 | 1053398-1   |                        |
| M39012/94-3003       | 2064-8003-90                                 | 1053400-1   |                        |
| M55339/02-30001      | 2088-0000-00<br>2088-0000-02<br>2088-8001-92 | 1055091-1   | 1055064-1<br>1055065-1 |
| M55339/28-30001      | 2084-1100-00<br>2084-1100-02<br>2084-8001-92 | 1054986-1   | 1054874-1<br>1054875-1 |
| M55339/28-30002      | 2084-8002-92                                 | 1054988-1   |                        |
| M55339/29-30001      | 2081-0000-00<br>2081-0000-02<br>2081-8001-92 | 1053765-1   | 1053634-1<br>1053635-1 |
| M55339/29-30101      | 2081-0000-00<br>2081-0000-02<br>2081-8101-92 | 1053767-1   | 1053634-1<br>1053635-1 |
| M55339/31-30001      | 2080-0000-00<br>2080-0000-02<br>2081-8001-92 | 1053633-1   | 1053488-1<br>1053489-1 |
| M83517/1-31001       | 2052-8003-92                                 | 1052928-1   |                        |
| M83517/1-31002       | 2052-1658-02<br>2052-8004-92                 | 1052930-1   | 1052577-1              |
| M83517/1-31003       | 2052-5636-00<br>2052-5636-02<br>2052-8005-92 | 1052932-1   | 1052897-1<br>1052898-1 |
| M83517/1-31004       | 2052-1618-00<br>2052-1618-02<br>2052-8006-92 | 1052934-1   | 1052565-1<br>1052566-1 |
| M83517/1-32001       | 2052-8003-90                                 | 1052927-1   |                        |
| M83517/1-32002       | 2052-1658-02<br>2052-8004-90                 | 1052929-1   | 1052577-1              |
| M83517/1-32003       | 2052-5636-00<br>2052-5636-02<br>2052-8005-90 | 1052931-1   | 1052897-1<br>1052898-1 |
| M83517/1-32004       | 2052-1618-00<br>2052-1618-02                 |             | 1052565-1<br>1052566-1 |

COTS part numbers are commercial equivalents and are not military qualified.

| Military Part Number | Reference Part Number (Ref. Only)            | TE Part No. | COTS Part No.          |
|----------------------|----------------------------------------------|-------------|------------------------|
|                      | 2052-8006-90                                 |             | 1052933-1              |
| M83517/2-31001       | 2051-8001-92                                 | 1052409-1   |                        |
| M83517/2-31002       | 2051-8002-92                                 | 1052411-1   |                        |
| M83517/2-31003       | 2051-8003-92                                 | 1052413-1   |                        |
| M83517/2-31004       | 2051-8004-92                                 | 1052415-1   |                        |
| M83517/2-32001       | 2051-8001-90                                 | 1052408-1   |                        |
| M83517/2-32002       | 2051-8002-90                                 | 1052410-1   |                        |
| M83517/2-32003       | 2051-8003-90                                 | 1052412-1   |                        |
| M83517/2-32004       | 2051-8004-90                                 | 1052414-1   |                        |
| M83517/3-31001       | 2052-1650-02<br>2052-8007-92                 | 1052936-1   | 1251095-1              |
| M83517/3-31002       | 2052-8008-92                                 | 1052938-1   |                        |
| M83517/3-31003       | 2052-8009-92                                 | 1052940-1   |                        |
| M83517/3-31004       | 2052-8010-92                                 | 1052942-1   |                        |
| M83517/3-31005       | 2052-1612-02<br>2052-8011-92                 | 1052944-1   | 1052563-1              |
| M83517/3-31006       | 2052-8012-92                                 | 1052946-1   |                        |
| M83517/3-31007       | 2052-8013-92                                 | 1052948-1   |                        |
| M83517/3-32001       | 2052-1612-02<br>2052-8007-90                 | 1052935-1   | 1052563-1              |
| M83517/3-32002       | 2052-8008-90                                 | 1052937-1   |                        |
| M83517/3-32003       | 2052-8009-90                                 | 1052939-1   |                        |
| M83517/3-32004       | 2052-8010-90                                 | 1052941-1   |                        |
| M83517/3-32005       | 2052-1612-02<br>2052-8011-90                 | 1052943-1   | 1052563-1              |
| M83517/3-32006       | 2052-8012-90                                 | 1052945-1   |                        |
| M83517/3-32007       | 2052-8013-90                                 | 1052947-1   |                        |
| M83517/4-31001       | 2052-8014-92                                 | 1052950-1   |                        |
| M83517/4-31002       | 2052-5674-00<br>2052-5674-02<br>2052-8015-92 | 1052952-1   | 1052901-1<br>1052902-1 |
| M83517/4-31003       | 2052-8016-92                                 | 1052954-1   |                        |
| M83517/4-31004       | 2052-1215-00<br>2052-1215-02<br>2052-8017-92 | 1052956-1   | 1052527-1<br>1052528-1 |
| M83517/4-31005       | 2052-1201-00<br>2052-1201-02<br>2052-8018-92 | 1052958-1   | 1052522-1<br>1052523-1 |
| M83517/4-32001       | 2052-8014-90                                 | 1052949-1   |                        |
| M83517/4-32002       | 2052-5674-00<br>2052-5674-02<br>2052-8015-90 | 1052951-1   | 1052901-1<br>1052902-1 |
| M83517/4-32003       | 2052-8016-90                                 | 1052953-1   |                        |
| M83517/4-32004       | 2052-1215-00<br>2052-1215-02<br>2052-8017-90 | 1052955-1   | 1052527-1<br>1052528-1 |
| M83517/4-32005       | 2052-1201-00<br>2052-1201-02<br>2052-8018-90 | 1052957-1   | 1052522-1<br>1052523-1 |
| M83517/5-31001       | 2051-8005-92                                 | 1052417-1   |                        |
| M83517/5-32002       | 2051-8005-90                                 | 1052416-1   |                        |
| M83517/6-31001       | 2066-8001-92                                 | 1053423-1   |                        |
| M83517/6-31002       | 2066-1403-00<br>2066-8002-92                 | 1053425-1   | 1053415-1              |
| M83517/6-32001       | 2066-8001-90                                 | 1053422-1   |                        |
| M83517/6-32002       | 2066-1403-00<br>2066-8002-90                 | 1053424-1   | 1053415-1              |
| M83517/7-31001       | 2067-8001-92                                 | 1053429-1   |                        |
| M83517/7-31002       | 2067-8002-92                                 | 1053431-1   |                        |
| M83517/7-32001       | 2067-8001-90                                 | 1053428-1   |                        |
| M83517/7-32002       | 2067-8002-90                                 | 1053430-1   |                        |
| M83517/8-31001       | 2068-5156-00<br>2068-8001-92                 | 1053451-1   | 1053438-1              |
| M83517/8-31002       | 2068-8002-92                                 | 1053453-1   |                        |
| M83517/8-32001       | 2068-5156-00<br>2068-8001-90                 | 1053450-1   | 1053438-1              |

### Cross Reference (Continued)

| Military Part Number | Reference Part Number (Ref. Only) | TE Part No. | COTS Part No. |
|----------------------|-----------------------------------|-------------|---------------|
| M83517/8-32002       | 2068-8002-90                      | 1053452-1   |               |
| M83517/9-31001       | 2070-8001-92                      | 1053476-1   |               |
| M83517/9-31002       | 2070-5068-02<br>2070-8002-92      | 1053478-1   | 1053465-1     |
| M83517/9-31003       | 2070-5069-02<br>2070-8003-92      | 1053480-1   | 1053467-1     |
| M83517/9-31004       | 2070-8004-92                      | 1053482-1   |               |
| M83517/9-32001       | 2070-8001-90                      | 1053475-1   |               |
| M83517/9-32002       | 2070-5068-02<br>2070-8002-90      | 1053477-1   | 1053465-1     |
| M83517/9-32003       | 2070-5069-02<br>2070-8003-90      | 1053479-1   | 1053467-1     |
| M83517/9-32004       | 2070-8004-90                      | 1053481-1   |               |
| M83517/10-31001      | 2052-3359-02<br>2052-8019-92      | 1052959-1   | 1052646-1     |
| M83517/10-31003      | 2052-3358-02                      |             | 1052643-1     |

| Military Part Number | Reference Part Number (Ref. Only) | TE Part No. | COTS Part No. |
|----------------------|-----------------------------------|-------------|---------------|
|                      | 2052-8021-92                      | 1052962-1   |               |
| M83517/10-31004      | 2052-8023-92                      | 1052963-1   |               |
| M83517/10-31005      | 2052-8023-92                      | 1052963-1   |               |
| M83517/10-31006      | 2052-8024-92                      | 1484518-1   |               |
| M83517/10-31015      | 2052-3358-02<br>2052-8033-92      | 1484519-1   | 1052643-1     |
| M83517/10-31016      | 2052-8034-92                      | 1484520-1   |               |
| M83517/10-32001      | 2052-3359-02<br>2052-8019-90      | 1484521-1   | 1052646-1     |
| M83517/10-32003      | 2052-3358-02<br>2052-8021-90      | 1052961-1   | 1052643-1     |
| M83517/10-32005      | 2052-8023-90                      | 1484522-1   |               |
| M83517/10-32006      | 2052-8024-90                      | 1484523-1   |               |
| M83517/10-32015      | 2052-8033-90                      | 1484524-1   |               |
| M83517/10-32016      | 2052-8034-90                      | 1484525-1   |               |

### DSCC Cross Reference

| DSCC Part No. | Reference Part Number (Ref. Only)            | TE Part No. | COTS Part No.          |
|---------------|----------------------------------------------|-------------|------------------------|
| 84149SSG      | 2001-5397-02                                 | 1050605-1   |                        |
| 84149SSG-1    | 2001-5557-02<br>2001-5003-00<br>2001-5003-02 | 1050629-1   | 1050524-1<br>1050525-1 |
| 84149SSGA     | 2001-5431-02                                 | 1050609-1   |                        |
| 84149SSGA-1   | 2001-5558-02<br>2001-7985-00<br>2001-7985-02 | 1050631-1   | 1050769-1<br>1050770-1 |
| 85022SSG      | 2006-5151-00                                 | 1051063-1   |                        |
| 85022SSG-1    | 2006-5192-00<br>2006-5013-00                 | 1221162-1   | 1051052-1              |
| 85022SSGA     | 2006-5150-00                                 | 1051062-1   |                        |
| 85022SSGA-1   | 2006-5193-00<br>2006-5010-00                 | 1051067-1   | 1051046-1              |
| 85037SSG      | 2007-5115-02<br>2007-5054-00<br>2007-5054-02 | 1051119-1   | 1051109-1<br>1051110-1 |
| 85037SSGA     | 2007-5116-02<br>2007-5055-00<br>2007-5055-02 | 1051120-1   | 1051113-1<br>1051114-1 |
| 86116ZSG      | 1001-5045-92                                 | 1045358-1   |                        |
| 86117ZSG      | 1004-5005-90                                 | 1045398-1   |                        |
| 86118ZSG      | 1007-5015-92                                 | 1045418-1   |                        |

| DSCC Part No. | Reference Part Number (Ref. Only) | TE Part No. | COTS Part No. |
|---------------|-----------------------------------|-------------|---------------|
| 86119ZSG      | 1031-5031-92                      | 1045486-1   |               |
| 86120ZSG      | 1037-5032-92                      | 1045517-1   |               |
| 94008ZCG-2    | 2902-5005-62                      | 1056521-1   |               |
| 94008ZCG-1    | 2902-5006-62                      | 1056522-1   |               |
| 94008ZCG-4    | 2908-5006-62                      | 1056550-1   |               |
| 94008ZCG-3    | 2908-5007-62                      | 1056551-1   |               |
| 94007ZCG-1    | 2980-5004-62                      | 1056703-1   |               |
| 94007ZCG-2    |                                   | 1757023-1   |               |
| 8501814FP-1   | 3180-4034-02                      | 1057848-1   |               |
| 8501814FP-2   | 3180-4036-02                      | 1080294-1   |               |
| 8604412SP-1   | 3081-4002-02                      | 1057371-1   |               |
| 8604412SP-4   | 3082-4031-02                      | 1057403-1   |               |
| 8503812FP-1   | 3080-4010-02                      | 1057354-1   |               |
| 8503812FP-2   | 3080-4015-02                      | 1057357-1   |               |
| 8503812FP-3   | 3084-4001-00                      | 1057465-1   |               |
| 8503812FP-4   | 3082-4028-02                      | 1057402-1   |               |
| 8503812FP-5   | 3082-4029-02                      | 1252992-1   |               |
| 8503812FP-6   | 3080-4019-02                      | 1057359-1   |               |
| 8503812FP-7   | 3080-4020-02                      | 1087866-1   |               |

### Cheminax Coaxial Cables Cross Reference

|              | 5024A3314 | Cable to RF Part Numbers<br>5020A1611 | 5030L1134 |
|--------------|-----------|---------------------------------------|-----------|
| SMA Plug     | 1996810-1 | 1996811-1                             | 1996812-1 |
| SMA R/A Plug | 1996813-1 | 1996814-1                             | 1996815-1 |
| SMA BHD Jack | 1996816-1 | 1996817-1                             | 1996818-1 |
| BNC Plug     | 1996819-1 | 1996820-1                             | 1996821-1 |
| BNC BHD Jack | 1996822-1 | 1996823-1                             | 1996824-1 |
| TNC Plug     | 1996825-1 | 1996826-1                             | 1996827-1 |
| TNC BHD Jack | 1996828-1 | 1996829-1                             | 1996830-1 |

## NANONICS Coaxial Connectors Introduction



2

RF Connectors

The NANONICS 50 ohm coaxial connector system combines the benefits of the rectangular DUALOBE connectors while offering the flexibility to terminate up to nine coaxial contacts within the same metal connector housing. Furthermore, with this unique design, five signal

contacts, terminated with 30 AWG or smaller discrete wire, can also be integrated into this connector package. These connectors are typically used in applications with frequencies up to 20 GHz.

RG-178 coax coaxial cable is the standard cable used on these connectors. The

receptacle coax connector is also available in a horizontal surface mount configuration allowing for wire to board applications. Harness assemblies and custom configurations can also be accommodated.

### Specifications

#### Technical and Performance Data

##### Electrical

**Contact Resistance** — .003 - .008 ohms

**Current Rating** — 1 amp max. per contact

**Dielectric Withstanding Voltage** — Volts RMS 60 Hz at room ambient conditions. At sea level 500V. At 70,000 ft. 150V.

**Insulation Resistance** — 5000 megohms min. (@ 500 VDC) at room ambient conditions.

**Magnetic Permeability** — 2 mu max.

**Temperature Range** — -55°C to +125°C

**Outer Coaxial Contacts** — BeCu Alloy plated with gold per MIL-G-45204 over nickel

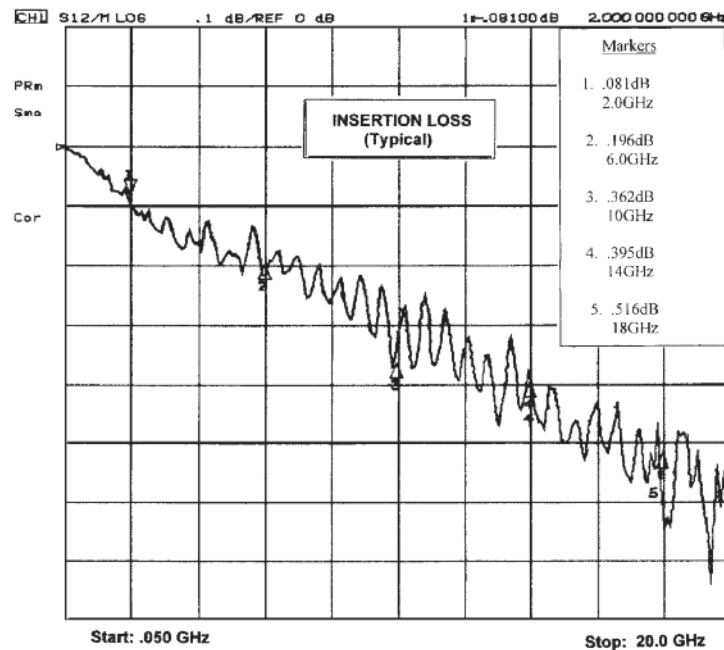
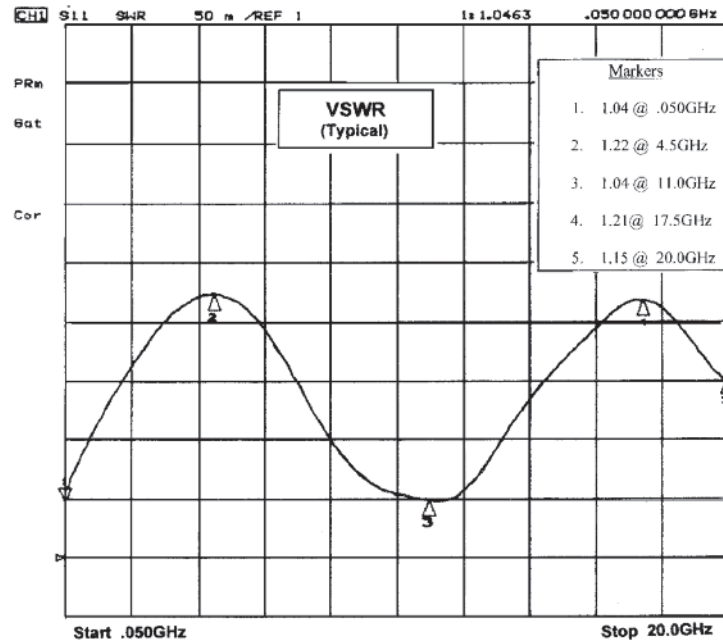
**Dielectric Insert** — PTFE

**Braid Termination** — Soldered to outer coaxial contacts with Sn63Pb37 solder

**Backpotting** — Standard for wire terminations

## NANONICS Typical VSWR and Insertion Loss

**Note:** Insertion Loss of 30 AWG Coax Cable @ (50 Ohm) is approximately 1.0db/ft. @ 3 GHz. The connector system with 6" of coax on each side, is better than 1.5db @ 3 GHz.



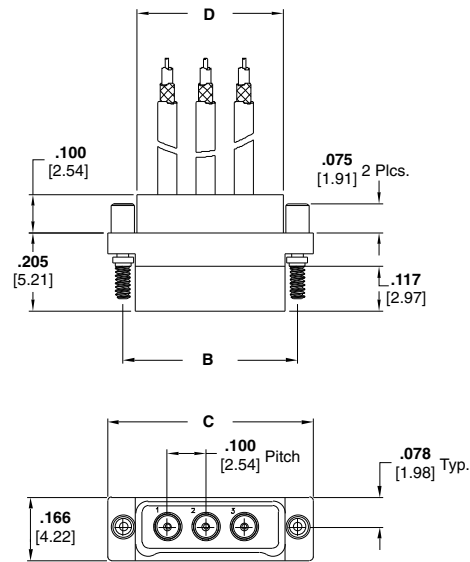
## NANONICS 50 Ohm Coax Connectors



Plug



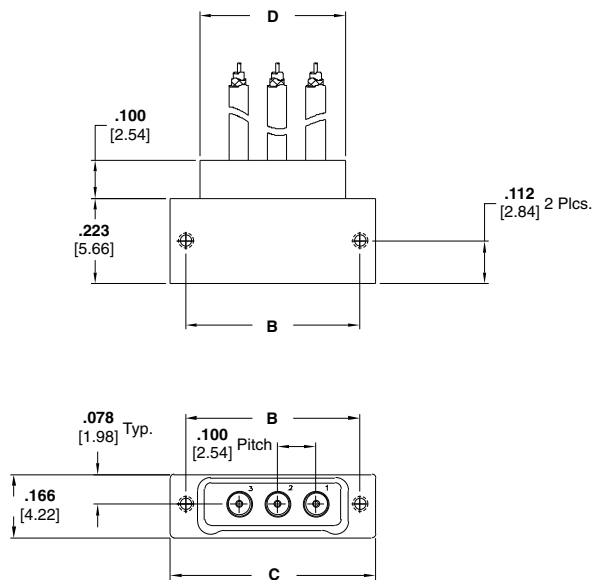
Receptacle



Plug Assembly  
Drawing Number 1589070

### Product Facts

- Metal Shell
- Standard Sizes: 1-9
- Factory wired to your specifications
- Contact TE Connectivity for custom configurations



Receptacle Assembly  
Drawing Number 1589071

| Size | Dimensions    |               |               | No. Coax |
|------|---------------|---------------|---------------|----------|
|      | B             | C             | D             |          |
| 1    | 0.254 [6.45]  | 0.335 [8.51]  | 0.180 [4.57]  | 1        |
| 2    | 0.354 [8.99]  | 0.435 [11.05] | 0.280 [7.11]  | 2        |
| 3    | 0.454 [11.53] | 0.535 [13.59] | 0.380 [9.65]  | 3        |
| 4    | 0.554 [14.07] | 0.635 [16.13] | 0.480 [12.19] | 4        |
| 5    | 0.654 [16.61] | 0.735 [18.67] | 0.580 [14.73] | 5        |
| 6    | 0.754 [19.15] | 0.835 [21.21] | 0.680 [17.27] | 6        |
| 7    | 0.854 [21.69] | 0.935 [23.75] | 0.780 [19.81] | 7        |
| 8    | 0.954 [24.23] | 1.035 [26.29] | 0.880 [22.35] | 8        |
| 9    | 1.054 [26.77] | 1.135 [28.83] | 0.980 [24.89] | 9        |

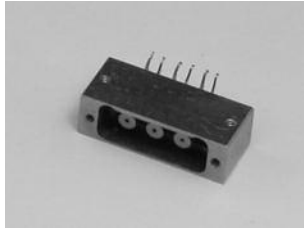
## Part Numbering Guideline for NANONICS 50 Ohm Coax Connectors

## Coax Only Connectors - Wire Terminations

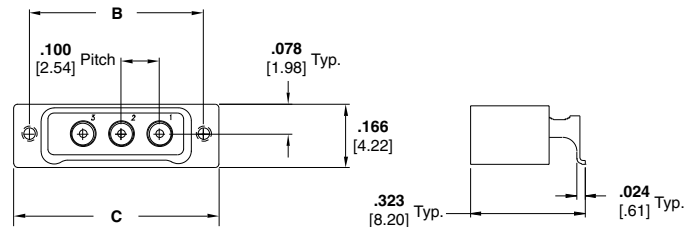
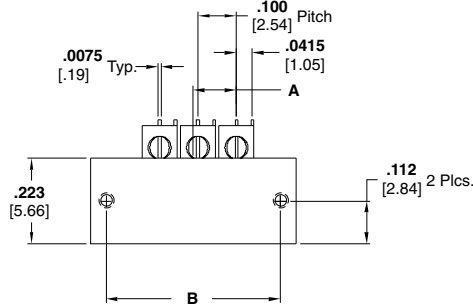
|                      |              |            |            |            |               |                                                                                                |                                        |
|----------------------|--------------|------------|------------|------------|---------------|------------------------------------------------------------------------------------------------|----------------------------------------|
| <b>Class/Type</b>    | <b>CX</b>    | <b>XXX</b> | <b>XX</b>  | <b>2</b>   | <b>RG</b>     | <b>XXX</b>                                                                                     | <b>X</b>                               |
| <b>CX</b>            | Coax, 50 Ohm |            |            |            |               |                                                                                                |                                        |
| <b>Positions</b>     | <b>010</b>   | <b>020</b> | <b>030</b> | <b>040</b> | <b>050</b>    | <b>060</b>                                                                                     | <b>070</b>                             |
|                      | 1 Position   |            |            |            |               |                                                                                                |                                        |
|                      | 2 Position   |            |            |            |               |                                                                                                |                                        |
|                      | 3 Position   |            |            |            |               |                                                                                                |                                        |
|                      | 4 Position   |            |            |            |               |                                                                                                |                                        |
|                      | 5 Position   |            |            |            |               |                                                                                                |                                        |
|                      | 6 Position   |            |            |            |               |                                                                                                |                                        |
|                      | 7 Position   |            |            |            |               |                                                                                                |                                        |
|                      | 8 Position   |            |            |            |               |                                                                                                |                                        |
|                      | 9 Position   |            |            |            |               |                                                                                                |                                        |
| <b>Configuration</b> | <b>PC</b>    | <b>SC</b>  |            |            |               |                                                                                                |                                        |
|                      | Plug         |            |            |            |               |                                                                                                |                                        |
|                      | Receptacle   |            |            |            |               |                                                                                                |                                        |
|                      |              |            |            | <b>2</b>   | <b>30 AWG</b> |                                                                                                |                                        |
|                      |              |            |            |            |               | <b>Threads/Jackscrews</b>                                                                      |                                        |
|                      |              |            |            |            |               | <b>Threads (Receptacles Only)</b>                                                              | <b>Jackscrews (Plugs Only)</b>         |
|                      |              |            |            |            |               | <b>N</b> Thread for 1.0 mm Jackscrews                                                          | <b>M</b> 1.0 mm Non Captive Jackscrews |
|                      |              |            |            |            |               | <b>Q</b> Thread for 1.2 mm Jackscrews                                                          | <b>N</b> 1.0 mm Captive Jackscrews     |
|                      |              |            |            |            |               |                                                                                                | <b>Q</b> 1.2 mm Captive Jackscrews     |
|                      |              |            |            |            |               | <b>Conductor Length</b>                                                                        |                                        |
|                      |              |            |            |            |               | <b>XXX</b> Three numbers only, length is in inches ( i.e. 012 = twelve inches)                 |                                        |
|                      |              |            |            |            |               | <b>CXX</b> A "C" followed by two numbers, length is in centimeters ( i.e. C06 = 6 centimeters) |                                        |
|                      |              |            |            |            |               | <b>MXX</b> An "M" followed by two numbers, length is in meters ( i.e. M02 = 2 meters)          |                                        |
|                      |              |            |            |            |               | <b>Conductor Type</b>                                                                          |                                        |
|                      |              |            |            |            |               | <b>RG</b> RG 178 Coaxial Cable                                                                 |                                        |



## NANONICS Horizontal SMT 50 Ohm Coax Connectors



Surface Mount



Receptacle Assembly  
Drawing Number 1589072

### Product Facts

- Metal Shell
- Standard Sizes: 1-9
- Factory wired to your specifications
- Contact TE Connectivity for custom configurations

| Size | Dimensions     |               |               | No. Coax |
|------|----------------|---------------|---------------|----------|
|      | A              | B             | C             |          |
| 1    | 0.0125 [.32]   | 0.254 [6.45]  | 0.335 [8.51]  | 1        |
| 2    | 0.0625 [1.59]  | 0.354 [8.99]  | 0.435 [11.05] | 2        |
| 3    | 0.1125 [2.86]  | 0.454 [11.53] | 0.535 [13.59] | 3        |
| 4    | 0.1625 [4.13]  | 0.554 [14.07] | 0.635 [16.13] | 4        |
| 5    | 0.2125 [5.40]  | 0.654 [16.61] | 0.735 [18.67] | 5        |
| 6    | 0.2625 [6.67]  | 0.754 [19.15] | 0.835 [21.21] | 6        |
| 7    | 0.3125 [7.94]  | 0.854 [21.69] | 0.935 [23.75] | 7        |
| 8    | 0.3625 [9.21]  | 0.954 [24.23] | 1.035 [26.29] | 8        |
| 9    | 0.4125 [10.48] | 1.054 [26.77] | 1.135 [28.83] | 9        |

## Part Numbering Guideline for NANONICS Horizontal SMT 50 Ohm Coax Connectors

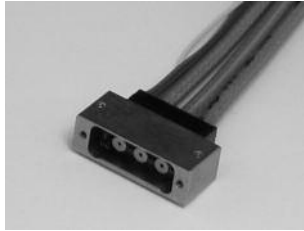
### Coax Only Connectors - SMT Termination

| Class/Type       | CX | XXX | L2 | X | X                              |
|------------------|----|-----|----|---|--------------------------------|
| CX Coax, 50 ohm  |    |     |    |   | <b>Jackscrew Threads</b>       |
|                  |    |     |    |   | <b>Threads</b>                 |
|                  |    |     |    |   | N Thread for 1.0 mm Jackscrews |
|                  |    |     |    |   | Q Thread for 1.2 mm Jackscrews |
| <b>Positions</b> |    |     |    |   | <b>Mounting Hardware</b>       |
| 010 1 Position   |    |     |    |   | A 1.2 mm x .160"               |
| 020 2 Position   |    |     |    |   | H 1.0 mm x .160"               |
| 030 3 Position   |    |     |    |   |                                |
| 040 4 Position   |    |     |    |   |                                |
| 050 5 Position   |    |     |    |   |                                |
| 060 6 Position   |    |     |    |   |                                |
| 070 7 Position   |    |     |    |   |                                |
| 080 8 Position   |    |     |    |   |                                |
| 090 9 Position   |    |     |    |   |                                |
|                  |    |     |    |   | <b>Configuration</b>           |
|                  |    |     | L2 |   | Receptacle, Horizontal SMT     |

## NANONICS 50 Ohm Coax with Mixed Signal Connectors



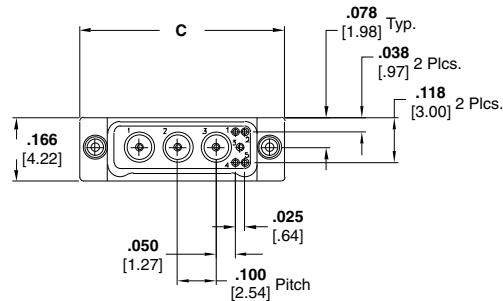
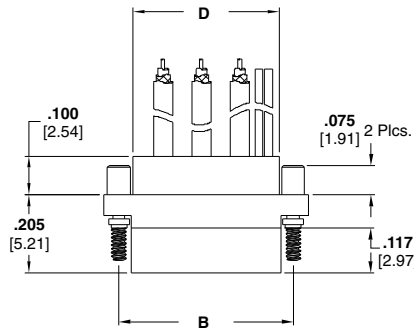
Plug



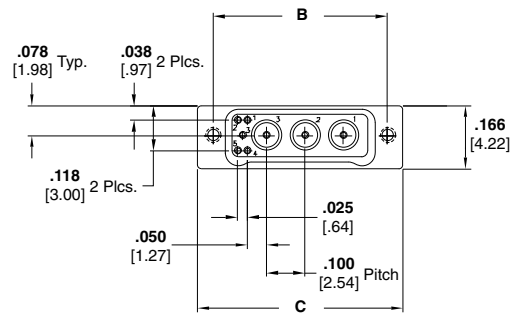
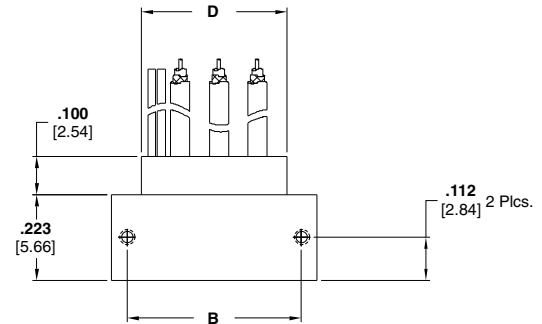
Receptacle

### Product Facts

- Metal Shell
- Standard Sizes: 1-9 coaxial contacts with 5 signal contacts
- Factory wired to your specifications
- Contact TE Connectivity for custom configurations



Plug Assembly  
Drawing Number 1589068



Receptacle Assembly  
Drawing Number 1589069

| Size | Dimensions    |               |               | No. Coax |
|------|---------------|---------------|---------------|----------|
|      | B             | C             | D             |          |
| 1    | 0.254 [6.45]  | 0.335 [8.51]  | 0.180 [4.57]  | 1        |
| 2    | 0.354 [8.99]  | 0.435 [11.05] | 0.280 [7.11]  | 2        |
| 3    | 0.454 [11.53] | 0.535 [13.59] | 0.380 [9.65]  | 3        |
| 4    | 0.554 [14.07] | 0.635 [16.13] | 0.480 [12.19] | 4        |
| 5    | 0.654 [16.61] | 0.735 [18.67] | 0.580 [14.73] | 5        |
| 6    | 0.754 [19.15] | 0.835 [21.21] | 0.680 [17.27] | 6        |
| 7    | 0.854 [21.69] | 0.935 [23.75] | 0.780 [19.81] | 7        |
| 8    | 0.954 [24.23] | 1.035 [26.29] | 0.880 [22.35] | 8        |
| 9    | 1.054 [26.77] | 1.135 [28.83] | 0.980 [24.89] | 9        |

## Part Numbering Guideline for NANONICS 50 Ohm Coax with Mixed Signal Connectors

## Coax w/ Mixed Signal Connectors - Wire Terminations

[illegible]

## Part Number Index Cross Reference

| NANONICS<br>Part Number | TE<br>Part Number |
|-------------------------|-------------------|
| <b>Coax Only</b>        |                   |
| CX010PC2RG006N          | 0-1589070-1       |
| CX010PC2RG018N          | 0-1589070-2       |
| CX010PC2RG048Q          | 2-1589070-8       |
| CX010PC2RG072N          | 0-1589070-3       |
| CX010PC2RGC10Q          | 2-1589070-1       |
| CX010SC2RG048Q          | 2-1589071-3       |
| CX020PC2RG018N          | 0-1589070-4       |
| CX020PC2RG048N          | 2-1589070-5       |
| CX020PC2RG060N          | 1-1589070-8       |
| CX020SC2RG012N          | 2-1589071-0       |
| CX020SC2RG018N          | 2-1589071-5       |
| CX020SC2RG024N          | 0-1589071-8       |
| CX020SC2RG024Q          | 2-1589071-8       |
| CX020SC2RG060N          | 2-1589071-2       |
| CX030PC2RG006N          | 0-1589070-5       |
| CX030PC2RG012           | 0-1589070-6       |
| CX030PC2RG012N          | 0-1589070-7       |
| CX030PC2RG018N          | 0-1589070-8       |
| CX030PC2RG020Q          | 0-1589070-9       |
| CX030PC2RG048N          | 2-1589070-4       |
| CX030PC2RG060N          | 2-1589070-6       |
| CX030SC2RG006N          | 0-1589071-3       |
| CX030SC2RG012           | 0-1589071-4       |
| CX030SC2RG012N          | 1-1589071-8       |
| CX030SC2RG060N          | 2-1589071-1       |
| CX040PC2RG012N          | 1-1589070-0       |
| CX040PC2RG030N          | 1-1589070-1       |
| CX040PC2RG039Q          | 3-1589070-7       |
| CX040PC2RG060N          | 1-1589070-7       |
| CX040SC2RG012           | 0-1589071-5       |
| CX040SC2RG024N          | 0-1589071-7       |
| CX050PC2RG006N          | 1-1589070-4       |
| CX050SC2RG006N          | 1-1589071-9       |
| CX060PC2RG012N          | 3-1589070-8       |
| CX060PC2RG012Q          | 3-1589070-3       |
| CX060PC2RG018N          | 3-1589070-5       |
| CX060PC2RG036N          | 3-1589070-0       |
| CX060PC2RG072N          | 3-1589070-1       |
| CX060PC2RG144N          | 3-1589070-2       |
| CX060PC2RGC10Q          | 2-1589070-0       |
| CX060SC2RG012Q          | 2-1589071-6       |
| CX070PC2RGC10Q          | 2-1589070-3       |
| CX080PC2RG006N          | 2-1589070-2       |
| CX080PC2RG012N          | 3-1589070-9       |
| CX080PC2RG012Q          | 3-1589070-4       |
| CX080PC2RG018N          | 3-1589070-6       |
| CX080PC2RG024N          | 2-1589070-9       |
| CX080PC2RG036N          | 1-1589070-5       |
| CX080PC2RG048N          | 1-1589070-6       |
| CX080PC2RG060N          | 1-1589070-9       |
| CX080PC2RGC10N          | 2-1589070-7       |
| CX080SC2RG012N          | 2-1589071-4       |
| CX080SC2RG012Q          | 2-1589071-7       |
| CX080SC2RG015N          | 1-1589071-7       |
| CX080SC2RG024N          | 0-1589071-9       |
| CX090PC2RG036N          | 1-1589070-2       |
| CX090SC2RG036N          | 0-1589071-6       |

| NANONICS<br>Part Number        | TE<br>Part Number |
|--------------------------------|-------------------|
| <b>Coax with Mixed Signals</b> |                   |
| CX015PC2RC012                  | 0-1589068-1       |
| CX015PC2RC012N                 | 0-1589068-5       |
| CX015SC2RC012N                 | 0-1589069-1       |
| CX035PC2RC006N                 | 0-1589068-2       |
| CX035PC2RC018N                 | 0-1589068-3       |
| CX035SC2RC006N                 | 0-1589069-2       |
| CX035SC2RC018N                 | 0-1589069-3       |
| CX045PC2RC006N                 | 0-1589068-4       |
| CX045PC2RC036N                 | 0-1589068-9       |
| CX045PC2RC036Q                 | 1-1589068-0       |
| CX045SC2RC006N                 | 0-1589069-4       |
| CX045SC2RC006Q                 | 0-1589069-7       |
| CX055PC2RC006N                 | 0-1589068-6       |
| CX055SC2RC006N                 | 0-1589069-5       |
| CX095PC2RC006N                 | 0-1589068-7       |
| CX095PC2RC036N                 | 0-1589068-8       |
| CX095SC2RC006N                 | 0-1589069-6       |

| NANONICS<br>Part Number    | TE<br>Part Number |
|----------------------------|-------------------|
| <b>Horizontal SMT Coax</b> |                   |
| CX010L2AQ                  | 1-1589072-3       |
| CX010L2HN                  | 0-1589072-1       |
| CX020L2HN                  | 1-1589072-2       |
| CX030L23N                  | 0-1589072-2       |
| CX030L23Q                  | 0-1589072-5       |
| CX030L2HN                  | 0-1589072-3       |
| CX040L2AQ                  | 1-1589072-0       |
| CX040L2HN                  | 1-1589072-6       |
| CX050L23Q                  | 0-1589072-6       |
| CX050L2HN                  | 0-1589072-9       |
| CX060L2AQ                  | 1-1589072-1       |
| CX060L2HN                  | 1-1589072-5       |
| CX070L2AQ                  | 1-1589072-4       |
| CX080L2HN                  | 0-1589072-4       |

## MICRODOT Coaxial Connectors Introduction

### Product Facts

- Designed to accept 50, 70 and 93 ohm miniature coaxial cables
- Three types of connectors: Screw-on Series, Slide-on Series and Quick-Connect Series
- Temperature range —  
-85°F to +257°F [-65°C to +125°C] (with neoprene gasket or bend relief cap)  
-80°F to 392°F [-62°C to +200°C] (with silicone gasket or bend relief cap)
- Dielectric Withstanding Voltage — 1000 volts RMS at sea level
- Contact Resistance — 3 milliohms max., D.C.
- Captive Contacts — Terminated connector contacts captivated from movement in both directions



MICRODOT Standard Coaxial Connectors are designed to accept 50, 70, and 93 Ohm miniature coaxial cables. These connectors are available as Screw-On Series, Slide-On Series, or Quick-Connect Series. The Screw-On Series is intermateable with

the Gold Plated Crimp Style Coaxial Connector Series and offers the dependability of a threaded coupling. For enhanced safety, choose connectors with wire holes.

Choose Slide-On Series for the fastest, most convenient mating and unmating.

The Quick-Connect Series offers the convenience of Slide-On coupling with added retention provided by a snap ring located on the jack/receptacle side.

Consult TE Connectivity for special cable accommodations and mounting features.



## MICRODOT Standard Connectors

### Performance Data Summary For Standard Connectors

#### Mechanical

**Captive Contacts** — Terminated connector contacts captivated from movement in both directions.

#### Cable Retention

50 Ohm connectors, 15 lb. min.<sup>1</sup>  
70 Ohm connectors, 25 lb. min.<sup>1</sup>  
93 Ohm connectors, 35 lb. min.<sup>1</sup>

**Recommended Coupling Torque (Threaded Interface)** — 8 inch/pounds max.

**Recommended Receptacle Mounting Torque (All Series)** — 8 inch/pounds max.

**Unmating Force (Slide-On Series)** — 1-7 pounds.

**Contact Protection (Unmated)** — Pin contact protected by coupling nut (threaded series)<sup>2</sup> or by housing (Quick-Connect and Slide-On Series). Socket protected by insulator and housing.

#### Assembly Methods

**Straight Plugs & Jacks** —

**Cable Inner Conductor** — Soldered to contact.

**Cable Shield** — Crimped to jerk ring (solder optional).

**Angle Plugs** —

**Cable Inner Conductor** — Soldered to contact.

**Cable Shield** — Soldered to ring & housing.

#### Environmental

**Temperature Range (Continuous Service)** — -85°F to +257°F [-65°C to +125°C] (with Neoprene gasket or bend relief cap). -80°F to 392°F [-62°C to +200°C] (with Silicone gasket or bend relief cap).

**Vibration<sup>3,4</sup>** — MIL-STD-202, Method 204, Test condition B (15 G peak). No physical damage or electrical discontinuities in excess of 1 microsecond.

**Shock<sup>3,4</sup>** — MIL-STD-202, Method 213, Test Condition H. No physical damage or electrical discontinuity after shock.

**Thermal Shock** — MIL-STD-202, Method 107, Test Condition B.

**Moisture Resistance<sup>3</sup>** — MIL-STD-202, Method 106.

**Salt Spray<sup>3</sup>** — MIL-STD-202, Method 101, Test Condition B (48 hours).

#### Electrical

**Impedance** — Designed to be compatible with 50, 70, or 93 Ohm miniature coaxial cable.

**Dielectric Withstanding Voltage** — 1000 volts RMS at sea level.

**Contact Resistance** — 3 milliohms max., D.C.

**Current Capacity** — 3 amps, D.C.

**Insulation Resistance** — 5 x 10<sup>3</sup> Megohms min. @ 500 volts D.C.

**Voltage Standing Wave Ratio<sup>5</sup> (VSWR)** — Typical 50 Ohm series, 1.2 max. to 2 GHz.

#### Materials

**Housing, Nut, Jerk Ring** — Brass per ASTM-B-16.

**Insulator** — PTFE per ASTM-D-1710.

**Pin Contact (Plugs)** — Brass per ASTM-B-16.

**Socket Contact (Jacks & Receptacles)** — Beryllium Copper per ASTM-B-196.

**Bend Relief Caps (Plugs & Jacks)** — Neoprene or Silicone Rubber per ZZ-R-765.

**Gaskets (Jacks & Receptacles)** — Neoprene or Silicone Rubber per ZZ-R-765.

**Lockwasher** — #425 Bronze Alloy.

#### Plating

**Contacts** — Gold per MIL-G-45204, Type II, Grade C, Class 1.

**Housing, Nut, Jerk Ring, Lockwasher** — Silver per QQ-S-365, Type II, Grade A, .0002 [.005] min.

#### Notes:

<sup>1</sup>Termination to cables with foamed dielectrics excluded. Straight connector jerk rings must be soldered to cable shield.

<sup>2</sup>Pin protector required. See individual connector specifications.

<sup>3</sup>Screw-On Series, threaded interface.

<sup>4</sup>TE Connectivity recommends the use of safety wired connectors in vibration and shock environment. See individual specifications for connectors with safety wire holes.

<sup>5</sup>VSWR is a system specification.

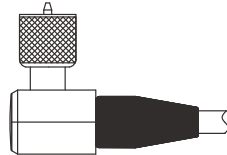
Where performance is critical, purchase TE cable assemblies with Screw-On or Quick-Connect Series connectors and specify VSWR testing and mating connector part number.

## MICRODOT Standard Connectors — Screw-On Series



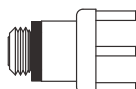
### Plug

| S-50 Ohm Series | S-70 Ohm Series | S-93 Ohm Series |
|-----------------|-----------------|-----------------|
| 032-0021-0001   | 032-0010-0001   | 032-0011-0001   |
| 032-0023-0001   | 032-0022-0001   | 032-0017-0001   |
| 032-0025-0001   | 032-0067-0001   | 032-0066-0001   |
| 032-0033-0001   | 032-0078-0001   | 032-0071-0001   |
| 032-0097-0001   | 032-0222-0001   | 032-0092-0001   |
| 032-0098-0001   | 052-0092-0001   | 032-0099-0001   |
| 032-0155-0001   |                 | 052-0200-0001   |
| 032-0156-0001   |                 |                 |
| 052-0213-0001   |                 |                 |
| 052-0235-0001   |                 |                 |
| 052-0235-0003   |                 |                 |
| 052-0370-0001   |                 |                 |
| 052-0542-0001   |                 |                 |



### Right-Angle Plug

| S-50 Ohm Series | S-70 Ohm Series | S-93 Ohm Series |
|-----------------|-----------------|-----------------|
| 032-0015-0001   | 032-0013-0001   | 032-0014-0001   |
| 052-0204-0001   | 052-0299-0001   | 032-0068-0001   |
| 052-0215-0001   | 052-0379-0001   | 032-0153-0001   |
| 052-0337-0001   |                 | 052-0207-0001   |
|                 |                 | 052-0298-0001   |
|                 |                 | 052-0304-0022   |



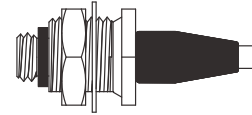
### Printed Circuit Receptacle

| S-50 Ohm Series | S-70 Ohm Series | S-93 Ohm Series |
|-----------------|-----------------|-----------------|
| 031-0059-0001   | 031-0069-0001   | 031-0067-0001   |
| 031-0062-0001   |                 | 031-0080-0001   |
| 051-0450-0001   |                 |                 |



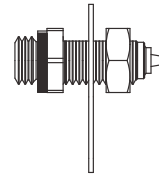
### Jack

| S-50 Ohm Series | S-70 Ohm Series | S-93 Ohm Series |
|-----------------|-----------------|-----------------|
| 031-0034-0001   | 031-0036-0001   | 031-0037-0001   |
| 051-0467-0001   | 031-0090-0001   | 031-0088-0001   |



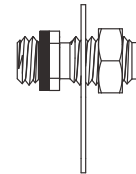
### Bulkhead Jack

| S-50 Ohm Series | S-70 Ohm Series | S-93 Ohm Series |
|-----------------|-----------------|-----------------|
| 031-0033-0001   | 031-0048-0001   | 031-0032-0001   |
|                 |                 | 031-0089-0001   |



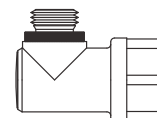
### Receptacle

| S-50 Ohm Series | S-70 Ohm Series | S-93 Ohm Series |
|-----------------|-----------------|-----------------|
| 031-0050-0001   | 031-0051-0001   | 031-0052-0001   |
| 051-0318-0001   |                 |                 |



### Receptacle

| S-50 Ohm Series | S-70 Ohm Series | S-93 Ohm Series |
|-----------------|-----------------|-----------------|
| 031-0001-0001   | 031-0017-0001   | 031-0016-0001   |
| 031-0001-0003   | 031-0018-0001   | 031-0019-0001   |
| 031-0002-0001   |                 | 031-0046-0001   |
| 031-0003-0001   |                 |                 |
| 031-0024-0001   |                 |                 |
| 051-0125-0001   |                 |                 |



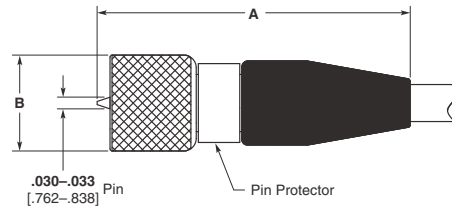
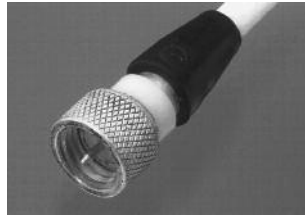
### Right-Angle Printed Circuit Receptacle

| S-50 Ohm Series | S-70 Ohm Series | S-93 Ohm Series |
|-----------------|-----------------|-----------------|
| 031-0061-0001   | 031-0072-0001   | 031-0073-0001   |
| 051-0459-0001   |                 |                 |

## MICRODOT Standard Connectors — Screw-On Series (Continued)

### Plugs

S-50, 70 & 93

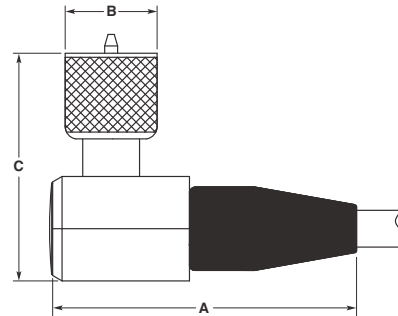
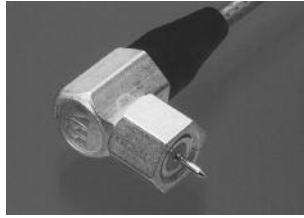


| Part No.                                                   | Dim. A        | Dim. B            | Cable Jacket Max. | Special Features                                                             | Instruction Sheet No. | Former MICRODOT I.S. No. | Assembly Tool |
|------------------------------------------------------------|---------------|-------------------|-------------------|------------------------------------------------------------------------------|-----------------------|--------------------------|---------------|
| <b>S-50 Series (50 Ohm) .190 [4.83] -32 UNF-2B Thread</b>  |               |                   |                   |                                                                              |                       |                          |               |
| 032-0021-0001                                              | .745<br>18.92 | .230<br>5.84 Dia. | .087<br>2.21      | <sup>1</sup> Solderless Assembly                                             | 408-8521              | RF-ASMB-88               | 010-0003-0000 |
| 032-0023-0001                                              | .745<br>18.92 | .230<br>5.84 Dia. | .087<br>2.21      | <sup>1</sup>                                                                 | 408-8522              | RF-ASMB-89               | 010-0003-0000 |
| 032-0025-0001                                              | .745<br>18.92 | .230<br>5.84 Dia. | .093<br>2.36      | <sup>1</sup> Solderless Assembly                                             | 408-8521              | RF-ASMB-88               | 010-0003-0000 |
| 032-0033-0001                                              | .745<br>18.92 | .230<br>5.84 Dia. | .093<br>2.36      | <sup>1</sup>                                                                 | 408-8522              | RF-ASMB-89               | 010-0003-0000 |
| 032-0097-0001                                              | .745<br>18.92 | .250<br>6.35 Hex. | .087<br>2.21      | <sup>1</sup> Solderless Assembly, Hex Nut                                    | 408-8521              | RF-ASMB-88               | 010-0003-0000 |
| 032-0098-0001                                              | .745<br>18.92 | .250<br>6.35 Hex. | .087<br>2.21      | Hex Nut                                                                      | 408-8522              | RF-ASMB-89               | 010-0003-0000 |
| 032-0155-0001                                              | .700<br>17.78 | .250<br>6.35 Hex. | .088<br>2.24      | <sup>1,2</sup> Hex Nut, .187 [4.75] Hex Cable Clamp Nut                      | 408-8522              | RF-ASMB-89               | 010-0003-0000 |
| 032-0156-0001                                              | .700<br>17.78 | .250<br>6.35 Dia. | .088<br>2.24      | <sup>1,2</sup> .187 [4.75] Hex Cable Clamp Nut                               | 408-8522              | RF-ASMB-89               | 010-0003-0000 |
| 052-0213-0001                                              | .745<br>18.92 | .250<br>6.35 Hex. | .087<br>2.21      | <sup>1</sup> Solderless, Hex Nut w/ Safety Wire Holes, .021 [0.53] Wire Max. | 408-8521              | RF-ASMB-88               | 010-0003-0000 |
| 052-0235-0001                                              | .745<br>18.92 | .250<br>6.35 Hex. | .087<br>2.21      | <sup>1,2</sup> Hex Nut                                                       | 408-8522              | RF-ASMB-89               | 010-0003-0000 |
| 052-0235-0003                                              | .745<br>18.92 | .250<br>6.35 Hex. | .087<br>2.21      | <sup>1,2</sup> Hex Nut w/ Safety Wire Holes, .021 [0.53] Wire Max.           | 408-8522              | RF-ASMB-89               | 010-0003-0000 |
| 052-0370-0001                                              | .745<br>18.92 | .250<br>6.35 Hex. | .093<br>2.36      | <sup>1</sup> Hex Nut, Designed for Dual Shield Cable                         | 408-8522              | RF-ASMB-89               | 010-0003-0000 |
| 052-0542-0001                                              | .745<br>18.92 | .250<br>6.35 Hex. | .087<br>2.21      | <sup>1</sup> Hex Nut                                                         | 408-8522              | RF-ASMB-89               | 010-0003-0000 |
| <b>S-70 Series (70 Ohm) .216 [5.49] -32 UNEF-2B Thread</b> |               |                   |                   |                                                                              |                       |                          |               |
| 032-0010-0001                                              | .760<br>19.30 | .255<br>6.48 Dia. | .093<br>2.36      | <sup>1</sup> Solderless Assembly                                             | 408-8521              | RF-ASMB-88               | 010-0004-0000 |
| 032-0022-0001                                              | .760<br>19.30 | .255<br>6.48 Dia. | .093<br>2.36      | <sup>1</sup>                                                                 | 408-8525              | RF-ASMB-95               | 010-0004-0000 |
| 032-0067-0001                                              | .755<br>19.18 | .255<br>6.48 Dia. | .108<br>2.74      | <sup>1</sup>                                                                 | 408-8522              | RF-ASMB-89               | 010-0035-0000 |
| 032-0078-0001                                              | .755<br>19.18 | .255<br>6.48 Dia. | .108<br>2.74      | <sup>1</sup> Solderless Assembly                                             | 408-8521              | RF-ASMB-88               | 010-0035-0000 |
| 032-0222-0001                                              | .760<br>19.30 | .281<br>7.14 Hex. | .093<br>2.36      | <sup>1</sup> Hex Nut w/ Safety Wire Holes, .014 [0.35] Wire Max.             | 408-8525              | RF-ASMB-95               | 010-0004-0000 |
| 052-0092-0001                                              | .760<br>19.30 | .255<br>6.48 Dia. | .093<br>2.36      | <sup>2</sup>                                                                 | 408-8525              | RF-ASMB-95               | 010-0004-0000 |
| <b>S-93 Series (93 Ohm) .250 [6.35] -32 UNEF-2B Thread</b> |               |                   |                   |                                                                              |                       |                          |               |
| 032-0011-0001                                              | .760<br>19.30 | .320<br>8.13 Dia. | .134<br>3.40      | <sup>1</sup> Solderless Assembly                                             | 408-8521              | RF-ASMB-88               | 010-0005-0000 |
| 032-0017-0001                                              | .760<br>19.30 | .320<br>8.13 Dia. | .134<br>3.40      | <sup>1</sup>                                                                 | 408-8525              | RF-ASMB-95               | 010-0005-0000 |
| 032-0066-0001                                              | .950<br>24.13 | .350<br>8.89 Dia. | .154<br>3.91      | <sup>1</sup> Silicone Bend Relief Cap                                        | 408-8523              | RF-ASMB-90               | —             |
| 032-0071-0001                                              | .760<br>19.30 | .320<br>8.13 Dia. | .134<br>3.40      | <sup>1</sup> Cable Inner Conductor, .031 [0.78] Max.                         | 408-8525              | RF-ASMB-95               | 010-0005-0000 |
| 032-0092-0001                                              | .760<br>19.30 | .320<br>8.13 Dia. | .155<br>3.94      | <sup>1</sup>                                                                 | 408-8525              | RF-ASMB-95               | 010-0044-0000 |
| 032-0099-0001                                              | .760<br>19.30 | .312<br>7.92 Hex. | .134<br>3.40      | <sup>1</sup> Hex Nut                                                         | 408-8525              | RF-ASMB-95               | 010-0005-0000 |
| 052-0200-0001                                              | .760<br>19.30 | .312<br>7.92 Hex. | .134<br>3.40      | <sup>1</sup> Hex Nut w/ Safety Wire Holes, .015 [0.38] Wire Max.             | 408-8525              | RF-ASMB-95               | 010-0005-0000 |

<sup>1</sup>Pin protected.

<sup>2</sup>Hole in ferrule permits soldering to clamp ring and shield for increased cable pullout strength.

**MICRODOT Standard Connectors — Screw-On Series** (Continued)

**Right-Angle Plugs**  
**S-50, 70 & 93**


| Part No.                                                   | Dim.<br>A     | Dim.<br>B            | Dim.<br>C     | Cable<br>Jacket<br>Max. | Special Features                                                                          | Instruction<br>Sheet No. | Former<br>MICRODOT<br>I.S. No. | Assembly<br>Tool |
|------------------------------------------------------------|---------------|----------------------|---------------|-------------------------|-------------------------------------------------------------------------------------------|--------------------------|--------------------------------|------------------|
| <b>S-50 Series (50 Ohm) .190 [4.83] -32 UNF-2B Thread</b>  |               |                      |               |                         |                                                                                           |                          |                                |                  |
| 032-0015-0001                                              | .735<br>18.67 | .225<br>5.72<br>Dia. | .570<br>14.48 | .092<br>2.34            |                                                                                           | 408-8520                 | RF-ASMB-87                     | 010-0016-0000    |
| 052-0204-0001                                              | .735<br>18.67 | .250<br>6.35<br>Hex. | .570<br>14.48 | .092<br>2.34            | Hex Nut                                                                                   | 408-8520                 | RF-ASMB-87                     | 010-0016-0000    |
| 052-0215-0001                                              | .735<br>18.67 | .250<br>6.35<br>Hex. | .570<br>14.48 | .092<br>2.34            | Hex Nut w/ Safety<br>Wire Holes,<br>.021 [.533] Wire Max.                                 | 408-8520                 | RF-ASMB-87                     | 010-0016-0000    |
| 052-0337-0001                                              | .745<br>18.92 | .225<br>5.72<br>Dia. | .570<br>14.48 | .111<br>2.82            | Dual Shield Cable                                                                         | 408-8520                 | RF-ASMB-87                     | 010-0016-0000    |
| <b>S-70 Series (70 Ohm) .216 [5.49] -32 UNEF-2B Thread</b> |               |                      |               |                         |                                                                                           |                          |                                |                  |
| 032-0013-0001                                              | .745<br>18.92 | .255<br>6.48<br>Dia. | .570<br>14.48 | .111<br>2.82            |                                                                                           | 408-8520                 | RF-ASMB-87                     | 010-0016-0000    |
| 052-0299-0001                                              | .745<br>18.92 | .281<br>7.14<br>Hex. | .570<br>14.48 | .111<br>2.82            | Hex Nut w/ Safety<br>Wire Holes,<br>.014 [.355] Wire Max.                                 | 408-8520                 | RF-ASMB-87                     | 010-0016-0000    |
| 052-0379-0001                                              | .745<br>18.92 | .281<br>7.14<br>Hex. | .570<br>14.48 | .111<br>2.82            | Hex Nut                                                                                   | 408-8520                 | RF-ASMB-87                     | 010-0016-0000    |
| <b>S-93 Series (93 Ohm) .250 [6.35] -32 UNEF-2B Thread</b> |               |                      |               |                         |                                                                                           |                          |                                |                  |
| 032-0014-0001                                              | .745<br>18.92 | .320<br>8.13<br>Dia. | .630<br>16.00 | .134<br>3.40            |                                                                                           | 408-8520                 | RF-ASMB-87                     | 010-0017-0000    |
| 032-0068-0001                                              | .745<br>18.92 | .320<br>8.13<br>Dia. | .630<br>16.00 | .155<br>3.94            |                                                                                           | 408-8520                 | RF-ASMB-87                     | 010-0017-0000    |
| 032-0153-0001                                              | .745<br>18.92 | .312<br>7.92<br>Hex. | .630<br>16.00 | .155<br>3.94            | Hex Nut                                                                                   | 408-8520                 | RF-ASMB-87                     | 010-0017-0000    |
| 052-0207-0001                                              | .745<br>18.92 | .312<br>7.92<br>Hex. | .630<br>16.00 | .134<br>3.40            | Hex Nut                                                                                   | 408-8520                 | RF-ASMB-87                     | 010-0017-0000    |
| 052-0298-0001                                              | .745<br>18.92 | .312<br>7.92<br>Hex. | .630<br>16.00 | .134<br>3.40            | Hex Nut w/ Safety<br>Wire Holes,<br>.015 [.381] Wire Max.                                 | 408-8520                 | RF-ASMB-87                     | 010-0017-0000    |
| 052-0304-0022                                              | .745<br>18.92 | .312<br>7.92<br>Hex. | .630<br>16.00 | .155<br>3.94            | Hex Nut w/ Safety<br>Wire Holes,<br>.015 [.381] Wire Max.,<br>Silicone Bend<br>Relief Cap | 408-8520                 | RF-ASMB-87                     | 010-0017-0000    |

## MICRODOT Standard Connectors — Screw-On Series (Continued)

### Jacks

#### S-50, 70 & 93

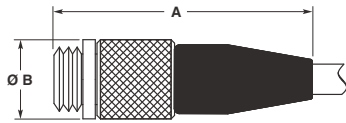


Fig. 1

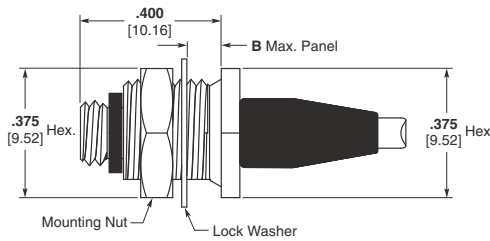
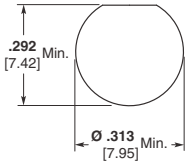


Fig. 2



Mounting Hole

| Part No.                                                   | Fig. | Dim. A         | Dim. B       | Cable Jacket Max. | Special Features                      | Instruction Sheet No. | Former MICRODOT I.S. No. | Assembly Tool |
|------------------------------------------------------------|------|----------------|--------------|-------------------|---------------------------------------|-----------------------|--------------------------|---------------|
| <b>S-50 Series (50 Ohm) .190 [4.83] -32 UNF-2A Thread</b>  |      |                |              |                   |                                       |                       |                          |               |
| 031-0033-0001                                              | 2    | .870<br>22.10  | .140<br>3.56 | .088<br>2.24      |                                       | 408-8522              | RF-ASMB-89               | 010-0003-0000 |
| 031-0034-0001                                              | 1    | .750<br>19.05  | .235<br>5.97 | .087<br>2.21      |                                       | 408-8522              | RF-ASMB-89               | 010-0003-0000 |
| 051-0467-0001                                              | 1    | .720<br>18.30  | .235<br>5.97 | .079<br>2.01      | Hex Collet Cable Clamp                | 408-8522              | RF-ASMB-89               | 010-0003-0000 |
| <b>S-70 Series (70 Ohm) .216 [5.49] -32 UNEF-2A Thread</b> |      |                |              |                   |                                       |                       |                          |               |
| 031-0036-0001                                              | 1    | .760<br>19.30  | .255<br>6.48 | .093<br>2.36      |                                       | 408-8522              | RF-ASMB-89               | 010-0004-0000 |
| 031-0048-0001                                              | 2    | .880<br>22.35  | .140<br>3.56 | .093<br>2.36      |                                       | 408-8525              | RF-ASMB-95               | 010-0004-0000 |
| 031-0090-0001                                              | 1    | .760<br>19.30  | .255<br>6.48 | .109<br>2.77      |                                       | 408-8522              | RF-ASMB-89               | 010-0035-0000 |
| <b>S-93 Series (93 Ohm) .250 [6.35] -32 UNEF-2A Thread</b> |      |                |              |                   |                                       |                       |                          |               |
| 031-0032-0001                                              | 2    | .880<br>22.35  | .155<br>3.94 | .134<br>3.40      |                                       | 408-8525              | RF-ASMB-95               | 010-0005-0000 |
| 031-0037-0001                                              | 1    | .760<br>19.30  | .320<br>8.13 | .134<br>3.40      |                                       | 408-8525              | RF-ASMB-95               | 010-0005-0000 |
| 031-0088-0001                                              | 1    | 1.000<br>25.40 | .320<br>8.13 | .154<br>3.91      |                                       | 408-8533              | RF-ASMB-106              | —             |
| 031-0089-0001                                              | 2    | .750<br>19.05  | .140<br>3.56 | .154<br>3.91      | No Mounting Flat, Hex Nut Cable Clamp | 408-8524              | RF-ASMB-92               | —             |

## MICRODOT Standard Connectors — Screw-On Series (Continued)

## Receptacles

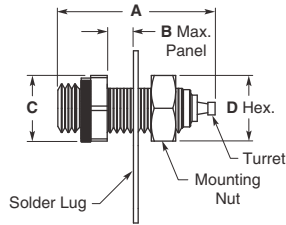


Fig. 1

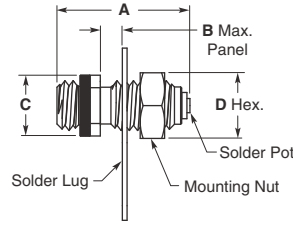


Fig. 2

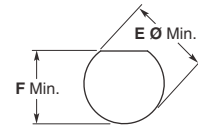
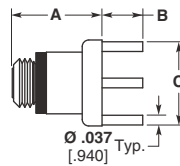

Mounting Hole  
for Fig. 1 & 2


Fig. 3

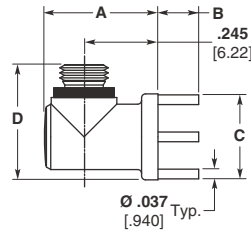
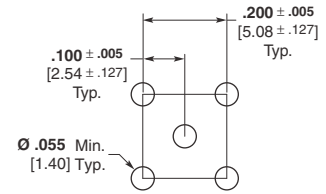


Fig. 4


Mounting Pattern  
for Fig. 3 & 4

| Part No.                                                   | Fig. | Dim.<br>A     | Dim.<br>B    | Dim.<br>C    | Dim.<br>D    | Dim.<br>E     | Dim.<br>F    | Special Features                                         |
|------------------------------------------------------------|------|---------------|--------------|--------------|--------------|---------------|--------------|----------------------------------------------------------|
| <b>S-50 Series (50 Ohm) .190 [4.83] -32 UNF-2A Thread</b>  |      |               |              |              |              |               |              |                                                          |
| 031-0001-0001                                              | 2    | .515<br>13.08 | .080<br>2.03 | .187<br>4.75 | Wrench Flats | .250<br>6.35  | .191<br>4.85 | — No Mounting Flat                                       |
| 031-0001-0003                                              | 2    | .510<br>12.95 | .110<br>2.80 | .187<br>4.75 | Wrench Flats | .250<br>6.35  | .191<br>4.85 | — No Mounting Flat                                       |
| 031-0002-0001                                              | 2    | .515<br>13.08 | .150<br>3.81 | .187<br>4.75 | Wrench Flats | .250<br>6.35  | .191<br>4.85 | — No Mounting Flat                                       |
| 031-0003-0001                                              | 2    | .255<br>6.48  | —            | .187<br>4.75 | Wrench Flats | —             | .190<br>4.83 | -32 — No Nut or Solder Lug, Threads into Panel           |
| 031-0024-0001                                              | 2    | .555<br>14.10 | .120<br>3.05 | .344<br>8.74 | Wrench Flats | .438<br>11.13 | .345<br>8.76 | — Housing Isolated by Nylon Insulator                    |
| 031-0050-0001                                              | 1    | .605<br>15.37 | .160<br>4.06 | .250<br>6.35 | Hex.         | .250<br>4.75  | .191<br>4.85 | .173<br>4.39                                             |
| 031-0059-0001                                              | 3    | .340<br>8.64  | .155<br>3.93 | .330<br>8.38 | Dia.         | —             | —            | —                                                        |
| 031-0061-0001                                              | 4    | .425<br>10.80 | .155<br>3.93 | .330<br>8.38 | Dia.         | .480<br>12.20 | —            | —                                                        |
| 031-0062-0001                                              | 3    | .345<br>8.76  | .250<br>6.35 | .330<br>8.38 | Dia.         | —             | —            | —                                                        |
| 051-0125-0001                                              | 2    | .315<br>8.00  | .125<br>3.18 | .187<br>4.75 | Wrench Flats | —             | .138<br>3.50 | — No Mounting Thread, Solder or Press into Panel         |
| 051-0318-0001                                              | 1    | .605<br>15.37 | .160<br>4.06 | .250<br>6.35 | Hex.         | .250<br>4.75  | .191<br>4.85 | .173<br>4.39 w/ Safety Wire Holes, .014 [.355] Wire Max. |
| 051-0450-0001                                              | 3    | .340<br>8.64  | .050<br>1.27 | .330<br>8.38 | Dia.         | —             | —            | —                                                        |
| 051-0459-0001                                              | 4    | .425<br>10.80 | .155<br>3.93 | .330<br>8.38 | Dia.         | .480<br>12.20 | —            | — 3 Outer Legs                                           |
| <b>S-70 Series (70 Ohm) .216 [5.49] -32 UNEF-2A Thread</b> |      |               |              |              |              |               |              |                                                          |
| 031-0017-0001                                              | 2    | .555<br>14.10 | .100<br>2.54 | .250<br>6.35 | Hex.         | .281<br>7.14  | .217<br>5.51 | — No Mounting Flat                                       |
| 031-0018-0001                                              | 2    | .555<br>14.10 | .160<br>4.06 | .250<br>6.35 | Hex.         | .281<br>7.14  | .217<br>5.51 | — No Mounting Flat                                       |
| 031-0051-0001                                              | 1    | .605<br>15.37 | .160<br>4.06 | .250<br>6.35 | Hex.         | .281<br>7.14  | .217<br>5.51 | .197<br>5.00                                             |
| 031-0069-0001                                              | 3    | .340<br>8.64  | .155<br>3.94 | .330<br>8.38 | Dia.         | —             | —            | —                                                        |
| 031-0072-0001                                              | 4    | .425<br>10.80 | .155<br>3.94 | .330<br>8.38 | Dia.         | .480<br>12.20 | —            | —                                                        |

**MICRODOT Standard Connectors — Screw-On Series** (Continued)

**Receptacles** (Continued)

| Part No.                                                   | Fig. | Dim.<br>A     | Dim.<br>B    | Dim.<br>C                 | Dim.<br>D     | Dim.<br>E    | Dim.<br>F    | Special Features                    |
|------------------------------------------------------------|------|---------------|--------------|---------------------------|---------------|--------------|--------------|-------------------------------------|
| <b>S-93 Series (93 Ohm) .250 [6.35] -32 UNEF-2A Thread</b> |      |               |              |                           |               |              |              |                                     |
| 031-0016-0001                                              | 2    | .555<br>14.10 | .100<br>2.54 | .312<br>7.92 Hex.         | .312<br>7.92  | .251<br>6.38 | —            | No Mounting Flat                    |
| 031-0019-0001                                              | 2    | .555<br>14.10 | .160<br>2.54 | .312<br>7.92 Hex.         | .312<br>7.92  | .251<br>6.38 | —            | No Mounting Flat                    |
| 031-0046-0001                                              | 2    | .555<br>3.05  | .120<br>3.05 | .345<br>8.76 Wrench Flats | .438<br>11.13 | .345<br>8.76 | —            | Housing Isolated by Nylon Insulator |
| 031-0052-0001                                              | 1    | .605<br>15.37 | .160<br>2.54 | .312<br>7.92 Hex.         | .312<br>7.92  | .251<br>6.38 | .232<br>5.89 |                                     |
| 031-0067-0001                                              | 3    | .340<br>8.64  | .155<br>3.94 | .330<br>8.38 Dia.         | —             | —            | —            |                                     |
| 031-0073-0001                                              | 4    | .425<br>10.80 | .155<br>3.94 | .330<br>8.38 Dia.         | .480<br>12.20 | —            | —            |                                     |
| 031-0080-0001                                              | 3    | .345<br>8.76  | .250<br>6.35 | .330<br>8.38 Dia.         | —             | —            | —            |                                     |



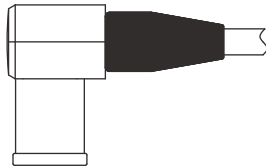
## MICRODOT Standard Connectors — Slide-On Series

All plugs shown below mate with all jacks/receptacles shown below.



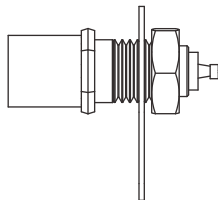
### Plug

| SOS-50 Ohm Series | SOS-70 Ohm Series | SOS-93 Ohm Series |
|-------------------|-------------------|-------------------|
| 032-0055-0001     | 032-0060-0001     | 032-0077-0001     |
|                   | 032-0087-0001     | 032-0084-0001     |



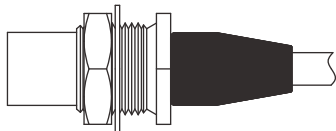
### Right-Angle Plug

| SOS-50 Ohm Series | SOS-70 Ohm Series | SOS-93 Ohm Series |
|-------------------|-------------------|-------------------|
| 032-0063-0001     | 032-0062-0001     | 032-0059-0001     |
|                   |                   | 032-0083-0001     |



### Plug Receptacle

| SOS-50 Ohm Series | SOS-70 Ohm Series | SOS-93 Ohm Series |
|-------------------|-------------------|-------------------|
| 032-0042-0001     | 032-0042-0001     | 032-0042-0001     |
| 052-0061-0001     | 052-0061-0001     | 052-0061-0001     |
| 052-0471-0001     | 052-0471-0001     | 052-0471-0001     |



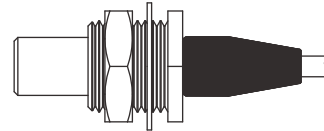
### Bulkhead Plug

| SOS-50 Ohm Series | SOS-70 Ohm Series | SOS-93 Ohm Series |
|-------------------|-------------------|-------------------|
| 032-0056-0001     | 032-0061-0001     | 032-0058-0001     |



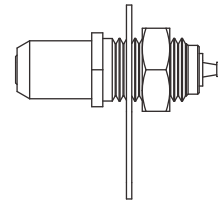
### Jack

| SOS-50 Ohm Series | SOS-70 Ohm Series | SOS-93 Ohm Series |
|-------------------|-------------------|-------------------|
| 031-0053-0001     | 031-0095-0001     | 031-0063-0001     |
|                   |                   | 031-0093-0001     |



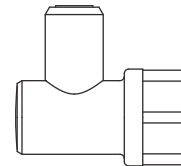
### Bulkhead Jack

| SOS-50 Ohm Series | SOS-70 Ohm Series | SOS-93 Ohm Series |
|-------------------|-------------------|-------------------|
| 031-0054-0001     |                   | 031-0064-0001     |
|                   |                   | 031-0094-0001     |



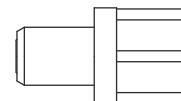
### Receptacle

| SOS-50 Ohm Series | SOS-70 Ohm Series | SOS-93 Ohm Series |
|-------------------|-------------------|-------------------|
| 031-0049-0001     | 031-0049-0001     | 031-0049-0001     |
| 051-0258-0001     | 051-0258-0001     | 051-0258-0001     |
| 051-0325-0001     | 051-0325-0001     | 051-0325-0001     |



### Right-Angle Printed Circuit Receptacle

| SOS-50 Ohm Series | SOS-70 Ohm Series | SOS-93 Ohm Series |
|-------------------|-------------------|-------------------|
| 031-0070-0001     | 031-0070-0001     | 031-0070-0001     |



### Printed Circuit Receptacle

| SOS-50 Ohm Series | SOS-70 Ohm Series | SOS-93 Ohm Series |
|-------------------|-------------------|-------------------|
| 031-0060-0001     | 031-0060-0001     | 031-0060-0001     |
| 031-0065-0001     | 031-0065-0001     | 031-0065-0001     |

## MICRODOT Standard Connectors — Slide-On Series (Continued)

### Straight Plugs

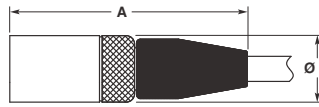
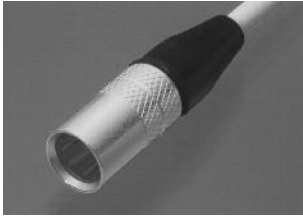
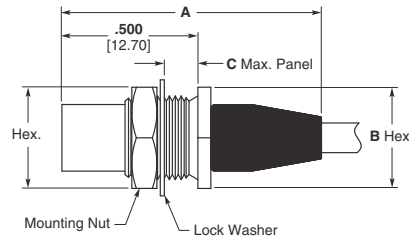
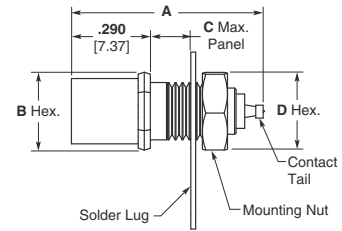
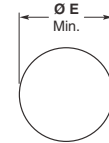


Fig. 1


Fig. 3  
Bulkhead Plug

Fig. 2  
Plug Receptacle

Mounting Hole  
for Fig. 2 & 3

| Part No.                      | Fig. | Dim. A        | Dim. B       | Dim. C       | Dim. D       | Dim. E       | Cable Max. Jacket | Special Features                       | Instruction Sheet No. | Former MICRODOT I.S. No. | Assembly Tool |
|-------------------------------|------|---------------|--------------|--------------|--------------|--------------|-------------------|----------------------------------------|-----------------------|--------------------------|---------------|
| <b>SOS-50 Series (50 Ohm)</b> |      |               |              |              |              |              |                   |                                        |                       |                          |               |
| 032-0042-0001                 | 2    | .705<br>17.91 | .250<br>6.35 | .160<br>4.06 | .281<br>7.14 | .217<br>5.51 | —                 | Turret Pin Contact Tail                | —                     | —                        | —             |
| 032-0055-0001                 | 1    | .870<br>22.10 | .250<br>6.35 | —            | —            | —            | .088<br>2.24      | —                                      | 408-8526              | RF-ASMB-97               | 010-0007-0000 |
| 032-0056-0001                 | 3    | .950<br>24.13 | .375<br>9.53 | .145<br>3.68 | .375<br>9.53 | .313<br>7.95 | .088<br>2.24      | —                                      | 408-8526              | RF-ASMB-97               | 010-0007-0000 |
| 052-0061-0001                 | 2    | .750<br>19.05 | .250<br>6.35 | .160<br>4.06 | .281<br>7.14 | .217<br>5.51 | —                 | Solder Pot Contact Tail                | —                     | —                        | —             |
| 052-0471-0001                 | 2    | .590<br>14.99 | .250<br>6.35 | .095<br>2.41 | .281<br>7.14 | .217<br>5.51 | —                 | Straight Pin Contact Tail <sup>1</sup> | —                     | —                        | —             |
| <b>SOS-70 Series (70 Ohm)</b> |      |               |              |              |              |              |                   |                                        |                       |                          |               |
| 032-0042-0001                 | 2    | .705<br>17.91 | .250<br>6.35 | .160<br>4.06 | .281<br>7.14 | .217<br>5.51 | —                 | Turret Pin Contact Tail                | —                     | —                        | —             |
| 032-0060-0001                 | 1    | .880<br>22.35 | .250<br>6.35 | —            | —            | —            | .093<br>2.36      | —                                      | 408-8529              | RF-ASMB-102              | 010-0007-0000 |
| 032-0061-0001                 | 3    | .960<br>24.38 | .375<br>9.53 | .145<br>3.68 | .375<br>9.53 | .313<br>7.95 | .093<br>2.36      | —                                      | 408-8526              | RF-ASMB-97               | 010-0007-0000 |
| 032-0087-0001                 | 1    | .880<br>22.35 | .250<br>6.35 | —            | —            | —            | .108<br>2.24      | —                                      | 408-8526              | RF-ASMB-97               | 010-0036-0000 |
| 052-0061-0001                 | 2    | .750<br>19.05 | .250<br>6.35 | .160<br>4.06 | .281<br>7.14 | .217<br>5.51 | —                 | Solder Pot Contact Tail                | —                     | —                        | —             |
| 052-0471-0001                 | 2    | .590<br>14.99 | .250<br>6.35 | .095<br>2.41 | .281<br>7.14 | .217<br>5.51 | —                 | Straight Pin Contact Tail <sup>1</sup> | —                     | —                        | —             |
| <b>SOS-93 Series (93 Ohm)</b> |      |               |              |              |              |              |                   |                                        |                       |                          |               |
| 032-0042-0001                 | 2    | .705<br>17.91 | .250<br>6.35 | .160<br>4.06 | .281<br>7.14 | .217<br>5.51 | —                 | Turret Pin Contact Tail                | —                     | —                        | —             |
| 032-0058-0001                 | 3    | .960<br>24.38 | .375<br>9.53 | .145<br>3.68 | .375<br>9.53 | .313<br>7.95 | .134<br>3.40      | —                                      | 408-8529              | RF-ASMB-102              | 010-1008-0000 |
| 032-0077-0001                 | 1    | .880<br>22.35 | .250<br>6.35 | —            | —            | —            | .134<br>3.40      | —                                      | 408-8529              | RF-ASMB-102              | 010-1008-0000 |
| 032-0084-0001                 | 1    | 1.06<br>26.92 | .250<br>6.35 | —            | —            | —            | .154<br>3.91      | —                                      | 408-8523              | RF-ASMB-90               | —             |
| 052-0061-0001                 | 2    | .750<br>19.05 | .250<br>6.35 | .160<br>4.06 | .281<br>7.14 | .217<br>5.51 | —                 | Solder Pot Contact Tail                | —                     | —                        | —             |
| 052-0471-0001                 | 2    | .590<br>14.99 | .250<br>6.35 | .095<br>2.41 | .281<br>7.14 | .217<br>5.51 | —                 | Straight Pin Contact Tail <sup>1</sup> | —                     | —                        | —             |

<sup>1</sup>Lockwasher supplied in place of solder lug.

## MICRODOT Standard Connectors — Slide-On Series (Continued)

### Jacks

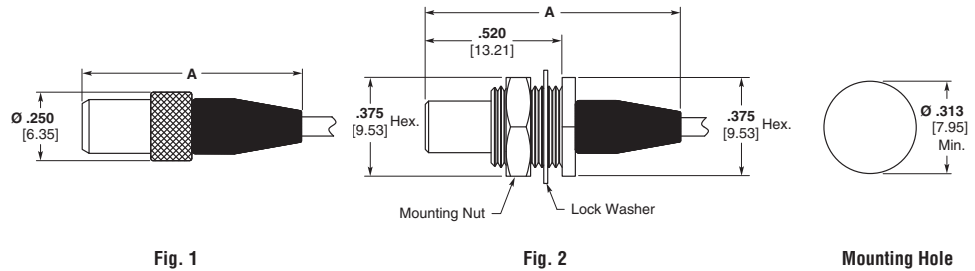


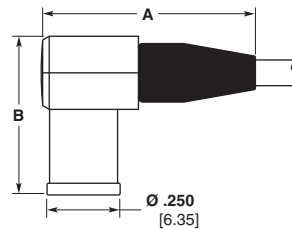
Fig. 1

Fig. 2

Mounting Hole

| Part No.                      | Fig. | Dim. A         | Cable Jacket Max. | Special Features               | Instruction Sheet No. | Former MICRODOT I.S. No. | Assembly Tool |
|-------------------------------|------|----------------|-------------------|--------------------------------|-----------------------|--------------------------|---------------|
| <b>SOS-50 Series (50 Ohm)</b> |      |                |                   |                                |                       |                          |               |
| 031-0053-0001                 | 1    | .800<br>20.32  | .088<br>2.24      |                                | 408-8531              | RF-ASMB-104              | 010-0007-0000 |
| 031-0054-0001                 | 2    | .970<br>24.64  | .088<br>2.24      |                                | 408-8531              | RF-ASMB-104              | 010-0007-0000 |
| <b>SOS-70 Series (70 Ohm)</b> |      |                |                   |                                |                       |                          |               |
| 031-0095-0001                 | 1    | .810<br>20.57  | .108<br>2.74      |                                | 408-8531              | RF-ASMB-104              | 010-0036-0000 |
| <b>SOS-93 Series (93 Ohm)</b> |      |                |                   |                                |                       |                          |               |
| 031-0063-0001                 | 1    | .810<br>20.57  | .134<br>3.40      |                                | 408-8530              | RF-ASMB-103              | 010-1008-0000 |
| 031-0064-0001                 | 2    | .980<br>24.89  | .134<br>3.40      |                                | 408-8530              | RF-ASMB-103              | 010-1008-0000 |
| 031-0093-0001                 | 1    | 1.100<br>27.94 | .154<br>3.91      | .305 [7.75] Dia. Over B.R. Cap | 408-8532              | RF-ASMB-105              | —             |
| 031-0094-0001                 | 2    | .750<br>19.05  | .154<br>3.91      | Hex Nut Cable Clamp            | 408-8524              | RF-ASMB-92               | —             |

### Right-Angle Plugs



| Part No.                      | Dim. A        | Dim. B        | Cable Max. O.D. | Special Features | Instruction Sheet No. | Former MICRODOT I.S. No. | Assembly Tool |
|-------------------------------|---------------|---------------|-----------------|------------------|-----------------------|--------------------------|---------------|
| <b>SOS-50 Series (50 Ohm)</b> |               |               |                 |                  |                       |                          |               |
| 032-0063-0001                 | .735<br>18.67 | .545<br>13.84 | .092<br>2.34    |                  | 408-8520              | RF-ASMB-87               | 010-0016-0000 |
| <b>SOS-70 Series (70 Ohm)</b> |               |               |                 |                  |                       |                          |               |
| 032-0062-0001                 | .745<br>18.92 | .545<br>13.84 | .111<br>2.82    |                  | 408-8520              | RF-ASMB-87               | 010-0016-0000 |
| <b>SOS-93 Series (93 Ohm)</b> |               |               |                 |                  |                       |                          |               |
| 032-0059-0001                 | .745<br>18.92 | .605<br>15.37 | .134<br>3.40    |                  | 408-8520              | RF-ASMB-87               | 010-0017-0000 |
| 032-0083-0001                 | .745<br>18.92 | .605<br>15.37 | .155<br>3.94    |                  | 408-8520              | RF-ASMB-87               | 010-0017-0000 |

## MICRODOT Standard Connectors — Slide-On Series (Continued)

## Receptacles

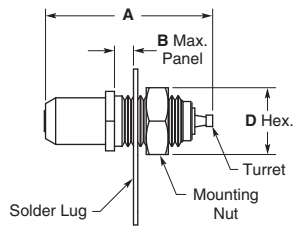


Fig. 1

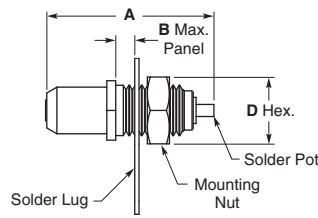


Fig. 2

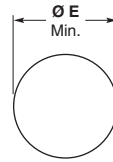
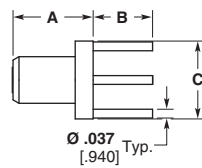

Mounting Hole  
for Fig. 1 & 2


Fig. 3

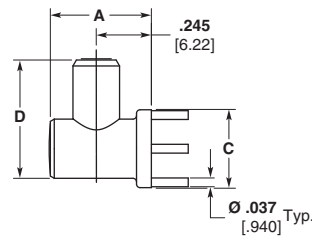
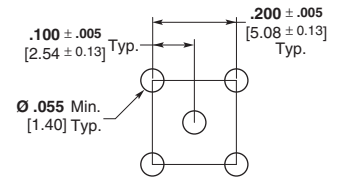


Fig. 4


Mounting Pattern  
for Fig. 3 & 4

| Part No.                                                              | Fig. | Dim.<br>A     | Dim.<br>B    | Dim.<br>C         | Dim.<br>D     | Dim.<br>E             | Special Features                         |
|-----------------------------------------------------------------------|------|---------------|--------------|-------------------|---------------|-----------------------|------------------------------------------|
| <b>SOS-50 (50 Ohm), SOS-70 (70 Ohm), &amp; SOS-93 (93 Ohm) Series</b> |      |               |              |                   |               |                       |                                          |
| 031-0049-0001                                                         | 1    | .715<br>18.16 | .160<br>4.06 | .250<br>6.35 Hex. | .281<br>7.14  | .217<br>5.51          |                                          |
| 031-0060-0001                                                         | 3    | .340<br>8.64  | .155<br>3.94 | .330<br>8.38 Dia. | —             | —                     |                                          |
| 031-0065-0001                                                         | 3    | .340<br>8.64  | .250<br>6.35 | .330<br>8.38 Dia. | —             | —                     |                                          |
| 031-0070-0001                                                         | 4    | .425<br>10.79 | .155<br>3.94 | .330<br>8.38 Dia. | .540<br>13.72 | —                     |                                          |
| 051-0258-0001                                                         | 2    | .715<br>18.16 | .160<br>4.06 | .250<br>6.35 Hex. | .281<br>7.14  | .217<br>5.51          |                                          |
| 051-0325-0001                                                         | 1    | .570<br>14.48 | .140<br>3.56 | .250<br>6.35 Hex. | —             | .216-.32<br>5.49 Thd. | No Nut or Lockwasher, Threads into Panel |

## MICRODOT Standard Connectors — Quick-Connect Series



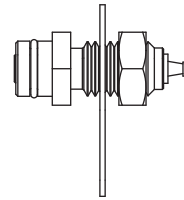
### Plug

| QC-50 Ohm Series | QC-70 Ohm Series | QC-93 Ohm Series |
|------------------|------------------|------------------|
| 032-0002-0001    | 032-0016-0001    | 032-0012-0001    |
| 032-0030-0001    | 032-0031-0001    | 032-0032-0001    |
|                  | 032-0079-0001    | 032-0072-0001    |



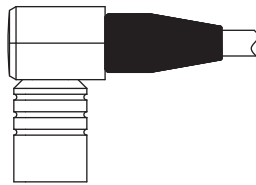
### Jack

| QC-50 Ohm Series | QC-70 Ohm Series | QC-93 Ohm Series |
|------------------|------------------|------------------|
| 031-0038-0001    |                  | 031-0040-0001    |



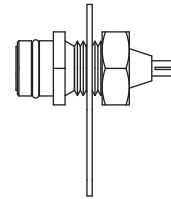
### Receptacle

| QC-50 Ohm Series | QC-70 Ohm Series | QC-93 Ohm Series |
|------------------|------------------|------------------|
| 031-0057-0001    | 031-0057-0001    | 031-0058-0001    |
|                  |                  | 031-0085-0001    |



### Right-Angle Plug

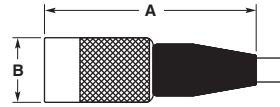
| QC-50 Ohm Series | QC-70 Ohm Series | QC-93 Ohm Series |
|------------------|------------------|------------------|
| 032-0026-0001    | 032-0027-0001    | 032-0020-0001    |
|                  |                  | 052-0228-0001    |



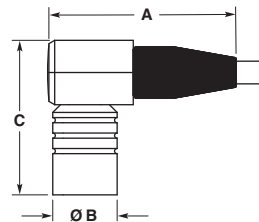
### Receptacle

| QC-50 Ohm Series | QC-70 Ohm Series | QC-93 Ohm Series |
|------------------|------------------|------------------|
| 031-0004-0001    | 031-0004-0001    | 031-0020-0001    |
| 031-0005-0001    | 031-0005-0001    | 031-0021-0001    |
| 031-0006-0001    | 031-0006-0001    |                  |
| 051-0586-0001    | 051-0586-0001    |                  |

**MICRODOT Standard Connectors — Quick-Connect Series** (Continued)

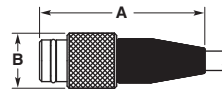
**Straight Plugs**


| Part No.                     | Dim.<br>A      | Dim.<br>B    | Cable<br>Jacket<br>Max. | Special Features              | Instruction<br>Sheet No. | Former<br>MICRODOT<br>I.S. No. | Assembly<br>Tool |
|------------------------------|----------------|--------------|-------------------------|-------------------------------|--------------------------|--------------------------------|------------------|
| <b>QC-50 Series (50 Ohm)</b> |                |              |                         |                               |                          |                                |                  |
| 032-0002-0001                | .820<br>20.83  | .250<br>6.35 | .093<br>2.36            | Solderless Assembly           | 408-8527                 | RF-ASMB-100                    | 010-0007-0000    |
| 032-0030-0001                | .820<br>20.83  | .250<br>6.35 | .093<br>2.36            |                               | 408-8526                 | RF-ASMB-97                     | 010-0007-0000    |
| <b>QC-70 Series (70 Ohm)</b> |                |              |                         |                               |                          |                                |                  |
| 032-0016-0001                | .830<br>21.08  | .250<br>6.35 | .093<br>2.36            | Solderless Assembly           | 408-8527                 | RF-ASMB-100                    | 010-0007-0000    |
| 032-0031-0001                | .830<br>21.08  | .250<br>6.35 | .093<br>2.36            |                               | 408-8529                 | RF-ASMB-102                    | 010-0007-0000    |
| 032-0079-0001                | .840<br>21.34  | .250<br>6.35 | .108<br>2.74            |                               | 408-8526                 | RF-ASMB-97                     | 010-0036-0000    |
| <b>QC-93 Series (93 Ohm)</b> |                |              |                         |                               |                          |                                |                  |
| 032-0012-0001                | .845<br>21.46  | .312<br>7.92 | .134<br>3.40            | Solderless Assembly           | 408-8527                 | RF-ASMB-100                    | 010-0008-0000    |
| 032-0032-0001                | .845<br>21.46  | .312<br>7.92 | .134<br>3.40            |                               | 408-8529                 | RF-ASMB-102                    | 010-0008-0000    |
| 032-0072-0001                | 1.050<br>26.67 | .312<br>7.92 | .154<br>3.91            | Mates with 031-0085-0001 Only | 408-8523                 | RF-ASMB-90                     | —                |

**Right-Angle Plugs**


| Part No.                     | Dim.<br>A     | Dim.<br>B    | Dim.<br>C     | Cable<br>Jacket<br>Max. | Special Features                 | Instruction<br>Sheet No. | Former<br>MICRODOT<br>I.S. No. | Assembly<br>Tool |
|------------------------------|---------------|--------------|---------------|-------------------------|----------------------------------|--------------------------|--------------------------------|------------------|
| <b>QC-50 Series (50 Ohm)</b> |               |              |               |                         |                                  |                          |                                |                  |
| 032-0026-0001                | .735<br>18.67 | .250<br>6.35 | .605<br>15.37 | .092<br>2.34            |                                  | 408-8520                 | RF-ASMB-87                     | 010-0016-0000    |
| <b>QC-70 Series (70 Ohm)</b> |               |              |               |                         |                                  |                          |                                |                  |
| 032-0027-0001                | .745<br>18.92 | .250<br>6.35 | .605<br>15.37 | .111<br>2.82            |                                  | 408-8520                 | RF-ASMB-87                     | 010-0016-0000    |
| <b>QC-93 Series (93 Ohm)</b> |               |              |               |                         |                                  |                          |                                |                  |
| 032-0020-0001                | .745<br>18.92 | .312<br>7.92 | .635<br>16.13 | .134<br>3.40            |                                  | 408-8520                 | RF-ASMB-87                     | 010-0017-0000    |
| 052-0228-0001                | .745<br>18.92 | .312<br>7.92 | .720<br>18.29 | .155<br>3.94            | Mates with<br>031-0085-0001 Only | 408-8520                 | RF-ASMB-87                     | 010-0017-0000    |

**MICRODOT Standard Connectors — Quick-Connect Series** (Continued)

**Jacks**


| Part No.                     | Dim. A        | Dim. B       | Cable Jacket Max. | Special Features | Instruction Sheet No. | Former MICRODOT I.S. No. | Assembly Tool |
|------------------------------|---------------|--------------|-------------------|------------------|-----------------------|--------------------------|---------------|
| <b>QC-50 Series (50 Ohm)</b> |               |              |                   |                  |                       |                          |               |
| 031-0038-0001                | .750<br>19.05 | .250<br>6.35 | .093<br>2.36      |                  | 408-8531              | RF-ASMB-104              | 010-0007-0000 |
| <b>QC-93 Series (93 Ohm)</b> |               |              |                   |                  |                       |                          |               |
| 031-0040-0001                | .760<br>19.30 | .320<br>8.13 | .134<br>3.40      |                  | 408-8530              | RF-ASMB-103              | 010-1009-0000 |

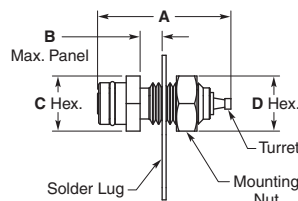
**Receptacles**


Fig. 1

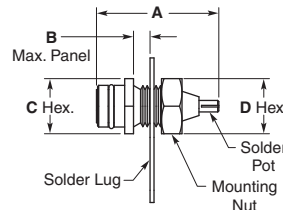
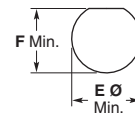


Fig. 2



Mounting Hole

| Part No.                                                 | Fig. | Dim. A        | Dim. B       | Dim. C       | Dim. D       | Dim. E           | Dim. F       | Special Features                                                |
|----------------------------------------------------------|------|---------------|--------------|--------------|--------------|------------------|--------------|-----------------------------------------------------------------|
| <b>QC-50 Series (50 Ohm) &amp; QC-70 Series (70 Ohm)</b> |      |               |              |              |              |                  |              |                                                                 |
| 031-0004-0001                                            | 2    | .555<br>14.10 | .095<br>2.41 | .250<br>6.35 | .250<br>6.35 | .191<br>4.85     | —            | No Mounting Flat                                                |
| 031-0005-0001                                            | 2    | .555<br>14.10 | .165<br>4.19 | .250<br>6.35 | .250<br>6.35 | .191<br>4.85     | —            | No Mounting Flat                                                |
| 031-0006-0001                                            | 2    | .250<br>6.35  | —            | .250<br>6.35 | —            | .190-.32<br>4.83 | Thd          | No Nut or Solder Lug, Threads into Panel                        |
| 031-0057-0001                                            | 1    | .605<br>15.37 | .165<br>4.19 | .250<br>6.35 | .250<br>6.35 | .191<br>4.85     | .173<br>4.39 |                                                                 |
| 051-0586-0001                                            | 2    | .555<br>14.10 | .165<br>4.19 | .250<br>6.35 | .250<br>6.35 | .191<br>4.85     | —            | No Mounting Flat, Split Solder Lug                              |
| <b>QC-93 Series (93 Ohm)</b>                             |      |               |              |              |              |                  |              |                                                                 |
| 031-0020-0001                                            | 2    | .555<br>14.10 | .095<br>2.41 | .312<br>7.92 | .312<br>7.92 | .251<br>6.38     | —            | No Mounting Flat                                                |
| 031-0021-0001                                            | 2    | .555<br>14.10 | .165<br>4.19 | .312<br>7.92 | .312<br>7.92 | .251<br>6.38     | —            | No Mounting Flat                                                |
| 031-0058-0001                                            | 1    | .605<br>15.37 | .160<br>4.06 | .312<br>7.92 | .312<br>7.92 | .251<br>6.38     | .232<br>5.89 |                                                                 |
| 031-0085-0001                                            | 1    | .715<br>18.16 | .165<br>4.19 | .312<br>7.92 | .312<br>7.92 | .251<br>6.38     | —            | No Mounting Flat, Mates with 032-0072-0001 & 052-0228-0001 Only |



## MICRODOT Standard Connectors — Twinax Series

### Twinax Plugs:

For cables with two inner conductors and one shield

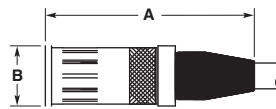


Fig. 1  
Slide-On Series

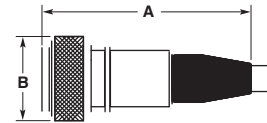


Fig. 2  
Screw-On Series

| Part No.      | Fig. | Dim. A         | Dim. B        | Cable Jacket Max. | Special Features | Instruction Sheet No. | Former MICRODOT I.S. No. | Assembly Tool |
|---------------|------|----------------|---------------|-------------------|------------------|-----------------------|--------------------------|---------------|
| 032-0088-0001 | 1    | 1.085<br>27.56 | .312<br>7.92  | .167<br>4.24      |                  | 408-8528              | RF-ASMB-101              | 010-0031-0000 |
| 032-0093-0001 | 1    | 1.085<br>27.56 | .312<br>7.92  | .123<br>3.12      |                  | 408-8528              | RF-ASMB-101              | 010-0031-0000 |
| 052-0229-0001 | 2    | 1.085<br>27.56 | .440<br>11.18 | .123<br>3.12      |                  | 408-8517              | RF-ASMB-61               | 010-0172-0000 |
| 052-0324-0001 | 2    | 1.095<br>27.81 | .440<br>11.18 | .167<br>4.24      |                  | 408-8517              | RF-ASMB-61               | 010-0172-0000 |

### Twinax Receptacles and Jacks:

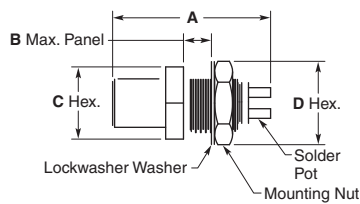


Fig. 1  
Slide-On Series

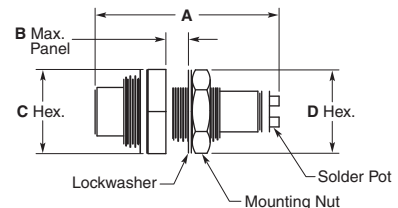


Fig. 2  
Slide-On Series or Screw-On Series

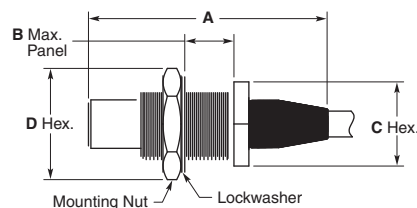
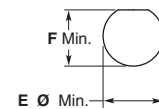


Fig. 3  
Slide-On Series or Screw-On Series



Mounting Hole

| Part No.      | Fig. | Dim. A         | Dim. B                    | Dim. C        | Dim. D       | Dim. E       | Dim. F       | Cable Max. Jacket | Special Features        | Instruction Sheet No. | Former MICRODOT I.S. No. | Assembly Tool |
|---------------|------|----------------|---------------------------|---------------|--------------|--------------|--------------|-------------------|-------------------------|-----------------------|--------------------------|---------------|
| 031-0098-0001 | 1    | .812<br>20.62  | .155<br>3.94              | .375<br>9.53  | .375<br>9.53 | .313<br>7.95 | .292<br>7.42 | —                 |                         | —                     | —                        | —             |
| 051-0248-0001 | 2    | .960<br>24.38  | .155<br>3.94              | .437<br>11.10 | .375<br>9.53 | .313<br>7.95 | .292<br>7.42 | —                 |                         | —                     | —                        | —             |
| 051-0358-0001 | 3    | 1.060<br>26.92 | .075 <sup>1</sup><br>1.91 | .437<br>11.10 | .500<br>12.7 | .376<br>9.55 | .351<br>8.92 | .167<br>4.24      | Lockwasher not included | 408-8516              | RF-ASMB-44               | 010-0186-0000 |
| 051-0389-0001 | 3    | 1.255<br>31.88 | .255 <sup>2</sup><br>6.48 | .437<br>11.10 | .500<br>12.7 | .376<br>9.55 | .351<br>8.92 | .167<br>4.24      |                         | 408-8516              | RF-ASMB-44               | 010-0186-0000 |

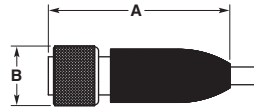
<sup>1</sup>.075 [1.91] Max. Panel when mated with a Screw-On plug, .180 [4.57] Max. Panel when mated with a Slide-On plug.

<sup>2</sup>.255 [6.48] Max. Panel when mated with a Screw-On plug, .360 [9.14] Max. Panel when mated with a Slide-On plug.

## MICRODOT Standard Connectors — Triax Series and Terminals

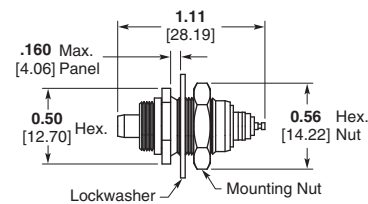
### Triax Plugs:

For cables with one inner conductor and two isolated shields

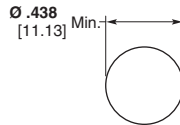


| Part No.      | Dim. A        | Dim. B             | Cable Jacket Max. | Special Features                                    | Instruction Sheet No. | Former MICRODOT I.S. No. | Assembly Tool |
|---------------|---------------|--------------------|-------------------|-----------------------------------------------------|-----------------------|--------------------------|---------------|
| 052-0130-0001 | 1.37<br>34.80 | .440<br>11.18 Dia. | .124<br>3.15      |                                                     | 408-8514              | RF-ASMB-20               | —             |
| 052-0138-0001 | 1.37<br>34.80 | .440<br>11.18 Dia. | .183<br>4.65      |                                                     | 408-8515              | RF-ASMB-21               | —             |
| 052-0593-0001 | 1.37<br>34.80 | .438<br>11.13 Hex. | .214<br>5.44      | Hex Nut w/ Safety Wire Holes, .027 [.686] Wire Max. | 408-8518              | RF-ASMB-73               | —             |

### Triax Receptacle:

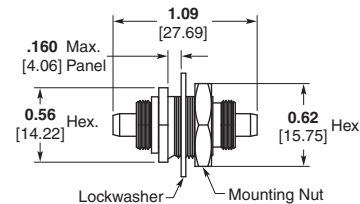


Part Number 051-0618-0001

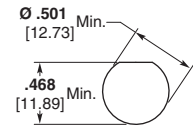


Mounting Hole

### Triax Adapter:



Part Number 053-0161-0001  
Mates with Triax Plug, Both Ends



Mounting Hole

### Terminals

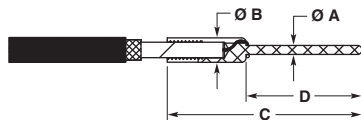


Fig. 1

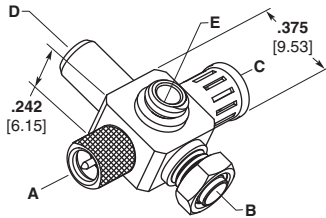


Fig. 2

| Part No.      | Fig. | Dim. A       | Dim. B       | Dim. C        | Dim. D        | Cable Max. Dielectric | Cable Max. Inner Conductor |
|---------------|------|--------------|--------------|---------------|---------------|-----------------------|----------------------------|
| 053-0354-0003 | 1    | .030<br>.762 | .080<br>2.03 | .630<br>16.00 | .375<br>9.53  | .050<br>1.27          | .015<br>.381               |
| 053-0249-0001 | 1    | .030<br>.762 | .105<br>2.67 | .630<br>16.00 | .375<br>9.53  | .071<br>1.80          | .021<br>.533               |
| 053-0495-0001 | 1    | .030<br>.762 | .125<br>3.18 | .880<br>22.35 | .610<br>15.49 | .083<br>2.11          | .022<br>.559               |
| 053-0656-0001 | 1    | .030<br>.762 | .145<br>3.68 | .880<br>22.35 | .375<br>9.53  | .108<br>2.74          | .023<br>.584               |
| 053-0294-0002 | 1    | .030<br>.762 | .145<br>3.68 | .880<br>22.35 | .625<br>15.88 | .108<br>2.74          | .023<br>.584               |
| 033-0115-0002 | 2    | .040<br>1.02 | .063<br>1.60 | .255<br>6.48  | .100<br>2.54  | .042<br>1.07          | .023<br>.584               |
| 033-0116-0001 | 2    | .040<br>1.02 | .094<br>2.39 | .300<br>7.62  | .100<br>2.54  | .068<br>1.73          | .023<br>.584               |
| 033-0117-0001 | 2    | .040<br>1.02 | .140<br>3.56 | .350<br>8.89  | .200<br>5.08  | .108<br>2.74          | .023<br>.584               |
| 053-0154-0001 | 1    | .041<br>1.04 | .080<br>2.03 | .430<br>10.92 | .175<br>4.45  | .050<br>1.27          | .019<br>.483               |
| 053-0250-0001 | 1    | .041<br>1.04 | .080<br>2.03 | .505<br>12.83 | .250<br>6.35  | .050<br>1.27          | .019<br>.483               |
| 053-0020-0003 | 1    | .041<br>1.04 | .080<br>2.03 | .630<br>16.00 | .375<br>9.53  | .050<br>1.27          | .015<br>.381               |
| 053-0021-0003 | 1    | .041<br>1.04 | .105<br>2.67 | .630<br>16.00 | .375<br>9.53  | .071<br>1.80          | .023<br>.584               |
| 053-0267-0003 | 1    | .041<br>1.04 | .105<br>2.67 | .875<br>22.23 | .625<br>15.88 | .071<br>1.80          | .023<br>.584               |
| 053-0265-0001 | 2    | .041<br>1.04 | .128<br>3.25 | .505<br>12.83 | .250<br>6.35  | .102<br>2.59          | .021<br>.533               |
| 053-0230-0001 | 2    | .041<br>1.04 | .128<br>3.25 | .630<br>16.00 | .375<br>9.53  | .102<br>2.59          | .018<br>.457               |
| 053-0155-0001 | 1    | .041<br>1.04 | .145<br>3.68 | .430<br>10.82 | .175<br>4.45  | .108<br>2.74          | .023<br>.584               |
| 053-0022-0003 | 1    | .041<br>1.04 | .145<br>3.68 | .630<br>16.00 | .375<br>9.53  | .108<br>2.74          | .023<br>.584               |
| 053-0388-0001 | 2    | .042<br>1.07 | .098<br>2.49 | .500<br>12.70 | .250<br>6.35  | .065<br>1.65          | .021<br>.533               |
| 053-0251-0001 | 2    | .042<br>1.07 | .098<br>2.49 | .630<br>16.00 | .375<br>9.53  | .065<br>1.65          | .021<br>.533               |

Terminals are gold plated.  
See applicable MICRODOT  
drawing for solder and crimp  
instructions.

## MICRODOT Standard Connectors — Module Blocks



The five faces of basic block can be used to mount any one of 10 different terminations. The 5 faces are coded with letters as shown above. The 10 terminations are coded with Nos. 1–10. Part number, to be complete, must show face location and termination Nos.

desired. (Ex: illustration shows 033-0042—A2—B7—C6—D5—E1) Ordering part number will be converted to a MICRODOT assigned number at time of ordering.

We do not stock complete assemblies.

| Size   | Part No.  | Dim. H       |
|--------|-----------|--------------|
| 50 Ohm | 033-0042* | .250<br>6.35 |
| 70 Ohm | 033-0043* | .250<br>6.35 |
| 93 Ohm | 033-0044* | .300<br>7.62 |

\*Part number to be completed by customer. A Computer Part Number will be assigned by TE Connectivity.

### Interfaces/Terminations

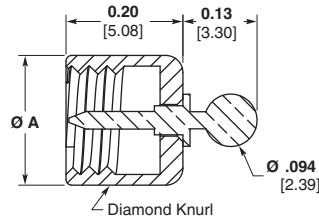
| Termination Number | 1                    | 2                    | 3          | 4            | 5          | 6            |
|--------------------|----------------------|----------------------|------------|--------------|------------|--------------|
| Mating Type        | S                    | S                    | QC         | QC           | SOS        | SOS          |
| Description        | Receptacle           | Plug with Knurl Nut  | Receptacle | Plug         | Receptacle | Plug         |
|                    |                      |                      |            |              |            |              |
|                    | Thread               | Thread Dia.          |            | Dia.         |            | Dia.         |
| 50 Series          | .190-32 UNF<br>4.83  | .190-32 UNF<br>4.83  |            | .250<br>6.35 |            | .250<br>6.35 |
| 70 Series          | .216-32 UNEF<br>5.49 | .216-32 UNEF<br>5.49 |            | .250<br>6.35 |            | .250<br>6.35 |
| 93 Series          | .250-32 UNEF<br>6.35 | .250-32 UNEF<br>6.35 |            | .312<br>7.92 |            | .250<br>6.35 |

### Interfaces/Terminations (Continued)

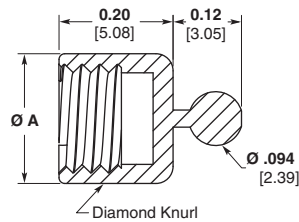
| Termination Number | 7                   | 8                                           | 9                    | 10                             |
|--------------------|---------------------|---------------------------------------------|----------------------|--------------------------------|
| Mating Type        | —                   | —                                           | S                    | S                              |
| Description        | Bulkhead Stud       | Bulkhead Receptacle                         | Plug with Hex. Nut   | Plug, Hex. Nut With Wire Holes |
|                    |                     |                                             |                      |                                |
|                    | Thread              | Thread Hex. Min. Hole Dia. Min. Hole Height | Thread Hex.          | Thread Hex.                    |
| 50 Series          | .190-32 UNF<br>4.83 | .190-32 UNF<br>4.83                         | .190-32 UNF<br>4.83  | .190-32 UNF<br>4.83            |
| 70 Series          | .190-32 UNF<br>4.83 | .216-32 UNEF<br>5.49                        | .216-32 UNEF<br>5.49 | .216-32 UNEF<br>5.49           |
| 93 Series          | .190-32 UNF<br>4.83 | .250-32 UNEF<br>6.35                        | .250-32 UNEF<br>6.35 | .250-32 UNEF<br>6.35           |

## MICRODOT Standard Connectors — Caps, Hoods

### Caps, Screw-On Series For Receptacles and Jacks



**Fig. 1**  
With Grounding Pin



**Fig. 2**  
Without Grounding Pin

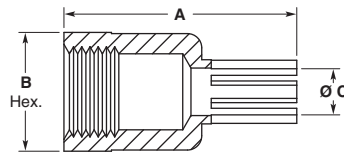
| Part No.           | Fig. | Dim. A       |
|--------------------|------|--------------|
| <b>S-50 Series</b> |      |              |
| 033-0046-0001      | 1    | .235<br>5.97 |
| 033-0056-0001      | 2    | .235<br>5.97 |
| <b>S-70 Series</b> |      |              |
| 033-0047-0001      | 1    | .255<br>6.48 |
| 033-0057-0001      | 2    | .255<br>6.48 |
| <b>S-93 Series</b> |      |              |
| 033-0048-0001      | 1    | .315<br>8.00 |
| 033-0058-0001      | 2    | .315<br>8.00 |

**Material** — Brass per QQ-B-626

**Finish** — Silver plate per QQ-S-365, .0002 [.005] min.

**Note:** All caps can be supplied with .094 [2.39] Dia. bead chain and end ring. When ordering, specify chain length and end ring hole size (.130 [3.30], .140 [3.56], .167 [4.24], or .193 [4.90] Dia.)

### Receptacle Hoods



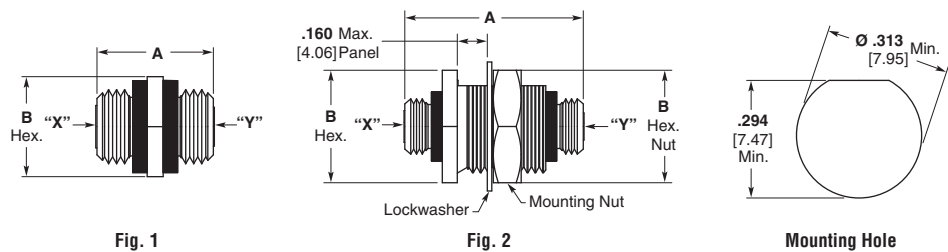
| Part No.      | Dim. A        | Dim. B        | Dim. C       | Thread               | For Receptacle Series        |
|---------------|---------------|---------------|--------------|----------------------|------------------------------|
| 033-0067-0001 | .490<br>12.45 | .250<br>6.35  | .098<br>2.49 | .190-32 UNF<br>4.83  | S-50, QC-50, QC-70           |
| 033-0068-0001 | .490<br>12.45 | .250<br>6.35  | .114<br>2.90 | .216-32 UNEF<br>5.49 | S-70, SOS-50, SOS-70, SOS-93 |
| 033-0069-0001 | .490<br>12.45 | .312<br>7.92  | .156<br>3.96 | .250-32 UNEF<br>6.35 | S-93, QC-93                  |
| 033-0084-0001 | .490<br>12.45 | .250<br>6.35  | .156<br>3.96 | .216-32 UNEF<br>5.49 | S-70, SOS-50, SOS-70, SOS-93 |
| 053-0147-0001 | .840<br>21.34 | .437<br>11.10 | .156<br>3.96 | .375-32 UNEF<br>9.53 | Twinax/Triax Receptacle      |

**Material** — Brass per QQ-B-626

**Finish** — Silver plate per QQ-S-365, .0002 [.005] min.

## MICRODOT Standard Connectors — Adapters

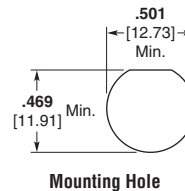
### Feed-Thru Adapters for Screw-On Series



| Part No.      | Fig. | Dim. A        | Dim. B       | End "X" Is      | End "Y" Is      |
|---------------|------|---------------|--------------|-----------------|-----------------|
| 033-0001-0001 | 1    | .300<br>7.62  | .250<br>6.35 | S-50 Receptacle | S-50 Receptacle |
| 033-0053-0001 | 2    | .600<br>15.24 | .375<br>9.53 | S-50 Receptacle | S-50 Receptacle |
| 033-0023-0001 | 1    | .400<br>10.16 | .250<br>6.35 | S-70 Receptacle | S-70 Receptacle |
| 033-0054-0001 | 2    | .600<br>15.24 | .375<br>9.53 | S-70 Receptacle | S-70 Receptacle |
| 033-0036-0001 | 1    | .410<br>10.41 | .312<br>7.92 | S-93 Receptacle | S-93 Receptacle |
| 033-0055-0001 | 2    | .600<br>15.24 | .375<br>9.53 | S-93 Receptacle | S-93 Receptacle |

### BNC and TNC/MICRODOT Adapters for Screw-On, Slide-On, and Quick-Connect Series

For mating BNC/TNC connectors to MICRODOT standard connectors.

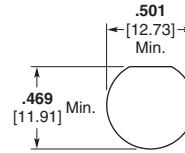


| End "A" Is:             | Configuration | End "B" Is:                  | 50 Series Part No.         | 70 Series Part No. | 93 Series Part No.         |
|-------------------------|---------------|------------------------------|----------------------------|--------------------|----------------------------|
| BNC Plug                |               | Screw-On (S) Type Plug       | 033-0103-0001              | 033-0107-0001      | 033-0111-0001              |
| BNC Plug                |               | Screw-On Type Receptacle     | 033-0101-0001              | 033-0105-0001      | 033-0109-0001              |
| BNC Receptacle          |               | Screw-On (S) Type Plug       | 033-0104-0001              | 053-0108-0001      | 033-0112-0001              |
| BNC Receptacle          |               | Screw-On (S) Type Receptacle | 033-0102-0001              | 033-0106-0001      | 033-0110-0001              |
| BNC Bulkhead Receptacle |               | Screw-On (S) Type Plug       | 033-0127-0001 <sup>1</sup> | —                  | 033-0129-0001 <sup>1</sup> |

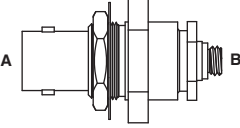
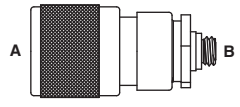
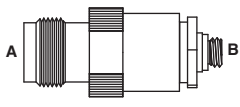
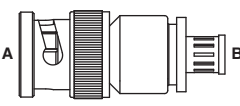
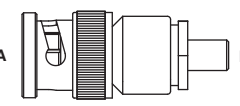
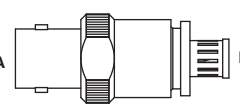
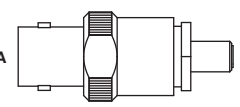
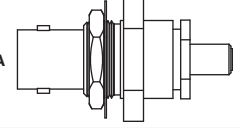
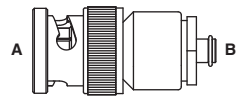
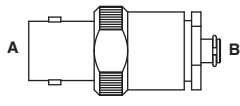
<sup>1</sup>Mounting information: Housing Hex. .688 [17.48], Mtg. Nut Hex. .625 [15.88], Max. Panel .090 [2.29].

**MICRODOT Standard Connectors — Adapters (Continued)**

**BNC and TNC/MICRODOT  
Adapters for Screw-On,  
Slide-On, and Quick-  
Connect Series (Continued)**



Mounting Hole

| End "A" Is:             | Configuration                                                                       | End "B" Is:                              | 50 Series<br>Part No.      | 70 Series<br>Part No.      | 93 Series<br>Part No.      |
|-------------------------|-------------------------------------------------------------------------------------|------------------------------------------|----------------------------|----------------------------|----------------------------|
| BNC Bulkhead Receptacle |    | Screw-On (S)<br>Type<br>Receptacle       | 033-0090-0001 <sup>1</sup> | 033-0125-0001 <sup>1</sup> | 033-0126-0001 <sup>1</sup> |
| TNC Plug                |    | Screw-On (S)<br>Type<br>Receptacle       | 033-0141-0001              | 033-0143-0001              | 033-0145-0001              |
| TNC Receptacle          |    | Screw-On (S)<br>Type<br>Receptacle       | 033-0153-0001              | —                          | —                          |
| BNC Plug                |   | Slide-On (SOS)<br>Type Plug              | 053-0339-0001              | 053-0339-0001              | 053-0339-0001              |
| BNC Plug                |  | Slide-On (SOS)<br>Type<br>Receptacle     | 033-0081-0001              | 033-0081-0001              | 033-0081-0001              |
| BNC Receptacle          |  | Slide-On (SOS)<br>Type Plug              | 033-0092-0001              | 033-0092-0001              | 033-0092-0001              |
| BNC Receptacle          |  | Slide-On (SOS)<br>Type<br>Receptacle     | 033-0082-0001              | 033-0082-0001              | 033-0082-0001              |
| BNC Bulkhead Receptacle |  | Slide-On (SOS)<br>Type<br>Receptacle     | 033-0124-0001 <sup>1</sup> | 033-0124-0001 <sup>1</sup> | 033-0124-0001 <sup>1</sup> |
| BNC Plug                |  | Quick-Connect<br>(QC) Type<br>Receptacle | 033-0093-0001              | 033-0093-0001              | 033-0097-0001              |
| BNC Receptacle          |  | Quick-Connect<br>(QC) Type<br>Receptacle | 033-0094-0001              | 033-0094-0001              | —                          |

<sup>1</sup>Mounting information: Housing Hex. .688 [17.48], Mtg. Nut Hex. .625 [15.88], Max. Panel .090 [2.29].

## MICRODOT Gold Plated Crimp Style Coaxial Connectors

### Performance Data Summary

For Gold Plated Crimp Style Coaxial Connectors

#### Mechanical

**Captive Contacts** — Terminated connector contacts captivated from movement in both directions.

#### Cable Retention

50 Ohm connectors, 15 lb. min.  
70 Ohm connectors, 25 lb. min.  
93 Ohm connectors, 25 lb. min.

#### Recommended Coupling Torque (Threaded Interface)

8 inch/pounds max. [.904 Nm]

#### Recommended Receptacle Mounting Torque (Threaded Interface)

8 inch/pounds max. [.904 Nm]

#### Contact Protection (Unmated)

Pin contact protected by coupling nut.  
Socket protected by insulator and housing.

#### Assembly Methods

##### Straight Plugs & Jacks

**Cable Inner Conductor** — Crimped to contact.

**Cable Shield** — Crimped under housing.

##### Right-Angle Plugs

**Cable Inner Conductor** — Crimped to contact.

**Cable Shield** — Crimped under housing.

#### Environmental

**Temperature Range (Continuous Service)** — -80°F to +392°F. [-62°C to +200°C].

**Vibration**<sup>1,2</sup> — MIL-STD-202, Method 204, Test condition B (15 G peak). No physical damage or electrical discontinuities in excess of 1 microsecond.

**Shock**<sup>1,2</sup> — MIL-STD-202, Method 213, Test Condition H. No physical damage or electrical discontinuity after shock.

**Thermal Shock** — MIL-STD-202, Method 107, Test Condition C.

**Moisture Resistance**<sup>1</sup> — MIL-STD-202, Method 106.

**Salt Spray**<sup>1</sup> — MIL-STD-202, Method 101, Test Condition B (48 hours).

#### Electrical

**Impedance** — Designed to be compatible with 50, 70, or 93 Ohm miniature coaxial cable.

**Dielectric Withstanding Voltage** — 1000 volts RMS at sea level.

**Contact Resistance** — 4 milliohms max., D.C.

**Contact Capacity** — 3 amps, D.C.

**Insulation Resistance** — 5 x 10<sup>3</sup> Megohms min. @ 500 volts D.C.

**Voltage Standing Wave Ratio<sup>3</sup> (VSWR)** — Typical 50 Ohm series, 1.2 max. to 2 GHz.

#### Materials

**Housing, Nut, Inner Sleeve** — Brass per ASTM-B-16, 35% Zinc.

**Insulator** — PTFE per ASTM-D-1710.

**Pin & Socket Contacts** — Beryllium Copper per ASTM-B-196.

**Middle Sleeve** — Copper Alloy.

**Facial Seal, Sealing Sleeve & Gasket** — Silicone Rubber per ZZ-R-765.

**Lockwasher** — #425 Bronze Alloy.

#### Plating

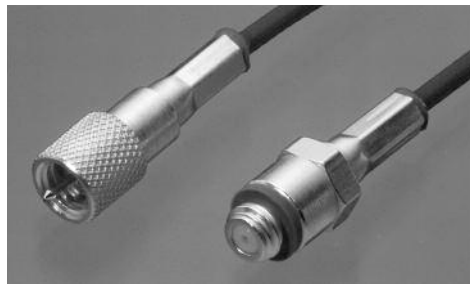
**Contacts, Housing, Nut, Inner Sleeve, Middle Sleeve, Lockwasher** — Gold per MIL-G-45204, Type II, Grade C, Class 1.

#### Notes:

<sup>1</sup>Screw-On Series threaded interface.

<sup>2</sup>TE Connectivity recommends the use of wired connectors in vibration and shock environments. See individual specifications for connectors with wire holes.

<sup>3</sup>VSWR is a system specification. Where performance is critical, purchase TE cable assemblies (See page 2-138) and specify VSWR testing and mating connector part numbers.





## MICRODOT Gold Plated Crimp Style Coaxial Connectors — Screw-On Series

### Straight Plugs

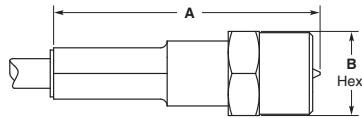


Fig. 1  
Partial Hex. Nut

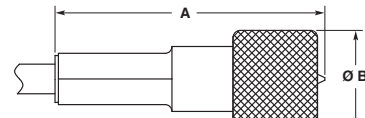


Fig. 2  
Knurl Nut

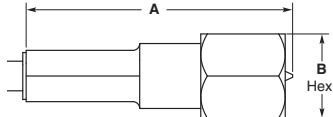


Fig. 3  
Full Hex. Nut

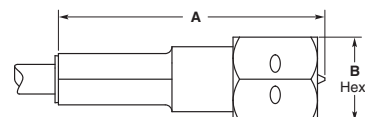


Fig. 4  
Hex. Nut w/ 3 Safety Wire Holes

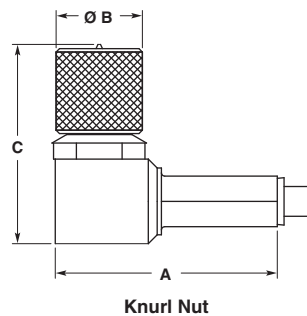
| Part No.                                            | Fig. | Dim. A        | Dim. B       | Cable Max.   | Special Features                          | Instruction Sheet No. | Former MICRODOT I.S. No. |
|-----------------------------------------------------|------|---------------|--------------|--------------|-------------------------------------------|-----------------------|--------------------------|
| <b>50 Ohm Series .190 [4.83] -32 UNF-2B Thread</b>  |      |               |              |              |                                           |                       |                          |
| 132-0112-0001                                       | 1    | .800<br>20.32 | .250<br>6.35 | .088<br>2.24 |                                           | 408-8508              | RF-ASMB-8                |
| 132-0112-0002                                       | 2    | .800<br>20.32 | .250<br>6.35 | .088<br>2.24 |                                           | 408-8508              | RF-ASMB-8                |
| 132-0112-0003                                       | 3    | .800<br>20.32 | .250<br>6.35 | .088<br>2.24 |                                           | 408-8508              | RF-ASMB-8                |
| 132-0112-0004                                       | 4    | .800<br>20.32 | .250<br>6.35 | .088<br>2.24 |                                           | 408-8508              | RF-ASMB-8                |
| 132-0113-0001                                       | 1    | .800<br>20.32 | .250<br>6.35 | .088<br>2.24 | With environmental seal                   | 408-8508              | RF-ASMB-8                |
| 132-0113-0002                                       | 2    | .800<br>20.32 | .250<br>6.35 | .088<br>2.24 | With environmental seal                   | 408-8508              | RF-ASMB-8                |
| 132-0113-0003                                       | 3    | .800<br>20.32 | .250<br>6.35 | .088<br>2.24 | With environmental seal                   | 408-8508              | RF-ASMB-8                |
| 132-0113-0004                                       | 4    | .800<br>20.32 | .250<br>6.35 | .088<br>2.24 | With environmental seal                   | 408-8508              | RF-ASMB-8                |
| 132-0114-0001                                       | 1    | .800<br>20.32 | .250<br>6.35 | .110<br>2.79 |                                           | 408-8508              | RF-ASMB-8                |
| 132-0114-0002                                       | 2    | .800<br>20.32 | .250<br>6.35 | .110<br>2.79 |                                           | 408-8508              | RF-ASMB-8                |
| 132-0114-0003                                       | 3    | .800<br>20.32 | .250<br>6.35 | .110<br>2.79 |                                           | 408-8508              | RF-ASMB-8                |
| 132-0114-0004                                       | 4    | .800<br>20.32 | .250<br>6.35 | .110<br>2.79 |                                           | 408-8508              | RF-ASMB-8                |
| 132-0115-0001                                       | 1    | .800<br>20.32 | .250<br>6.35 | .110<br>2.79 | With environmental seal                   | 408-8508              | RF-ASMB-8                |
| 132-0115-0002                                       | 2    | .800<br>20.32 | .250<br>6.35 | .110<br>2.79 | With environmental seal                   | 408-8508              | RF-ASMB-8                |
| 132-0115-0003                                       | 3    | .800<br>20.32 | .250<br>6.35 | .110<br>2.79 | With environmental seal                   | 408-8508              | RF-ASMB-8                |
| 132-0115-0004                                       | 4    | .800<br>20.32 | .250<br>6.35 | .110<br>2.79 | With environmental seal                   | 408-8508              | RF-ASMB-8                |
| 132-0509-0002                                       | 2    | .800<br>20.32 | .250<br>6.35 | .116<br>2.95 | Dual shield cable version of RG 188 & 316 | 408-8508              | RF-ASMB-8                |
| <b>70 Ohm Series .216 [5.49] -32 UNEF-2B Thread</b> |      |               |              |              |                                           |                       |                          |
| 132-0200-0001                                       | 1    | .800<br>20.32 | .281<br>7.14 | .110<br>2.79 |                                           | 408-8508              | RF-ASMB-8                |
| 132-0200-0002                                       | 2    | .800<br>20.32 | .290<br>7.37 | .110<br>2.79 |                                           | 408-8508              | RF-ASMB-8                |
| 132-0200-0003                                       | 3    | .800<br>20.32 | .281<br>7.14 | .110<br>2.79 |                                           | 408-8508              | RF-ASMB-8                |
| 132-0200-0004                                       | 4    | .800<br>20.32 | .281<br>7.14 | .110<br>2.79 |                                           | 408-8508              | RF-ASMB-8                |
| 132-0201-0001                                       | 1    | .800<br>20.32 | .281<br>7.14 | .110<br>2.79 | With environmental seal                   | 408-8508              | RF-ASMB-8                |
| 132-0201-0002                                       | 2    | .800<br>20.32 | .290<br>7.37 | .110<br>2.79 | With environmental seal                   | 408-8508              | RF-ASMB-8                |
| 132-0201-0003                                       | 3    | .800<br>20.32 | .281<br>7.14 | .110<br>2.79 | With environmental seal                   | 408-8508              | RF-ASMB-8                |
| 132-0201-0004                                       | 4    | .800<br>20.32 | .281<br>7.14 | .110<br>2.79 | With environmental seal                   | 408-8508              | RF-ASMB-8                |

## MICRODOT Gold Plated Crimp Style Coaxial Connectors — Screw-On Series (Continued)

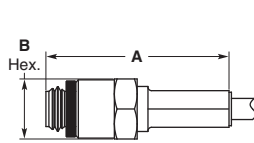
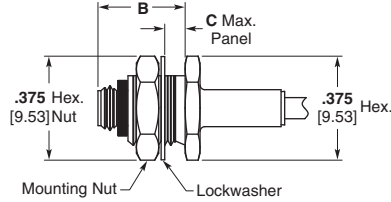
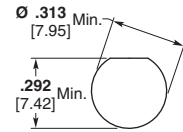
### Straight Plugs (Continued)

| Part No.                                            | Fig. | Dim. A        | Dim. B       | Cable Max.   | Special Features        | Instruction Sheet No. | Former MICRODOT I.S. No. |
|-----------------------------------------------------|------|---------------|--------------|--------------|-------------------------|-----------------------|--------------------------|
| <b>93 Ohm Series .250 [6.35] -32 UNEF-2B Thread</b> |      |               |              |              |                         |                       |                          |
| 132-0300-0001                                       | 1    | .795<br>20.19 | .312<br>7.92 | .155<br>3.94 |                         | 408-8508              | RF-ASMB-8                |
| 132-0300-0002                                       | 2    | .795<br>20.19 | .320<br>8.13 | .155<br>3.94 |                         | 408-8508              | RF-ASMB-8                |
| 132-0300-0003                                       | 3    | .795<br>20.19 | .312<br>7.92 | .155<br>3.94 |                         | 408-8508              | RF-ASMB-8                |
| 132-0300-0004                                       | 4    | .795<br>20.19 | .312<br>7.92 | .155<br>3.94 |                         | 408-8508              | RF-ASMB-8                |
| 132-0301-0001                                       | 1    | .795<br>20.19 | .312<br>7.92 | .155<br>3.94 | With environmental seal | 408-8508              | RF-ASMB-8                |
| 132-0301-0002                                       | 2    | .795<br>20.19 | .320<br>8.13 | .155<br>3.94 | With environmental seal | 408-8508              | RF-ASMB-8                |
| 132-0301-0003                                       | 3    | .795<br>20.19 | .312<br>7.92 | .155<br>3.94 | With environmental seal | 408-8508              | RF-ASMB-8                |
| 132-0301-0004                                       | 4    | .795<br>20.19 | .312<br>7.92 | .155<br>3.94 | With environmental seal | 408-8508              | RF-ASMB-8                |

### Right-Angle Plugs



| Part No.                                            | Dim. A        | Dim. B       | Dim. C        | Cable Jacket Max. | Special Features        | Instruction Sheet No. | Former MICRODOT I.S. No. |
|-----------------------------------------------------|---------------|--------------|---------------|-------------------|-------------------------|-----------------------|--------------------------|
| <b>50 Ohm Series .190 [4.83] -32 UNF-2B Thread</b>  |               |              |               |                   |                         |                       |                          |
| 132-0116-0002                                       | .660<br>16.76 | .250<br>6.35 | .620<br>15.75 | .088<br>2.24      |                         | 408-8509              | RF-ASMB-11               |
| 132-0117-0002                                       | .660<br>16.76 | .250<br>6.35 | .620<br>15.75 | .088<br>2.24      | With environmental seal | 408-8509              | RF-ASMB-11               |
| 132-0118-0002                                       | .695<br>17.65 | .250<br>6.35 | .650<br>16.51 | .110<br>2.79      |                         | 408-8509              | RF-ASMB-11               |
| 132-0119-0002                                       | .695<br>17.65 | .250<br>6.35 | .650<br>16.51 | .110<br>2.79      | With environmental seal | 408-8509              | RF-ASMB-11               |
| <b>70 Ohm Series .216 [5.49] -32 UNEF-2B Thread</b> |               |              |               |                   |                         |                       |                          |
| 132-0202-0002                                       | .695<br>17.65 | .290<br>7.37 | .650<br>16.51 | .110<br>2.79      |                         | 408-8509              | RF-ASMB-11               |
| 132-0203-0002                                       | .695<br>17.65 | .290<br>7.37 | .650<br>16.51 | .110<br>2.79      | With environmental seal | 408-8509              | RF-ASMB-11               |
| <b>93 Ohm Series .250 [6.35] -32 UNEF-2B Thread</b> |               |              |               |                   |                         |                       |                          |
| 132-0302-0002                                       | .710<br>18.03 | .320<br>8.13 | .680<br>17.27 | .155<br>3.94      |                         | 408-8509              | RF-ASMB-11               |
| 132-0303-0002                                       | .710<br>18.03 | .320<br>8.13 | .680<br>17.27 | .155<br>3.94      | With environmental seal | 408-8509              | RF-ASMB-11               |

**MICRODOT Gold Plated Crimp Style Coaxial Connectors — Screw-On Series (Continued)**
**Jacks**

**Fig. 1**

**Fig. 2**

**Mounting Hole**

| Part No.                                            | Fig. | Dim. A        | Dim. B       | Dim. C       | Cable Jacket Max. | Special Features                             | Instruction Sheet No. | Former MICRODOT I.S. No. |
|-----------------------------------------------------|------|---------------|--------------|--------------|-------------------|----------------------------------------------|-----------------------|--------------------------|
| <b>50 Ohm Series .190 [4.83] -32 UNF-2B Thread</b>  |      |               |              |              |                   |                                              |                       |                          |
| 131-0134-0001                                       | 1    | .770<br>19.56 | .250<br>6.35 | —            | .088<br>2.24      |                                              | 408-8508              | RF-ASMB-8                |
| 131-0135-0001                                       | 2    | .770<br>19.56 | .360<br>9.14 | .105<br>2.67 | .088<br>2.24      |                                              | 408-8508              | RF-ASMB-8                |
| 131-0136-0001                                       | 1    | .770<br>19.56 | .250<br>6.35 | —            | .110<br>2.79      |                                              | 408-8508              | RF-ASMB-8                |
| 131-0137-0001                                       | 2    | .770<br>19.56 | .360<br>9.14 | .105<br>2.67 | .110<br>2.79      |                                              | 408-8508              | RF-ASMB-8                |
| 131-0150-0001                                       | 1    | .770<br>19.56 | .250<br>6.35 | —            | .116<br>2.95      | Dual Shield Cable<br>Version of RG 188 & 316 | 408-8508              | RF-ASMB-8                |
| 131-0151-0001                                       | 2    | .770<br>19.56 | .360<br>9.14 | .105<br>2.67 | .116<br>2.95      | Dual Shield Cable<br>Version of RG 188 & 316 | 408-8508              | RF-ASMB-8                |
| <b>70 Ohm Series .216 [5.49] -32 UNEF-2B Thread</b> |      |               |              |              |                   |                                              |                       |                          |
| 131-0200-0001                                       | 1    | .770<br>19.56 | .281<br>7.14 | —            | .110<br>2.79      |                                              | 408-8508              | RF-ASMB-8                |
| 131-0201-0001                                       | 2    | .770<br>19.56 | .360<br>9.14 | .100<br>2.54 | .110<br>2.79      |                                              | 408-8508              | RF-ASMB-8                |
| <b>93 Ohm Series .250 [6.35] -32 UNEF-2B Thread</b> |      |               |              |              |                   |                                              |                       |                          |
| 131-0300-0001                                       | 1    | .760<br>19.30 | .312<br>7.92 | —            | .155<br>3.94      |                                              | 408-8508              | RF-ASMB-8                |
| 131-0301-0001                                       | 2    | .760<br>19.30 | .350<br>8.89 | .095<br>2.41 | .155<br>3.94      |                                              | 408-8508              | RF-ASMB-8                |

## MICRODOT Gold Plated Crimp Style Coaxial Connectors — Screw-On Series (Continued)

### Receptacles

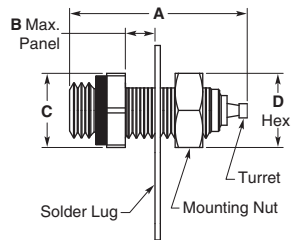


Fig. 1

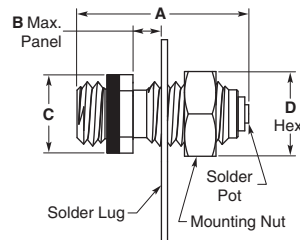


Fig. 2

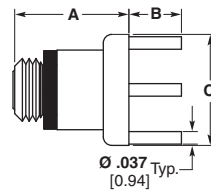


Fig. 3

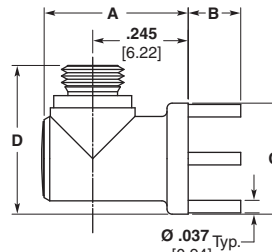
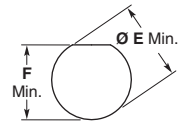
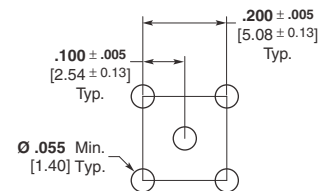


Fig. 4


Mounting Hole  
for Fig. 1 & 2

Mounting Pattern  
for Fig. 3 & 4

| Part No.                                            | Fig. | Dim. A        | Dim. B       | Dim. C                    | Dim. D        | Dim. E                | Dim. F       | Special Features                         |
|-----------------------------------------------------|------|---------------|--------------|---------------------------|---------------|-----------------------|--------------|------------------------------------------|
| <b>50 Ohm Series .190 [4.83] -32 UNF-2A Thread</b>  |      |               |              |                           |               |                       |              |                                          |
| 131-0138-0002                                       | 1    | .605<br>15.37 | .160<br>4.06 | .250<br>6.35 Hex.         | .250<br>6.35  | .191<br>4.85          | .173<br>4.39 |                                          |
| 131-0139-0002                                       | 2    | .515<br>13.08 | .150<br>3.81 | .187<br>4.75 Wrench Flats | .250<br>6.35  | .191<br>4.85          | —            | No Mounting Flat                         |
| 131-0140-0001                                       | 2    | .255<br>6.48  | —            | .187<br>4.75 Wrench Flats | —             | .190<br>4.83 -32 Thd. | —            | No Nut or Solder Lug, Threads into Panel |
| 131-0141-0002                                       | 3    | .340<br>8.64  | .155<br>3.94 | .330<br>8.38 Dia.         | —             | —                     | —            |                                          |
| 131-0142-0002                                       | 4    | .425<br>10.80 | .155<br>3.94 | .330<br>8.38 Dia.         | .480<br>12.19 | —                     | —            |                                          |
| <b>70 Ohm Series .216 [5.49] -32 UNEF-2A Thread</b> |      |               |              |                           |               |                       |              |                                          |
| 131-0202-0002                                       | 1    | .605<br>15.37 | .160<br>4.06 | .250<br>6.35 Hex.         | .281<br>7.14  | .217<br>5.51          | .197<br>5.00 |                                          |
| 131-0705-0001                                       | 3    | .340<br>8.64  | .155<br>3.94 | .330<br>8.38 Dia.         | —             | —                     | —            |                                          |
| <b>93 Ohm Series .250 [6.35] -32 UNEF-2A Thread</b> |      |               |              |                           |               |                       |              |                                          |
| 131-0303-0002                                       | 3    | .340<br>8.64  | .155<br>3.94 | .330<br>8.38 Dia.         | —             | —                     | —            |                                          |
| 131-0304-0001                                       | 4    | .425<br>10.80 | .155<br>3.94 | .330<br>8.38 Dia.         | .480<br>12.19 | —                     | —            |                                          |
| 131-0904-0001                                       | 1    | .605<br>15.37 | .160<br>4.06 | .312<br>7.92 Hex.         | .312<br>7.92  | .251<br>6.38          | .232<br>5.89 |                                          |

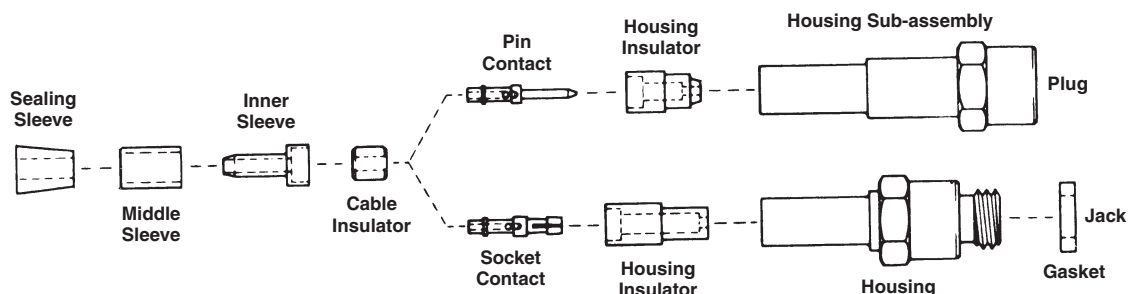
### Gold Plated Crimp Style Coaxial Connectors Assembly Tools

Table 1. Contact Crimp Tools

| MICRODOT Part No. | Manufacturers Part No. |
|-------------------|------------------------|
| 010-0065-0000     | Astro Tool A-810-3     |

Table 2. Housing Crimp Tools

| MICRODOT Part No. | Thomas & Betts Part No. | Max. Cable Diameter |
|-------------------|-------------------------|---------------------|
| 010-0081-0000     | WT-400                  | .088 [2.24]         |
| 010-0082-0000     | WT-402                  | .110 [2.79]         |
| 010-0083-0000     | WT-406                  | .155 [3.94]         |



## MICRODOT LEPRA/CON Ultra-Miniature Connectors

### Performance Data Summary For LEPRA/CON Connectors

#### Mechanical

**Captive Contacts** — Terminated connector contacts captivated from movement in both directions.

**Cable Retention** — 10 lb. min. when properly assembled to RG196/U and RG178/U cable.

**Recommended Coupling Torque (Threaded Interface)** — 24 inch/ounces max.

**Recommended Receptacle Mounting Torque (All Series)** — 24 inch/ounces max.

**Typical Cable Acceptance Dimensions** — Inner conductor: .012 [0.31] nom. Dielectric: .039 [0.99] max. Shield: .059 [1.50] max. Jacket: .081 [2.06] max.

**Contact Protection (Unmated)** — Twist pin contact protected from damage by insulator. Tube socket protected by connector housing.

#### Assembly Methods

**Straight Plugs & Jacks** — Cable Inner Conductor: Crimped to contact. Cable Shield: Crimped under housing.

**Right-Angle Plugs** — Cable Inner Conductor: Soldered to contact. Cable Shield: Crimped under housing.

#### Environmental

**Temperature Range (Continuous Service)** — -85°F to +392°F [-65°C to +200°C].

**Vibration<sup>1,2</sup>** — MIL-STD-202, Method 204, Test Condition B (15 G peaks). No physical damage or electrical discontinuities in excess of 1 microsecond.

**Shock<sup>1,2</sup>** — MIL-STD-202, Method 213, Test Condition H. No physical damage or electrical discontinuity after shock.

**Thermal Shock** — MIL-STD-202, Method 107, Test Condition C.

**Moisture Resistance<sup>1</sup>** — MIL-STD-202, Method 106.

**Salt Spray<sup>1</sup>** — MIL-STD-202, Method 101, Test Condition B (48 hours).

#### Electrical

**Impedance** — Designed to be compatible with 50 Ohm coaxial cable RG178/U.

**Dielectric Withstanding Voltage** — 450 volts RMS at sea level, 250 volts RMS at 50,000 ft [15,240 m], 150 volts RMS at 70,000 ft. [21,336 m]

**Contact Resistance** — 8 milliohms max., D.C.

**Contact Capacity** — 3 amps, D.C.

**Insulation Resistance** — 10<sup>4</sup> Megohms min. @ 500 volts D.C.

**Voltage Standing Wave Ratio<sup>3</sup> (VSWR)** — Typical 50 Ohm Series, 1.2 Maximum to 2 GHz.

#### Materials

**Housing, Nut, Ferrule** — Brass per ASTM-B-16.

**Insulator** — PTFE per ASTM-D-1710.

**Pin & Socket Contact** — Copper Alloy.

**Crimp Sleeve** — Copper Alloy.

**Lockwasher** — #425 Bronze Alloy.

#### Plating

**Contacts, Housing, Nut, Ferrule, Crimp Sleeve, Lockwasher** — Gold per MIL-G-45204, Type II, Grade C, Class 1.

#### Notes:

<sup>1</sup>Screw-On Series, threaded interface.

<sup>2</sup>TE Connectivity recommends the use of safety wired connectors in vibration and shock environments. See individual specifications with wire holes.

<sup>3</sup>VSWR is a system specification. Where performance is critical, purchase TE cable assemblies with Screw-On connectors (See page 2-140) and specify VSWR testing and mating connector part numbers.

## MICRODOT LEPR/CON Ultra-Miniature Connectors — Screw-On Series

### Featuring Twist Pin, Pin and Socket Contacts, Standard Interface

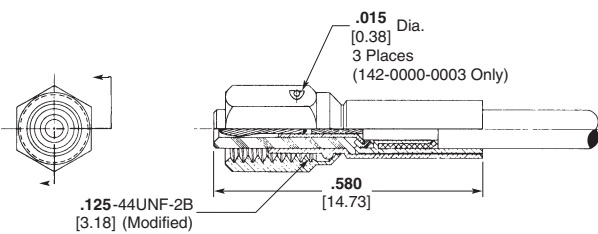


MICRODOT twist pin, pin and socket contacts are used in LEPR/CON connectors. Twist pin contact pins are produced from beryllium copper material with a gold-plated finish and constructed with helically-wound stress free cable of spring copper around a highly conductive soft copper core, terminated with a hemispherical weld. Twist pin

contacts contain seven self-wiping spring surfaces, designed for consistent continuity and very low noise level. Twist pin contacts are self-aligning because of the contact-engaging-end configuration. The sockets are a closed entry tubular-type contact, made of gold-plated copper alloy.

The connectors are designed to be used with coaxial cables RG196/U and RG178/U.

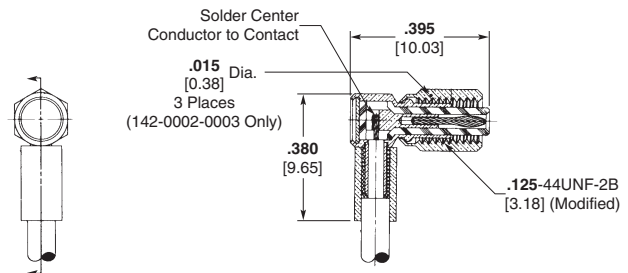
The connectors are designed with the contacts completely protected for reliability. The use of twist pin contacts makes the connectors very rugged for their size.



**Straight Plugs<sup>1</sup>**

| Part No.      | Nut Style                             |
|---------------|---------------------------------------|
| 142-0000-0001 | .156 [3.96] Hex.                      |
| 142-0000-0002 | .160 [4.06] Dia. Knurl                |
| 142-0000-0003 | .156 [3.96] Hex. w/ Safety Wire Holes |

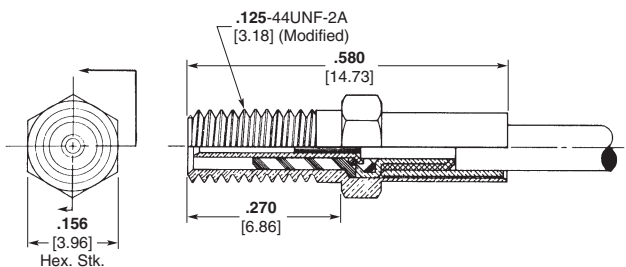
Assembly instructions: RF-ASMB-12



**Right-Angle Plug<sup>1</sup>**

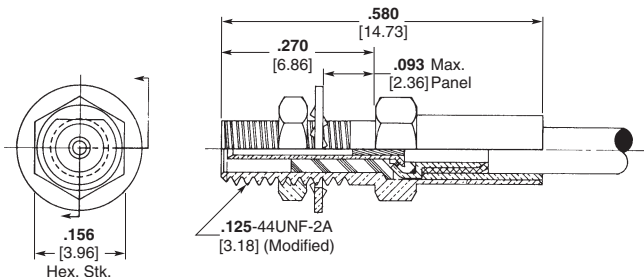
| Part No.      | Nut Style                             |
|---------------|---------------------------------------|
| 142-0002-0001 | .156 [3.96] Hex.                      |
| 142-0002-0002 | .160 [4.06] Dia. Knurl                |
| 142-0002-0003 | .156 [3.96] Hex. w/ Safety Wire Holes |

Assembly instructions: RF-ASMB-13



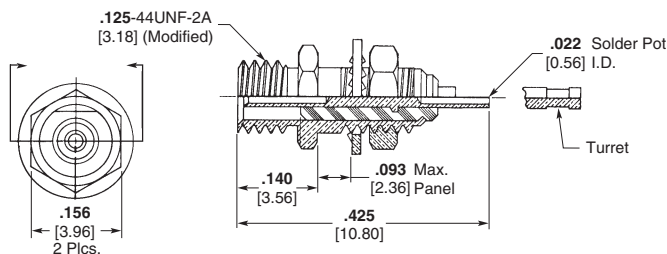
**Jack<sup>1</sup>**

Part Number 141-0000-0001  
Instruction Sheet Number 408-8510  
Former MICRODOT I.S. Number RF-ASMB-12



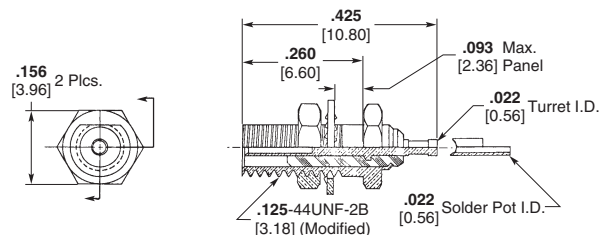
**Bulkhead Jack<sup>1</sup>**

Part Number 141-0001-0001  
Instruction Sheet Number 408-8510  
Former MICRODOT I.S. Number RF-ASMB-12



**Front Mount Receptacle<sup>1</sup>**

| Part No.      | Contact Tail |
|---------------|--------------|
| 141-0002-0001 | Turret       |
| 141-0002-0002 | Solder Pot   |



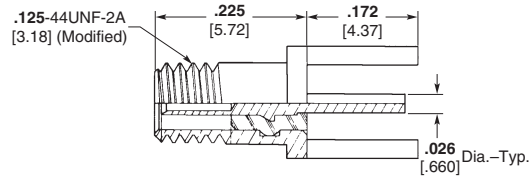
**Rear Mount Receptacle<sup>1</sup>**

| Part No.      | Contact Tail |
|---------------|--------------|
| 141-0003-0001 | Turret       |
| 141-0003-0002 | Solder Pot   |

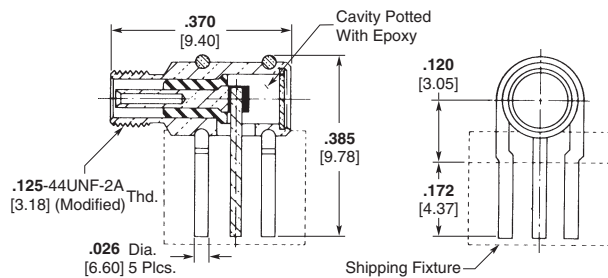
<sup>1</sup>Mounting hole pattern and assembly tools shown on page 2-134.

**MICRODOT LEpra/CON Ultra-Miniature Connectors — Screw-On Series (Continued)**

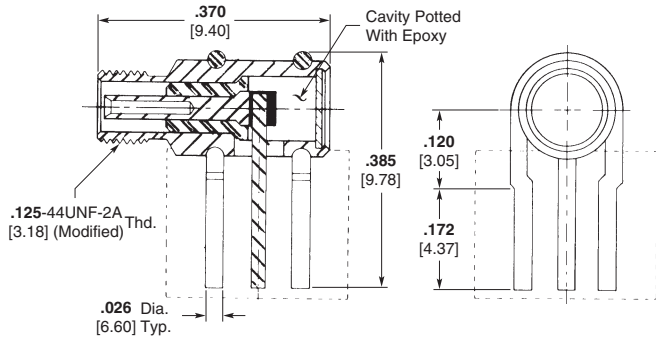
**Featuring Twist Pin,  
Pin and Socket Contacts,  
Standard Interface (Continued)**



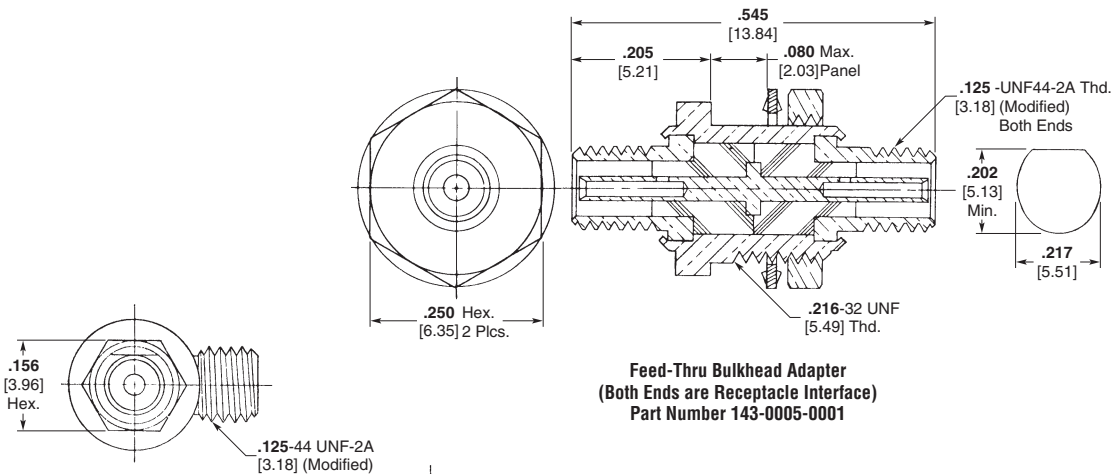
**Straight Printed Circuit Receptacle<sup>1</sup>**  
Part No. 141-0004-0001



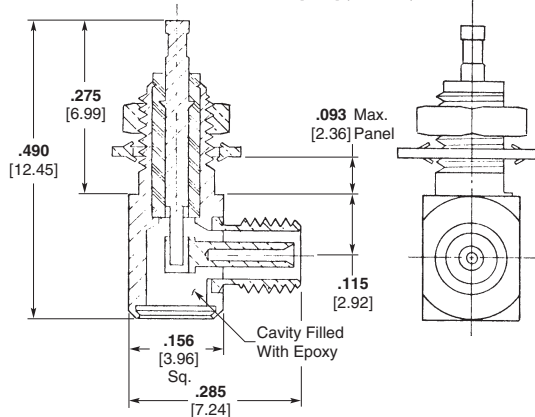
**Right-Angle Printed Circuit Receptacle<sup>1</sup>**  
(Small Mounting Pattern)  
Part Number 141-0019-0001



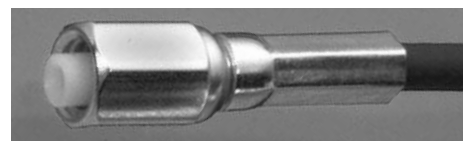
**Right-Angle Printed Circuit Receptacle<sup>1</sup>**  
(Standard Mounting Pattern)  
Part Number 141-0010-0001



**Feed-Thru Bulkhead Adapter**  
(Both Ends are Receptacle Interface)  
Part Number 143-0005-0001



**Right-Angle Receptacle<sup>1</sup>**  
Part Number 141-0013-0001



**Straight Plug**

<sup>1</sup>Mounting hole pattern and assembly tools shown on page 2-134.

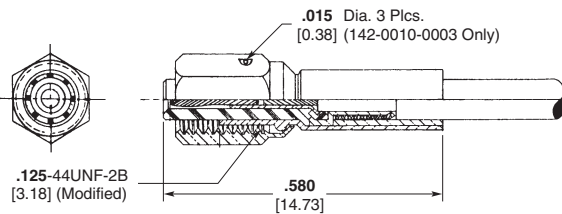


## MICRODOT LEPRA/CON Ultra-Miniature Connectors — Screw-On Series (Continued)

### Featuring Twist Pin, Pin and Socket Contacts with Locking Interface

The MICRODOT LEPRA/CON coaxial connector series is now offered with a unique locking interface feature. This new coupling design permits the user to lock the coaxial plug, when mated to its receptacle, preventing any axial rotation. This

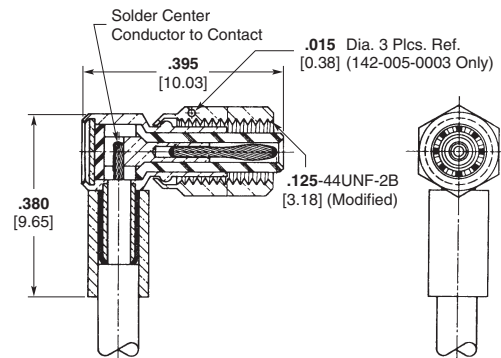
adaptation is especially popular on connector installations requiring straight or 90° cable terminations firmly held in a fixed position. The locking interface is especially suited for telecommunications and instrumentation applications.



Straight Plug<sup>1</sup>

| Part No.      | Nut Style                             |
|---------------|---------------------------------------|
| 142-0010-0001 | .156 [3.96] Hex.                      |
| 142-0010-0002 | .160 [4.06] Dia. Knurl                |
| 142-0010-0003 | .156 [3.96] Hex. w/ Safety Wire Holes |

Assembly instructions: RF-ASMB-12, 142-0010-0001



Right-Angle Plug<sup>1</sup>

| Part No.      | Nut Style                             |
|---------------|---------------------------------------|
| 142-0005-0001 | .156 [3.96] Hex.                      |
| 142-0005-0002 | .160 [4.06] Dia. Knurl                |
| 142-0005-0003 | .156 [3.96] Hex. w/ Safety Wire Holes |

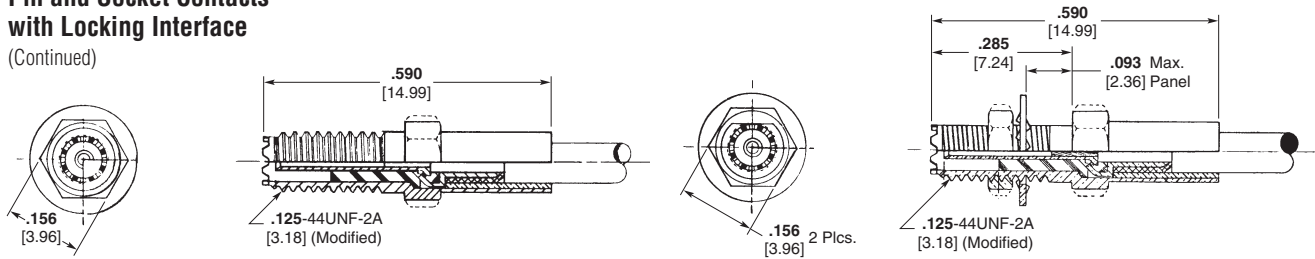
Assembly instructions: RF-ASMB-13, 142-0005-0001

<sup>1</sup>Assembly tools; page 2-134.

**MICRODOT LEPPA/CON Ultra-Miniature Connectors — Screw-On Series (Continued)**

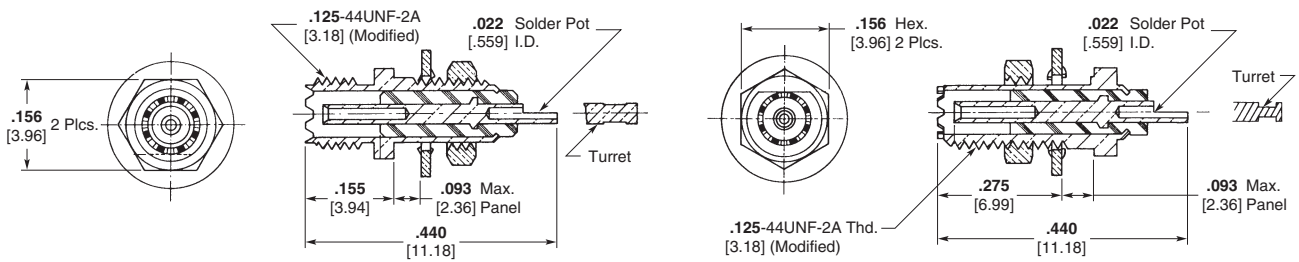
**Featuring Twist Pin,  
Pin and Socket Contacts  
with Locking Interface**

(Continued)



**Straight Jack<sup>1</sup>**  
Part Number 141-0017-0001  
Instruction Sheet Number 408-8510  
Former MICRODOT I.S. Number RF-ASMB-12

**Bulkhead Jack<sup>1</sup>**  
Part Number 141-0014-0001  
Instruction Sheet Number 408-8510  
Former MICRODOT I.S. Number RF-ASMB-12

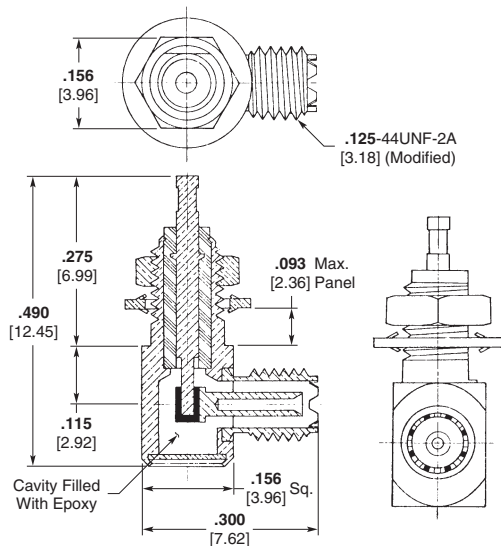


**Front Mount Receptacle<sup>1</sup>**

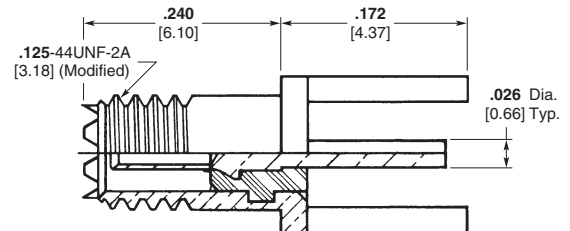
**Rear Mount Receptacle w/ Locking Interface<sup>1</sup>**

| Part No.      | Contact Tail |
|---------------|--------------|
| 141-0012-0001 | Solder Pot   |
| 141-0012-0002 | Turret       |

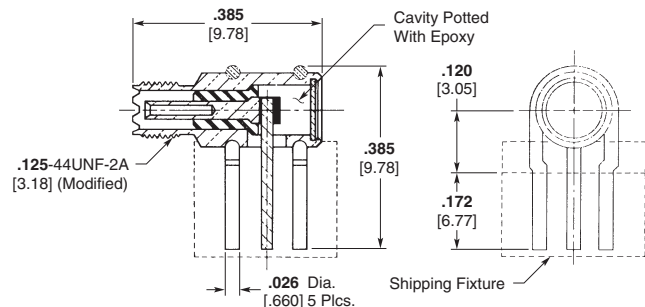
| Part No.      | Contact Tail |
|---------------|--------------|
| 141-0011-0001 | Turret       |
| 141-0011-0002 | Solder Pot   |



**Right-Angle Receptacle<sup>1</sup>**  
Part Number 141-0020-0001



**Straight Printed Circuit Receptacle<sup>1</sup>**  
Part Number 141-0015-0001



**Right-Angle Printed Circuit Receptacle<sup>1</sup>**  
Part Number 141-0023-0001

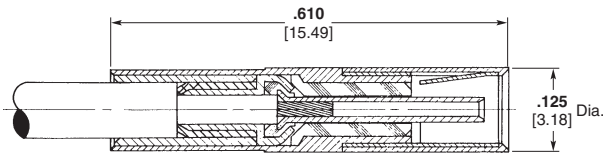
<sup>1</sup>Mounting hole pattern and assembly tools shown on page 2-134.

## MICRODOT LEPRA/CON Ultra-Miniature Connectors — Slide-On Series

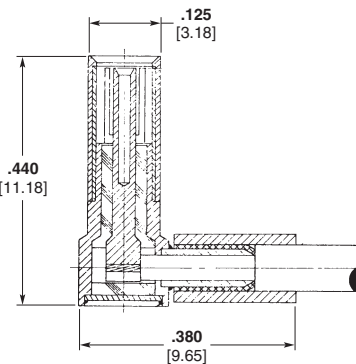
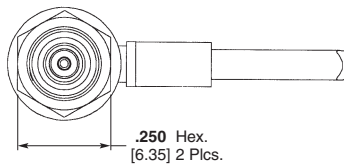
### Featuring Twist Pin, Pin and Socket Contacts



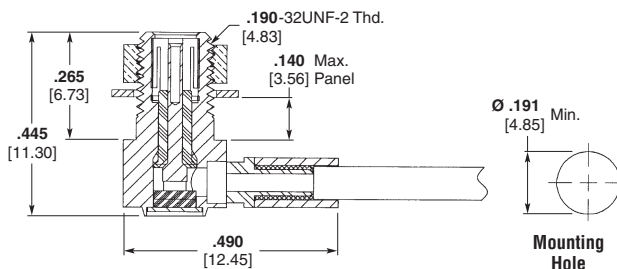
LEPRA/CON Slide-On Connectors offer a convenient mating style along with Ultra-miniature size. Inner contacts are twist pin tubular sockets in plugs and twist pin contacts for jacks and receptacles. Positive housing contact is provided by a three finger contact in the plug housing.



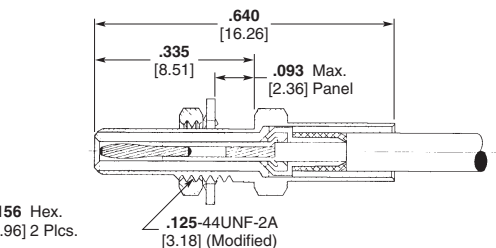
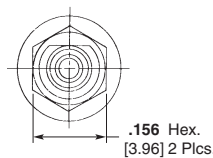
**Straight Plug<sup>1</sup>**  
Part Number 142-1000-0001  
Instruction Sheet Number 408-8512  
Former MICRODOT I.S. Number RF-ASMB-15



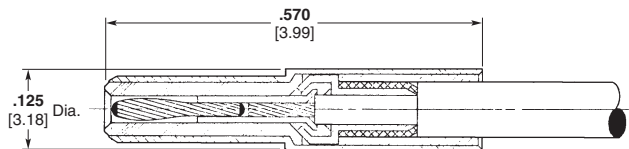
**Right-Angle Plug<sup>1</sup>**  
Part Number 142-1002-0001  
Instruction Sheet Number 408-8513  
Former MICRODOT I.S. Number RF-ASMB-16



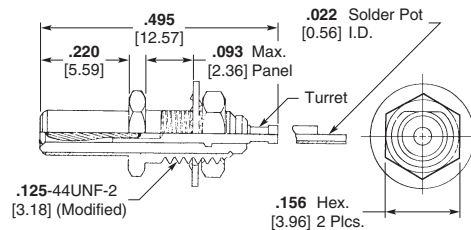
**Right-Angle Bulkhead Mount Plug<sup>1</sup>**  
Part Number 142-1021-0001  
Instruction Sheet Number 408-8519  
Former MICRODOT I.S. Number RF-ASMB-76



**Straight Bulkhead Jack<sup>1</sup>**  
Part Number 141-1001-0001  
Instruction Sheet Number 408-8512  
Former MICRODOT I.S. Number RF-ASMB-15



**Straight Jack<sup>1</sup>**  
Part Number 141-1000-0001  
Instruction Sheet Number 408-8512  
Former MICRODOT I.S. Number RF-ASMB-15



**Front Mount Receptacle<sup>1</sup>**

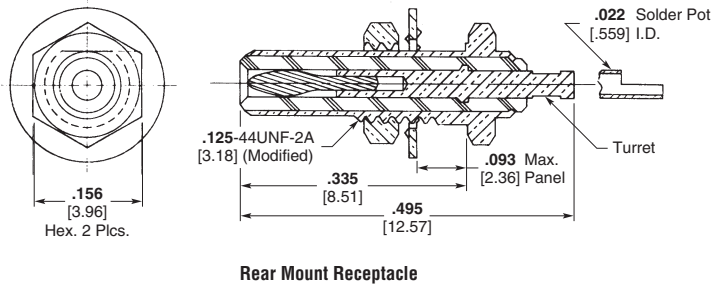
| Part No.      | Contact Tail |
|---------------|--------------|
| 141-1002-0001 | Turret       |
| 141-1002-0002 | Solder Pot   |

<sup>1</sup>Mounting hole and assembly tools shown on page 2-134.

**MICRODOT LEPRA/CON Ultra-Miniature Connectors — Slide-On Series** (Continued)

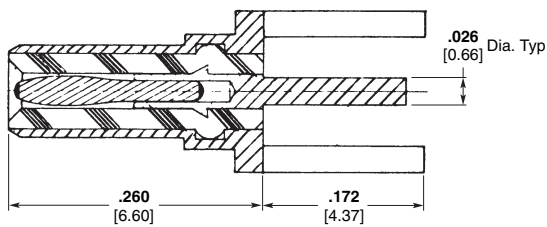
**Featuring Twist Pin,  
Pin and Socket Contacts**

(Continued)

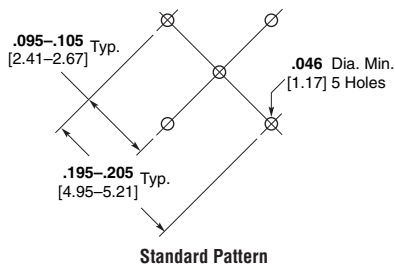
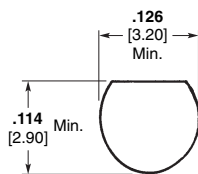


| Part No.      | Contact Tail |
|---------------|--------------|
| 141-1003-0001 | Turret       |
| 141-1003-0002 | Solder Pot   |

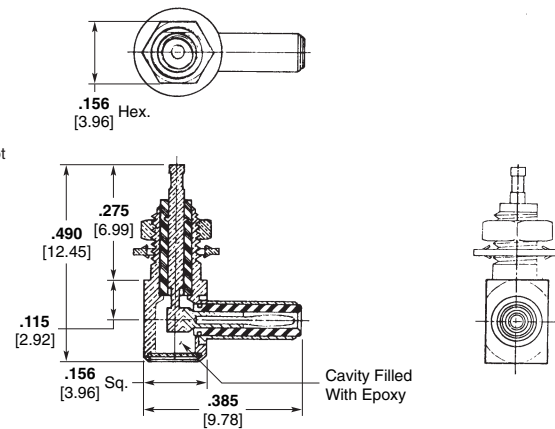
Mounting Hole shown below.



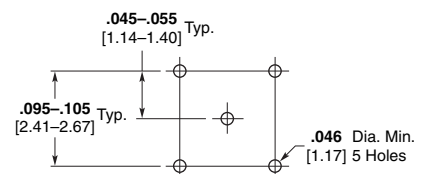
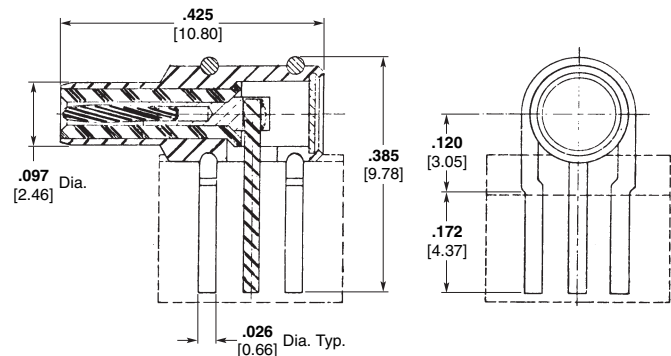
Bulkhead Receptacle Mounting Hole



Printed Circuit Receptacle Mounting Hole Pattern



Right-Angle Printed Circuit Receptacle  
Mounting Hole Pattern Shown Below  
Part Number 141-1005-0001

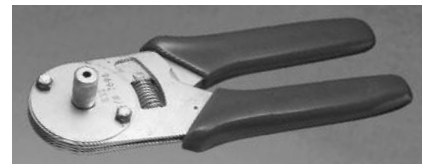


**LEPRA/CON Connector Assembly Tools**



Housing Crimp Tool

| Part No.      | Thomas & Betts Part No. |
|---------------|-------------------------|
| 010-0132-0000 | WT-419                  |

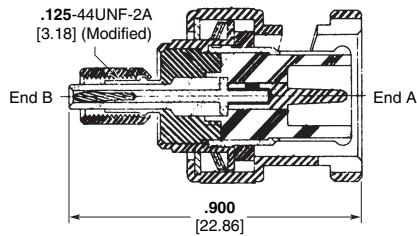


Contact Crimp Tool

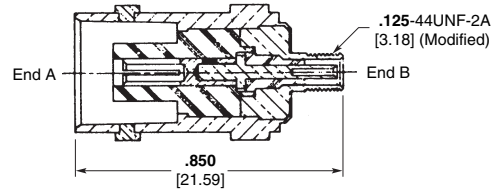
| Connector               | Contact Crimp No. | Astro Tool Part No. |
|-------------------------|-------------------|---------------------|
| Straight Connector Only | 010-0150-0000     | A-826-1             |
| 141-1001-0001           | 010-0161-0000     | 827                 |

**MICRODOT LEPRA/CON Ultra-Miniature Connectors** (Continued)

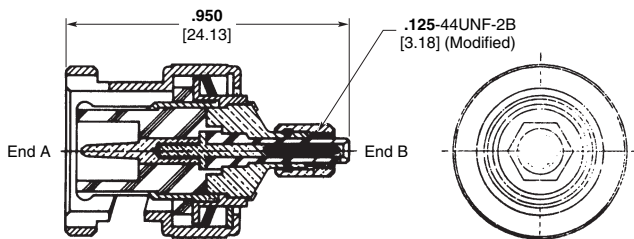
**BNC / LEPRA/CON  
Connector Adapters**



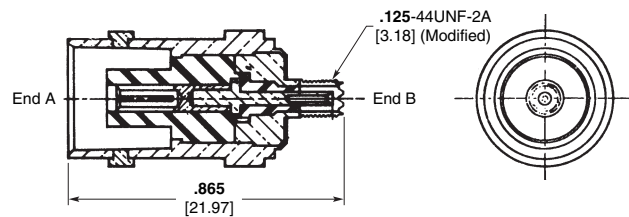
End "B" is MICRODOT  
Screw-On Plug      End "A" is BNC Plug  
Part Number 143-0001-0001



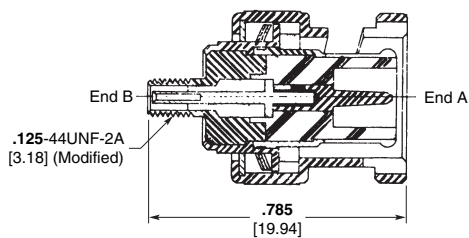
End "A" is BNC Receptacle      End "B" is MICRODOT  
Screw-On Receptacle  
Part Number 143-0003-0001



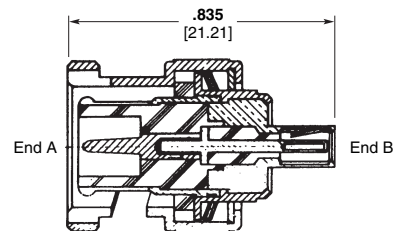
End "A" is BNC Plug      End "B" is MICRODOT Screw-On Plug  
with Locking Interface  
Part Number 143-0029-0001



End "A" is BNC Receptacle      End "B" is MICRODOT Screw-On  
Receptacle with Locking Interface  
Part Number 143-0032-0001



End "B" is Screw-On Receptacle      End "A" is BNC Plug  
Part Number 143-0002-0001

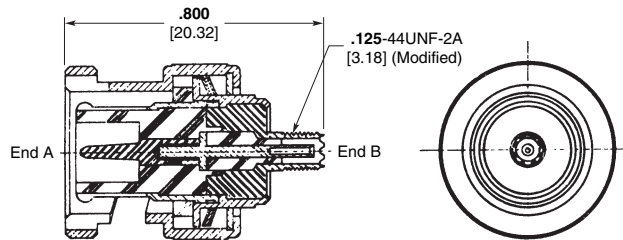


End "A" is BNC Plug      End "B" is MICRODOT  
Slide-On Plug  
Part Number 143-1000-0001

**MICRODOT LEPRA/CON Ultra-Miniature Connectors** (Continued)

**BNC / LEPRA/CON  
Connector Adapters**

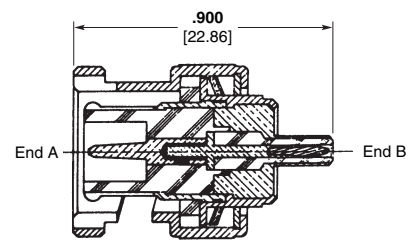
(Continued)



End "A" is BNC Plug

End "B" is MICRODOT Receptacle with  
Locking Interface

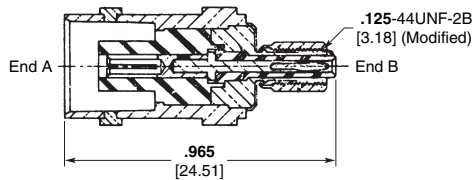
Part Number 143-0031-0001



End "A" is BNC Plug

End "B" is MICRODOT  
Slide-On Receptacle

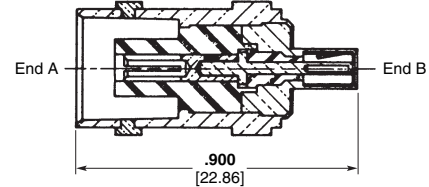
Part Number 143-1002-0001



End "A" is BNC Receptacle

End "B" is MICRODOT  
Screw-On Plug

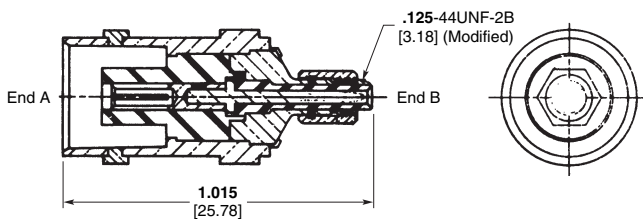
Part Number 143-0004-0001



End "A" is BNC Receptacle

End "B" is MICRODOT  
Slide-On Plug

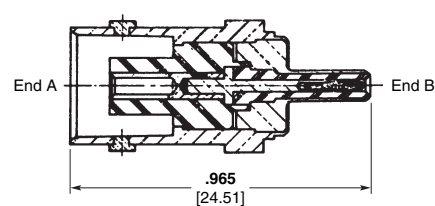
Part Number 143-1001-0001



End "A" is BNC Receptacle

End "B" is MICRODOT Screw-On Plug  
with Locking Interface

Part Number 143-0030-0001



End "A" is BNC Receptacle

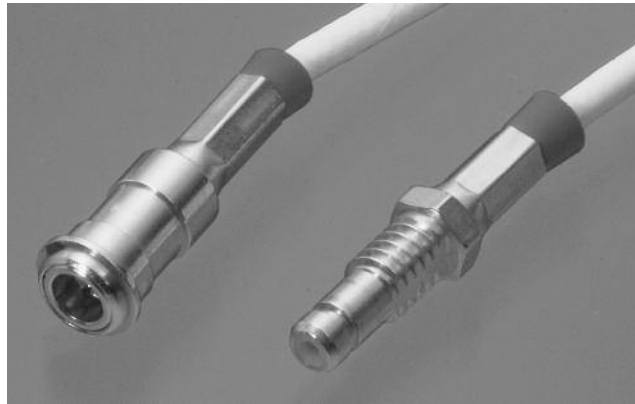
End "B" is MICRODOT  
Slide-On Receptacle

Part Number 143-1003-0001

## MICRODOT LEPRA/CON Ultra-Miniature Connectors — Snap-Lock Series

### Product Facts

- Simple coupling design eliminates the need for tools and saves assembly time
- Positive locking mechanism provides its own fail-safe features
- Inspection of the mated connector is fast, simple and effective
- Push-Pull design allows higher panel density
- Quick-connect and disconnect features



### Performance Data Summary For Snap-Lock Connectors

#### Electrical

**Impedance** — Designed to be compatible with 50 Ohm coaxial cables (Dual Shield RG 196).

**Dielectric Withstanding Voltage** — 450 volts RMS at sea level (Operating).

**Contact Resistance** — 8 milliohms max. at 3 amps. Average resistance: 4 milliohms

**Insulation Resistance** —  $10^4$  megohms min.

**Voltage Standing Wave Ratio (VSWR)** — 3.4 max., 1.3 min. to 12 GHz.

#### Environmental

**Temperature Range** — -85°F to +257°F [-65°C to +125°C].

**Vibration** — MIL-STD-202, Method 204, Test condition D. No change in electrical discontinuity in excess of 1 microsecond.

**Shock** — MIL-STD-202, Method 213A, Test Condition C. No electrical discontinuity or evidence of physical damage.

#### Mechanical

**Cable Acceptance Dimensions** —

**Center conductor** — .012 [0.31] nom.

**Dielectric** — .040 [1.02] max.

**Shield** — .080 [2.03] max.

**Jacket** — .090 [2.29] max..

#### All-Crimp Assembly —

Center contacts and shield are crimped individually.

**Durability** — 500 mating cycles.

#### Materials

**Body and Body Components** — Brass per QQ-B-626 Comp 360.

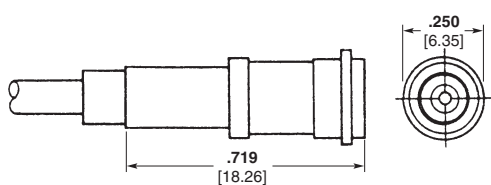
**Contact Material** — Copper Alloy.

**Crimp Sleeves** — Leaded Copper.

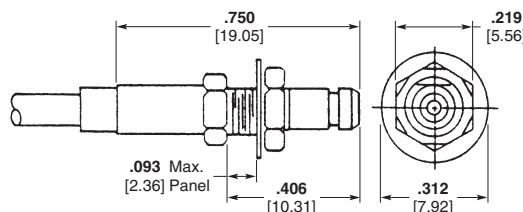
**Insulators** — PTFE per ASTM-D-1710.

**Lockwashers** — #425 Bronze Alloy.

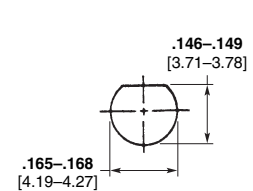
**Plating** — Gold per MIL-G-45204, Type II, Grade C, Class 1.



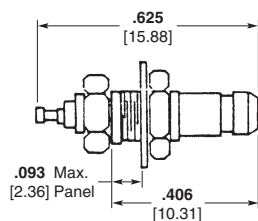
**Straight Plug**  
Part Number 144-0001-0001



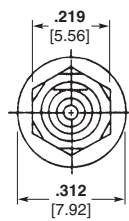
**Bulkhead Jack, Rear Mount**  
Part Number 145-0001-0001



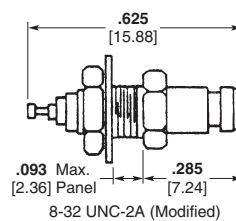
**"D" Hole Dimensions**  
For Panel Mounting



**Receptacle, Rear Mount**  
Part Number 145-0003-0001



**Receptacle, Front Mount**  
Part Number 145-0002-0001



### Connector/Cable Assembly Crimp Tools — Center Contact and Shield

| Tool            | Part No.      |
|-----------------|---------------|
| SKT & Pin Crimp | 010-1004-0000 |
| Housing Crimp   | 010-0081-0000 |



## MICRODOT Cable Assemblies

### Capability

The experience TE Connectivity has gained through years of pioneering efforts in the development of MICRODOT miniaturized cable and connectors is available to customers in the assembly of complex cable/connector combinations. This experience offers the customer low cost and

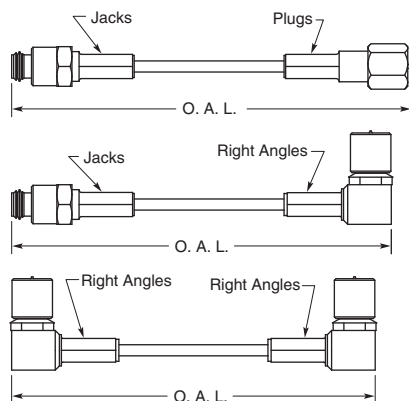
no tooling charges, precision construction, thorough inspection and prompt delivery. The capability also makes it possible for the designer to specify a complete assembly or harness with the understanding that TE will deliver a custom fabrication equal in quality to the MICRODOT compo-

nents it contains. These assemblies are made to the customer's specifications or are designed by the Company's experienced engineers to fit particular requirements. Special features are light weight, reduced size, high operating temperatures and comprehensive layouts.

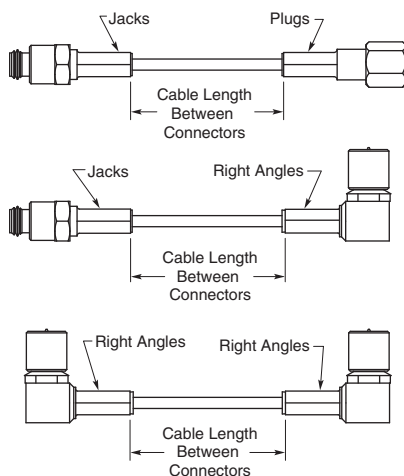
### How To Order

1. Specify MICRODOT part numbers
  - A. Connector, one end
  - B. Connector, other end
  - C. Cable

2. Specify normal length
  - A. Overall length



- B. Or length between connectors



3. Specify length tolerance
  - A. Standard tolerance

| Assembly Length         | Tolerance                   |
|-------------------------|-----------------------------|
| 0 thru 12-1/2"          | ±1/8"                       |
| Over 12-1/2" thru 1000" | ±1% rounded to nearest 1/4" |
| Over 1000"              | ±1% rounded to nearest 1"   |

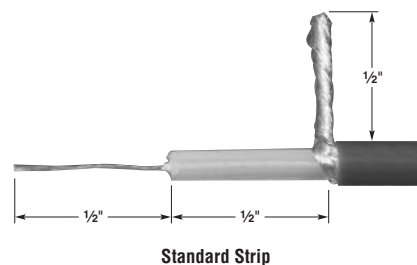
- B. Special tolerance

Tolerances as close as  $\pm 0.5\%$  are available for most cable assemblies at a premium rate. Consult TE Connectivity for details.

4. Specify cable strip (Applies to cable assemblies with only one connector)

- A. Not stripped

- B. Standard strip



- C. Special strip - specify style

Example:

Connector:

142-1000-0001 one end

142-1002-0001 other end

Length:

36" overall, standard tolerance

## MICRODOT Cable Assemblies (Continued)

### Mating Interface Chart

| Plugs    |                                            |              | Jacks and Receptacles |                                            |              |
|----------|--------------------------------------------|--------------|-----------------------|--------------------------------------------|--------------|
| Series   | Description                                | Page         | Series                | Description                                | Page         |
| S50      | Standard                                   | 2-105, 2-106 | S50                   | Standard                                   | 2-107, 2-108 |
| 50 Ohm   | Gold Plated Crimp Style                    | 2-124, 2-125 | 50 Ohm                | Gold Plated Crimp Style                    | 2-126, 2-127 |
| 50 Ohm   | Cap                                        | 2-120        | 50 Ohm                | Feed Thru Adapter                          | 2-121, 2-122 |
| S70      | Standard                                   | 2-105, 2-106 | S70                   | Standard                                   | 2-107, 2-108 |
| 70 Ohm   | Gold Plated Crimp Style                    | 2-124, 2-125 | 70 Ohm                | Gold Plated Crimp Style                    | 2-126, 2-127 |
| 70 Ohm   | Cap                                        | 2-120        | 70 Ohm                | Feed Thru Adapter                          | 2-121, 2-122 |
| S93      | Standard                                   | 2-105, 2-106 | S93                   | Standard                                   | 2-107, 2-109 |
| 93 Ohm   | Gold Plated Crimp Style                    | 2-125        | 93 Ohm                | Gold Plated Crimp Style                    | 2-126, 2-127 |
| 93 Ohm   | Cap                                        | 2-120        | 93 Ohm                | Feed Thru Adapter                          | 2-121, 2-122 |
| SOS 50   | Standard                                   | 2-110, 2-111 | SOS 50                | Standard                                   | 2-110, 2-113 |
| SOS 70   | Standard                                   | 2-111, 2-112 | SOS 70                | Standard                                   | 2-112, 2-113 |
| SOS 93   | Standard                                   | 2-111, 2-112 | SOS 93                | Standard                                   | 2-112, 2-113 |
| QC 50    | Standard                                   | 2-114, 2-115 | QC 50                 | Standard                                   | 2-114        |
| QC 70    | Standard                                   | 2-115        | QC 70                 | Standard                                   | 2-114        |
| QC 93    | Standard                                   | 2-115        | QC 93                 | Standard                                   | 2-114        |
| Screw-On | Twinax                                     | 2-117        | Screw-On              | Twinax                                     | 2-117        |
| Slide-On | Twinax                                     | 2-117        | Slide-On              | Twinax                                     | 2-117        |
| Screw-On | Triax                                      | 2-118        | Screw-On              | Triax                                      | 2-118        |
| Screw-On | LEPRA/CON Connector                        | 2-129        | Screw-On              | LEPRA/CON Connector                        | 2-129, 2-130 |
| Screw-On | LEPRA/CON Connector Interlocking Interface | 2-131        | Screw-On              | LEPRA/CON Connector Interlocking Interface | 2-132        |
| Slide-On | LEPRA/CON Connector                        | 2-133        | Slide-On              | LEPRA/CON Connector                        | 2-133, 201   |

## MICRODOT Cable Acceptance Dimensions

### Standard Connectors

#### Screw-On Series

Straight Plugs — Page 2-105

| Connector Part No. | Max. Jacket  | Max. Shield  | Max. Dielectric | Max. Inner Conductor |
|--------------------|--------------|--------------|-----------------|----------------------|
| <b>S-50</b>        |              |              |                 |                      |
| 032-0021-0001      | .087<br>2.21 | .061<br>1.55 | .050<br>1.27    | .013<br>.330         |
| 032-0023-0001      | .087<br>2.21 | .061<br>1.55 | .041<br>1.04    | .015<br>.381         |
| 032-0025-0001      | .093<br>2.36 | .068<br>1.73 | .050<br>1.27    | .013<br>.330         |
| 032-0033-0001      | .093<br>2.36 | .077<br>1.96 | .047<br>1.00    | .015<br>.381         |
| 032-0097-0001      | .087<br>2.21 | .061<br>1.55 | .050<br>1.27    | .015<br>.381         |
| 032-0098-0001      | .087<br>2.21 | .061<br>1.55 | .041<br>1.04    | .015<br>.381         |
| 032-0155-0001      | .088<br>2.24 | .061<br>1.55 | .041<br>1.04    | .015<br>.381         |
| 032-0156-0001      | .088<br>2.24 | .061<br>1.55 | .041<br>1.04    | .015<br>.381         |
| 052-0213-0001      | .087<br>2.21 | .061<br>1.55 | .050<br>1.27    | .013<br>.330         |
| 052-0235-0001      | .087<br>2.21 | .061<br>1.55 | .041<br>1.04    | .015<br>.381         |
| 052-0235-0003      | .087<br>2.21 | .061<br>1.55 | .041<br>1.04    | .015<br>.381         |
| 052-0370-0001      | .093<br>2.36 | .068<br>1.73 | .041<br>1.04    | .015<br>.381         |
| 052-0542-0001      | .087<br>2.21 | .061<br>1.55 | .041<br>1.04    | .015<br>.381         |
| <b>S-70</b>        |              |              |                 |                      |
| 032-0010-0001      | .093<br>2.36 | .075<br>1.91 | .061<br>1.55    | .013<br>.330         |
| 032-0022-0001      | .093<br>2.36 | .075<br>1.91 | .059<br>1.50    | .015<br>.381         |
| 032-0067-0001      | .108<br>2.74 | .079<br>2.01 | .059<br>1.50    | .015<br>.381         |
| 032-0078-0001      | .108<br>2.74 | .079<br>2.01 | .061<br>1.55    | .013<br>.330         |
| 032-0222-0001      | .093<br>2.36 | .075<br>1.91 | .059<br>1.50    | .015<br>.381         |
| 052-0092-0001      | .093<br>2.36 | .075<br>1.91 | .059<br>1.50    | .015<br>.381         |
| <b>S-93</b>        |              |              |                 |                      |
| 032-0011-0001      | .134<br>3.40 | .118<br>2.99 | .100<br>2.54    | .013<br>.330         |
| 032-0017-0001      | .134<br>3.40 | .118<br>2.99 | .100<br>2.54    | .015<br>.381         |
| 032-0066-0001      | .154<br>3.91 | .118<br>2.99 | .101<br>2.67    | .015<br>.381         |
| 032-0071-0001      | .134<br>3.40 | .118<br>2.99 | .097<br>2.446   | .031<br>.787         |
| 032-0092-0001      | .155<br>3.94 | .125<br>3.18 | .107<br>2.72    | .015<br>.381         |
| 032-0099-0001      | .134<br>3.40 | .118<br>2.99 | .100<br>2.54    | .015<br>.381         |
| 052-0200-0001      | .134<br>3.40 | .118<br>2.99 | .100<br>2.54    | .015<br>.381         |

## MICRODOT Cable Acceptance Dimensions (Continued)

### Screw-On Series (Continued)

#### Right-Angle Plugs — Page 2-106

| Connector Part No. | Max. Jacket  | Max. Shield  | Max. Dielectric | Nom. Inner Conductor |
|--------------------|--------------|--------------|-----------------|----------------------|
| <b>S-50</b>        |              |              |                 |                      |
| 032-0015-0001      | .092<br>2.34 | .060<br>1.52 | Any             | .012<br>.305         |
| 052-0204-0001      | .092<br>2.34 | .060<br>1.52 | Any             | .012<br>.305         |
| 052-0215-0001      | .092<br>2.34 | .060<br>1.52 | Any             | .012<br>.305         |
| 052-0337-0001      | .111<br>2.81 | .074<br>1.88 | Any             | .012<br>.305         |
| <b>S-70</b>        |              |              |                 |                      |
| 032-0013-0001      | .111<br>2.81 | .074<br>1.88 | Any             | .012<br>.305         |
| 052-0299-0001      | .111<br>2.81 | .074<br>1.88 | Any             | .012<br>.305         |
| 052-0379-0001      | .111<br>2.81 | .074<br>1.88 | Any             | .012<br>.305         |
| <b>S-93</b>        |              |              |                 |                      |
| 032-0014-0001      | .134<br>3.40 | .123<br>3.12 | Any             | .012<br>.305         |
| 032-0068-0001      | .155<br>3.94 | .118<br>2.99 | Any             | .012<br>.305         |
| 032-0153-0001      | .155<br>3.94 | .118<br>2.99 | Any             | .012<br>.305         |
| 052-0207-0001      | .134<br>3.40 | .123<br>3.12 | Any             | .012<br>.305         |
| 052-0298-0001      | .134<br>3.40 | .123<br>3.12 | Any             | .012<br>.305         |
| 052-0304-0022      | .155<br>3.94 | .118<br>2.99 | Any             | .012<br>.305         |

#### Jacks — Page 2-107

| Connector Part No. | Max. Jacket  | Max. Shield  | Max. Dielectric | Max. Inner Conductor |
|--------------------|--------------|--------------|-----------------|----------------------|
| <b>S-50</b>        |              |              |                 |                      |
| 031-0033-0001      | .088<br>2.24 | .061<br>1.55 | .041<br>1.04    | .021<br>.533         |
| 031-0034-0001      | .087<br>2.21 | .061<br>1.55 | .041<br>1.04    | .021<br>.533         |
| 051-0467-0001      | .079<br>2.01 | .061<br>1.55 | .041<br>1.04    | .021<br>.533         |
| <b>S-70</b>        |              |              |                 |                      |
| 031-0036-0001      | .093<br>2.36 | .075<br>1.91 | .059<br>1.50    | .021<br>.533         |
| 031-0048-0001      | .093<br>2.36 | .075<br>1.91 | .059<br>1.50    | .021<br>.533         |
| 031-0090-0001      | .109<br>2.77 | .079<br>2.01 | .059<br>1.50    | .021<br>.533         |
| <b>S-93</b>        |              |              |                 |                      |
| 031-0032-0001      | .134<br>3.40 | .118<br>2.99 | .100<br>2.54    | .021<br>.533         |
| 031-0037-0001      | .134<br>3.40 | .118<br>2.99 | .100<br>2.54    | .021<br>.533         |
| 031-0088-0001      | .154<br>3.91 | .118<br>2.99 | .101<br>2.57    | .021<br>.533         |
| 031-0089-0001      | .154<br>3.91 | .118<br>2.99 | .101<br>2.57    | .021<br>.533         |

**MICRODOT Cable Acceptance Dimensions (Continued)**
**Slide-On Series**
**Straight Plugs** — Page 2-111

| Connector Part No. | Max. Jacket  | Max. Shield  | Max. Dielectric | Max. Inner Conductor |
|--------------------|--------------|--------------|-----------------|----------------------|
| <b>SOS-50</b>      |              |              |                 |                      |
| 032-0055-0001      | .088<br>2.24 | .058<br>1.47 | .041<br>1.04    | .015<br>.381         |
| 032-0056-0001      | .088<br>2.24 | .058<br>1.47 | .041<br>1.04    | .015<br>.381         |
| <b>SOS-70</b>      |              |              |                 |                      |
| 032-0060-0001      | .093<br>2.36 | .075<br>1.71 | .059<br>1.50    | .015<br>.381         |
| 032-0061-0001      | .093<br>2.36 | .075<br>1.71 | .059<br>1.50    | .015<br>.381         |
| 032-0087-0001      | .108<br>2.74 | .079<br>2.01 | .059<br>1.50    | .015<br>.381         |
| <b>SOS-93</b>      |              |              |                 |                      |
| 032-0058-0001      | .134<br>3.40 | .118<br>2.99 | .100<br>2.54    | .015<br>.381         |
| 032-0077-0001      | .134<br>3.40 | .118<br>2.99 | .100<br>2.54    | .015<br>.381         |
| 032-0084-0001      | .154<br>3.91 | .118<br>2.99 | .101<br>2.57    | .015<br>.381         |

**Right-Angle Plugs** — Page 2-112

| Connector Part No. | Max. Jacket  | Max. Shield  | Max. Dielectric | Nom. Inner Conductor |
|--------------------|--------------|--------------|-----------------|----------------------|
| <b>SOS-50</b>      |              |              |                 |                      |
| 032-0063-0001      | .092<br>2.34 | .060<br>1.52 | Any             | .012<br>.305         |
| <b>SOS-70</b>      |              |              |                 |                      |
| 032-0062-0001      | .111<br>2.82 | .074<br>1.88 | Any             | .012<br>.305         |
| <b>SOS-93</b>      |              |              |                 |                      |
| 032-0059-0001      | .134<br>3.40 | .123<br>3.12 | Any             | .012<br>.305         |
| 032-0083-0001      | .155<br>3.94 | .118<br>2.99 | Any             | .012<br>.305         |

**Jacks** — Page 2-112

| Connector Part No. | Max. Jacket  | Max. Shield  | Max. Dielectric | Max. Inner Conductor |
|--------------------|--------------|--------------|-----------------|----------------------|
| <b>SOS-50</b>      |              |              |                 |                      |
| 031-0053-0001      | .088<br>2.24 | .061<br>1.55 | .041<br>1.04    | .021<br>.533         |
| 031-0054-0001      | .088<br>2.24 | .061<br>1.55 | .041<br>1.04    | .021<br>.533         |
| <b>SOS-70</b>      |              |              |                 |                      |
| 031-0095-0001      | .108<br>2.74 | .079<br>2.01 | .059<br>1.50    | .021<br>.533         |
| <b>SOS-93</b>      |              |              |                 |                      |
| 031-0063-0001      | .134<br>3.40 | .118<br>2.99 | .100<br>2.54    | .021<br>.533         |
| 031-0064-0001      | .134<br>3.40 | .118<br>2.99 | .100<br>2.54    | .021<br>.533         |
| 031-0093-0001      | .154<br>3.91 | .118<br>2.99 | .101<br>2.57    | .021<br>.533         |
| 031-0094-0001      | .154<br>3.91 | .118<br>2.99 | .101<br>2.57    | .021<br>.533         |

**MICRODOT Cable Acceptance Dimensions (Continued)**
**Quick-Connect Series**
**Straight Plugs** — Page 2-115

| Connector Part No. | Max. Jacket  | Max. Shield  | Max. Dielectric | Max. Inner Conductor |
|--------------------|--------------|--------------|-----------------|----------------------|
| <b>QC-50</b>       |              |              |                 |                      |
| 032-0002-0001      | .093<br>2.36 | .058<br>1.47 | Any             | .013<br>.330         |
| 032-0030-0001      | .093<br>2.36 | .058<br>1.47 | .041<br>1.04    | .015<br>.381         |
| <b>QC-70</b>       |              |              |                 |                      |
| 032-0016-0001      | .093<br>2.36 | .075<br>1.91 | .061<br>1.55    | .013<br>.330         |
| 032-0031-0001      | .093<br>2.36 | .075<br>1.71 | .059<br>1.50    | .015<br>.381         |
| 032-0079-0001      | .108<br>2.74 | .079<br>2.01 | .059<br>1.50    | .015<br>.381         |
| <b>QC-93</b>       |              |              |                 |                      |
| 032-0012-0001      | .134<br>3.40 | .118<br>2.99 | .100<br>2.54    | .013<br>.330         |
| 032-0032-0001      | .134<br>3.40 | .118<br>2.99 | .100<br>2.54    | .015<br>.381         |
| 032-0072-0001      | .154<br>3.91 | .118<br>2.99 | .101<br>2.57    | .015<br>.381         |

**Right-Angle Plugs** — Page 2-115

| Connector Part No. | Max. Jacket  | Max. Shield  | Max. Dielectric | Nom. Inner Conductor |
|--------------------|--------------|--------------|-----------------|----------------------|
| <b>QC-50</b>       |              |              |                 |                      |
| 032-0026-0001      | .092<br>2.34 | .060<br>1.52 | Any             | .012<br>.305         |
| <b>QC-70</b>       |              |              |                 |                      |
| 032-0027-0001      | .111<br>2.82 | .074<br>1.88 | Any             | .012<br>.305         |
| <b>QC-93</b>       |              |              |                 |                      |
| 032-0020-0001      | .134<br>5.40 | .123<br>3.12 | Any             | .012<br>.305         |
| 052-0228-0001      | .155<br>3.94 | .118<br>2.99 | Any             | .012<br>.305         |

**Jacks** — Page 2-116

| Connector Part No. | Max. Jacket  | Max. Shield  | Max. Dielectric | Max. Inner Conductor |
|--------------------|--------------|--------------|-----------------|----------------------|
| <b>QC-50</b>       |              |              |                 |                      |
| 031-0038-0001      | .093<br>2.36 | .061<br>1.55 | .041<br>1.04    | .021<br>.533         |
| <b>QC-93</b>       |              |              |                 |                      |
| 031-0040-0001      | .134<br>3.40 | .118<br>2.99 | .100<br>2.54    | .021<br>.533         |

**Twinax**
**Plugs** — Page 2-117

| Connector Part No. | Max. Jacket  | Max. Shield  | Max. Dielectric | Max. Inner Conductor |
|--------------------|--------------|--------------|-----------------|----------------------|
| 032-0088-0001      | .167<br>4.24 | .142<br>3.60 | .061<br>1.55    | .014<br>.356         |
| 032-0093-0001      | .123<br>3.12 | .092<br>2.34 | .042<br>1.07    | .014<br>.356         |
| 052-0229-0001      | .123<br>3.12 | .092<br>2.34 | .042<br>1.07    | .014<br>.356         |
| 052-0324-0001      | .167<br>4.24 | .142<br>3.61 | .061<br>1.55    | .014<br>.356         |

**Jacks** — Page 2-117

| Connector Part No. | Max. Jacket  | Max. Shield  | Max. Dielectric | Max. Inner Conductor |
|--------------------|--------------|--------------|-----------------|----------------------|
| 051-0358-0001      | .167<br>4.24 | .142<br>3.60 | .061<br>1.55    | .020<br>.508         |
| 051-0389-0001      | .167<br>4.24 | .142<br>3.61 | .061<br>1.55    | .020<br>.508         |

**MICRODOT Cable Acceptance Dimensions (Continued)**
**Triax**
**Plugs** — Page 2-118

| Connector Part No. | Max. Jacket  | Max. Outer Shield | Max. Outer Dielectric | Max. Inner Shield | Max. Inner Dielectric | Max. Inner Conductor |
|--------------------|--------------|-------------------|-----------------------|-------------------|-----------------------|----------------------|
| 052-0130-0001      | .124<br>3.15 | Single Shield     | .085<br>2.26          | Single Shield     | .041<br>1.04          | .014<br>.356         |
| 052-0138-0001      | .183<br>4.65 | Single Shield     | .146<br>3.71          | .118<br>2.99      | .107<br>2.72          | .014<br>.356         |
| 052-0593-0001      | .214<br>5.44 | Single Shield     | .166<br>4.22          | .161<br>4.09      | .131<br>3.33          | .020<br>.508         |

**Gold Plated Crimp Style Coaxial Connectors**
**Straight Plugs** — Pages 2-124, 2-125

| Connector Part No.   | Max. Jacket  | Max. Dielectric | Nom. Inner Conductor |
|----------------------|--------------|-----------------|----------------------|
| <b>50 Ohm Series</b> |              |                 |                      |
| 132-0112-000*        | .088<br>2.24 | .039<br>.991    | .012<br>.305         |
| 132-0113-000*        | .088<br>2.24 | .039<br>.991    | .012<br>.305         |
| 132-0114-000*        | .110<br>2.79 | .070<br>1.78    | .012<br>.305         |
| 132-0115-000*        | .110<br>2.79 | .070<br>1.78    | .012<br>.305         |
| 132-0509-0002        | .116<br>2.95 | .070<br>1.78    | .012<br>.305         |
| <b>70 Ohm Series</b> |              |                 |                      |
| 132-0200-000*        | .110<br>2.79 | .070<br>1.78    | .012<br>.305         |
| 132-0201-000*        | .110<br>2.79 | .070<br>1.78    | .012<br>.305         |
| <b>93 Ohm Series</b> |              |                 |                      |
| 132-0300-000*        | .155<br>3.94 | .107<br>2.72    | .012<br>.305         |
| 132-0301-000*        | .155<br>3.94 | .107<br>2.72    | .012<br>.305         |

**Right-Angle Plugs** — Page 2-125

| Connector Part No.   | Max. Jacket  | Max. Dielectric | Nom. Inner Conductor |
|----------------------|--------------|-----------------|----------------------|
| <b>50 Ohm Series</b> |              |                 |                      |
| 132-0116-0002        | .088<br>2.24 | .039<br>.991    | .012<br>.305         |
| 132-0117-0002        | .088<br>2.24 | .039<br>.991    | .012<br>.305         |
| 132-0118-0002        | .110<br>2.79 | .074<br>1.88    | .012<br>.305         |
| 132-0119-0002        | .110<br>2.79 | .074<br>1.88    | .012<br>.305         |
| <b>70 Ohm Series</b> |              |                 |                      |
| 132-0202-0002        | .110<br>2.79 | .074<br>1.88    | .012<br>.305         |
| 132-0203-0002        | .110<br>2.79 | .074<br>1.88    | .012<br>.305         |
| <b>93 Ohm Series</b> |              |                 |                      |
| 132-0302-0002        | .155<br>3.94 | .107<br>2.72    | .012<br>.305         |
| 132-0303-0002        | .155<br>3.94 | .107<br>2.72    | .012<br>.305         |



**MICRODOT Cable Acceptance Dimensions** (Continued)

**Gold Plated Crimp Style Coaxial Connectors** (Continued)

**Jacks** — Page 2-126

| Connector Part No.   | Max. Jacket  | Max. Dielectric | Nom. Inner Conductor |
|----------------------|--------------|-----------------|----------------------|
| <b>50 Ohm Series</b> |              |                 |                      |
| 131-0134-0001        | .088<br>2.24 | .039<br>.991    | .012<br>.305         |
| 131-0135-0001        | .088<br>2.24 | .039<br>.991    | .012<br>.305         |
| 131-0136-0001        | .110<br>2.79 | .070<br>1.78    | .012<br>.305         |
| 131-0137-0001        | .110<br>2.79 | .070<br>1.78    | .012<br>.305         |
| <b>70 Ohm Series</b> |              |                 |                      |
| 131-0200-0001        | .110<br>2.79 | .070<br>1.78    | .012<br>.305         |
| 131-0201-0001        | .110<br>2.79 | .070<br>1.78    | .012<br>.305         |
| <b>93 Ohm Series</b> |              |                 |                      |
| 131-0300-0001        | .155<br>3.94 | .107<br>2.72    | .012<br>.305         |
| 131-0301-0001        | .155<br>3.94 | .107<br>2.72    | .012<br>.305         |

**LEPRA/CON Connectors**
**All** — Pages 2-129 to 2-137

| Connector Part No. | Max. Jacket  | Max. Dielectric | Nom. Inner Conductor |
|--------------------|--------------|-----------------|----------------------|
| All                | .081<br>2.06 | .040<br>1.02    | .012<br>.305         |

## MICRODOT Hermetic Connectors

### Coaxial Screw-On, Slide-On Series



#### Material and Finish

50 Connector uses 10-32 thread.

70 Connector uses 12-32 thread.

93 Connector uses 1/4-32 thread.

**Housing (1)** — Cold rolled steel silver plate.

**Gasket (2)** — Neoprene or silicone rubber.

**Insulator (3)** — PTFE.

**Glass Seal (4)**

**Center Contact (5)** — Nickel Iron alloy contact with slotted turret type solder pot (other terminations available).

#### Service and Performance Data

**Temperature Range** —

-65°F to 450°F [-54°C to 232°C]

**Electrical** — 750 VAC working voltage.

**Performance** — 1200 VAC test at sea level.

**Insulation Resistance** — 5000 megohms at 500 VDC (room temperature).

**Shock** — 100 G's minimum.

**Pressure** — 100 PSI minimum.

**Leak Rate Per Seal** — Less than  $1.04 \times 10^{-8}$  cc/sec. (.001 Micron cubic ft/hr) of 100% helium tested at one atmosphere pressure differential far exceeding requirements of MIL-C-26500 and MIL-C-26482.

**Plating** — Silver unless otherwise specified.

### Bulkhead Solder Mount

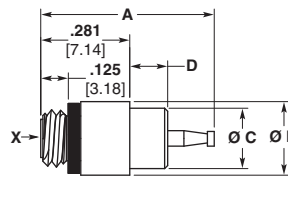


Fig. 1

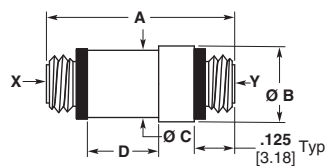


Fig. 2

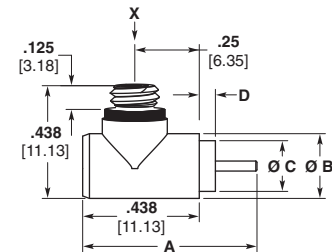


Fig. 3

| Part No.      | Fig. | A             | B Dia.       | C Dia. ±.015 | D            | X*   | Y*   |
|---------------|------|---------------|--------------|--------------|--------------|------|------|
| 051-0049-0001 | 1    | .563<br>14.30 | .25<br>6.35  | .200<br>5.08 | .125<br>3.18 | S-50 | —    |
| 051-0056-0001 | 1    | .563<br>14.30 | .313<br>7.95 | .251<br>6.38 | .125<br>3.18 | S-93 | —    |
| 053-0228-0001 | 2    | .594<br>15.09 | .25<br>6.35  | .227<br>5.77 | .234<br>5.94 | S-50 | S-50 |
| 051-0315-0001 | 3    | .656<br>16.66 | .25<br>6.35  | .195<br>4.95 | .063<br>1.60 | S-50 | —    |

\* "S" indicates Screw-On Series

Dimensions are subject to change without notice.

### Bulkhead Solder Mount, Panel Insulated

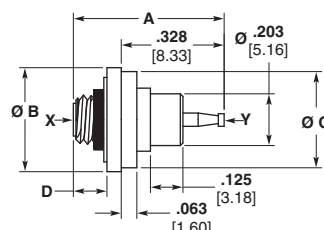


Fig. 1

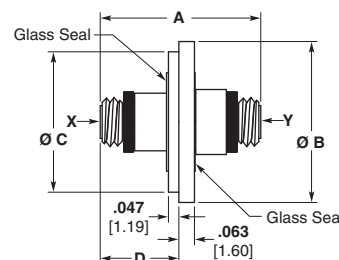


Fig. 2

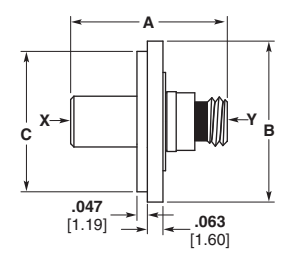


Fig. 3

| Part No.      | Fig. | A             | B Dia.        | C Dia.        | D            | X*     | Y*   |
|---------------|------|---------------|---------------|---------------|--------------|--------|------|
| 051-0232-0001 | 1    | .563<br>14.30 | .406<br>10.31 | .370<br>9.40  | .172<br>4.37 | S-50   | —    |
| 053-0227-0001 | 2    | .609<br>15.47 | .625<br>15.88 | .540<br>13.72 | .297<br>7.54 | S-50   | S-50 |
| 053-0412-0001 | 2    | .609<br>15.47 | .625<br>15.88 | .540<br>13.72 | .297<br>7.54 | S-93   | S-93 |
| 053-0028-0001 | 3    | .609<br>15.47 | .625<br>15.88 | .540<br>13.72 | .297<br>7.54 | SOS-50 | S-50 |

\* "S" indicates Screw-On Series; "SOS" indicates Slide-On Series

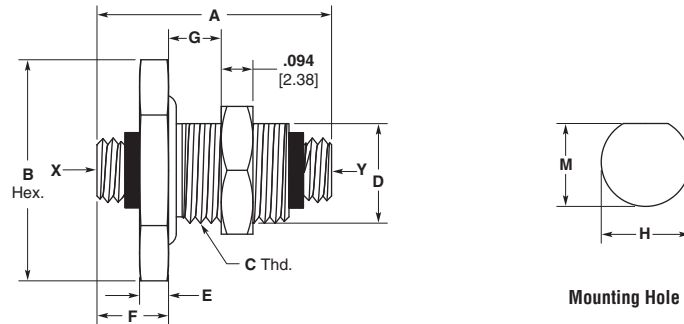
Dimensions are subject to change without notice.

## MICRODOT Hermetic Connectors (Continued)

### Coaxial Screw-On, Slide-On Series

(Continued)

#### Microminiature Coaxial Receptacles

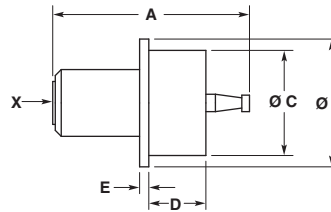


| Part No.      | A             | B Hex.        | C Thd.             | D            | E            | F            | G             | H            | M            | X*   | Y*   |
|---------------|---------------|---------------|--------------------|--------------|--------------|--------------|---------------|--------------|--------------|------|------|
| 053-0455-0001 | .688<br>17.46 | .563<br>14.29 | 5/16-32<br>UNEF-2A | .297<br>7.54 | .094<br>2.38 | .203<br>5.16 | .25<br>6.35   | .312<br>7.92 | .291<br>7.39 | S-50 | S-50 |
| 053-0636-0001 | .922<br>23.42 | .625<br>15.88 | 3/8-32<br>UNEF-2A  | .344<br>8.73 | .078<br>1.98 | .203<br>5.16 | .438<br>11.11 | .375<br>9.53 | .347<br>8.81 | S-93 | S-93 |

\* "S" indicates Screw-On Series

Dimensions are subject to change without notice.

#### Solder Mount Slide-On Series Receptacles

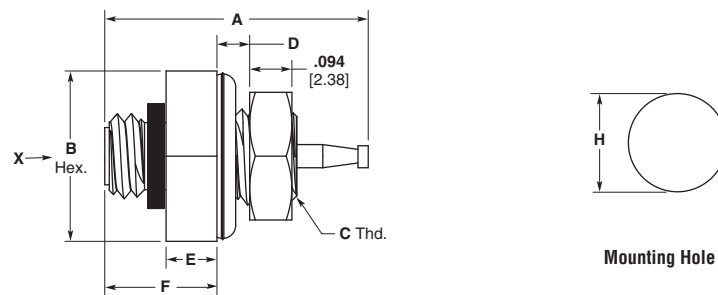


| Part No.      | A             | B Dia.       | C Dia. ±.015 | D            | E            | X*             |
|---------------|---------------|--------------|--------------|--------------|--------------|----------------|
| 051-0134-0001 | .563<br>14.29 | .375<br>9.53 | .309<br>7.85 | .172<br>4.37 | .031<br>.794 | SOS-50, 70, 93 |
| 051-0158-0001 | .563<br>14.29 | .25<br>6.35  | .200<br>5.08 | .125<br>3.18 | .047<br>1.19 | SOS-50, 70, 93 |

\* "SOS" indicates Slide-On Series

Dimensions are subject to change without notice.

#### Single Hole Mount Receptacles



| Part No.      | A             | B Hex.        | C Thd.            | D            | E            | F            | H            | X*   |
|---------------|---------------|---------------|-------------------|--------------|--------------|--------------|--------------|------|
| 051-0249-0001 | .563<br>14.29 | .375<br>9.53  | 12-32<br>UNEF-2A  | .078<br>1.98 | .109<br>2.78 | .234<br>5.95 | .218<br>5.54 | S-50 |
| 051-0154-0001 | .656<br>16.67 | .625<br>15.88 | 3/8-32<br>UNEF-2A | .156<br>3.97 | .078<br>1.98 | .203<br>5.16 | .375<br>9.53 | S-93 |

\* "S" indicates Screw-On Series

Dimensions are subject to change without notice.

## Appendix A - Theory and Application

### Theory and Application

As a leading manufacturer of RF products, TE Connectivity produces a large variety of coaxial connectors. The proper selection and application of these connectors requires a knowledge of factors not involved in other types of connectors and terminals. The following paragraphs have been prepared to improve understanding of the theory behind RF connectors:

#### Basic RF Theory<sup>1</sup>

RF energy travels by electromagnetic waves, and it is primarily the frequency of these waves that we are interested in. Briefly, if an oscillating voltage source is connected to a cable, a continuous electromagnetic wave will propagate along the cable. A sensor placed at some point on the cable would indicate a varying voltage (E field) as well as a current and magnetic field (H field) as the wave travels past it. This is called an electromagnetic wave because both electric and magnetic fields are varying. The wave shape is initially determined by the variation of the source with time.

Figure 7 shows the radiant energy spectrum. Visible light, radio, television, x-rays and Gamma rays are all phenomenon of electromagnetic waves at different frequencies. This introduction will treat only those that are generated by an electrical source and propagated along a physical cable or other transmission media. That is, frequencies above zero and up to about 50 gigahertz.

<sup>1</sup>The majority of the technical terms, relative to RF and coaxial cable and connectors, used here-in and throughout this catalog are defined in the Glossary of Terms in Section 11.

| Frequency or Wavelengths | Designation                    | Applications                                                                                                |
|--------------------------|--------------------------------|-------------------------------------------------------------------------------------------------------------|
| 0 - 29.9 KHz             | VLF (Very Low Frequency)       | Commercial AC electricity, deep depth sounders, ultrasonic grinders, sonic oscillators                      |
| 30 - 299.9 KHz           | LF (Low sonar Frequency)       | Shallow-to-medium depth sounders                                                                            |
| 300 - 2999.9 KHz         | MF (Medium Frequency)          | Commercial AM radio broadcasting, marine radio telephone, direction finders                                 |
| 3 - 29.9 MHz             | HF (High Frequency)            | Citizen band radio, amateur radio, international broadcasting                                               |
| 30 - 299.9 MHz           | VHF (Very High Frequency)      | VHF television (Channels 2 thru 13), commercial FM radio broadcasting, amateur radio, fire and police radio |
| 300 - 2999.9 MHz         | UHF (Ultra-high Frequency)     | UHF television (Channels 14 thru 83), microwave ovens, aeronautical radionavigation                         |
| 3 - 29.9 GHz             | SHF (Super High Frequency)     | Microwave communications, marine radar, aircraft tracking and airborne radars                               |
| 30 - 299.9 GHz           | EHF (Extremely High Frequency) | Space communications, radio astronomy                                                                       |

#### Notes:

1. KHz = Kilohertz (1 thousand cycles per second)
2. MHz = Megahertz (1 million cycles per second)
3. GHz = Gigahertz (1 billion cycles per second)

Figure 7

#### Radiant Energy Spectrum

In the following paragraphs we will discuss waves in greater detail, including the relationship of frequency and wave length, how pulses are formed and used, how each differs from the other and the problems involved in their transmission.

#### Sine Waves

An RF wave is a sine wave, meaning that it smoothly swings from zero to a positive peak value, then back down past zero to a negative peak value, then back to zero to complete a 360 electrical degree cycle. The positive and negative peaks are always equal in amplitude. The two qualities which characterize this type of wave are amplitude and frequency (f). Figure 8 shows these two characteristics. Amplitude refers to the peak value attained by the wave and corresponds to voltage. Frequency refers to the number of oscillations per second. For example, the sine wave in Figure 8(B) has completed 12 cycles in one second. Therefore, we would say that this wave has a frequency of 12 cycles per second or 12 Hertz. The time for one complete cycle is defined as the period (T). The relationship between the period and frequency is given by the equation:

$$f = 1 / T \text{ in Hertz}$$

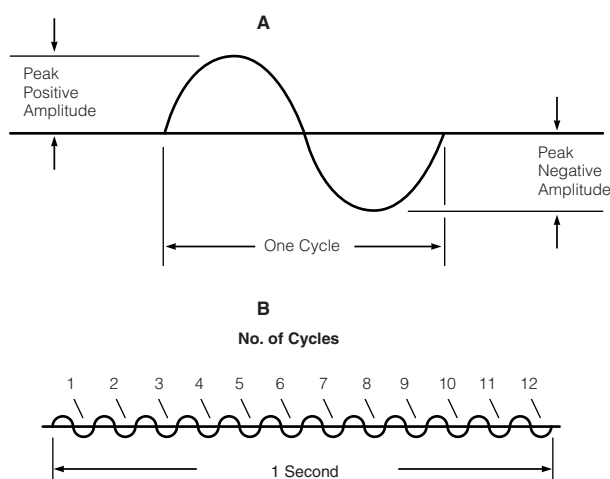


Figure 8

#### Typical Sine Wave Characteristics

The wave travels away from the generator at speeds approaching the speed of light. When an electromagnetic wave travels in a medium other than air or vacuum, the **speed** for the wave is reduced by a factor of the square root of the dielectric constant ( $\epsilon$ ). The velocity (v) of the propagation of a signal is given by:

$$v = \frac{c}{\sqrt{\epsilon}}$$

Where c is the speed of light,  $3 \times 10^8$  m/sec or  $1.18 \times 10^{10}$  in/sec, and  $\epsilon$  is the dielectric constant of the medium. (See Table 1 for dielectric constants of various materials)

The **wavelength** of a signal is given by the formula

$$\lambda = v/f = \frac{c}{\sqrt{\epsilon} \times f \text{ (GHz)}} = \frac{1.18 \times 10^{10}}{\sqrt{\epsilon} \times f \text{ (GHz)}} \text{ inches}$$

See Figure 9

## Appendix A - Theory and Application (Continued)

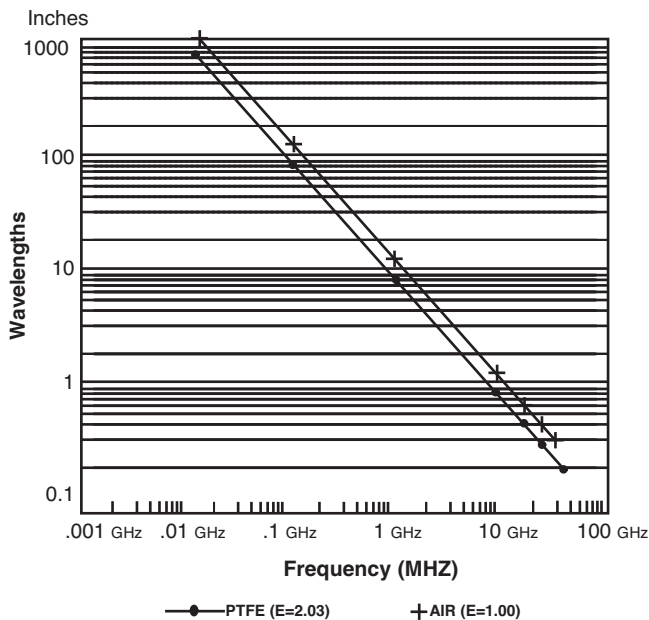


Figure 9

Table 1.

### Properties of Insulating Materials

| Dielectric Material | Dielectric Constant | Operating Temperature Range |
|---------------------|---------------------|-----------------------------|
| TFE                 | 2.03                | -70 +250°C                  |
| Polyethylene        | 2.3                 | -60 +80°C                   |
| Nylon               | 4.6-4.0             | -40 +120°C                  |
| TPX                 | 2.12                | -65 +85°C                   |
| Polypropylene       | 2.25                | -40 +105°C                  |
| Acetal              | 3.7                 | -65 +85°C                   |

## Pulses

The sine wave is most often used for communication purposes where intelligence is imposed on the wave by a variation in amplitude (amplitude modulation, AM) or by a variation in frequency (frequency modulation, FM).

Pulses, on the other hand, are primarily used in computers and digital instrumentation. Since pulses are generally used for triggering purposes, the pulse rise/fall time, amplitude and width are the most important. Figure 10 shows a pulse and identifies these characteristics.

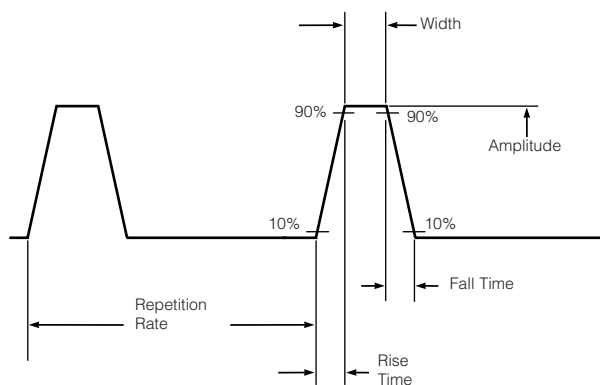


Figure 10

### Pulse Characteristics

Notice that rise time is the time required for the pulse to rise from 10% to 90% of its amplitude — not from zero to maximum. Rise and fall time is perhaps the single most important characteristic of a pulse in today's high-speed digital equipment. Figure 11 shows that the faster the rise and fall time, the more pulses will fit in a given time frame.

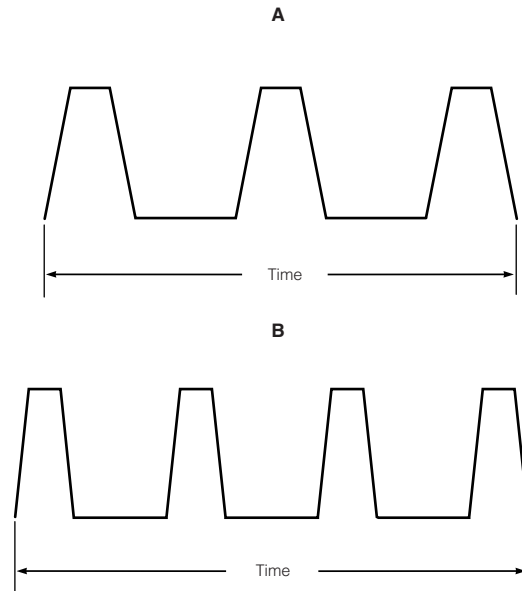


Figure 11

### Pulse Rise and Fall Time

The bit rate for a system is the maximum rate of pulses per second that a system can process without causing data errors. The maximum performance can also be specified in terms of baud rate. The baud rate is defined as the number of characters (bytes) that are transmitted per second. Generally a character represents 10 bits (7 bits for the information, one parity bit, and two for start and stop, totalling 10).

Now that we know why fast pulses are required, the next problem is how to obtain faster rise times. A pulse is made up of a great number of different frequencies, and the more high frequencies a pulse contains, the faster will be its rise time and the flatter will be its peak. To better understand this, refer to Figure 12. At A, you will see a fundamental frequency (1), its third harmonic (3), and the resultant waveform (S3), which is a combination of 1 and 3. Although this does not yet resemble a square wave, you will note that the rise time is decreased, and a dip appears at the peak. At B of Figure 12, we have added the fifth harmonic. Rise time is further decreased, and the peak is beginning to flatten out. At C the seventh harmonic has been included, and the resultant wave S7 begins to resemble a square wave. As more high frequency harmonics are added to the waveform, it will more closely resemble a square wave, and the squarer it becomes, the faster will be the rise time.

## Appendix A - Theory and Application (Continued)

Fast rise times and short pulse widths require high frequency components.

Two frequent causes of digital signal degradation can be (1) high capacitance of the transmission line and (2) impedance mismatches of connector transmission line or I/O devices. Selection of an impedance-matched connector on a digital line, especially if short cable assemblies are used, can be as important as connector selection for an RF modulated line. **Reflected pulses out of phase with the original pulse can cause false signals or high error rates in a digital system.**

Since pulses with fast rise times are necessary in high-speed computers, any circuit element which could reduce or attenuate high frequency response is undesirable.

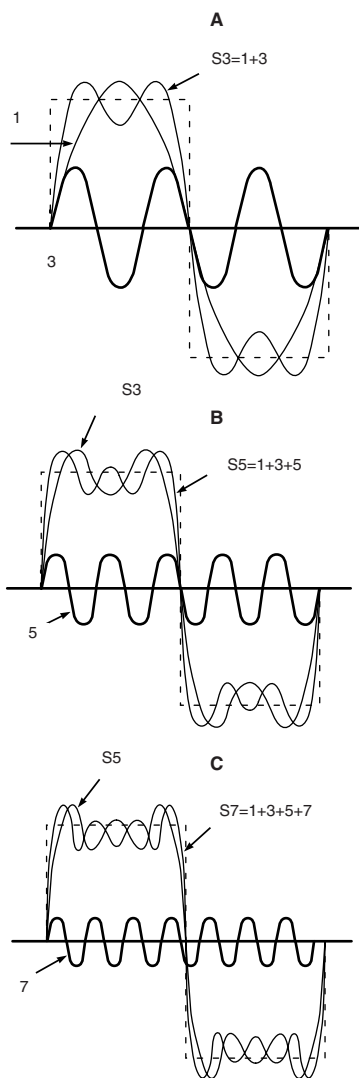


Figure 12

### Development of a Square Wave

### Signal Integrity and Propagation

To explain how to maintain signal integrity, it is necessary to review how the signal is configured in a cable and how it propagates. Ignoring digital signals for this discussion we will identify the issues that deal with the integrity of a sine wave. Consider a coaxial cable consisting of an inner conductor surrounded by a dielectric material and then an outer conductor (See Figure 13). The outer conductor may be a braid, a foil, or a solid metal.

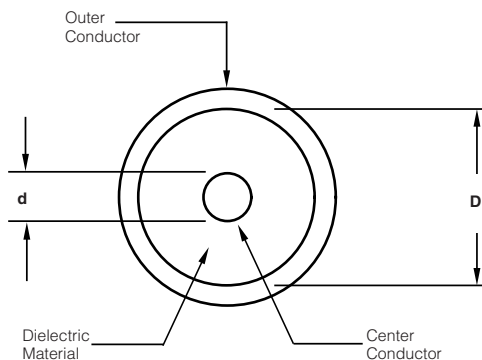


Figure 13

### Diagram of a Cable

An electromagnetic wave traveling in a coaxial cable produces an electric and a magnetic field between the inner conductor and the outer conductor (Figure 14). The electric (E field) is radial and varies in time. An alternating current flows along the inner conductor and the outer conductor. An oscillating magnetic field (H field) circles the inner conductor.

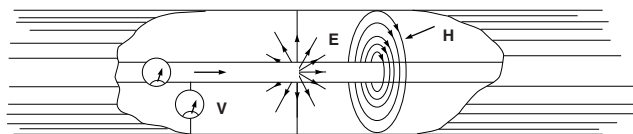


Figure 14

### Electric field (E) and magnetic field (H) belonging to the principal mode in a coaxial line.

The alternating current on a conductor is not spread throughout the conductor but is strongest at the surface and decays exponentially at points further into the conductor. This is called the skin effect. At a frequency of 1MHz, three skin depths is 0.0078" (95% of the current is within three skin depths of the surface) and at 10GHz three skin depths is 0.00078". As a result, the current is on the outer surface of the inner conductor and the inner surface of the outer conductor over the entire range of interest for most RF systems. The dimensions and material beyond several skin depths have no effect on the wave; gold plated plastic will propagate as well as gold plated copper at sufficiently high frequencies.

## Appendix A - Theory and Application (Continued)

### Attenuation

A wave loses energy (attenuates) in several ways: (1) The resistance of the inner and outer conductors is small but can be significant over long lengths and will produce some heat. (2) The dielectric may be lossy; its resistance is high but not infinite, and some energy is lost. (3) Electromagnetic energy radiates at high frequencies; significant energy losses are caused by radiation of electromagnetic energy (the cable acts like an antenna). (4) Energy is reflected due to impedance mismatches. The combination of these four types of losses are referred to as the **insertion loss** of a transmission line system. Connectors have similar losses.

### Characteristic Impedance

A parameter which defines the behavior of a cable, connector, or any propagating system is **Characteristic Impedance**,  $Z_0$ . The characteristic impedance of a lossless cable is related to the inductance per unit length,  $L$ , and the capacitance per unit length,  $C$ , as follows:

$$Z_0 = \sqrt{L/C} \text{ in ohms}$$

The equivalent circuit of a transmission line is shown in Figure 15.  $R$  represents the conductor resistance for a unit length.

For a coaxial cable the characteristic impedance is given by:

$$Z_0 = \frac{138}{\sqrt{\epsilon}} \times \log_{10} \frac{D}{d} \text{ in ohms}$$

where  $D$  is the inner diameter of the outer conductor and  $d$  is the outer diameter of the inner conductor, respectively. Similar equations apply for other geometries such as two parallel wires.

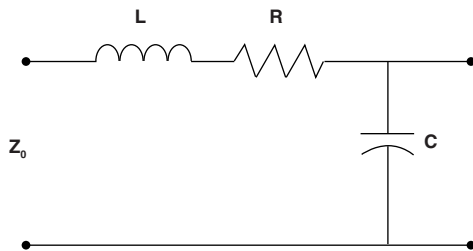


Figure 15

#### Typical Transmission Line Schematic

The maximum power is transferred between two systems if they have the same impedance. This is called impedance matching. However, impedance variations that are short compared to a wavelength can have a negligible effect on signal loss.

Standard impedances are 50 ohm, 75 ohm and 93-125 ohm. Most systems use 50 ohm because it is a compromise between maximum power transmission and minimum line loss. The telephone industry and the broadcast industry use 75 ohm for minimum line attenuation. The need for low capacitance instrumentation cable has produced the 93-125 ohm systems. The higher impedances are generally achieved by changing the conductor diameters and by modifying the dielectric material to add air.

### Reflections

When the characteristic impedance changes in a transmission line system, part of an incident wave is reflected. The reflection coefficient can be calculated as:

$$\text{Reflection Coefficient} = \rho = \frac{V_i}{V_R} = \frac{Z_R - Z_0}{Z_R + Z_0}$$

Where  $V_i$  and  $Z_0$  are the incident voltage and impedance of the first media.  $V_R$  and  $Z_R$  represent the reflected voltage and impedance of the media that caused the reflection. The decibel loss due to reflection is given by:

$$\text{Return Loss} = 10 \log_{10} \left( \frac{1}{1 - \rho^2} \right) \text{ dB}$$

### VSWR

The traditional way to determine the reflection coefficient is to measure the standing wave caused by the superposition of the incident wave and the reflected wave. Traditionally the voltage is measured at a series of points using a slotted line. The ratio of the maximum divided by the minimum is the Voltage Standing Wave Ratio (VSWR). The VSWR is infinite for total reflections because the minimum voltage is zero. If no reflection occurs the VSWR is 1.0. VSWR and reflection coefficient are related as follows:

$$\text{VSWR} = (1 + \rho)/(1 - \rho)$$

Most present instrumentation measures the reflection coefficient and calculates the VSWR.

Figure 16 represents the direct relationship between VSWR and its equivalent in return loss (expressed in dB).

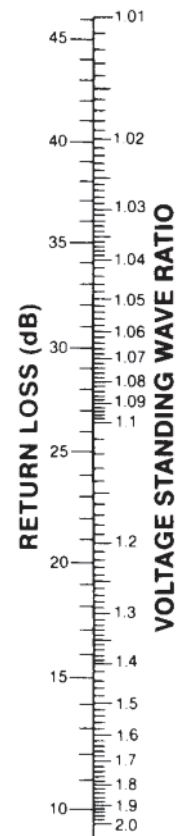


Figure 16

#### VSWR vs. Return Loss

### Multiple Reflections

If there is a series of impedance changes, each one will have a reflection coefficient. The total reflection coefficient is the vector addition of each of the individual coefficients accounting for the distance between reflections and the reflection of any reflected waves. Even though the calculations are difficult, a total VSWR can still be measured.

Multiple reflections can produce a resonance phenomenon that is unique to wave theory. Properly understood some serious difficulties can be avoided. An example will make the point clear. Consider an electromagnetic wave with a wave-



## Appendix A - Theory and Application (Continued)

length of 4 inches traveling on a cable that changes from 50 ohms to 25 ohms. The reflection coefficient is  $-.33$ , which means that one third of the incident voltage is reflected toward the source. Assume that one inch (one quarter wave-length) down the cable the impedance changes back to 50 ohm. Again, one third of the wave is reflected, but without any phase shift. It travels back to the first interface where one third of this reflected wave is reflected back toward the second interface. Two thirds of the wave is transmitted through the interface and travels back to the source. Since the first (reflected) wave is shifted 180 degrees at the reflection, and the second (transmitted-reflected-transmitted) wave is shifted 180 degrees because it traveled the one inch separation twice, the two waves are in phase. The net result is that the VSWR is much larger because the length of the 25 ohm section was just the right length to cause a resonance. If the length of the 25 ohm section had been one half wave-length, the two waves would have interfered and the VSWR would be at a minimum.

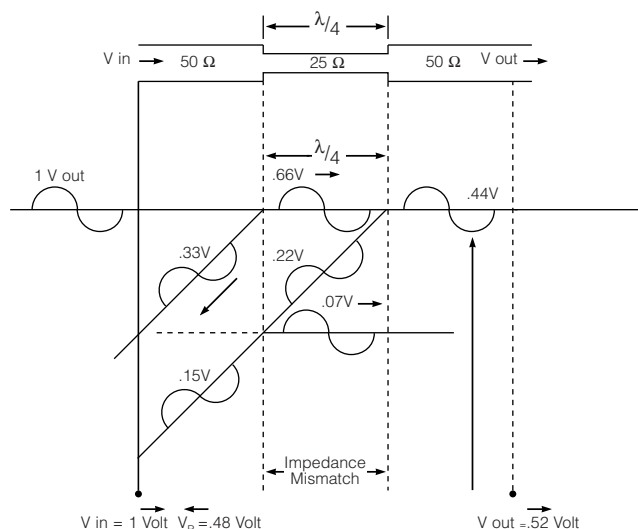


Figure 17

### Multiple Wave Reflections (Caused by Impedance Mismatch)

In summary, avoid cable lengths, printed circuit board paths, or connectors that are multiple of one quarter ( $\lambda/4$ ,  $3\lambda/4$ , etc.) of the intended signal transmission wavelength. Coaxial cables, when manufactured, also have periodic variations in diameter that result in periodic changes in impedance ( $Z_0$ ), that can cause significant levels of reflected signal (high return loss) at specific frequencies.

### Reflections of Digital Signals

The previous discussions dealing with attenuation, reflections and standing waves can apply to digital signals with some extra thought.

A single pulse can be thought of as a combination of high frequency sine waves. The maximum frequency component in a square wave pulse can be calculated by this equation:

$$f = 0.35/\text{rise time}$$

where

$$f = \text{GHz when "t" is in nanoseconds}$$

Attenuation of the frequencies necessary to support the short risetime will produce a slower rise and possibly prohibit the pulse from ever reaching the detector. This 'slurring' of the pulse is similar to the behavior of an RC circuit and the attenuation is sometimes called capacitive attenuation.

A series of pulses can demonstrate resonance. If a portion of a pulse is reflected at each interface, it is possible for them to come together and add up to form a new phantom pulse.

The critical frequency here is the bit rate. Think of a sine wave with a frequency the same as the bit rate; if it will resonate in the cable, the pulses will also. Extra pulses caused by resonance might easily result in an error signal from the receiving system requesting a retransmission. The final result would be a communication system that is much slower than intended.

### Cut-off Frequency

The cut-off frequency of a coaxial transmission line is the frequency at which modes of energy transmission, other than the "TEM" mode, can be generated.

$$f_{co} = \frac{7.5}{\sqrt{\epsilon} (D+d)} \text{ (in GHz)}$$

(D and d are measured in inches)

### Types of Transmission Lines

**Twin Lead transmission cable** is generally used where impedance matching alone is important, since it provides only minimal shielding. Impedance values of 300 ohms and 600 ohms are common. Lower impedance values require closer spacing of the conductors and are not normally available in this type of cable. A typical application for twin lead cable is in antenna lead wire for television sets.

**Twisted Pair** is a variation of the twin lead type. It consists of two lengths of ordinary hookup wire twisted together. A twisted pair provides relatively constant impedance plus better magnetic shielding than twin lead cables. It is flexible, inexpensive, easy to terminate and is used extensively by the computer industry. However, it should not be used when maximum shielding is required.

## Appendix A - Theory and Application (Continued)

**Shielded Twisted Pair Cable** is used to eliminate inductive and capacitive coupling. Twisting cancels out inductive coupling, while the shield eliminates capacitive coupling. Most applications for this cable are between equipment, racks and buildings.

**Flexible (Braided) Coaxial Cable** is by far the most common type of closed transmission line because of its flexibility. It is a coaxial cable, meaning that both the signal and the ground conductors are on the same center axis. The outer conductor is made from fine braided wire, hence the name "braided coaxial cable". This type of cable is used in practically all applications requiring complete shielding of the center conductor. The effectiveness of the shielding depends upon the weave of the braid and the number of braid layers. TE Connectivity manufactures connectors for cable sizes ranging from less than 1/8 in. diameter, for low power applications of around 50 watts, to over 1/2 in. diameter for power of 850 watts at 100 MHz and voltages up to 5000. In addition to power handling capabilities, cables are available for high frequency applications, high and low temperature applications, severe environmental applications and many other specialized uses.

**Triaxial Cable** is used when higher "shielding" efficiency characteristics are required in applications similar to those using shielded twisted pair cable.

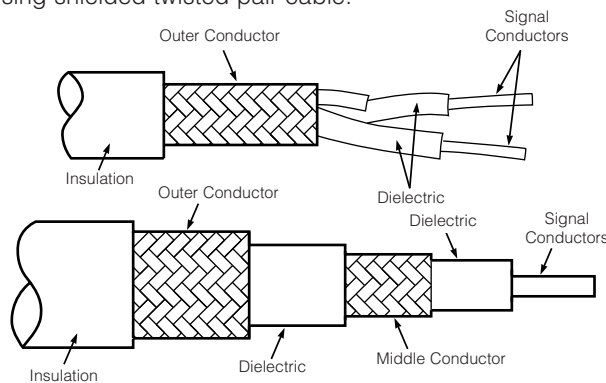


Figure 18

### Twin Conductor and Triaxial Cable

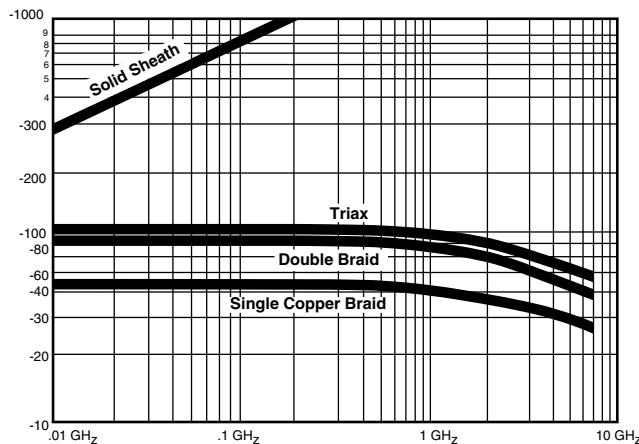


Figure 19

### Shielding Efficiencies

Often you will hear the term "shielded cable". This is very similar to coaxial cable except the spacing between center conductor and shield is not carefully controlled during manufacture, resulting in non-constant impedance.

**Semi-rigid Coaxial Cable** uses a solid tubular outer conductor rather than the braided type, so that all the RF energy is contained within the cable. One of the drawbacks of braided cable is that the shielding is not 100% effective, especially at higher frequencies. This is because the braided construction can permit small amounts of short wavelength (high frequency) energy to radiate. Normally this does not present a problem; however, if a higher degree of shielding is required, semi-rigid coaxial cable is recommended. For applications using frequencies higher than 30 GHz a miniature semi-rigid cable is recommended. Various connectors are available from TE to terminate these cables.

**Ribbon Coaxial Cable** is a relatively recent TE innovation which combines the advantages of both ribbon cable and coaxial cable. TE currently provides both the cable and the insulation displacing coaxial connector to terminate the cable. Each individual coaxial cable consists of the signal conductor, dielectric, a foil shield and a drain wire which is in continuous contact with the foil. The entire assembly is then covered with an outer insulating jacket. The unique manufacturing feature of this cable is the precise placement of the drain wires to permit gang stripping of the outer jacket and foil. The major advantage of this cable is the speed and ease with which it can be mass terminated with the TE insulation displacement technique. They can also be separated into individual coaxial lines and terminated with standard coaxial connectors as required.

## Appendix B - Typical Coaxial Cable Specifications

### Abbreviations

#### Dielectric

PE.....Solid polyethylene  
PTEE.....Solid polytetrafluoroethylene  
PIB.....Polyisobutylene, Type B, per MIL-C-17  
Rubber.....Per MIL-C-17D  
Sil.....Silicone rubber  
PS.....Polystyrene

#### Conductors and Braid Materials

AL.....Aluminum  
SCAAI.....Silver covered copper covered aluminum  
BC.....Bare copper  
SC.....Silver covered copper  
CCS.....Copper covered steel  
TC.....Tinned copper  
SCCS.....Silver covered copper covered steel

SCCad Br.....Silver covered cadmium bronze  
GS.....Galvanized steel  
TCCS.....Tin copper covered steel  
SSC.....Silver covered strip  
HR.....High resistance wire  
SA.....Silver covered alloy

#### Jacket Material

PVC-I.....Black polyvinylchloride, contaminating, Type I, per MIL-C-17D  
PVC-II.....Gray polyvinylchloride, noncontaminating, Type II, per MIL-C-17D  
PVC-IIA.....Black polyvinylchloride, noncontaminating, Type IIA, per MIL-C-17D  
PE-III.....Clear polyethylene  
PE-IIIA.....High molecular weight, black polyethylene, Type IIIA, per MIL-C-17D  
FG Braid V.....Fiberglass, impregnated, Type V, per MIL-C-17D  
FEP-IX.....Fluorinated ethylene propylene, Type IX, per MIL-C-17D  
PUR.....Polyurethane, black specific compounds  
SIL/DAC-VI.....Dacron braid over silicone rubber, Type VI, per MIL-C-17D  
Rubber.....Per MIL-C-17D

| RG/U Type Cable | Inner Conductor                                    | Dielectric Material | DOD                 | Number/Type of Shielding Braids | Jacket Material | O.D.                 | Weight (lb/ft) | Nom. Imped. (Ohms) | Nom. Cap pf/ft | Max. Operating Temp. (C°) | Max. Operating Voltage (Volts RMS) | Comments                     |
|-----------------|----------------------------------------------------|---------------------|---------------------|---------------------------------|-----------------|----------------------|----------------|--------------------|----------------|---------------------------|------------------------------------|------------------------------|
| 8               | <b>2.17</b><br>.0855<br>7/ <b>0.72</b> BC<br>.0285 | PE                  | <b>7.24</b><br>.285 | 1/BC                            | PVC-I           | <b>10.29</b><br>.405 | .106           | 52                 | 29.5           | -40 +80                   | 4000                               | Use RG213                    |
| 8A              | <b>2.17</b><br>.0855<br>7/ <b>0.72</b> BC<br>.0285 | PE                  | <b>7.24</b><br>.285 | <b>.285</b><br>1/BC             | PVC-IIA         | <b>10.29</b><br>.405 | .106           | 52                 | 29.5           | -40 +80                   | 5000                               | Use RG213                    |
| 9               | <b>2.17</b><br>.0855<br>7/ <b>0.72</b> SC<br>.0285 | PE                  | <b>7.11</b><br>.280 | 2/Inner SC<br>Outer BC          | PVC-II          | <b>10.67</b><br>.420 | .140           | 51                 | 30.0           | -40 +80                   | 4000                               | Use RG214                    |
| 9A              | <b>2.17</b><br>.0855<br>7/ <b>0.72</b> SC<br>.0285 | PE                  | <b>7.11</b><br>.280 | 2/SC                            | PVC-II          | <b>10.67</b><br>.420 | .140           | 51                 | 30.0           | -40 +80                   | 4000                               | Use RG214                    |
| 9B              | <b>2.17</b><br>.0855<br>7/ <b>0.72</b> SC<br>.0285 | PE                  | <b>7.11</b><br>.280 | 2/SC                            | PVC-IIA         | <b>10.67</b><br>.420 | .150           | 50                 | 30.8           | -40 +80                   | 5000                               | Use RG214                    |
| 11              | <b>1.21</b><br>.0477<br>7/ <b>0.4</b> TC<br>.0159  | PE                  | <b>7.24</b><br>.285 | 1/BC                            | PVC-I           | <b>10.29</b><br>.405 | .096           | 75                 | 20.6           | -40 +80                   | 4000                               | Use up to 100 MHz            |
| 11A             | <b>1.21</b><br>.0477<br>7/ <b>0.4</b> TC<br>.0159  | PE                  | <b>7.24</b><br>.285 | 1/BC                            | PVC-IIA         | <b>10.29</b><br>.405 | .096           | 75                 | 20.6           | -40 +80                   | 5000                               | Use up to 1000 MHz           |
| 55              | <b>0.81</b> BC<br>.0320                            | PE                  | <b>2.95</b><br>.116 | 2/TC                            | PE-III          | <b>5.08</b><br>.200  | .032           | 53.5               | 28.5           | -55 +80                   | 1900                               | Use RG55B                    |
| 55A             | <b>0.89</b> SC<br>.0350                            | PE                  | <b>2.95</b><br>.116 | 2/SC                            | PVC-IIA         | <b>5.08</b><br>.200  | .034           | 50                 | 30.8           | -40 +80                   | 1900                               | Use RG223                    |
| 55B             | <b>0.81</b> SC<br>.0320                            | PE                  | <b>2.95</b><br>.116 | 2/TC                            | PE-IIIA         | <b>5.08</b><br>.200  | .033           | 53.5               | 28.5           | -55 +80                   | 1900                               | Use up to 1000 MHz           |
| 58              | <b>0.81</b> BC<br>.0320                            | PE                  | <b>2.95</b><br>.116 | 1/TC                            | PVC-I           | <b>4.95</b><br>.195  | .029           | 53.5               | 28.5           | -40 +80                   | 1900                               | Use RG58B                    |
| 58A             | <b>0.9</b><br>.0355                                | PE                  | <b>2.95</b><br>.116 | 1/TC                            | PVC-I           | <b>4.95</b><br>.195  | .029           | 52                 | 28.5           | -40 +80                   | 1900                               | Use RG58C                    |
| 58B             | <b>0.81</b> BC<br>.0320                            | PE                  | <b>2.95</b><br>.116 | 1/TC                            | PVC-IIA         | <b>4.95</b><br>.195  | .029           | 53.5               | 28.5           | -40 +80                   | 1900                               | Use up to 1000 MHz           |
| 58C             | <b>0.9</b><br>.0355<br>19/ <b>0.8</b> TC<br>.0071  | PE                  | <b>2.95</b><br>.116 | 1/TC                            | PVC-IIA         | <b>4.95</b><br>.195  | .029           | 50                 | 30.8           | -40 +80                   | 1900                               | Extra Flexible Version RG58B |
| 59              | <b>0.64</b> CCS<br>.0253                           | PE                  | <b>3.71</b><br>.146 | 1/BC                            | PVC-I           | <b>6.15</b><br>.242  | .032           | 73                 | 21.0           | -40 +80                   | 2300                               | Use RG59B                    |
| 59A             | <b>0.64</b> CCS<br>.0253                           | PE                  | <b>3.71</b><br>.146 | 1/BC                            | PVC-IIA         | <b>6.15</b><br>.242  | .032           | 73                 | 21.0           | -40 +80                   | 2300                               | Use RG59B                    |
| 59B             | <b>0.58</b> CCS<br>.0230                           | PE                  | <b>3.71</b><br>.146 | 1/BC                            | PVC-IIA         | <b>6.15</b><br>.242  | .032           | 75                 | 20.6           | -40 +80                   | 2300                               | Use up to 1000 MHz           |

**Appendix B - Typical Coaxial Cable Specifications (Continued)**

| RG/U Type Cable | Inner Conductor                                      | Dielectric Material | ODD                 | Number/Type of Shielding Braids | Jacket Material | O.D.                 | Weight (lb/ft) | Nom. Imped. (Ohms) | Nom. Cap pF/ft | Max. Operating Temp. (C°) | Max. Operating Voltage (Volts RMS) | Comments                        |
|-----------------|------------------------------------------------------|---------------------|---------------------|---------------------------------|-----------------|----------------------|----------------|--------------------|----------------|---------------------------|------------------------------------|---------------------------------|
| 62A             | <b>0.64</b> CCS<br>.0253                             | Air-space<br>PE     | <b>3.71</b><br>.146 | 1/BC                            | PVC-IIA         | <b>6.15</b><br>.242  | .038           | 93                 | 13.5           | -40 +80                   | 750                                | Low Capacitance                 |
| 62B             | <b>0.61</b><br>.0240<br>7/ <b>0.2</b> CCS<br>.0080   | Air-space<br>PE     | <b>3.71</b><br>.146 | 1/BC                            | PVC-IIA         | <b>6.15</b><br>.242  | .038           | 93                 | 13.5           | -40 +80                   | 750                                | Extra Flexible RG62A            |
| 71              | <b>0.64</b> CCS<br>.0253                             | Air-space<br>PE     | <b>3.71</b><br>.146 | 2/TC                            | PVC-I           | <b>6.22</b><br>.245  | .046           | 93                 | 13.5           | -40 +80                   | 750                                | Use RG71B                       |
| 71A             | <b>0.64</b> CCS<br>.0253                             | Air-space<br>PE     | <b>3.71</b><br>.146 | 2/TC                            | PE-III          | <b>6.22</b><br>.245  | .046           | 93                 | 13.5           | -55 +80                   | 750                                | Use RG71B                       |
| 71B             | <b>0.64</b> CCS<br>.0253                             | Air-space<br>PE     | <b>3.71</b><br>.146 | 2/TC                            | PE-IIIA         | <b>6.22</b><br>.245  | .046           | 93                 | 13.5           | -55 +80                   | 750                                | Low Capacitance                 |
| 122             | <b>0.76</b><br>.0300<br>7/ <b>0.13</b> TC<br>.0050   | PE                  | <b>2.44</b><br>.096 | 1/TC                            | PVC-IIA         | <b>4.06</b><br>.160  | .016           | 50                 | 29.4           | -40 +80                   | 1900                               | Use up to 1000 MHz              |
| 124             | <b>0.64</b> TCCS<br>.0253                            | Taped<br>PTFE       | <b>3.43</b><br>.135 | 1/TC                            | FG Braid-V      | <b>6.1</b><br>.240   | .210           | 73                 | 20.3           | -55 +250                  | 2300                               | Use RG140                       |
| 140             | <b>0.64</b> SCCS<br>.0250                            | PTFE                | <b>3.71</b><br>.146 | 1/SC                            | FG Braid-V      | <b>5.92</b><br>.233  | .056           | 75                 | 19.5           | -55 +250                  | 2300                               | See RG302 for FEP Jacket        |
| 141             | <b>0.91</b> SCCS<br>.0359                            | PTFE                | <b>2.95</b><br>.116 | 1/SC                            | FG Braid-V      | <b>4.83</b><br>.190  | .036           | 50                 | 29.4           | -55 +250                  | 1900                               | Use RG141A                      |
| 141A            | <b>0.99</b> SCCS<br>.0390                            | PTFE                | <b>2.95</b><br>.116 | 1/SC                            | FG Braid-V      | <b>4.83</b><br>.190  | .036           | 50                 | 29.4           | -55 +250                  | 1900                               | See RG303 for FEP Jacket        |
| 142             | <b>0.91</b> SCCS<br>.0359                            | PTFE                | <b>2.95</b><br>.116 | 2/SC                            | FG Braid-V      | <b>4.95</b><br>.195  | .047           | 50                 | 29.4           | -55 +250                  | 1900                               | Use RG142A                      |
| 142A            | <b>0.99</b> SCCS<br>.0390                            | PTFE                | <b>2.95</b><br>.116 | 2/SC                            | FG              | <b>4.95</b><br>.195  | .047           | 50                 | 29.4           | -50 +250                  | 1900                               | See RG142B for FEP Jacket       |
| 142B            | <b>0.99</b> SCCS<br>.0390                            | PTFE                | <b>2.95</b><br>.116 | 2/SC                            | FEP             | <b>4.95</b><br>.195  | .047           | 50                 | 29.4           | -55 +250                  | 1900                               | Standard Center Cond. Available |
| 174             | <b>0.48</b><br>.0189<br>7/ <b>0.16</b> CCS<br>.0063  | PE                  | <b>1.52</b><br>.060 | 1/TC                            | PVC             | <b>2.54</b><br>.100  | .008           | 50                 | 30.8           | -40 +80                   | 1500                               | Miniature Data Transmission     |
| 178             | <b>0.3</b><br>.0120<br>7/ <b>0.1</b> SCCS<br>.0040   | PTFE                | <b>0.91</b><br>.036 | 1/SC                            | KEL-F           | <b>1.83</b><br>.072  | .0054          | 50                 | 29.4           | -40 +150                  | 1000                               | Use RG178B                      |
| 178B            | <b>0.3</b><br>.0120<br>7/ <b>0.1</b> SCCS<br>.0040   | PTFE                | <b>0.86</b><br>.034 | 1/SC                            | FEP-IX          | <b>1.83</b><br>.072  | .0054          | 50                 | 29.4           | -55 +200                  | 1000                               | High Strength Cond. Available   |
| 179             | <b>0.3</b><br>.0120<br>7/ <b>0.1</b> SCCS<br>.0040   | PTFE                | <b>1.45</b><br>.057 | 1/SC                            | KEL-F           | <b>2.54</b><br>.100  | .010           | 70                 | 20.4           | -55 +150                  | 1200                               | Use RG179B                      |
| 180B            | <b>0.3</b><br>.0120<br>7/ <b>0.1</b> SCCS<br>.0040   | PTFE                | <b>2.59</b><br>.102 | 1/SC                            | KEP-IX          | <b>3.56</b><br>.140  | .019           | 95                 | 15.4           | -55 +200                  | 1500                               | High Strength Cond. Available   |
| 188             | <b>0.51</b><br>.0201<br>7/ <b>0.17</b> SCCS<br>.0067 | PTFE                | <b>1.52</b><br>.060 | 1/SC                            | PTFE            | <b>2.67</b><br>.105  | .011           | 50                 | 29.4           | -55 +250                  | 1200                               | Use RG316                       |
| 188A            | <b>0.51</b><br>.0201<br>7/ <b>0.17</b> SCCS<br>.0067 | PTFE                | <b>1.52</b><br>.060 | 1/SC                            | PTFE            | <b>2.67</b><br>.105  | .011           | 50                 | 29.4           | -55 +250                  | 1200                               | Use RG316                       |
| 195A            | <b>0.3</b><br>.0120<br>7/ <b>0.1</b> SCCS<br>.004    | PTFE                | <b>2.59</b><br>.102 | 1/SC                            | PTFE            | <b>3.68</b><br>.145  | .020           | 95                 | 15.4           | -55 +250                  | 1500                               | Use RG180B                      |
| 210             | <b>0.64</b> SCCS<br>.0253                            | Air-Space<br>PTFE   | <b>3.71</b><br>.146 | 1/SC                            | FG Braid-V      | <b>6.15</b><br>.242  | .040           | 93                 | 13.5           | -55 +250                  | 750                                | High Temp. Low Capacitance      |
| 213             | <b>2.26</b><br>.0888<br>7/ <b>0.75</b> BC<br>.0296   | PE                  | <b>7.24</b><br>.285 | 1/BC                            | PVC-IIA         | <b>10.29</b><br>.405 | .099           | 50                 | 30.8           | -40 +80                   | 5000                               | Use up to 1000 MHz              |
| 214             | <b>2.26</b><br>.0888<br>7/ <b>0.75</b> SC<br>.0296   | PE                  | <b>7.24</b><br>.285 | 2/SC                            | PVC-IIA         | <b>10.0</b><br>.425  | .126           | 50                 | 30.8           | -40 +80                   | 5000                               | Use up to 10,000 MHz            |

**Appendix B - Typical Coaxial Cable Specifications** (Continued)

| RG/U Type Cable | Inner Conductor                                      | Dielectric Material | DOD                 | Number/Type of Shielding Braids       | Jacket Material | O.D.                 | Weight (lb/ft) | Nom. Imped. (Ohms) | Nom. Cap pf/ft | Max. Operating Temp. (C°) | Max. Operating Voltage (Volts RMS) | Comments                 |
|-----------------|------------------------------------------------------|---------------------|---------------------|---------------------------------------|-----------------|----------------------|----------------|--------------------|----------------|---------------------------|------------------------------------|--------------------------|
| 216             | <b>1.21</b><br>.0477<br>7/ <b>0.75</b> BC<br>.0159   | PE                  | <b>7.24</b><br>.285 | 2/BC                                  | PVC-IIA         | <b>10.8</b><br>.425  | .114           | 75                 | 20.6           | −40 +80                   | 5000                               | Use up to 1000 MHz       |
| 223             | <b>0.89</b> SC<br>.035                               | PE                  | <b>2.95</b><br>.116 | 2/SC                                  | PVC-IIA         | <b>5.36</b><br>.211  | .034           | 50                 | 30.8           | −40 +80                   | 1900                               | Use up to 10,000 MHz     |
| 225             | <b>2.38</b><br>.0936<br>7/ <b>0.79</b> SC<br>.0312   | PTFE                | <b>7.24</b><br>.285 | 2/SC                                  | FG Braid-V      | <b>10.92</b><br>.430 | .180           | 50                 | 29.4           | −55 +250                  | 5000                               | See RG393 for FEP Jacket |
| 302             | <b>0.64</b> SCCS<br>.0250                            | PTFE                | <b>3.71</b><br>.146 | 1/SC                                  | FEP-IX          | <b>5.11</b><br>.201  | .030           | 75                 | 19.5           | −55 +200                  | 2300                               | FEP Jacketed RG140       |
| 303             | <b>0.99</b> SCCS<br>.0390                            | PTFE                | <b>2.95</b><br>.116 | 1/SC                                  | FEP-IX          | <b>4.32</b><br>.170  | .088           | 50                 | 29.4           | −55 +200                  | 1900                               | FEP Jacketed RG141A      |
| 316             | <b>0.51</b><br>.0201<br>7/ <b>0.17</b> SCCS<br>.0067 | PTFE                | <b>1.52</b><br>.060 | 1/SC                                  | FEDP-IX         | <b>2.59</b><br>.102  | .012           | 50                 | 29.4           | −55 +200                  | 1200                               | FEP Jacketed RG188A      |
| 400             | <b>0.98</b><br>.0385<br>19/ <b>0.2</b> SPC<br>.0077  | PTFE                | <b>2.95</b><br>.116 | 2/SC                                  | FEP-IX          | <b>4.95</b><br>.195  | .050           | 50                 | 29.3           | −55 +200                  | 1900                               | —                        |
| 402             | <b>0.91</b> SCCS<br>.0360                            | PTFE                | <b>3.02</b><br>.119 | <b>3.58</b> OD<br>.141<br>Copper Tube | None            | <b>3.58</b><br>.141  | .032           | 50                 | 29.3           | −40 +125                  | 2500                               | Semi-rigid               |
| 405             | <b>0.51</b> SCCS<br>.0201                            | PTFE                | <b>1.68</b><br>.066 | <b>2.18</b> OD<br>.086<br>Copper Tube | None            | <b>2.19</b><br>.0865 | .015           | 50                 | 29.4           | −40 +125                  | 1500                               | Semi-rigid               |

## Appendix C - Maximum Power Handling Capabilities for Cables

### Average Input Power in Watts

| RG/U<br>Type Cable                            | Frequency in MHz |       |       |       |       |       |       |       |        |
|-----------------------------------------------|------------------|-------|-------|-------|-------|-------|-------|-------|--------|
|                                               | 10               | 50    | 100   | 200   | 400   | 1,000 | 3,000 | 5,000 | 10,000 |
| 5, 5A, 5B                                     | 2,000            | 800   | 550   | 350   | 230   | 125   | 60    | 40    | 22     |
| 8, 8A, 10A, 213, 215                          | 3,700            | 1,300 | 850   | 540   | 350   | 190   | 95    | 65    | 37     |
| 9, 9A, 9B, 214                                | 3,700            | 1,300 | 850   | 540   | 350   | 190   | 95    | 65    | 37     |
| 11, 11A, 12, 12A, 13, 13A, 216                | 2,500            | 1,000 | 650   | 400   | 260   | 150   | 70    | 50    | 26     |
| 217                                           | 6,000            | 2,000 | 1,200 | 800   | 480   | 260   | 120   | 85    | 50     |
| 22, 22B                                       | 1,700            | 650   | 430   | 280   | 190   | 110   | 50    | 38    | 20     |
| 55, 55A, 55B, 223                             | 800              | 310   | 205   | 137   | 90    | 53    | 28    | 20    | 10     |
| 58, 58B                                       | 730              | 280   | 180   | 125   | 85    | 50    | 25    | 17    | —      |
| 58A, 58C                                      | 650              | 225   | 170   | 110   | 75    | 44    | 22    | 15    | —      |
| 59, 59A, 59B                                  | 1,300            | 480   | 310   | 200   | 135   | 77    | 40    | 27    | 15     |
| 62, 62A, 71, 71A, 71B                         | 1,300            | 480   | 310   | 200   | 135   | 77    | 40    | 27    | 15     |
| 62B                                           | 1,150            | 420   | 280   | 180   | 120   | 69    | 35    | 25    | 14     |
| 115, 115A, 165, 225, 393                      | 25,000           | 9,500 | 6,300 | 4,300 | 2,800 | 1,700 | 880   | 620   | 350    |
| 108, 108A                                     | 340              | 145   | 100   | 70    | 50    | 30    | 15    | —     | —      |
| 122                                           | 540              | 205   | 140   | 90    | 60    | 35    | 18    | 12    | —      |
| 140, 141, 141A, 142, 142B, 302, 303, 400, 402 | 9,000            | 3,500 | 2,400 | 1,600 | 1,100 | 650   | 350   | 245   | 140    |
| 143, 143A                                     | 11,500           | 4,600 | 3,200 | 2,100 | 1,450 | 850   | 460   | 330   | 190    |
| 144                                           | 25,000           | 9,500 | 6,300 | 4,300 | 2,800 | 1,700 | 880   | 620   | 350    |
| 161, 179, 179A, 179B, 187, 187A               | 1,600            | 780   | 570   | 420   | 310   | 200   | 110   | 76    | 41     |
| 174, 174A                                     | 170              | 72    | 50    | 36    | 25    | 16    | —     | —     | —      |
| 178, 178A, 178B, 196, 196A                    | 710              | 340   | 240   | 170   | 123   | 78    | 41    | 28    | 14     |
| 180, 180A, 180B, 195, 195A                    | 2,500            | 1,100 | 800   | 570   | 400   | 250   | 135   | 93    | 50     |
| 188, 188A, 316                                | 1,250            | 600   | 450   | 330   | 240   | 160   | 80    | 57    | 30     |
| 210                                           | 8,500            | 3,300 | 2,300 | 1,600 | 1,100 | 620   | 310   | 220   | 140    |

**Note:** Values above 3 GHz vary considerably depending on construction.

**Conditions:**

Ambient — 104°F [40°C]

Altitude — Sea level

Center Conductor Temperature — 176°F [80°C] for polyethylene, 392°F [200°C] for PTFE

## Appendix D - Nominal Loss Characteristics for Cables

### Decibels per Hundred Feet

| RG/U<br>Type Cable                            | Frequency in MHz |       |       |       |       |       |       |        |        |
|-----------------------------------------------|------------------|-------|-------|-------|-------|-------|-------|--------|--------|
|                                               | 10               | 50    | 100   | 200   | 400   | 1,000 | 3,000 | 5,000  | 10,000 |
| 5, 5A, 5B                                     | .80              | 1.40  | 2.90  | 4.30  | 6.40  | 11.00 | 22.00 | 30.00  | 52.00  |
| 8, 8A, 10A, 213, 215                          | .66              | 1.50  | 2.20  | 3.20  | 4.60  | 9.00  | 19.00 | 28.00  | 47.00  |
| 9, 9A, 9B, 214                                | .66              | 1.50  | 2.20  | 3.20  | 4.60  | 9.00  | 19.00 | 28.00  | 47.00  |
| 11, 11A, 12, 12A, 13, 13A, 216                | .66              | 1.50  | 2.20  | 3.20  | 4.60  | 9.00  | 19.00 | 28.00  | —      |
| 217                                           | .41              | 1.00  | 1.40  | 2.10  | 3.10  | 5.80  | 13.00 | 19.00  | 31.00  |
| 22, 22B                                       | 1.20             | 2.80  | 4.20  | 6.30  | 9.50  | —     | —     | —      | —      |
| 55, 55A, 55B, 223                             | 1.35             | 3.00  | 4.30  | 6.00  | 8.80  | 16.50 | 36.00 | 51.00  | 85.00  |
| 58, 58B                                       | 1.20             | 3.10  | 4.60  | 7.00  | 10.00 | 17.50 | 38.00 | —      | —      |
| 58A, 58C                                      | 1.40             | 3.30  | 4.90  | 7.30  | 11.00 | 20.00 | 41.00 | —      | —      |
| 59, 59A, 59B                                  | 1.10             | 2.30  | 3.30  | 4.70  | 6.70  | 11.50 | 25.50 | 41.00  | —      |
| 62, 62A, 71, 71A, 71B                         | .90              | 1.90  | 2.80  | 3.70  | 5.20  | 8.50  | 18.40 | 29.50  | —      |
| 62B                                           | .90              | 2.10  | 3.00  | 4.30  | 6.10  | 10.50 | 23.50 | 36.00  | —      |
| 115, 115A, 165, 225, 393                      | .60              | 1.40  | 2.10  | 3.10  | 4.50  | 7.50  | 14.00 | 21.00  | 35.00  |
| 108, 108A                                     | 2.30             | 5.20  | 7.50  | 11.00 | 16.00 | 26.20 | 54.00 | —      | —      |
| 122                                           | 1.60             | 4.40  | 6.90  | 11.00 | 16.60 | 29.20 | 57.20 | 89.00  | —      |
| 140, 141, 141A, 142, 142B, 302, 303, 400, 402 | 1.20             | 2.70  | 3.90  | 5.50  | 8.00  | 13.00 | 26.00 | 36.00  | 62.00  |
| 143, 143A                                     | .85              | 1.80  | 2.50  | 3.80  | 5.70  | 9.70  | 18.10 | 26.10  | 40.70  |
| 144                                           | .38              | 1.00  | 1.60  | 2.30  | 3.80  | 7.00  | 15.10 | —      | —      |
| 161, 179, 179A, 179B, 187, 187A               | 5.00             | 7.90  | 9.80  | 12.70 | 15.80 | 25.00 | 43.00 | 62.50  | 135.00 |
| 174, 174A                                     | 3.80             | 6.50  | 8.90  | 12.00 | 17.50 | 31.00 | 64.30 | 97.00  | 185.00 |
| 178, 178A, 178B, 196, 196A                    | 5.30             | 10.00 | 13.30 | 20.00 | 27.50 | 45.00 | 78.00 | 115.00 | 172.00 |
| 180, 180A, 180B, 195, 195A                    | 3.10             | 4.20  | 5.10  | 7.30  | 10.40 | 16.50 | 36.00 | 49.50  | 89.00  |
| 188, 188A, 316                                | 3.80             | 7.90  | 11.50 | 15.00 | 20.00 | 30.00 | 58.00 | 79.00  | 133.00 |
| 210                                           | .23              | .58   | .85   | 1.30  | 1.90  | 3.10  | 6.50  | 9.00   | 15.00  |

**Note:** Values above 3 GHz vary considerably depending on construction.

#### Conditions

Ambient —68°F [20°C]



## Table of Contents

|                                                             |               |
|-------------------------------------------------------------|---------------|
| <b>Introduction</b>                                         | .3-2 to 3-3   |
| <b>Expanded Beam Products</b>                               |               |
| MIL Qualified Connectors (MIL-DTL-83526)                    | .3-4          |
| Pro Beam Mini Connectors                                    | .3-5 to 3-7   |
| Pro Beam Jr. Connectors                                     | .3-8 to 3-11  |
| Pro Beam Sr. Connectors                                     | .3-12, 3-13   |
| 38999 Series III Style Connectors                           | .3-14 to 3-16 |
| Expanded Beam Contact (Size 16)                             | .3-17         |
| Cable Assemblies and Accessories                            | .3-18 to 3-19 |
| Cables                                                      |               |
| Reels                                                       |               |
| Backpacks                                                   |               |
| Tactical Optical Cable                                      | .3-20         |
| Commercial Fiber Optic Mechanical Splice Kits               | .3-21         |
| Optical Test Set for Fiber Optic Cables                     | .3-22         |
| Hand Held Fault Locator                                     | .3-23         |
| Expanded Beam Avionics-Related Standards and Specifications | .3-24         |
| ARINC 600 and 404                                           | .3-25 to 3-28 |
| <b>Physical Contact &amp; Technology</b>                    |               |
| ARINC 801 Optical Termini                                   | .3-29 to 3-30 |
| F12 ARINC 801 Insert Assemblies                             | .3-31         |
| ARINC 801 Optical Termini Adapter Dimensions                | .3-32         |
| ARINC 801 Optical Termini Termination Kit                   | .3-33         |
| MIL-T-29504                                                 | .3-34         |
| Optical Inserts for EN4165 and ARINC 809                    | .3-34         |
| Fiber Optic Insert for DMC-M                                | .3-34         |
| RSC-v                                                       | .3-34         |
| <b>Rugged Circular Connectors</b>                           |               |
| 38999 Style Connectors                                      | .3-35         |
| MC3                                                         | .3-36 to 3-39 |
| MC4                                                         | .3-40 to 3-41 |
| MC5                                                         | .3-42 to 3-45 |
| MC6                                                         | .3-46 to 3-48 |
| MC801                                                       | .3-49         |
| Ruggedized Singleway Connector (RSC)                        | .3-50 to 3-52 |
| Sealed Circular LC ODVA                                     | .3-53         |
| Empire                                                      | .3-54         |
| <b>Rugged Board Level Connectors</b>                        |               |
| Ruggedized Optical Backplane Interconnect for VITA 66.1     | .3-55         |
| <b>Navy CID Approved - Epoxy Applied</b>                    |               |
| Tight Jacketed LC Connectors                                | .3-56         |
| Tight Jacketed SC Connectors                                | .3-57         |
| <b>LightCrimp Plus Navy Approved</b>                        |               |
| LC, SC and LightCrimp Plus ST Approved by US Navy           | .3-58         |
| Combination LightCrimp Plus Termination Kit                 | .3-59         |
| LightCrimp Splice                                           | .3-60         |
| <b>Offshore Optical Connectors and Cable Assemblies</b>     | .3-61         |



## Ruggedized Fiber Optic Products

### Product Facts

- **Expanded Beam**
  - PRO BEAM Sr.Connectors
  - PRO BEAM Jr.Connectors
  - PRO BEAM Mini Connectors
  - Mini 38999
  - Mini ARINC
  - Mini GPRC
  - Size 16 M29504 EB/4 and /5 varieties

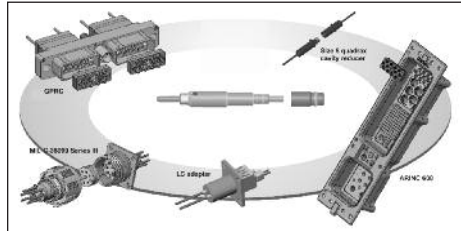
### Physical Contact Technology

- ARINC 801 MM and SM
- M29504 /4 and /5 MM and SM
- MC Series
  - MC3
  - MC3
  - MC5
  - MC6
  - MC801
- Rugged Single Channel (RSC)
- Sealed Circular LC ODVA Conforming Connector

TE Connectivity (TE) is proud to offer a full rugged fiber optic product family.

With TE's complete selection that includes world class Physical Contact and Expanded Beam technologies that include MC series of high density contact, a Rugged Single Channel and MT ribbon fiber as well as global industry standards of EN4165 and ARINC 801 along with our M83526/20 and /21 qualified products and wide variety of Expanded Beam technologies the end user is guaranteed a complete choice that meets their cost and optical performance needs in multiple industries.

For specific information, please contact your local TE Sales Representative.



ARINC 801 Optical Termini



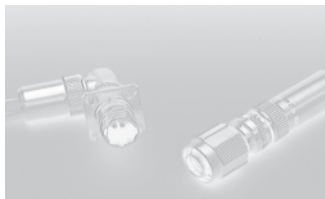
Expanded Beam Products



MC5 (JN1130) multiway connectors



EN4165 derivatives



MC4



MC3 (JN1146) multiway connectors



MIL-T-29504



RSC (JN1148) single way connector



MC6

**ASSEMBLY CAPABILITIES**  
TE Connectivity has extensive Rugged Optic Harness capabilities. Please consult your local TE Sales representative for assistance.

## Ruggedized Fiber Optic Products (Continued)

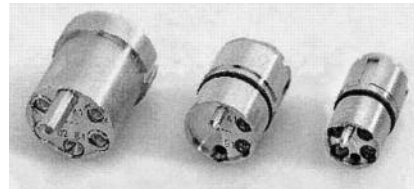
### Expanded Beam Products

#### Product Facts

- PRO BEAM Sr., PRO BEAM Jr. and PRO BEAM Mini Connector field deployable interconnects
- ARINC 600 connectors, with inserts/holder blocks designed for Mini Expanded Beam — up to 128 channels on size 3 ARINC 600
- MIL-C-38999 Series III shell size 11 and 15 style circular connectors — Cable assemblies up to 8 fibers
- Unique Modular Design, for use with multimode and singlemode fiber
- Tactical cables, cable reels, backpacks
- Cable assembly and termination services
- Ball lens expands cross-sectional area of light over 200 times for multimode and over 2000 times for singlemode
- Rugged hermaphroditic construction (i.e., same insert mates to each other)
- Physically non-contacting mating conditions; no wear, installed fiber ferrule protected by ball lens

#### ASSEMBLY CAPABILITIES

TE Connectivity has extensive Rugged Optic Harness capabilities. Please consult your local TE Sales representative for assistance.

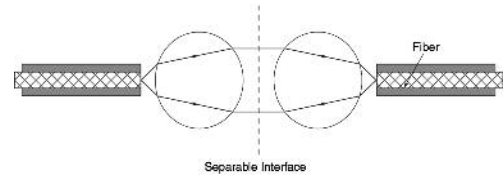


From left to right: PRO BEAM Sr., PRO BEAM Jr. & Mini Expanded Beam inserts.

#### Key Features

Fiber Optic Interconnect/Cable System using Expanded Beam technology, which physically expands and collimates the transmission signal into an optical beam over 14 times its original diameter (the cross sectional area of the light beam increases over 200 times for multimode optical signals). For singlemode signals, the collimated beam is over 45 times its

### Expanded Beam Technology



Expanded Beam Principle

original diameter (the cross-sectional area of the light beam increases over 2,000 times.). It is then refocused back down onto the core of the receiving fiber. This approach provides ease of alignment and low sensitivity to thermal changes and contamination. High strength, precision connector housings enhance a durable connection, optimizing low loss and repeatable performance.

#### Applications

Suitable for field-deployable communications, marine ship-to-shore applications, security systems, mobile diagnostic units, oil and gas exploration and other harsh environment applications demanding strength, durability and reliable performance in conditions of multiple coupling/decouplings, blindmate situations, and high vibration.

#### Product Facts

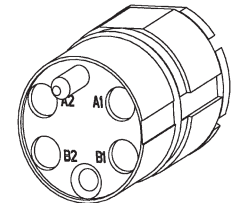
- No wear on fiber optic interface; Very vibration resistant
- Easy to handle, easy to clean. Durable connection that is highly resistant to dirt/debris
- Singlemode or multimode
- Common 850/1300 Dual Wavelength, 1310, or 1550 nm wavelengths
- Easy alignment for low-loss, repeatable performance
- Consistent overall optical "link budget" assured
- Low sensitivity to thermal fluctuations and interface contamination
- Repeatable low-loss performance in harsh environments

#### EB termini



- Durable non-contacting interface assures ease of use/cleaning
- Termini designed to replace existing M29504/4 and /5 physical contact termini that fits the Size 16 AWG cavity of a D389999 III connector
- MM and SM termini designs

#### Expanded Beam Inserts



- PRO BEAM Sr. Insert — the original, larger format, Field Tactical, hermaphroditic Connector System
- PRO BEAM Jr. Insert — the second generation, reduced size, Field Tactical Connector System — a TE Connectivity original design
- Mini Expanded Beam Insert for multi-channel small form factor — the smallest expanded beam multi-channel insert in the industry, another TE Connectivity original design

## Expanded Beam Products

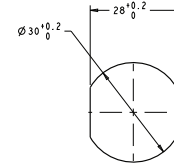
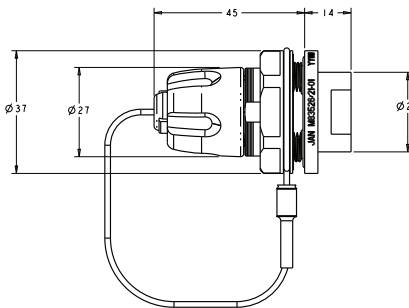
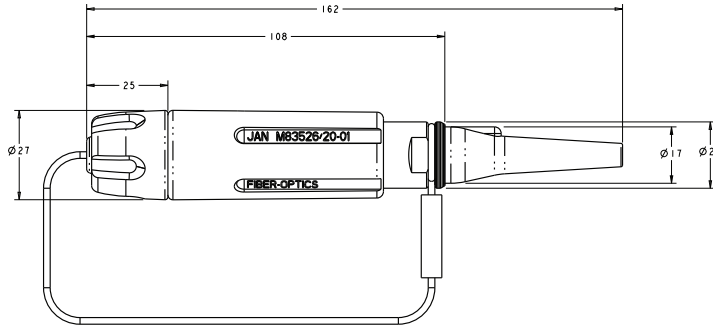
### MIL-Qualified Connectors M83526/20 and M83526/21

The original now has a MIL-qualified version. The benchmark PRO BEAM Jr. connector series was the model for the MIL-DTL-83526/20 and /21 specifications. TE is now the first to gain full qualification to these specifications with TE's M83526/20 and M83526/21 connectors.

#### Product Facts

- MIL-qualified to MIL-DTL-83526/20B and MIL-DTL-83526/21B
- QPD- (Qualified Products Database) listed on <http://qpldocs.dla.mil/>
- VG-approval to VG 95319-100 and -101
- Fully intermateable and interoperable with the benchmark PRO BEAM Jr. connector series
- TE's patented Interference-Fit expanded beam design technology yields unmatched high performance and high reliability

**TECHNICAL DOCUMENTS**  
**408-32093 M83526/20 Plug**  
**408-32107 M83526/21 Bulkhead**  
<http://te.com/documents>  
**MIL-DTL-83526/20B**  
**MIL-DTL-83526/21B**  
<http://quicksearch.dla.mil>



#### MIL-DTL-83526 Connector Assembly Part Numbers

| P/N          | Part Number | Description              |
|--------------|-------------|--------------------------|
| M83526/20-01 | 2064556-1   | 4 x 850/1300 MM Plug     |
| M83526/20-02 | 2064557-1   | 4 x 1310 SM Plug         |
| M83526/20-03 | 2064558-1   | 4 x 1550 SM Plug         |
| M83526/20-04 | 2064559-1   | 2 x 850/1300 MM Plug     |
| M83526/20-05 | 2064560-1   | 2 x 1310 SM Plug         |
| M83526/20-06 | 2064561-1   | 2 x 1550 SM Plug         |
| M83526/21-01 | 2064562-1   | 4 x 850/1300 MM Bulkhead |
| M83526/21-02 | 2064563-1   | 4 x 1310 SM Bulkhead     |
| M83526/21-03 | 2064564-1   | 4 x 1550 SM Bulkhead     |
| M83526/21-04 | 2064565-1   | 2 x 850/1300 MM Bulkhead |
| M83526/21-05 | 2064566-1   | 2 x 1310 SM Bulkhead     |
| M83526/21-06 | 2064567-1   | 2 x 1550 SM Bulkhead     |

VG numbers assigned as reference docs. Mil spec detail sheets will be formal guidance for orders

MIL-DTL-83426/20 = VG 95319-100

MIL-DTL-83426/21 = VG 95319-101

#### MFOCA - Mixed Mode

| P/N       | DLA P/N  | Type     | Channels    | Color |
|-----------|----------|----------|-------------|-------|
| 1516546-1 | 10023-03 | Plug     | 2 MM + 2 SM | Brown |
| 1516547-1 | 10023-01 | Plug     | 2 SM        | Green |
| 1516548-1 | 10023-02 | Plug     | 2 MM        | Black |
| 1516702-1 | 10024-03 | Bulkhead | 2 MM + 2 SM | Brown |
| 1516703-1 | 10024-01 | Bulkhead | 2 SM        | Green |
| 1516704-1 | 10024-02 | Bulkhead | 2 MM        | Black |

\* for cable assembly applications please contact your local TE representative

## Expanded Beam Products (Continued)

### PRO BEAM Mini Connectors

TE Connectivity is pleased to announce the natural extension from our PRO BEAM Sr. and Jr. Connector product lines.

The PRO BEAM Mini Connector saves space and weight and is perfect for high density applications. The product offers the same durability as its larger counterparts.



PRO BEAM Sr., Jr. & Mini Connectors



PRO BEAM Mini Plug Connector

### Connector Assembly

- 1 Shell Kit
- 1 Insert Kit
- 1 Cable Adapter Kit\*
- X Ferrule Kits (X = No. of optical channels)

\*Not applicable for Low Profile

### PRO BEAM Mini Connector Shell Kits

| Type     | Mount Style   | Attribute Difference         | Part Number   |               |              |                  |
|----------|---------------|------------------------------|---------------|---------------|--------------|------------------|
|          |               |                              | (HA Aluminum) | (OD Aluminum) | (NiAlBronze) | (Black Aluminum) |
| Plug     |               | EPDM Grip                    | 1828698-1     | N/A           | 1828698-2    | N/A              |
| Bulkhead | D-Hole        | Low Profile - Buffered Fiber | 1828699-1     | 1828699-2 ♦   | 1828699-3    | 1828699-4        |
|          |               | Low Profile - 1.8 Jacketed   | 1985140-1     | 1985140-2 ♦   | 1985140-3    | 1985140-4        |
|          |               | Sealed                       | 1918185-1     | 1918185-3     | 1918185-2    | 1918185-4        |
|          | Square Flange | Low Profile - Buffered Fiber | 1828826-1     | *             | *            | *                |
|          |               | Neutrik Cutout-Drop-In       | 1918603-1     | *             | *            | *                |

\* Contact TE for availability.

### PRO BEAM Mini Insert Kits

| Description                      | Part Number |
|----------------------------------|-------------|
| 2 x 850 / 1300 nm Dual Multimode | 1374759-4   |
| 2 x 1310 nm Singlemode           | 1588129-2   |
| 2 x 1550 nm Singlemode           | 1588128-2   |
| 4 x 850 / 1300 nm Dual Multimode | 1374759-2   |
| 4 x 1310 nm Singlemode           | 1588129-3   |
| 4 x 1550 nm Singlemode           | 1588128-3   |

### PRO BEAM Mini Ferrule Kits

| Fiber Hole Size | Mode | PRO BEAM Connector | Part Number |
|-----------------|------|--------------------|-------------|
| 125 µm          | SM   | Mini               | 1754700-1   |
| 126 µm          | SM   | Mini               | 1754700-2   |
| 126 µm          | MM   | Mini               | 1754699-1   |

### PRO BEAM Mini Cable Adapter Kits For Plug

| Cable Diameter | Part Number |            |
|----------------|-------------|------------|
|                | Aluminum    | NiAlBronze |
| 5.1 mm         | 1828700-1   | 1828700-5  |
| 5.6 mm         | 1828700-2   | 1828700-6  |
| 6.2 mm         | 1828700-3   | 1828700-7  |
| 6.7 mm         | 1828700-4   | 1828700-8  |

### PRO BEAM Mini Cable Adapter Kits For Sealed Bulkhead

| Cable Diameter | Part Number |
|----------------|-------------|
| 5.1 mm         | 1516228-1   |
| 5.6 mm         | 1516228-2   |
| 6.2 mm         | 1516228-3   |

**Note:** Part Numbers are RoHS compliant except: ♦ Indicates non-RoHS compliant.

**ASSEMBLY CAPABILITIES**  
TE Connectivity has extensive Rugged Optic Harness capabilities. Please consult your local TE Sales representative for assistance.

Standard color black for Polymer Grip Rings, Cap and Boots. Alternate colors available upon request.



## Expanded Beam Products (Continued)

### PRO BEAM Mini Connectors

#### Performance Specifications

##### Optical, Multimode Version

**Insertion Loss, Typical\*** —  
0.7 dB @ 1300 nm and 850 nm dual wavelength

##### Optical, Singlemode Version

**Insertion Loss, Typical\*** —  
0.8 dB @ 1310 nm or 1550 nm optimized wavelength

**Return Loss\*\*** — > 34 dB @ 1310 nm or 1550 nm optimized wavelength

\*When tested with reference quality launch/receive cable assemblies

\*\*RL Tested Open Ended

#### Mechanical

##### Vibration, Sinusoidal —

10 - 500 Hz, 3 directions;  
0.75 mm amplitude @ 10g acceleration

**Bump** — 4,000 Bumps, 3 directions @ 40g acceleration

**Free Fall** — 500 falls on concrete; Severity 1.2 m

**Coupling Endurance** —  
3,000 couplings

##### Weight —

Plug — 50 grams, typical  
D-Hole bulkhead — 39 grams, typical

#### Temperature

**Operational Temperature** —  
-40°C/+85°C

**Storage Temperature** —  
-55°C/+85°C

**Temperature, Cyclic** —  
-55°C/+85°C

**Humidity (Damp Heat)** —95% RH

#### Immersion

**Water** — 5 m depth (plug) -  
2 m (Bulkhead)

#### Pressure

**Low Pressure** — 25 kPa @ -55°C

#### Material and Finish

**Shell Alloy** — Aluminum; or nickel aluminum bronze (high saline environment)

**Plating (For Aluminum Shells Only)** — clear hard anodized; or green chromate conversion zinc or black zinc - nickel alloy (PRO BEAM Mini Bulkheads only)

#### Technical Documents

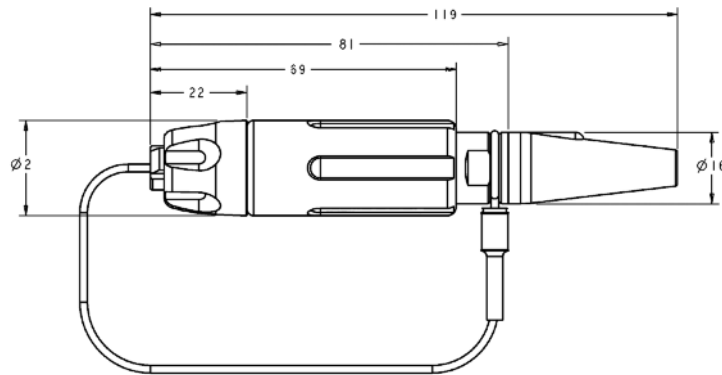
408-10065 Plug

408-10067 Square Flange Bulkhead

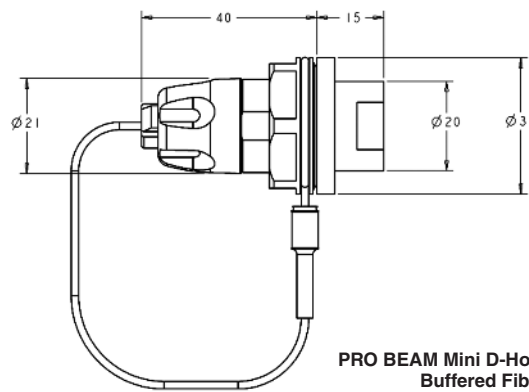
408-10069 Low Profile D-Hole Bulkhead

408-10076 Sealed D-Hole Bulkhead

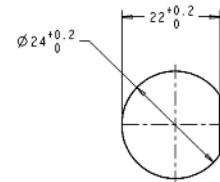
<http://www.te.com/documents>



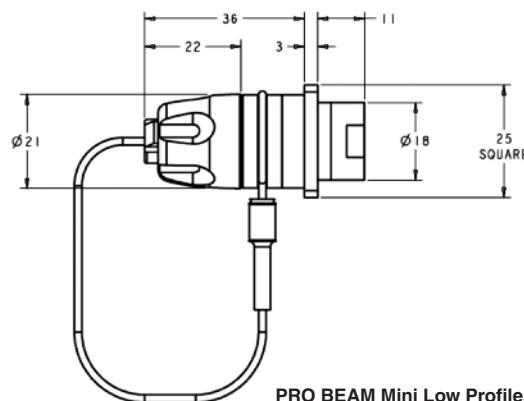
PRO BEAM Mini Cable Connector, Plug



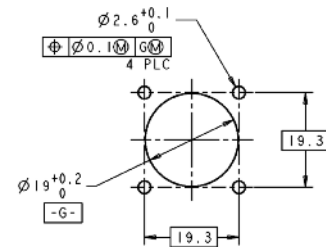
PRO BEAM Mini D-Hole Bulkhead Connector, Buffered Fiber, Low Profile



Recommended Panel Cutout



PRO BEAM Mini Low Profile, Square Flange Mount Bulkhead Connector

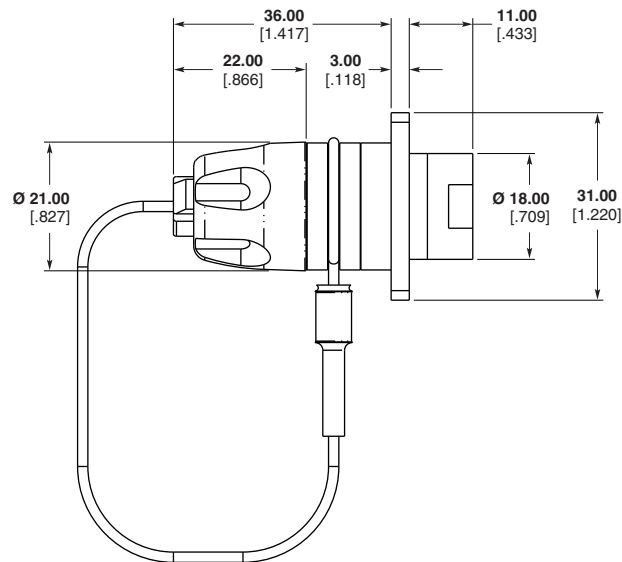


Recommended Panel Cutout

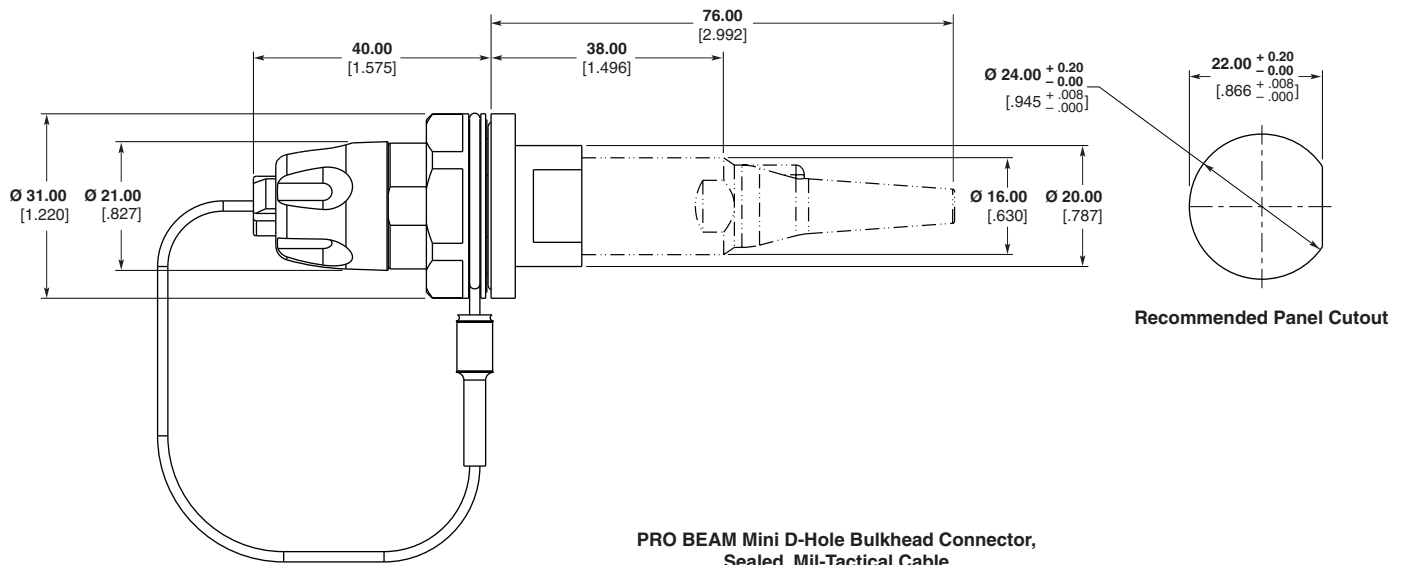
## Expanded Beam Products (Continued)

### PRO BEAM Mini Connectors

(Continued)



PRO BEAM Mini Low Profile,  
Alternate Square Flange Mount Bulkhead Connector



PRO BEAM Mini D-Hole Bulkhead Connector,  
Sealed, Mil-Tactical Cable

3

Ruggedized Fiber Optic Connectors



## Expanded Beam Products (Continued)

### PRO BEAM Jr. Connectors

#### Performance Specifications

##### Optical, Multimode Version

##### Insertion Loss, Typical\*—

0.7 dB @ 1300 nm and 850 nm dual wavelength

##### Optical, Singlemode Version

##### Insertion Loss, Typical\*—

0.8 dB @ 1310 nm or 1550 nm optimized wavelength

##### Return Loss\*\*— > 34 dB @ 1310

nm or 1550 nm optimized wavelength

\*When tested with reference quality launch/receive cable assemblies

\*\*RL Tested Open Ended

#### Mechanical

##### Vibration, Sinusoidal —

10 - 500 Hz, 3 directions;  
0.75 mm amplitude @ 10g acceleration

**Bump** — 4,000 Bumps, 6 directions  
@ 50g acceleration

**Free Fall** — 500 falls on concrete;  
Severity 1.2 m

**Coupling Endurance** —  
3,000 couplings

##### Weight —

Plug — 123 grams, typical  
D-Hole bulkhead — 102 grams, typical

#### Temperature

##### Operational Temperature —

-40°C/+85°C

##### Storage Temperature —

-55°C/+85°C

##### Temperature, Cyclic —

-55°C/+85°C

**Humidity (Damp Heat)** —95% RH

#### Immersion

**Water** — 15 m depth (plug) -  
15 m (Bulkhead)

#### Material and Finish

**Shell Alloy** — Aluminum; or nickel  
aluminum bronze (high saline environ-  
ment)

##### Plating (For Aluminum Shells

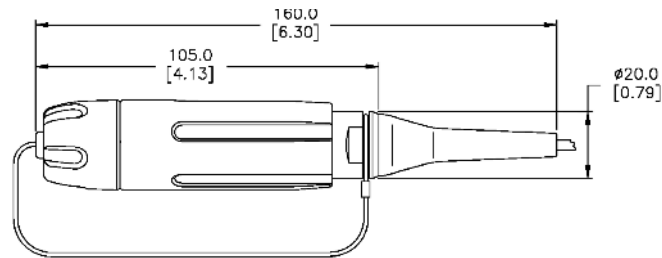
**Only)** — clear hard anodized; or green  
chromate conversion zinc or black zinc -  
nickel alloy (PRO BEAM Jr. Bulkheads  
only)

#### Bulkhead Connector Panel Thicknesses

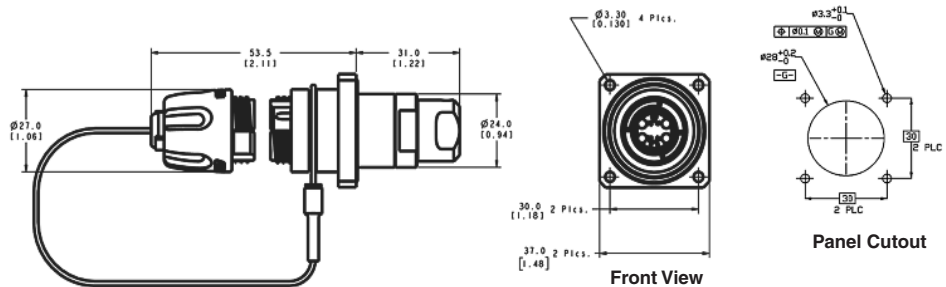
**PRO BEAM Jr. Bulkhead Connector**  
**D-Hole** — 4 mm max.

**PRO BEAM Jr. Bulkhead Connector**  
**Square Flange** — 6 mm max.

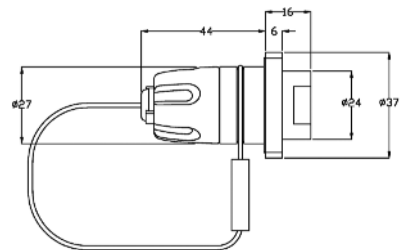
Standard color black for Polymer Grip  
Rings, Cap and Boots. Alternate colors  
available upon request.



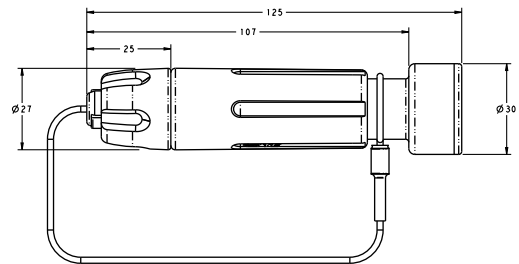
PRO BEAM Jr. Cable Connector, Plug



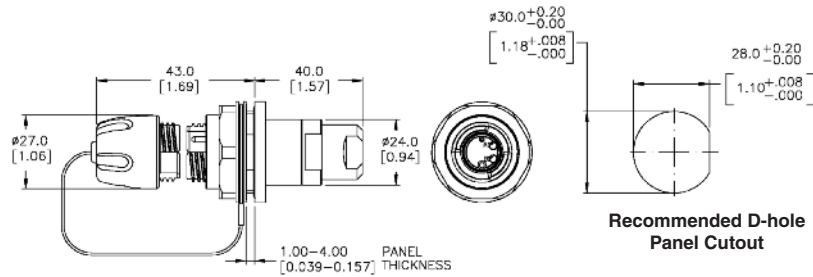
PRO BEAM Jr. Square Flange Mount Bulkhead Connector



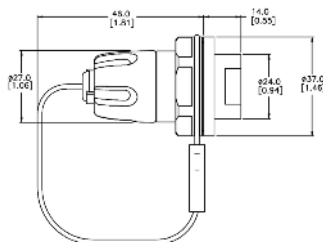
PRO BEAM Jr., Low Profile,  
Square Flange Mount Bulkhead Connector



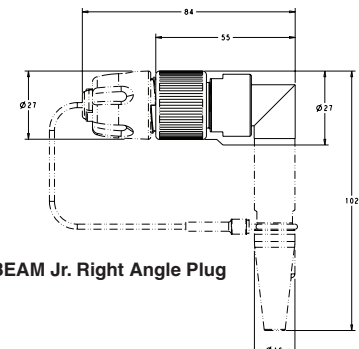
PRO BEAM Jr.,  
Loopback Plug Connector



PRO BEAM Jr. D-Hole Standard Bulkhead Connector without Boot



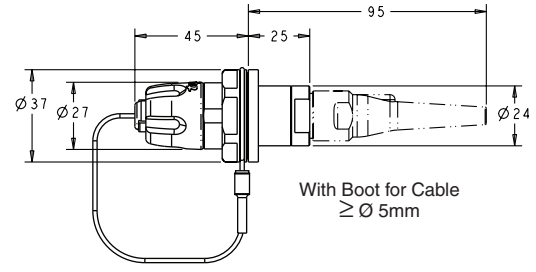
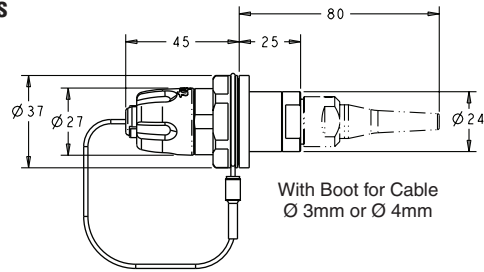
PRO BEAM Jr. Low Profile D-Hole Bulkhead Connector



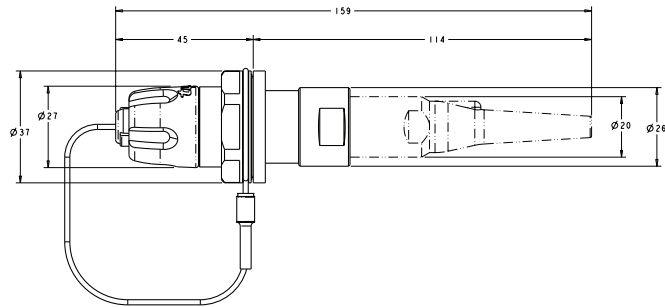
PRO BEAM Jr. Right Angle Plug

## Expanded Beam Products (Continued)

### PRO BEAM Jr. Connectors



PRO BEAM Jr. Standard Bulkhead Connector, with Boot



PRO BEAM Jr. Sealed Bulkhead Connector

## Expanded Beam Products (Continued)

### PRO BEAM Jr. Connectors

(Continued)

#### Connector Assembly

1 Shell Kit  
1 Insert Kit  
1 Cable Adapter Kit\*  
X Ferrule Kits (X = No. of optical channels)

Part Numbers listed are  
Shell alloy = aluminum  
Plating = hard anodized.  
Consult TE Connectivity  
for other plating/material  
options such as non-cadmium  
olive drab or RoHS-compliant  
black Zn/Ni.

### PRO BEAM Jr. Connector Shell Kits

| Description                                                    | Alloy                              |                    |                                 |
|----------------------------------------------------------------|------------------------------------|--------------------|---------------------------------|
|                                                                | Hard Anodized Aluminum Part Number | NiAlBz Part Number | Black Zinc Aluminum Part Number |
| PRO BEAM Jr. Plug w/EPDM rubber                                | 1918937-1                          | 1918937-2          | —                               |
| PRO BEAM Jr. Right-Angle Plug Kit                              | 1985915-1                          | —                  | —                               |
| PRO BEAM Jr. D-Hole Low Profile, Buffered Fiber Bulkhead       | 1693741-1                          | 1693741-2          | 1754445-3                       |
| PRO BEAM Jr. D-Hole Low Profile, Simplex Cable Bulkhead        | 6828413-1                          | —                  | 6828413-2                       |
| PRO BEAM Jr. D-Hole Standard Bulkhead                          | 1918939-1                          | 1918939-2          | 1918941-2                       |
| PRO BEAM Jr. D-Hole Sealed Bulkhead                            | 1918940-1                          | 1918940-2          | 1918940-4                       |
| PRO BEAM Jr. Square Flange Low Profile Buffered Fiber Bulkhead | 1754439-1                          | 1754439-2          | 1754447-3                       |
| PRO BEAM Jr. Square Flange Standard Bulkhead                   | 1918943-1                          | 1918943-2          | —                               |

### PRO BEAM Jr. Loopback Plug Assembly

| Description                                     | Part Number |
|-------------------------------------------------|-------------|
| 4 x 850 / 1300nm Multimode, 62.5/125 µm fiber   | 1516506-1   |
| 4 x 850 / 1300nm Multimode, OM3 50/125 µm fiber | 1516506-2   |
| 4 x 1310nm Singlemode                           | 1516506-3   |
| 4 x 1550nm Singlemode                           | 1516506-4   |

### PRO BEAM Jr. Insert Kits

| Description                | Part Number |
|----------------------------|-------------|
| 2 x 850 / 1300nm Multimode | 1515743-1   |
| 2 x 1310nm Singlemode      | 1515739-1   |
| 2 x 1550nm Singlemode      | 1516040-1   |
| 4 x 850 / 1300nm Multimode | 1515747-1   |
| 4 x 1310nm Singlemode      | 1515740-1   |
| 4 x 1550nm Singlemode      | 1516041-1   |

### Ferrule Kits

| Fiber Hole Size | Mode | PRO BEAM | Part Number |
|-----------------|------|----------|-------------|
| 125 m           | SM   | Jr.      | 1588908-2   |
| 126 m           | SM   | Jr.      | 1588908-1   |
| 126 m           | MM   | Jr.      | 1588700-1   |

### PRO BEAM Jr. Connector Plug & Sealed Bulkhead Cable Adapter Kits

| Cable Dia. Max.           | Aluminum Plug Part Number | NiAlBz Plug Part Number | Aluminum Sealed Bulkhead Part Number | NiAlBz Sealed Bulkhead Part Number | Black Zn-Ni Part Number |
|---------------------------|---------------------------|-------------------------|--------------------------------------|------------------------------------|-------------------------|
| 3.2                       | 1918931-1                 | 1918931-9               | 1918932-1                            | 1918932-9                          | 2-1918932-5             |
| 3.6                       | 1918931-2                 | 1-1918931-0             | 1918932-2                            | 1-1918932-0                        | 2-1918932-6             |
| 4.2                       | 1918931-3                 | 1-1918931-1             | 1918932-3                            | 1-1918932-1                        | 2-1918932-7             |
| 5.2                       | 1918931-4                 | 1-1918931-2             | 1918932-4                            | 1-1918932-2                        | 2-1918932-8             |
| 5.7                       | 1918931-5                 | 1-1918931-3             | 1918932-5                            | 1-1918932-3                        | 2-1918932-9             |
| 6.2                       | 1918931-6                 | 1-1918931-4             | 1918932-6                            | 1-1918932-4                        | 3-1918932-0             |
| 6.7                       | 1918931-7                 | 1-1918931-5             | 1918932-7                            | 1-1918932-5                        | 3-1918932-1             |
| 7.5 (breakout cable only) | 1918931-8                 | 1-1918931-6             | 1918932-8                            | 1-1918932-6                        | 3-1918932-2             |

### PRO BEAM Jr. Connector Standard Bulkhead Cable Adapter Kits\*

| Cable Dia. Max. | Aluminum with Boot Part Number | NiAlBz with Boot Part Number | Black Zn-Ni Part Number | Aluminum without Boot Part Number | NiAlBz without Boot Part Number | Black Zn-Ni Part Number |
|-----------------|--------------------------------|------------------------------|-------------------------|-----------------------------------|---------------------------------|-------------------------|
| 3.2             | 1918933-1                      | 1918933-9                    | 2-1918933-5             | 1918934-1                         | 1918934-8                       | 2-1918934-2             |
| 4.1             | 1918933-2                      | 1-1918933-0                  | 2-1918933-6             | 1918934-2                         | 1918934-9                       | 2-1918934-3             |
| 5.1             | 1918933-3                      | 1-1918933-1                  | 2-1918933-7             | 1918934-3                         | 1-1918934-0                     | 2-1918934-4             |
| 5.5             | 1918933-4                      | 1-1918933-2                  | 2-1918933-8             | 1918934-4                         | 1-1918934-1                     | 2-1918934-5             |
| 6.0             | 1918933-5                      | 1-1918933-3                  | 2-1918933-9             | 1918934-5                         | 1-1918934-2                     | 2-1918934-6             |
| 4 x 3.00        | 1918933-8                      | 1-1918933-6                  | 3-1918933-2             | 1918934-7                         | 1-1918934-4                     | 2-1918934-8             |

\* Standard Cable Adapter. Not applicable for Low Profile.

**Note:** Part Numbers are RoHS compliant except: ♦ Indicates non-RoHS compliant.

### Technical Documents

#### Product Specification

108-2177 Design Objectives

#### Application Specification

114-13099

#### Instruction Sheets

408-10250 Grounding and Standard D-Hole Bulkhead

408-10222 Plug

408-10249 Sealed D-Hole Bulkhead

408-8834 Low Profile Square Flange Bulkhead

408-8840 Low Profile D-Hole Bulkhead

408-10251 Standard Square Flange Bulkhead

408-10018 Low Profile D-Hole Simplex Cable Bulkhead

408-10252 7.5 Cable Adapter

http://www.te.com/documents

## Expanded Beam Products (Continued)

### PRO BEAM Jr. Connectors

(Continued)

#### Spare Parts & Tools

#### Technical Documents

##### Product Specifications

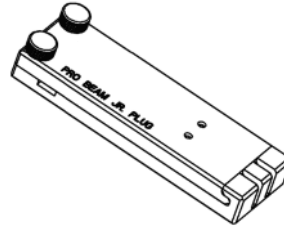
408-8857 Curing Fixtures for  
PRO BEAM Jr. and Sr.  
Connectors

408-8828 Cleaning Procedure for  
EB C/A's

##### Tooling Specifications

408-8795 Crimp Tool with Die Set for  
PRO BEAM Jr. and Sr.  
Connectors

408-10022 Die Assembly for Mini and  
Jr. Circular Crimps

<http://www.te.com/documents>


#### Curing Fixtures

| Connector                                                                | Part Number |
|--------------------------------------------------------------------------|-------------|
| PRO BEAM Jr. Cable Plug (having cable with KEVLAR strength member fiber) | 1693797-1   |
| PRO BEAM Jr. Sealed D-Hole Bulkhead                                      |             |
| PRO BEAM Jr. Standard D-Hole and Square Flange Bulkhead                  | 1693800-1   |
| PRO BEAM Jr. Low Profile Buffered Fiber Bulkhead                         | 1754122-1   |

Instruction Sheet 408-8857. Available at [www.te.com](http://www.te.com)

#### Cable Crimp Components

| Description                                                            | Part Number |
|------------------------------------------------------------------------|-------------|
| Crimp Sleeve (use with all PRO BEAM Jr. Connector Crimp Support sizes) | 1918497-1   |
| 3.2 mm Crimp Support                                                   | 1918498-1   |
| 4.2 mm Crimp Support                                                   | 1918498-2   |
| 5.2 mm Crimp Support                                                   | 1918498-3   |
| 5.7 mm Crimp Support                                                   | 1918498-4   |
| 6.2 mm Crimp Support                                                   | 1918498-5   |
| 6.7 mm Crimp Support                                                   | 1918498-6   |
| Square Crimp Support for (4) 3 mm Cables                               | 1985319-1   |

#### Ferrule Kits

| Fiber Hole Size | Mode | PRO BEAM | Part Number |
|-----------------|------|----------|-------------|
| 125 µm          | SM   | Jr.      | 1588908-2   |
| 126 µm          | SM   | Jr.      | 1588908-1   |
| 126 µm          | MM   | Jr.      | 1588700-1   |

#### Protective Caps

| Description                             | PRO BEAM | Part Number |
|-----------------------------------------|----------|-------------|
| Standard cap, for D-Hole Bulkhead       | Jr.      | 1515868-1   |
| Standard cap, for Flange Mount Bulkhead | Jr.      | 1515787-2   |
| Standard cap, for connector plug        | Jr.      | 1515867-1   |

#### Termination Kit

| Part Number |
|-------------|
| 1828650-1   |

KEVLAR is a trademark of E. I. du Pont  
de Nemours and Company.

**Note:** All part numbers are RoHS compliant.

## Expanded Beam Products (Continued)

### PRO BEAM Sr. Connectors

#### Performance Specifications

##### Optical, Multimode Version

**Insertion Loss, Typical\*** —  
0.7 dB @ 1300 nm and 850 nm dual  
wavelength

##### Optical, Singlemode Version

**Insertion Loss, Typical\*** —  
0.8 dB @ 1310 nm or 1550 nm  
optimized wavelength

**Return Loss\*\*** — > 34 dB  
@ 1310 nm or 1550 nm optimized  
wavelength

\*When tested with reference quality  
launch/receive cable assemblies

\*\*RL Tested Open Ended

#### Mechanical

##### Vibration, Sinusoidal —

10 - 500 Hz, 3 directions;  
0.75 mm amplitude @ 10g acceleration

**Bump** — 4,000 Bumps, 6 directions,  
@ 50g acceleration

**Free Fall** — 500 falls on concrete;  
Severity 1.2 m

**Coupling Endurance** —  
3,000 couplings

##### Weight —

Plug — 290 grams, typical

Chassis bulkhead — 150 grams, typical

#### Temperature

**Operational Temperature** —  
-40°C/+85°C

**Storage Temperature** — -55°C/+85°C

**Temperature, Cyclic** — -55°C/+85°C

**Humidity (Damp Heat)** — 95% RH

#### Immersion

**Water** — 5 m depth (plug),  
2 m (Bulkhead)

#### Material and Finish

**Shell Alloy** — Aluminum; or nickel  
aluminum bronze (high saline environ-  
ment)

**Plating (For Aluminum Shells Only)** —  
clear hard anodized or black zinc - nickel  
alloy (PRO BEAM Sr. bulkheads only)

#### Bulkhead Connector Panel Thicknesses

**PRO BEAM Sr. D-Hole Connector** —  
6.5 mm max.

**PRO BEAM Sr. Square Flange  
Connector** — 8.5 mm max.

#### Technical Documents

##### Product Specifications

408-8799 Plug

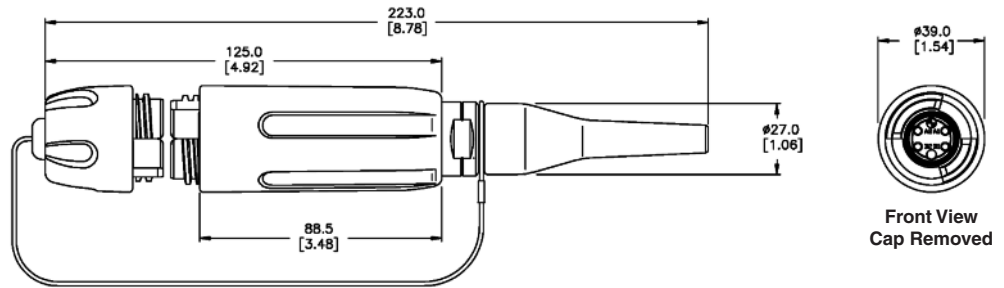
408-8800 D-Hole Bulkhead

408-8877 Square Flange Bulkhead

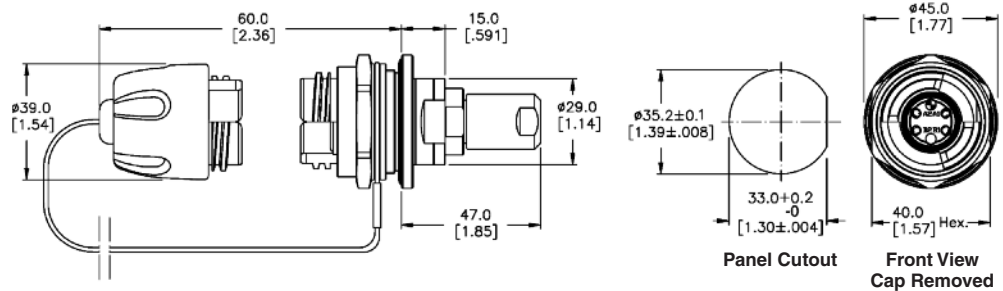
##### Application Specification

114-13122

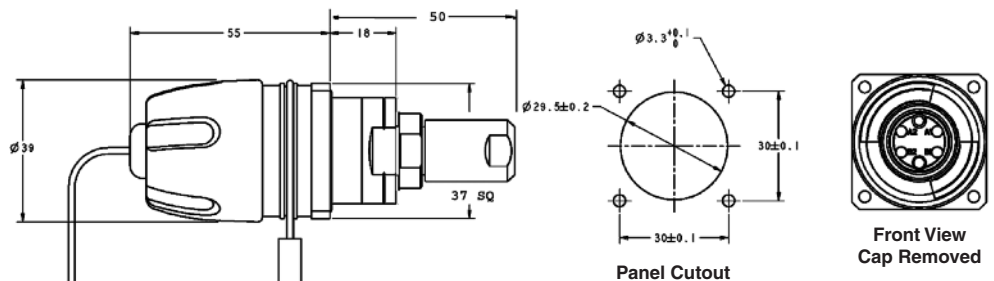
<http://www.te.com/documents>



PRO BEAM Sr. Cable Connector, Plug



PRO BEAM Sr. D-Hole Bulkhead Connector with Standard Cable Adapter



PRO BEAM Sr. Square Flange Mount Bulkhead Connector with Standard Cable Adapter

Standard color black for Polymer Grip Rings, Cap and Boots. Alternate colors available upon request.

## Expanded Beam Products (Continued)

### PRO BEAM Sr. Connectors

(Continued)

#### Connector Assembly

1 Shell Kit  
1 Insert Kit  
1 Cable Adapter Kit\*  
X Ferrule Kits (X = No.  
of optical channels)

\*Not applicable for Low Profile

Part numbers listed are  
Shell alloy = aluminum  
Plating = hard anodized.  
Consult TE Connectivity  
for other plating/material  
options such as NiAlBz for  
Naval applications, or other  
plating options such as RoHS-  
compliant black Zn-Ni.

**ASSEMBLY  
CAPABILITIES**  
TE Connectivity has  
extensive Rugged Optic Harness  
capabilities. Please consult  
your local TE  
Sales representative  
for assistance.

#### Technical Documents

##### Product Specifications

408-8857 Curing Fixtures for  
PRO BEAM Jr. and Sr.  
Connectors  
408-8828 Cleaning Procedure for  
EB C/A's

##### Tooling Specifications

408-8795 Crimp Tool with Die Set for  
PRO BEAM Jr. and Sr.  
Connectors

<http://www.te.com/documents>

| PRO BEAM Sr. Connector Shell Kits            | Alloy                   |                       |
|----------------------------------------------|-------------------------|-----------------------|
|                                              | Aluminum<br>Part Number | NiAlBz<br>Part Number |
| PRO BEAM Sr. Plug w/EPDM rubber              | 1754842-1               | 1754842-2             |
| PRO BEAM Sr. D-Hole Standard Bulkhead        | 1754843-1               | 1754843-2             |
| PRO BEAM Sr. Square Flange Standard Bulkhead | 1754844-1               | 1754844-2             |

| PRO BEAM Sr. Insert Kits    | Part Number |
|-----------------------------|-------------|
| 2 x 850 / 1300 nm Multimode | 1693001-1   |
| 2 x 1310 nm Singlemode      | 1515734-2   |
| 4 x 850 / 1300 nm Multimode | 1693001-2   |
| 4 x 1310 nm Singlemode      | 1515735-1   |
| 8 x 850/1300 nm Multimode   | 1516256-1   |
| 8 x 1310 nm Singlemode      | 1516258-1   |
| 8 x 1550 nm Singlemode      | 1516258-2   |

#### PRO BEAM Sr. Ferrule Kits

| Fiber Hole Size | Mode | Insert Application | Part Number |
|-----------------|------|--------------------|-------------|
| 125 µm          | SM   | 2 & 4 Channel      | 1515941-1   |
| 126 µm          | SM   | 2 & 4 Channel      | 1515941-2   |
| 126 µm          | MM   | 2 & 4 Channel      | 1588801-1   |
| 125 µm          | SM   | 8 Channel          | 1985635-1   |
| 126 µm          | SM   | 8 Channel          | 1985635-2   |
| 126 µm          | MM   | 8 Channel          | 1985107-1   |

#### PRO BEAM Sr. Connector Plug Adapter Kits

| Cable Dia. (Max.) | Alloy                   |                       |
|-------------------|-------------------------|-----------------------|
|                   | Aluminum<br>Part Number | NiAlBz<br>Part Number |
| 5.10<br>.201      | 1515940-1               | 1515940-2             |
| 5.65<br>.222      | 1515940-3               | 1515940-4             |
| 6.20<br>.244      | 1515940-5               | 1515940-6             |
| 6.70<br>.264      | 1515940-7               | 1515940-8             |

#### PRO BEAM Sr. Connector Standard Bulkhead Cable Adapter Kits

| Cable Dia. (Max.) | Style                  | Alloy                   |                       |
|-------------------|------------------------|-------------------------|-----------------------|
|                   |                        | Aluminum<br>Part Number | NiAlBz<br>Part Number |
| 5.20<br>.205      | Standard Cable Adapter | 1516229-3               | 1516229-7             |
| 5.70<br>.224      | Standard Cable Adapter | 1516229-2               | 1516229-6             |
| Buffered<br>Fiber | Low Profile Adapter    | 1516229-4               | 1516229-8             |
| 6.70<br>.264      | Standard Cable Adapter | 1-1516229-3             | 1-1516229-4           |
| 4 x 3 mm          | Standard Cable Adapter | 1516229-1               | 1-1516229-5           |

Note: All part numbers are RoHS compliant.

## Expanded Beam Products (Continued)

### 38999 Style EB for Harsh Environments

#### Product Facts

- Available in shell size 11, housed on D38999 Series III style shells for harness applications
- Multiple options available for backshells. Consult your local TE Connectivity Sales Representative
- Shell polarizations A through E available upon request

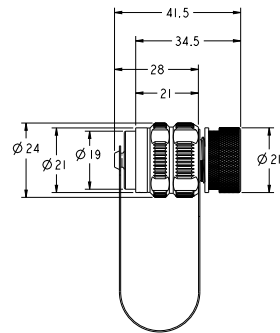
#### Standard Material and Finish

**Shell Alloy** — Aluminum

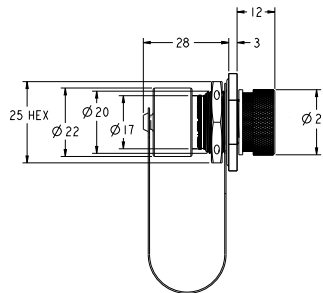
**Plating** — Nickel or green chromated zinc or RoHS-compliant black chromated zinc-nickel alloy

\*Refer to customer drawing for dash number designation

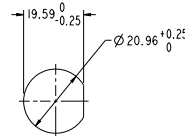
For part number details and plating options, contact your local TE Connectivity Sales Representative.



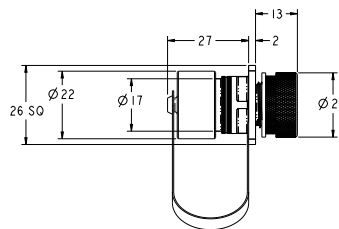
**38999 Plug Shell Kit for mini EB**



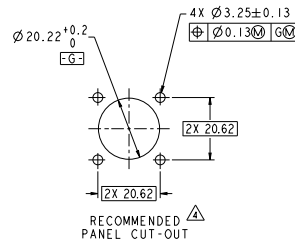
**38999 Jam-Nut Receptacle Shell Kit for mini EB**



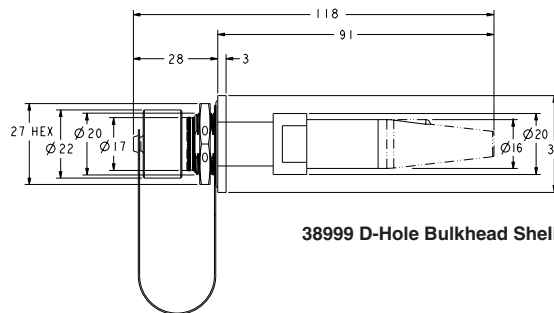
RECOMMENDED PANEL CUT-OUT



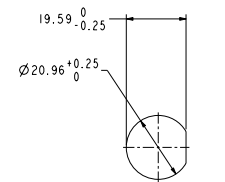
**38999 Shell Kit Wall Mount Receptacle for mini EB**



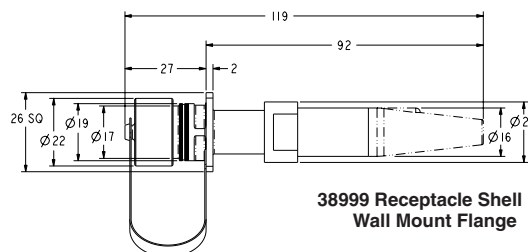
RECOMMENDED PANEL CUT-OUT



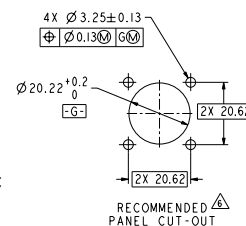
**38999 D-Hole Bulkhead Shell Kit**



RECOMMENDED PANEL CUT-OUT



**38999 Receptacle Shell Kit Wall Mount Flange**



RECOMMENDED PANEL CUT-OUT

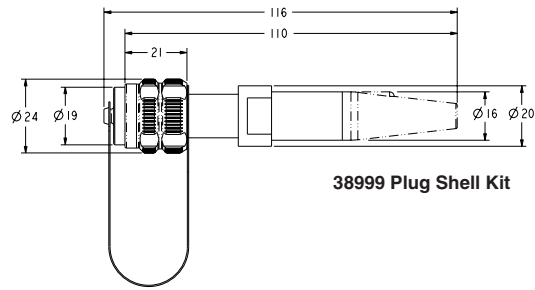
**ASSEMBLY CAPABILITIES**  
TE Connectivity has extensive Rugged Optic Harness capabilities. Please consult your local TE Sales representative for assistance.

**Note:** All part numbers are RoHS compliant.

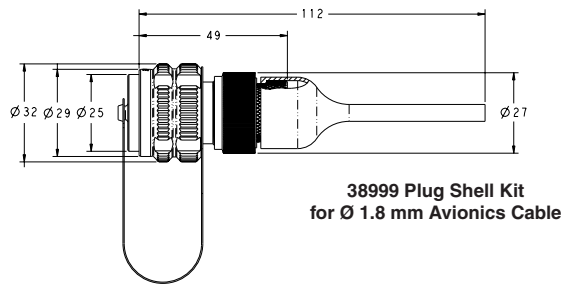


## Expanded Beam Products (Continued)

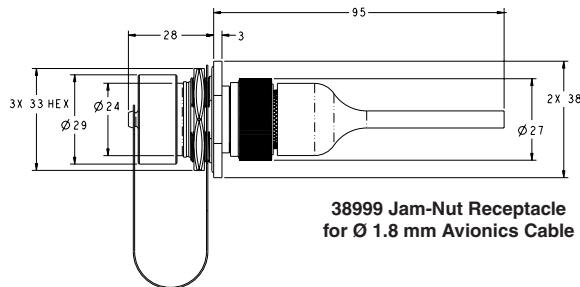
### 38999-style EB for Harsh Environments (Continued)



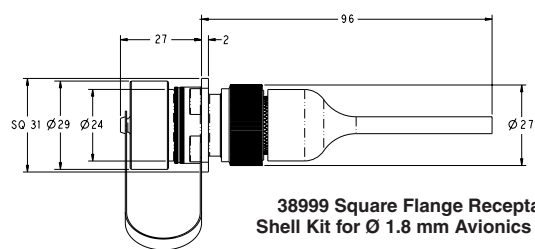
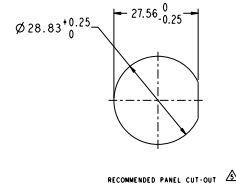
38999 Plug Shell Kit



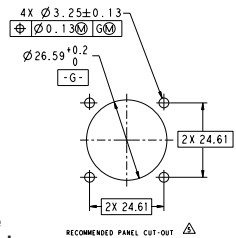
38999 Plug Shell Kit  
for Ø 1.8 mm Avionics Cable



38999 Jam-Nut Receptacle  
for Ø 1.8 mm Avionics Cable



38999 Square Flange Receptacle  
Shell Kit for Ø 1.8 mm Avionics Cable



## Expanded Beam Products (Continued)

### 38999-style EB for Harsh Environments (Continued)

#### Size 11 Shield Kit

| Use with:                | Mini EB 38999 Connector Shell Kits (N-Key) |             |             |                                 |             |             |                      |             |             |
|--------------------------|--------------------------------------------|-------------|-------------|---------------------------------|-------------|-------------|----------------------|-------------|-------------|
|                          | Ø1.8 mm Max Avionics Cable                 |             |             | MIL-Tactical Distribution Cable |             |             | Buffered Fiber Only  |             |             |
| Finish:                  | Electroless Ni Plate                       | OD Zn       | Black Zn-Ni | Electroless Ni Plate            | OD Zn       | Black Zn-Ni | Electroless Ni Plate | OD Zn       | Black Zn-Ni |
| Plug:                    | 6754518-1                                  | 1754518-7 ♦ | 6754518-7   | 1985021-1                       | 1985021-7 ♦ | —           | 1918883-1            | 1918883-7 ♦ | 1-1918883-3 |
| Jam-Nut Receptacle:      | 6754519-1                                  | 1754519-7 ♦ | 6754519-7   | 2064163-1                       | 2064163-7 ♦ | —           | 1918884-1            | 1918884-7 ♦ | 1-1918884-3 |
| Flange-Mount Receptacle: | 6754520-1                                  | 1754520-7 ♦ | 6754520-7   | 2064166-1                       | 2064166-7 ♦ | —           | 1918885-1            | 1918885-7 ♦ | 1-1918885-3 |

\* Contact TE Connectivity for availability.

#### Size 15 Shield Kit

| Use with:                | 2.2 mm Ø Max Avionics Cable |                   | End Nut Backshell for Non-Jacketed Cable |                   |
|--------------------------|-----------------------------|-------------------|------------------------------------------|-------------------|
|                          | Electroless Nickel Plate    | Black Zinc Nickel | Electroless Nickel Plate                 | Black Zinc Nickel |
| Plug:                    | 1516342-1                   | 1516342-7         | 1516338-1                                | 1516338-7         |
| Jam-Nut Receptacle:      | 1516343-1                   | 1516343-7         | 1516339-1                                | 1516339-7         |
| Flange-Mount Receptacle: | 1516344-1                   | 1516344-7         | 1516340-1                                | 1516340-7         |

#### Cable Adapter Kits For 38999 Mini EB Mil-Tactical

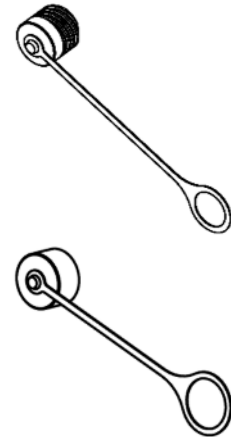
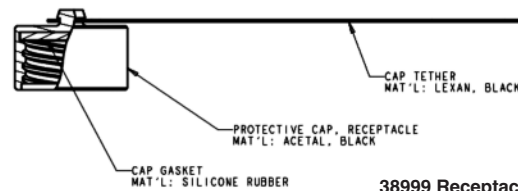
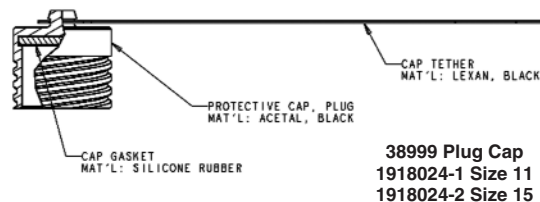
| Cable Diameter | Part Number |
|----------------|-------------|
| 5.1 mm         | 1516228-1   |
| 5.6 mm         | 1516228-2   |
| 6.2 mm         | 1516228-3   |

#### Insert Kits

| Description                           | Part Number |
|---------------------------------------|-------------|
| Mini 2 x 850 / 1300 nm Dual Multimode | 1374759-4   |
| Mini 2 x 1310 nm Singlemode           | 1588129-2   |
| Mini 2 x 1550 nm Singlemode           | 1588128-2   |
| Mini 4 x 850 / 1300 nm Dual Multimode | 1374759-2   |
| Mini 4 x 1310 nm Singlemode           | 1588129-3   |
| Mini 4 x 1550 nm Singlemode           | 1588128-3   |
| 8 x 850/1300 nm Multimode             | 1516256-1   |
| 8 x 1310 nm Singlemode                | 1516258-1   |
| 8 x 1550 nm Singlemode                | 1516258-2   |

#### Ferrule Kits

| Fiber Hole Size | Mode | Insert Type | Part Number |
|-----------------|------|-------------|-------------|
| 125 µm          | SM   | Mini        | 1754700-1   |
| 126 µm          | SM   | Mini        | 1754700-2   |
| 126 µm          | MM   | Mini        | 1754699-1   |
| 125 µm          | SM   | 8 Channel   | 1985635-1   |
| 126 µm          | SM   | 8 Channel   | 1985635-2   |
| 126 µm          | MM   | 8 Channel   | 1985107-1   |



**Note:** Part Numbers are RoHS compliant except: ♦ Indicates non-RoHS compliant.

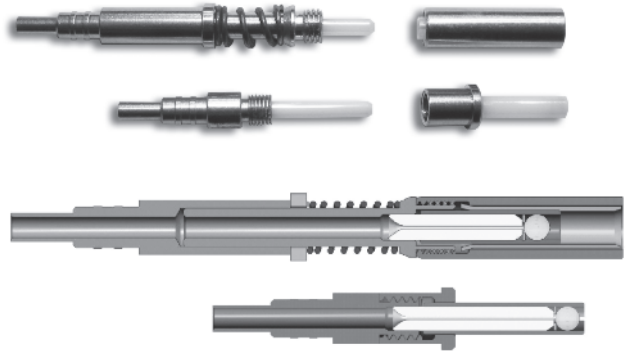
## Expanded Beam Products (Continued)

### EB termini

#### Product Facts

- Durable non-contacting interface assures ease of use/cleaning
- Termini designed to replace existing M29504/4 and /5 physical contact termini that fits the Size 16 AWG cavity of a D38999 III connector
- MM and SM termini designs

EB termini are combination of inserts (containing the lens) and EB termini (for terminating the fiber).



## Cable Assemblies and Accessories

### Product Facts

- Ruggedized cable assemblies custom tailored for field use in harsh environments
- Heavy-duty light-weight cable reel organizes and protects connectors and cable for easy pay-out and safe storage
- Options for 500 meter reels include special backpack harnesses, a separate reel stand, or a combination reel and reel stand

### Featured Cable Assemblies



**TFOCA to PRO BEAM Jr. Plug Cable Assembly**  
1828536-1 ♦

**LP D-Hole Bulkhead to 4 ST 62.5/125 on 1.8 mm cable**  
6828454-1 ♦

**Plug to Plug (100 meters)**  
6754475-2

### Typical Reels and Reel Stands for Field-Deployable Cable Assemblies



1918930-1



Tactical Reel/Drum Options

### PRO BEAM Jr. Kits

**PRO BEAM Jr. Termination Kit**  
1828650-1

**Cleaning Kit**  
1828335-2

### Cable Reels

#### Reel Capacity (Random Lay)

| Cable Diameter | Notes/Description                                                              | Flange Diameter | Part Number |
|----------------|--------------------------------------------------------------------------------|-----------------|-------------|
| 5.8 mm         |                                                                                |                 |             |
| 186 M          | Reel & Reel Stand Combination<br>Reel can be detached from stand without tools | 310 mm          | 1918930-1   |
| 247 M          | Reel*                                                                          | 310 mm          | 1754515-1   |
| 462 M          | Reel*                                                                          | 370 mm          | 1754515-2   |
| 816 M          | Reel*                                                                          | 460 mm          | 1754515-3   |
| 1052 M         | Reel*                                                                          | 510 mm          | 1754515-4   |

\* See Accessories options below

TFOCA-II is a trademark of Amphenol Fiber Systems International.

**Note:** Part Numbers are RoHS compliant except: ♦ Indicates non-RoHS compliant.

## Cable Assemblies and Accessories (Continued)

**ASSEMBLY CAPABILITIES**  
TE Connectivity has extensive Rugged Optic Harness capabilities. Please consult your local TE Sales representative for assistance.



Backpack with Reel



Reel with Stand  
"Static Frame"



Backpack Harness

### Accessories

| Description  | Reel Diameter    | Part Number |
|--------------|------------------|-------------|
| Backpack     | 370 mm Dia. Reel | 1754516-1*  |
| Backpack     | 460 mm Dia. Reel | 1754516-2*  |
| Backpack     | 510 mm Dia. Reel | 1754516-3*  |
| Static Frame | 500 mm Dia. Max  | 1754517-1*  |
| Static Frame | 700 mm Dia. Max  | 1754517-2*  |

\* Reel must be ordered separately.

**Note:** For lower cost alternative options. Please contact your local TE Connectivity Sales Representative or TE Product Information Center at 1-800-522-6752.

## Tactical Optical Cable

### Non-Metallic Tactical Field Deployable Fiber Optic Cable

#### Product Facts

- All terrain field deployable cable, up to 4 fibers, singlemode or multimode
- Developed for deployment under the most demanding conditions
- Tight buffered fibers are protected by Aramid yarns and a tough ruggedized polyurethane sheath
- Tested in accordance with MIL-PRF-85045
- Flexible, water resistant, high crush resistant, and lightweight,
- Designs available to be resilient against radiation exposure

#### Technical Data

##### Mil-Standard Distribution Cable — 2 Fiber Singlemode

**Attenuation** —  $\leq 0.5$  dB/km @ 1310 nm /  $\leq 0.5$  dB/km @ 1550 nm  
**Diameter** — 5.8 mm  
**Weight** — 25 kg/km  
**Minimum Bending Radius** — 29 mm  
**Crush Resistance** — 2000 N/cm  
**Operating Temperature** — -55° C to +85° C

##### Mil-Standard Distribution Cable — 4 Fiber Singlemode

**Attenuation** —  $\leq 0.5$  dB/km @ 1310 nm /  $\leq 0.5$  dB/km @ 1550 nm  
**Diameter** — 5.8 mm  
**Weight** — 27 kg/km  
**Minimum Bending Radius** — 28 mm  
**Crush Resistance** — 2000 N/cm  
**Operating Temperature** — -55° C to +85° C

##### Mil-Standard Distribution Cable — 2 Fiber Multimode

**Fiber Type** — 50  $\mu$ m/125  $\mu$ m and 62.5/125  
**Attenuation** —  $\leq 3.5$  dB/km @ 850 nm /  $\leq 1.0$  dB/km @ 1300 (62.5/125);  $\leq 3.5$  dB/km @ 850 nm /  $\leq 1.5$  dB/km @ 1300 (50/125)

##### Mil-Standard Distribution Cable — 4 Fiber Multimode

**Fiber Type** — 50  $\mu$ m/125  $\mu$ m and 62.5/125  
**Attenuation** —  $\leq 3.5$  dB/km @ 850 nm /  $\leq 1.0$  dB/km @ 1300 (62.5/125);  $\leq 3.5$  dB/km @ 850 nm /  $\leq 1.5$  dB/km @ 1300 (80/125)

Other fibers (i.e. Polyimide, Silicon buffer, Carbon coated, radiation hardened, etc.) are available upon request.

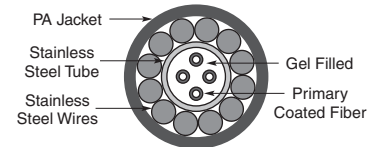
Contact TE Connectivity or your local TE Sales Representative for part numbers, pricing, and availability.

### ARMOR-LIGHT Tactical Field Deployable Fiber Optic Cable for Extreme Environments (Metallic for Rodent Proof)



### 4-Color Optical Fiber Cable Specification for Armored Cable for Ruggedized Applications Construction:

- 4-color coded fibers
- Fiber types 50/125/250  $\mu$ m, 62.5/125/250  $\mu$ m and 9/125/250  $\mu$ m
- Stainless steel gel filled tube
- Stainless steel wire
- Jacket — Nylon, black

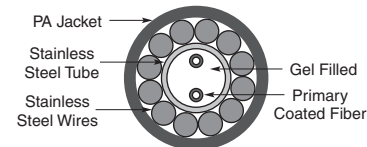


| Fiber Type | Part Number | Outside Dia. (mm) | Weight kg/km | Max. Attenuation dB/km |         |         |         | Bandwidth MHz-km |         |
|------------|-------------|-------------------|--------------|------------------------|---------|---------|---------|------------------|---------|
|            |             |                   |              | 850 nm                 | 1300 nm | 1310 nm | 1550 nm | 850 nm           | 1300 nm |
| 62.5/125   | 1588957-1   | 3.8               | 24           | 3.5                    | 1.0     | X       | X       | 160              | 500     |
| 50/125     | 1588957-2   | 3.8               | 24           | 2.7                    | 0.9     | X       | X       | 400              | 1200    |
| SM         | 1588957-4   | 3.8               | 24           | X                      | X       | 0.40    | 0.25    | X                | X       |

**Notes:** 35 mm recommended bend radius.  
3.1 kN breaking strength.

### 2-Color Optical Fiber Cable Specification for Armored Cable for Ruggedized Applications Construction:

- 2-color coded fibers
- Fiber types 50/125/250  $\mu$ m, 62.5/125/250  $\mu$ m and 9/125/250  $\mu$ m
- Stainless steel gel filled tube
- Stainless steel wire
- Jacket — Nylon, black



| Fiber Type | Part Number | Outside Dia. (mm) | Weight kg/km | Max. Attenuation dB/km |         |         |         | Bandwidth MHz-km |         |
|------------|-------------|-------------------|--------------|------------------------|---------|---------|---------|------------------|---------|
|            |             |                   |              | 850 nm                 | 1300 nm | 1310 nm | 1550 nm | 850 nm           | 1300 nm |
| 62.5/125   | 1693808-1   | 3.8               | 24           | 3.5                    | 1.0     | X       | X       | 160              | 500     |
| 50/125     | 1693808-2   | 3.8               | 24           | 2.7                    | 0.9     | X       | X       | 400              | 1200    |
| SM         | 1693808-4   | 3.8               | 24           | X                      | X       | 0.40    | 0.25    | X                | X       |

**Notes:** 35 mm recommended bend radius.  
3.1 kN breaking strength.

**Note:** All part numbers are RoHS compliant.

## Commercial Fiber Optic Mechanical Splicing Kit

### Light Crimp Splice

Part Number: 1985368-1

#### Product Facts

- Terminates 250 micron coated, 900 micron tight-buffered fibers and 2.0 mm jacketed cable
- Attenuation (typical): ≤0.1dB
- Return Loss (at ambient; 18° to 28° C): ≥20 dB multimode  
≥35 dB single-mode
- Operating Temperature: -25° to 70° C
- Storage Temperature: -40° to 85° C
- Tensile retention:  
250 micron coated: 2.0 N  
900 micron buffered: 3.0 N  
Jacketed: 50.0 N



Part Number: 1516626-1

The KITCO 0831-8238 Kit Provides a low cost, highly reliable, solution for the repair of Tactical Fiber Optic Cables featuring the TE Connectivity Mechanical Splice. The Kit contains all of the tools and materials required to make (3) three four channel cable repairs, including the JPS-400 Splice Protection Sleeve. An Ideal solution in a tactical environment when system reliability is essential, not an option!

### The TFOCA Military/Commercial Fiber Optic Mechanical Splicing Kit contains the following items:

- 2 JPS-400 Splice Protection Sleeves
- 12 Mechanical Splices
- Light Crimp Splice
- Precision Cleaver
- Crimp Tool with Crimp Die
- Splice Holder with Strip Template
- Cleaning Materials
- Tool Roll with all Required Tools
- Support for LC/SC Light Crimp Connectors
- Lightweight, rugged Case



Part Number: 1516516-1

### JPS Splice Enclosure

Part Number: 1516516-1

The JPS 400 Splice Enclosure is designed to protect TFOCA cable that has been repaired with any mechanical splice or fusion splicer. Designed & evaluated by the United States Marine Corps, this product works in all field applications, even in severe or harsh battlefield environments. Simple to install and easy to re-enter, yet flexible enough to conform to the diameter of a reel

when re-wound. The JPS 400 is ideal for both TFOCA AND TFOCA Second Generation applications.

There are two high-grade brass retention assemblies that use both the jacket and the Aramid yarn found in TFOCA cable to provide strain relief & secure the fiber inside the waterproof housing. A waterproof compression gasket prevents water and other contaminants from entering the housing.

### JPS 400 Mechanical Properties & Performance Specifications:

- High-grade formulated polyamide conduit & threaded adapters
- Self-extinguishing, low smoke, halogen & cadmium free
- Temperature Range: -50C to +105C continuous, 150C short term
- Chemical resistance to fuels, mineral oils, fats, and alkalies

- Specifically designed for external application in traction industry
- Size: 15" x .630" (ID) x .932" (OD)
- Re-enterable & Re-usable
- Conforms to TFOCA reel sizes
- Cable Size Range: .196"-.394"
- Pull Strength (Load Test): 250 lbs
- Waterproof

| Ser Number | RFP Specification                                                             | Compliance to RFP specification YES/NO                         | In case of non-compliance deviation from RFP to be specified in unambiguous terms |
|------------|-------------------------------------------------------------------------------|----------------------------------------------------------------|-----------------------------------------------------------------------------------|
| (a)        | Splicing Capability                                                           | For up to 1-4 splices SM & MM                                  | Y                                                                                 |
| (b)        | Water Proofing Standard                                                       | IP64 class for the hard cover case                             | Y                                                                                 |
| (c)        | Tube Protection class                                                         | Better then IP67 (24 h @ 5000 mm)                              | IP68                                                                              |
| (d)        | Time taken to repair a cable                                                  | Fast & reliable cable repair within 10 min - 30 min (1F , 4F)  | Y                                                                                 |
| (e)        | Maximum Attenuation for Mechanical splices                                    | Typical value < 0.2 db @ 1300 nm                               | Y                                                                                 |
| (f)        | Should be able to splice Armored/ Ruggedized cable (as offered by the vender) | Yes                                                            | Y                                                                                 |
| (g)        | Reusable components                                                           | 100% reusable components (except mechanical splice protector)  | Y                                                                                 |
| (h)        | Temperature range                                                             | Operating Temp: -10°C - 50°C<br>Non-Operating Temp: -40°C 71°C |                                                                                   |
| (i)        | Weight                                                                        | < 4.2 kg                                                       | Do not have kit. TE has kit in India.                                             |
| (k)        | Dimensions (max)                                                              | 410x33x202mm                                                   | Do not have kit. TE has kit in India.                                             |
| (l)        | Tensile load of cable after repair                                            | No Change                                                      | 250 lbs                                                                           |



## Optical Test Set for Fiber Optic Cables

Designed for harsh environments

### Product Facts

- Especially designed to support the installation of optical links in the field
- Able to test both cable drums and entire links
- Powered by batteries with high autonomy
- Suitable for diagnostics and construction teams
- Easy to use, ergonomic, rugged design
- Suitable for cable length up to 10 km
- Supports up to 4 fibers per cable with various types of connectors



### Diagnostic Features

#### Power Meter

The optical power from any source can easily be measured with the power meter function.

#### Optical Source

A continuous optical signal is generated and transmitted with selectable output power.

#### Drum Test / Cable Test

Test of an entire cable drum with automatic good/bad indication. The test of an entire cable is realized with a 2nd KPG-opt or a loop connector.

#### Test Frames (optional)

The KPG-opt can generate specific test frames as used in optical networks and LOS systems.

### Optical Tester

| Description                               | Part Number |
|-------------------------------------------|-------------|
| 850 nm 38999 III Size 11 Optical Test Kit | 1918016-1   |
| 850/1300 nm PRO BEAM Jr. Optical Test Kit | 1918016-2   |
| 1310 nm PRO BEAM Jr. Optical Test Kit     | 1985006-1   |

For additional wavelength testers, contact your local TE Connectivity Sales Representative.

#### Protective Case

1918082-1

**Note:** All part numbers are RoHS compliant.

## Fiber Optic Accessories

### Hand Held Visual Fault Locator (VFL)

#### Product Facts

- 650 nm (visible) Class 2 1.0 mW max Diode Laser
- Continuous and flashing (2-3 Hz pulsed) modes
- Rugged rubber shell and body design modeled after a popular military connector
- Lanyard attached dust cover
- Standard 2.5 mm adapter for SC, ST, and FC connectors
- Optional 1.25 mm adapter for LC and MU connectors.
- Unique design allows adapter to permanently reside on VFL so it is not misplaced allowing user to choose 1.25 mm or 2.5 mm
- Uses 1 “AA” style battery for >30 hours of continuous use
- Soft-sided belt case for convenience and storage

The TE Connectivity Hand Held Visual Fault Locator (VFL) is a rugged and affordable solution for identifying breaks and bending in optical fibers and cabling. Its powerful, red (650 nm) laser provides the ability to locate damaged, broken, or tightly bent fibers that cause undesirable attenuation in your system.

The jacket of the cable will glow red at the location of the fault. The FLASH button



allows the user to toggle between continuous or pulsed mode. The compact, rugged, and balanced design is based upon a popular harsh environment fiber optic connector. The single “AA” style battery is good for >30 hours of continuous use and the soft-sided protective case with belt loop provides a convenient and protective means of storage.

#### Applications

Affordable VFL Solution for:

- Identifying breaks, bends, and other damage in optical fibers
- Tracing fiber paths
- Identifying termination errors
- Continuity testing

#### Product Dimensions

**Length** — 18.5 cm [7.283 in]

**Width** — 2.2 cm [0.866 in]

**Thickness** — 2.2 cm [0.866 in]

**Weight (w/battery)** — 150 g [0.33 lb]

| Description                                   | Part Number |
|-----------------------------------------------|-------------|
| Hand Held Visual Fault Locator                | 1828352-1   |
| 1.25 mm Adapter for Hand Held VFL             | 1828353-1   |
| Includes Part Numbers 1828352-1 and 1828353-1 | 1828352-2   |

## Expanded Beam Avionics-Related Standards and Specifications

### ARINC 600, 664, 763 and 801

#### ARINC 664 — Aircraft Data Network

TE Connectivity's ARINC Connectors with Mini Expanded Beam inserts will meet/exceed all 100 Base-FX Ethernet LAN applications

#### ARINC 763 — Avionics Network Server System —

TE's ARINC 600 Connectors are designed to meet/exceed 100 Base-FX Ethernet LAN applications.

**Network Server Unit (NSU)** — can use ARINC 600 Size 1 connector with up to 8 Expanded Beam fiber optic channels (two Mini Expanded Beam inserts in cavity C)

**Server Interface Unit (SIU)** — can use ARINC 600 Size 3 connector with up to 16 Expanded Beam fiber optic channels (four Mini Expanded Beam inserts in cavity F)

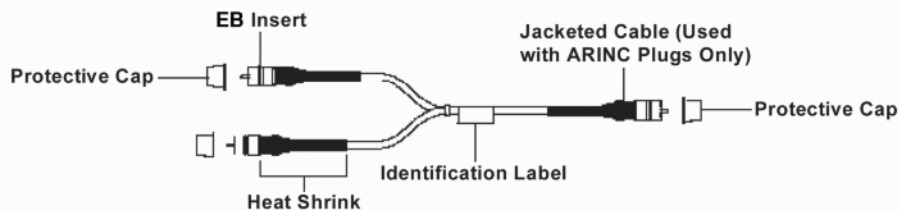
**Integrated Network Server Unit (INSU)** — can use ARINC 600 Size 3 connector with up to 16 Expanded Beam fiber optic channels (four Mini Expanded Beam inserts in cavity F)

#### ARINC 801 — Fiber Optics Working Group

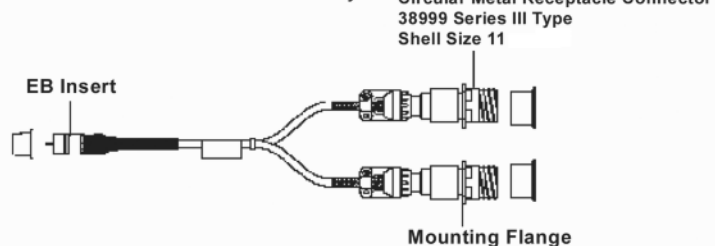
TE provides a single reference point for Flight Level Optics that are multi-sourced.

### Typical Assemblies for In-Flight Network Applications

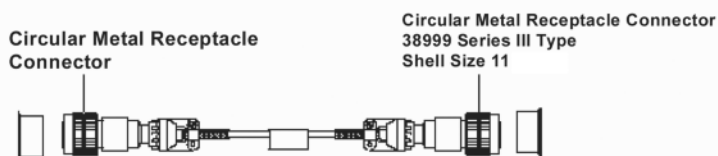
*ARINC EB Connector-to-ARINC EB Connector Cable Assembly*



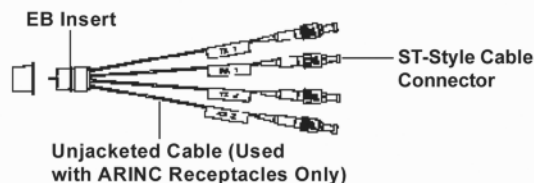
*ARINC EB Connector-to-Circular Metal Connector Cable Assembly*



*Circular Metal Connector-to-Circular Metal Connector Cable Assembly*



*ARINC EB Connector-to-ST-Style Cable Assembly*



### Typical Assemblies

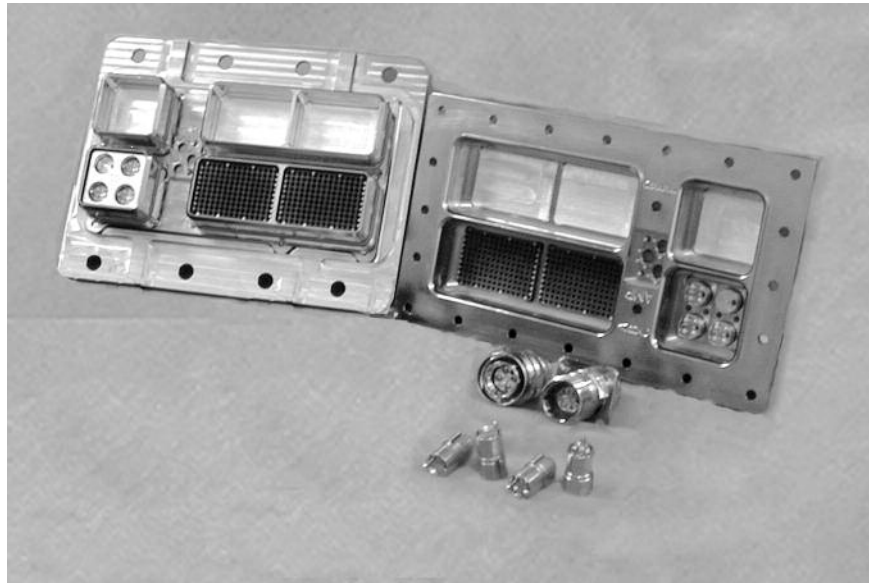


**ASSEMBLY CAPABILITIES**  
TE Connectivity has extensive Rugged Optic Harness capabilities. Please consult your local TE Sales representative for assistance.

## ARINC 600 and 404

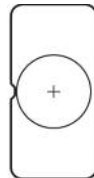
### Product Facts

- For Mini Expanded Beam Inserts
- For use in 100 base-FX Ethernet LAN applications per ARINC 664 and ARINC 763
- Insert holders designed to ARINC 600, Supplement 13 or to specific customer needs for Mini Expanded Beam inserts
- Drop-In Insert Holders utilize Standard ARINC 600 Retainers
  - Hard Stop on Plug Side
  - Spring-Loaded Stop on Receptacle Side
  - Captive Hardware
- Facial Sealing — Optional
  - Bonded to Receptacle Block Mating Face
  - Raised Collar Seal around Optics Insert compresses against Chamfer on Plug Block Mating Face

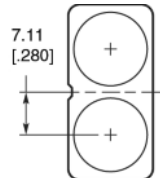


### ARINC 600 Insert Holders for Mini-Expanded Beam Contacts

#### Size 1 Power Cavities

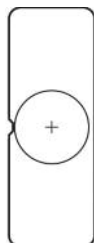


ARINC 600, 1 Position  
1MP

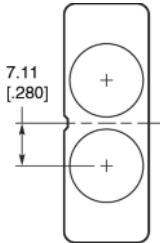


ARINC 600, 2 Position  
2MP

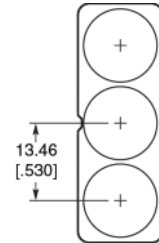
#### Size 1 Signal Cavities



ARINC 600, 1 Position  
1MS



ARINC 600, 2 Position  
2MS



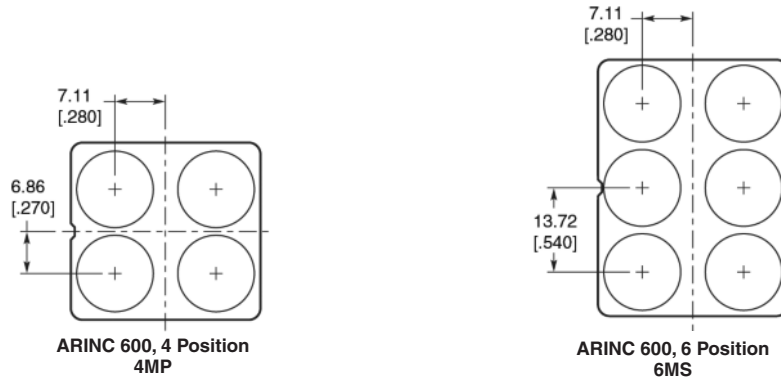
ARINC 600, 3 Position  
3MS

**ASSEMBLY CAPABILITIES**  
TE Connectivity has extensive Rugged Optic Harness capabilities. Please consult your local TE Sales representative for assistance.

See next page for Size 2 / 3 Power and Signal Cavities

## ARINC 600 and 404 (Continued)

### Size 2 / 3 Power and Signal Cavities



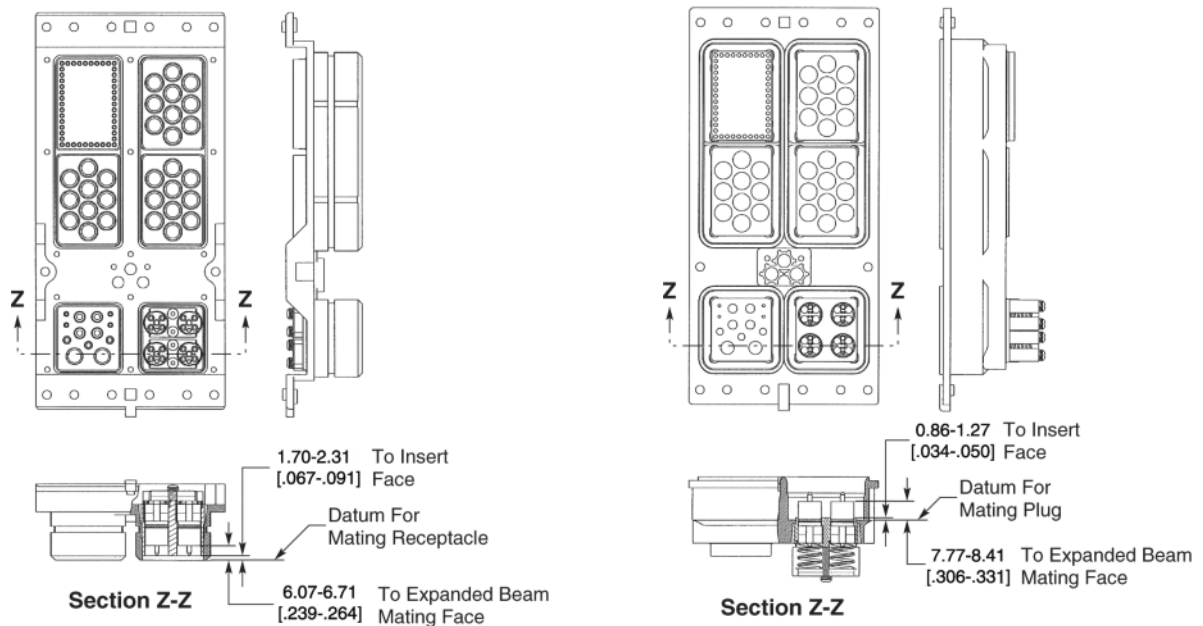
### Rack and Panel Mini Insert Kits

| Description                      | Part Number |
|----------------------------------|-------------|
| 2 x 850 / 1300 nm Dual Multimode | 1374759-3   |
| 2 x 1310 nm Singlemode           | 1588839-3   |
| 2 x 1550 nm Singlemode           | 1754622-3   |
| 4 x 850 / 1300 nm Dual Multimode | 1374759-1   |
| 4 x 1310 nm Singlemode           | 1588839-1   |
| 4 x 1550 nm Singlemode           | 1754622-4   |

### Ferrule Kits

| Fiber Hole Size | Mode | PRO BEAM Connector | Part Number |
|-----------------|------|--------------------|-------------|
| 125 $\mu$ m     | SM   | Mini               | 1754700-1   |
| 126 $\mu$ m     | SM   | Mini               | 1754700-2   |
| 126 $\mu$ m     | MM   | Mini               | 1754699-1   |

### ARINC 600 Insert Holders for Mini-Expanded Beam Contacts



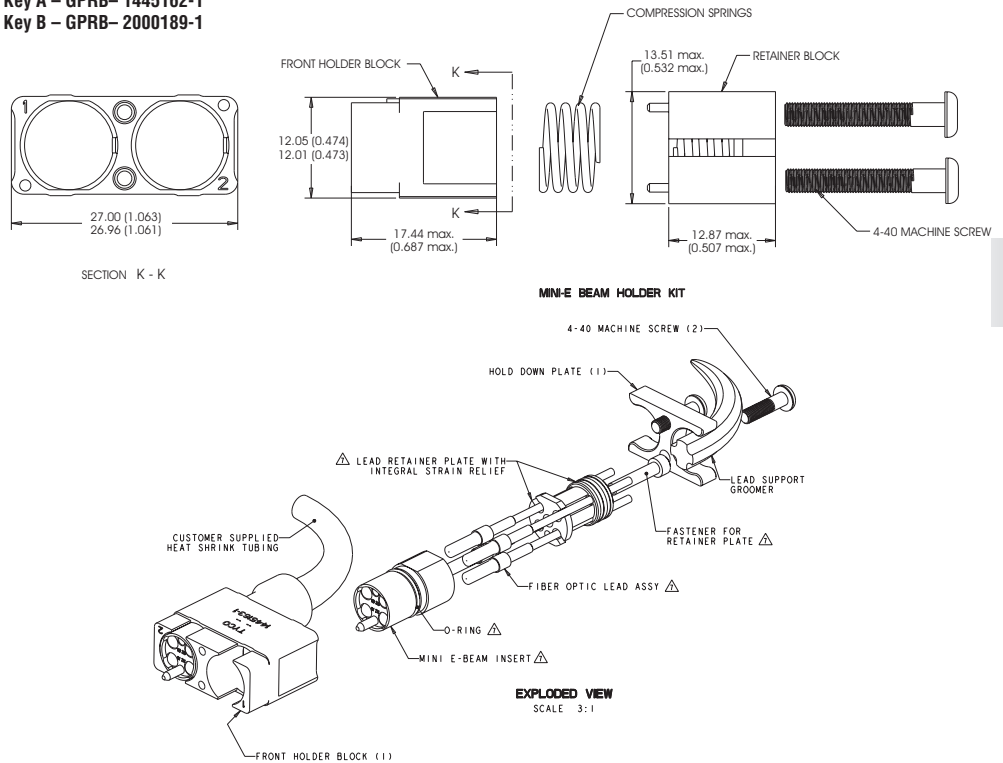
Typical Layout for Plug

Typical Layout for Receptacle

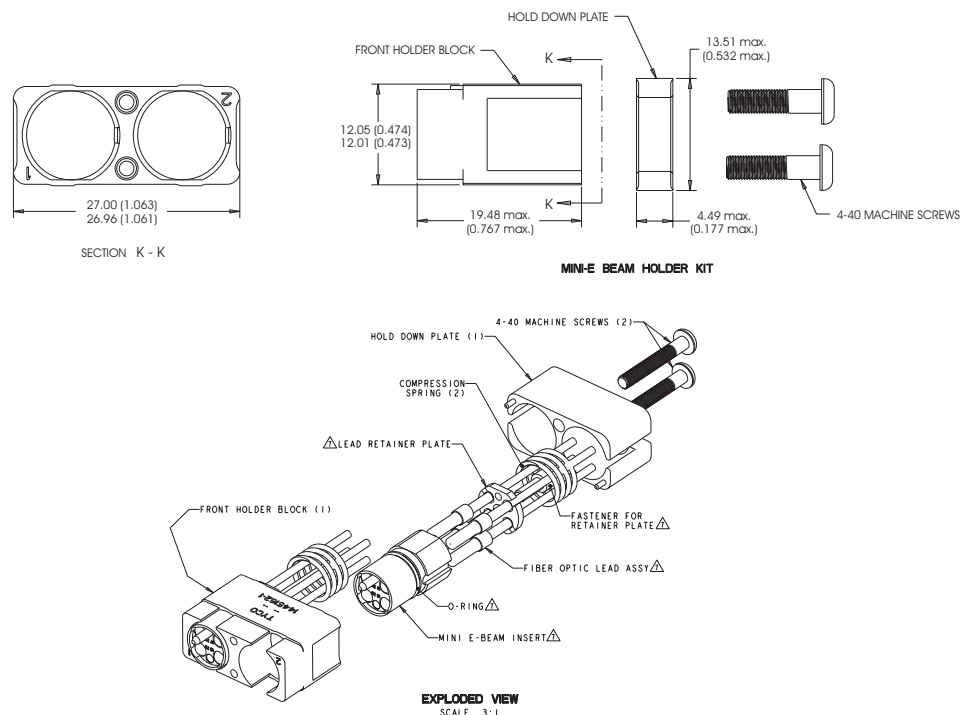
## ARINC 600 and 404 (Continued)

### M2 Mini-Expanded Beam Insert Holders for GPRB

**Holder Kit, Pin (Spring-Loaded), Mini-Expanded Beam**  
**Key A – GPRB-1445162-1**  
**Key B – GPRB-2000189-1**



**Holder Kit, Socket (Fixed), Mini-Expanded Beam,**  
**Key A – GPRB-1445163-1**  
**Key B – GPRB-2000190-1**



## ARINC 600 and 404 (Continued)

### Insert Kits for GPRB Holders

#### Rack and Panel Mini Insert Kits

| Description                      | Part Number |
|----------------------------------|-------------|
| 2 x 850 / 1300 nm Dual Multimode | 1374759-3   |
| 2 x 1310 nm Singlemode           | 1588839-3   |
| 2 x 1550 nm Singlemode           | 1754622-3   |
| 4 x 850 / 1300 nm Dual Multimode | 1374759-1   |
| 4 x 1310 nm Singlemode           | 1588839-1   |
| 4 x 1550 nm Singlemode           | 1754622-4   |

#### Ferrule Kits

| Fiber Hole Size | Mode | PRO BEAM Connector | Part Number |
|-----------------|------|--------------------|-------------|
| 125 $\mu$ m     | SM   | Mini               | 1754700-1   |
| 126 $\mu$ m     | SM   | Mini               | 1754700-2   |
| 126 $\mu$ m     | MM   | Mini               | 1754699-1   |

### Comparative on Expanded Beam Inserts

### Comparative on Expanded Beam Inserts' weight and Insertion Forces when applied to an ARINC housing

- ARINC 600 connector mated pair size 2 = 440 grams (without copper contacts)
- ARINC style Mini and Junior size Expanded Beam inserts = 5 pounds insertion force each when applied to the Rack and Panel ARINC Connector inserts
- Signal Cavity Optical Holder insert (i.e.: holds up to six mini inserts with four fiber ball lenses each or up to 24 fibers each insert set) = @ 30 grams
- Power Cavity Optical Holder insert (i.e.: holds up to four mini inserts with four fiber ball lenses each or up to 16 fibers each insert set) = @ 20 grams
- Insert mated pair PRO BEAM Jr. Connector insert set = @ 41.79 grams
- Insert mated pair Connector insert set = @ 16.17 grams
- Fiber = single fiber  $\leq$  4 kg / km
- Fiber = four fiber jacketed with a support member  $\leq$  24 kg / km
- Static spring force per mated Expanded Beam insert pair = 5 lbs.



## Physical Contact & Technology

### ARINC 801 Optical Termini

#### Product Facts

- Optical termini for use with GPR, ARINC 600, circular MIL-DTL-38999 connectors.
- Industry Standard 1.25 mm ceramic ferrule
- Compatible with 1.5-2.2 mm Tight jacket and loose tube cable construction:
  - MT - Tight jacket cable
  - ML - Loose tube cable
- SM / MM versions

#### Materials

**Housings** — Nickel Plated Copper  
**Ferrule** — Zirconia  
**Spring** — Stainless Steel  
**Crimp Sleeve** — Nickel Plated Copper  
**Protective Cover** — Silicone

#### Optical Performance

**Singlemode, 1310 nm/1550 nm (UPC):**

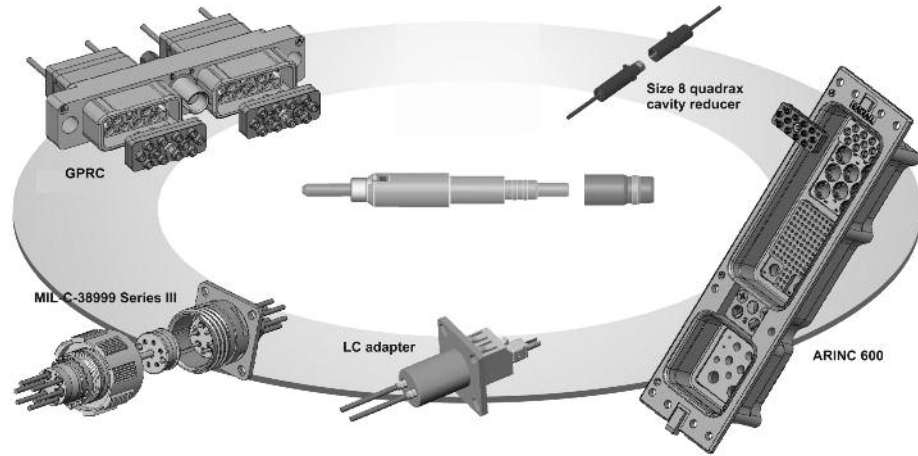
**Attenuation, Mean** — 0.15dB  
**Return Loss** — > 50dB

**Multimode, 850 nm/1310 nm:**

**Attenuation, Mean** — 0.10dB  
**Return Loss** — > 20dB

## ARINC 801 Optical Termini

one common terminus for all types of connectors



3

Ruggedized Fiber Optic Connectors

#### Mechanical / Environmental Performance

| Test Description            | Standard                       | ARINC 801 Optical Termini in GPR A & B Connector | ARINC 801 Optical Termini in 38999 Connector | ARINC 801 Optical Termini in ARINC 600 Connector |
|-----------------------------|--------------------------------|--------------------------------------------------|----------------------------------------------|--------------------------------------------------|
| Thermal Shock               | SAE-AS-13441 met 1003.1        | -55C /+100C                                      | -55C /+100C                                  | -55C /+100C                                      |
| Temperature Life            | TIA/EIA 455-20A                | 500h @ +100C                                     | 500h @ +100C                                 | 500h @ +100C                                     |
| Vibration                   | TIA/EIA 455-11                 | 8h/axis<br>3.8g <sup>2</sup> /Hz<br>43 G rms     | 8h/axis<br>3.8g <sup>2</sup> /Hz<br>43 G rms | 8h/axis<br>0.2g <sup>2</sup> /Hz<br>16.4 G rms   |
| Shock                       | TIA/EIA 455-14A                | 300 G - 3ms                                      | 300 G - 3ms                                  | 50G - 11ms                                       |
| Mate/Unmate (GPR/ARINC 600) | SAE-AS-13441 met 2016          | 100 Cycles                                       | N/A                                          | 100 Cycles                                       |
| Mate/Unmate (38999)         | TIA/EIA 455-21A                | N/A                                              | 500 Cycles                                   | N/A                                              |
| Maint. Aging                | SAE-AS-13441 met 2002-1        | 10 Cycles                                        | 10 Cycles                                    | 10 Cycles                                        |
| Salt Spray                  | SAE-AS-13441 met 1001.1 cond C | 96 hr                                            | 500 hr                                       | 48 hr                                            |
| Cable Ret. (1.8 mm)         | SAE-AS-13441 met 2009-1        | 68N                                              | 68N                                          | 68N                                              |
| Humidity (GPR/38999)        | TIA/EIA 455-5 met B7A          | 10 cycles / 24h<br>90% RH<br>-25C/+65C           | 10 cycles / 24h<br>90% RH<br>-25C/+65C       | N/A                                              |
| Humidity (ARINC 600)        | TIA/EIA 455-5 met B            | N/A                                              | N/A                                          | 10 cycles / 24h<br>90% RH<br>-25C/+65C           |
| Altitude Imm.               | TIA/EIA 455-15                 | 10,000 ft (69.6kPa)                              | 10,000 ft (69.6kPa)                          | 10,000 ft (69.6kPa)                              |

**ASSEMBLY CAPABILITIES**  
 TE Connectivity has extensive Rugged Optic Harness capabilities. Please consult your local TE Sales representative for assistance.

## Physical Contact &amp; Technology (Continued)

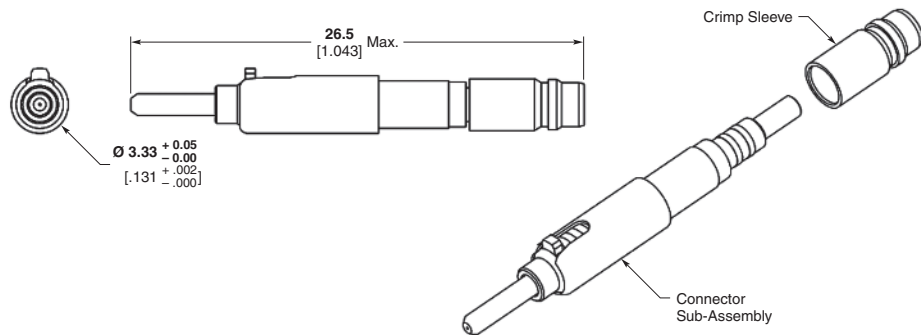
### ARINC 801 Optical Termini (Continued)

There are three types of ARINC 801 Optical Termini available dependent upon cable structure.

TE Connectivity has multiple connector types/families available for the ARINC 801 Optical Termini System.

These are:

- General Purpose Rectangular Connectors
  - F5 & F12 Inserts
- MIL-DTL-38999 connectors
  - 13-04, 15-06, 21-16
- ARINC 600
  - F12 combinations and F36
- Quadrax Cavity Reducers
- Motherboard & Daughtercard Solutions



### ARINC 801 Optical Termini Part Numbers

| Cable Dia.   | Cable Structure<br>ML (loose & tight)<br>MT (ultra tight) | S/M Fiber<br>125.3 µm<br>PC/UPC | S/M Fiber<br>125.3 µm<br>APC | M/M Fiber<br>128 µm<br>PC |
|--------------|-----------------------------------------------------------|---------------------------------|------------------------------|---------------------------|
| 0.9mm Buffer | —                                                         | *                               | *                            | *                         |
| 1.5 - 2.2 mm | ML                                                        | 1918614-1                       | 1918616-1                    | 1828199-1                 |
| 1.5 - 2.2 mm | MT                                                        | 1918615-1                       | 1918617-1                    | 1828200-1                 |

Consult your local TE Sales Representative for additional options.

\* Contact TE for availability.

| Accessories      | Part Number |
|------------------|-------------|
| Dust Cap         | 1985335-1   |
| 100 Pc Bulk Pack | 1985335-2   |

### ARINC 801 Cavity Reducers

| Size 8 Quadrax                                                                 | Part Number | ARINC 801 Cavity Reducer                            |
|--------------------------------------------------------------------------------|-------------|-----------------------------------------------------|
| Pin Quadrax adapter for ARINC 801 Optical Termini in Quadrax FR type cavity    | 1757727-1   | Quadrax cavity reducer (FR/FR) for receptacle shell |
| Pin Quadrax adapter for ARINC 801 Optical Termini in Quadrax RR type cavity    | 1757710-1   | Quadrax cavity reducer (RR/RR) for receptacle shell |
| Socket Quadrax adapter for ARINC 801 Optical Termini in Quadrax RR type cavity | 1757711-1   | Quadrax cavity reducer (RR/RR) for plug shell       |

### Cable Structure

|                                        | Loose Structure | Tight Structure | Ultra Tight Structure |
|----------------------------------------|-----------------|-----------------|-----------------------|
| Movement between fiber & 900 µm buffer | Yes             | No              | No                    |
| Movement between 900 µm & cable jacket | Yes             | Yes             | No                    |

### Adapters

| Type                                                   | Version                           | Alignment Sleeve | Part Number | Dim. (page 3-32) |
|--------------------------------------------------------|-----------------------------------|------------------|-------------|------------------|
| ARINC 801 Optical Termini to ARINC 801 Optical Termini | Simplex Bulkhead Feedthrough Type | Ceramic Zirconia | 1828996-1   | Fig. 1           |
| ARINC 801 Optical Termini to ARINC 801 Optical Termini | Simplex Straight                  | Ceramic Zirconia | 1828997-1   | Fig. 2           |
| ARINC 801 Optical Termini to LC                        | Simplex LC Panel Cutout           | Ceramic Zirconia | 1828979-1   | Fig. 3           |
| ARINC 801 Optical Termini to LC                        | Duplex LC Panel Cutout            | Ceramic Zirconia | 1828980-1   | Fig. 4           |
| ARINC 801 Optical Termini to LC                        | Duplex MIL-DTL-38999 Panel Cutout | Ceramic Zirconia | 1828995-1   | Fig. 5           |

### Tools

| Description/Function                   | Part Number  |
|----------------------------------------|--------------|
| Metal Extraction Tool (M81 969/1-03)   | 91066-3      |
| Plastic Extraction Tool (M81 969/1403) | M81969/14-03 |
| Daniels Right Angle Insertion Tool     | DAK83-16*    |
| Daniels Right Angle Removal Tool       | DRK83-16*    |

\* Contact Daniels Manufacturing Corporation

**Note:** All part numbers are RoHS compliant.

#### Connector Options:

For part numbers, details, and / or additional connector types and arrangements, contact your local TE Sales Representative.

**ASSEMBLY CAPABILITIES**  
TE Connectivity has extensive Rugged Optic Harness capabilities. Please consult your local TE Sales representative for assistance.

## Physical Contact &amp; Technology (Continued)

## F12 ARINC 801 Insert Assemblies



### Product Facts

- ARINC 801 approved
- Optical termini for use with GPR, ARINC 600, circular MIL-DTL-38999 connectors
- Industry Standard 1.25 mm ceramic ferrule
- Compatible with 1.5-2.2 mm tight jacket and loose tube cable construction:
  - MT - Tight jacket cable
  - ML - Loose tube cable
- Singlemode (SM) and Multimode (MM) versions
- ARINC 801 Optical Termini part numbers:
  - 1828199-1 MM/ML Version
  - 1828200-1 MM/MT Version
  - 1918614-1 SM/ML Version
  - 1918616-1 SM/ML Version-APC
  - 1918615-1 SM/MT Version
  - 1918617-1 SM/MT Version-APC

### Materials:

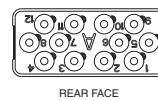
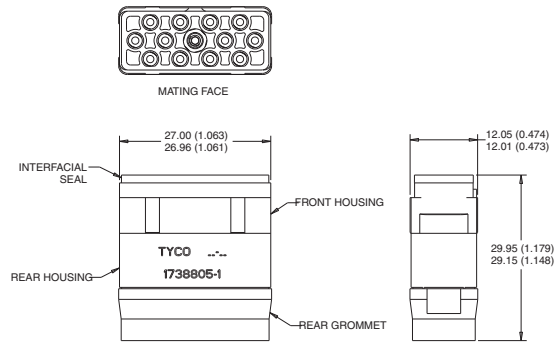
**Housings** – Nickel Plated Copper  
**Ferrule** – Zirconia  
**Spring** – Stainless Steel  
**Crimp Sleeve** – Nickel Plated Copper  
**Protective Cover** – Silicone

### Optical Performance

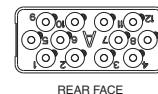
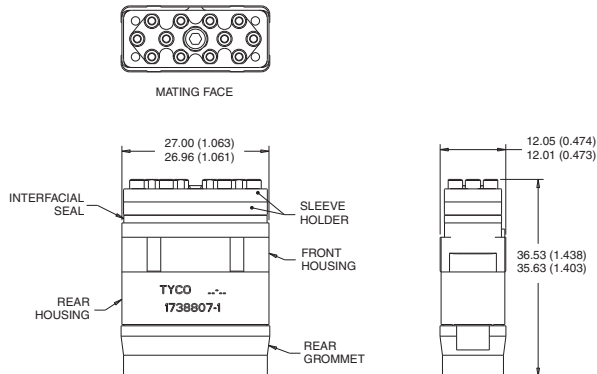
**Singlemode**, 1310 nm/1550 nm (UPC)  
**Attenuation, Mean** – 0.15dB  
**Return Loss** – >50dB  
**Multimode**, 850 nm, 1310 nm  
**Attenuation, Mean** – 0.10dB  
**Return Loss** – >20dB

### Assembly Capabilities

TE Connectivity has extensive Rugged Optic Harness capabilities. Please consult your local TE Sales Representative for assistance.

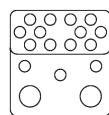


Insert Assembly, without Sleeve Holder,  
Environmental, F12  
Key A 1738805-1  
Key B 1738806-1

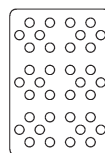


Insert Assembly, with Sleeve Holder,  
Environmental, F12, Key A  
GPRB  
Key A 1738807-1  
Key B 1738808-1

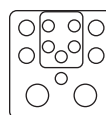
### ARINC 801 Inserts



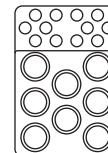
17F12Q2



36F36



12F5C2



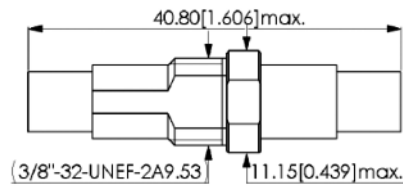
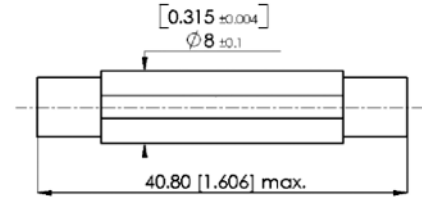
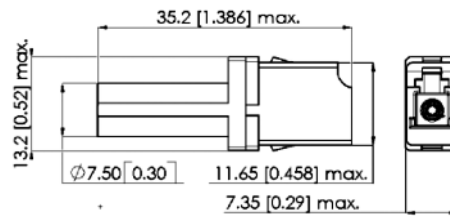
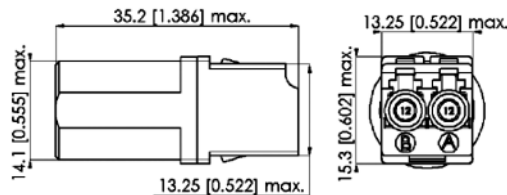
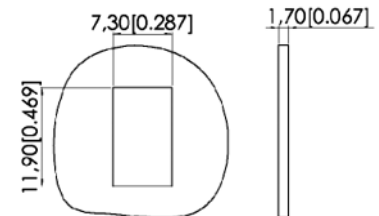
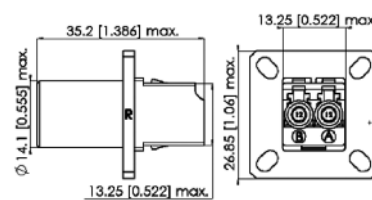
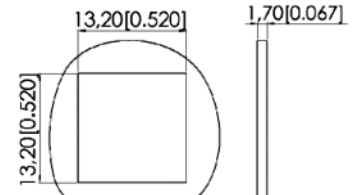
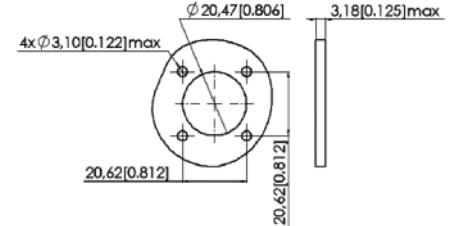
20F12Q8

ARINC 801 Inserts and Cavity Reducers accept ARINC 801 Optical Termini.

**Note:** All part numbers are RoHS compliant.

## Physical Contact &amp; Technology (Continued)

## ARINC 801 Optical Termini Adapter Dimensions


Terminus to Terminus Bulkhead Feedthrough  
Figure 1

Terminus to Terminus Straight  
Figure 2

Terminus to LC Simplex  
Figure 3

Terminus to LC Duplex, LC Panel  
Figure 4

Terminus to LC Duplex, MIL-DTL-38999 Panel Cutout  
Figure 5


## Physical Contact & Technology (Continued)

Most of the tools included in the Termination Kit are commonly used in the fiberoptic industry (strippers, cutting pliers and all accessories for fiber and cable preparation). The items in the table below are specially made for the ARINC 801 Optical Termini System. Their use is highly recommended to achieve mechanical and optical performances.

### ARINC 801 Optical Termini Termination Kit

Part Number 1828644-X



| Qty -2 | Qty -1 | Description                        | Part Number | Item # |
|--------|--------|------------------------------------|-------------|--------|
| 1      | 1      | Label, Termination Kit             | 1918887-1   | 28     |
| 1      | 1      | Insertion and Extraction Tool      | 91066-3     | 27     |
| 2      | 2      | 1.25 mm Swab                       | 1828355-1   | 26     |
| 1      | 1      | LC Polishing Bushing               | 1754074-1   | 25     |
| 1      | 1      | Polishing Plate                    | 501197-1    | 24     |
| 1      | 1      | Polishing Pad                      | 501523-1    | 23     |
| 10     | 10     | 0.3 µm Polishing Film              | 228433-5    | 22     |
| 5      | 5      | Fine Diamond Polishing Film        | 503887-1    | 21     |
| 10     | 10     | 5 µm Polishing Film                | 228433-8    | 20     |
| 15     | 15     | 9 µm Polishing Film                | 1374484-1   | 19     |
| 1      | 1      | Cleave Tool                        | 504064-1    | 18     |
| 1      | —      | Curing Oven Block                  | 1918510-1   | 17     |
| 1      | —      | Curing oven                        | 502130-1    | 16     |
| 1      | 1      | Resin injector tips                | 1918509-2   | 15     |
| 1      | 1      | Resin injector                     | 1918509-1   | 14     |
| 5      | 5      | Epoxy, 353ND                       | 504035-1    | 13     |
| 10     | 10     | Alcohol Fiber Wipe                 | 501857-2    | 12     |
| 1      | 1      | Inner Ferrule Shaping Tool         | 1918511-1   | 11     |
| 1      | 1      | Hexagonal key                      | 19840-5     | 10     |
| 1      | 1      | Fiber Stripping tool (125 µm)      | 1754708-1   | 9      |
| 1      | 1      | Handtool                           | 58532-1     | 8      |
| 1      | 1      | Die-set, ARINC 801 Optical Termini | 1828889-1   | 7      |
| 1      | 1      | KEVLAR Shears                      | 1278637-1   | 6      |
| 1      | 1      | Cable Jacket Strip Tool            | 1278531-1   | 5      |
| 1      | —      | 1.25 mm Microscope Adapter         | 1754765-1   | 4      |
| 1      | —      | 200x Microscope                    | 1754767-1   | 3      |
| 1      | —      | Carrying case, Weekender           | 1918881-1   | 2      |
| —      | 1      | Carrying case, Attache             | 1918834-1   | 1      |

The following tools are necessary for product termination but are not included in the kit:  
Alcohol, canned air, and clean cloth.

Other accessories available include ruler, tweezers, cleaning tip, roller adhesive tape, moss cable support and permanent ink markers.

### ARINC 801 Optical Termini Service Tool Kit (Inspection, testing & cleaning)

Part Number 1828335-1

### ARINC 801 Optical Termini Service Tool Kit (Cleaning only)

Part Number 1828335-2

### ARINC 801 Optical Termini Service Tool Kit (Testing only)

Part Number 1828335-3

### ARINC 801 Optical Termini Service Tool Kit (Hand Held Digital Probe Kit)

Part Number 1828335-4

#### Tool Kit Contents

| Item # | Comp Part Number | Description                             | -1 | -2 | -3 | -4 |
|--------|------------------|-----------------------------------------|----|----|----|----|
| 1      | 1278540-1        | Soft Carry Bag                          | 1  | —  | —  | —  |
| 2      | 1754767-1        | 200x Microscope                         | 1  | —  | —  | —  |
| 3      | 1754765-1        | LC Microscope adapter                   | 1  | —  | —  | —  |
| 4      | 6374613-5        | LC - SC 50/125 cable assembly           | 2  | —  | —  | —  |
| 5      | 6374615-5        | LC - SC 62.5/125 cable assembly         | 2  | —  | —  | —  |
| 6      | 1918808-1        | 1.25 mm swab                            | 2  | 2  | —  | —  |
| 7      | 1918810-1        | OPTIPOP C Card Cleaner                  | 2  | 5  | —  | —  |
| 8      | 1828349-1        | Optical Loss Test Set                   | 1  | —  | 1  | —  |
| 9      | 1828350-1        | OLTS 1.25 mm detector cap               | 1  | —  | 1  | —  |
| 10     | 1828352-1        | Visual Fault Locator                    | 1  | —  | 1  | —  |
| 11     | 1828353-1        | VFL 1.25 mm Adapter                     | 1  | —  | 1  | —  |
| 12     | 1828465-1        | Label, Service Kit                      | 1  | —  | 1  | —  |
| 13     | 1918222-1        | Inspection, Hand Held Digital Probe Kit | —  | —  | —  | 1  |
| 14     | 1918223-1        | 1.25 mm Adapter, Digital Probe          | —  | —  | —  | 1  |

-1 inspection, cleaning & testing

-2 cleaning

-3 testing

-4 Hand Held Digital Probe Kit

**Note:** All part numbers are RoHS compliant.

KEVLAR is a trademark of E.I. du Pont de Nemours and Company.

OPTIPOP is a trademark of NTT Advanced Technology Corporation.

### Ruggedized Fiber Optic Products (Continued)

#### MIL-T-29504 Style Optical Connector Range

##### Product Facts

- Manufactured to meet the requirements of MIL-T-29504/4 and 5
- Proven in both rotary and fixed-wing aerospace applications
- Sprung loaded socket contacts ensure consistent pressure and performance levels

The range of MIL-T style optical contacts is designed specifically for use with the MIL-DTL-38999 Series III connectors within the standard size 16 cavity.



#### Optical Inserts for EN4165 and ARINC 809

##### Product Facts

- Interchangeable modular inserts
- Easy use insertion / extraction tool
- Easy access to optical contacts for cleaning maintenance
- Compliments DMC-M multiway modular connector range

TE has designed a comprehensive range of Fiber optic inserts to further enhance our EN4165 connector range. To date the modular inserts can accommodate MC5, MC6 ribbon, Arinc 801 and EN4531 optical contacts.



#### Fiber Optical Insert for DMC-M

##### Product Facts

- Light weight composite
- Colour coded
- Modularity
- Screw coupling

An optical insert is available for the popular DMC-M connector which enables six standard MC5 contact to be incorporated into a single insert package or 12 way MC6 or 4 way Arinc 801 contacts.



#### RSC-v

##### Product Facts

- Suitable for singlemode applications
- Good return loss measurements
- Tuneable PC variant for optimum performance

APC version of the ever popular RSC connector range. The RSC-V is available with either an angled polish (APC) or a tuneable physical contact (PC) variant.





## Ruggedized Circular Connectors

**38999**

### Product Facts

- **100% Scoop Proof**
- **High strength Aluminium shells**
- **Superior flourosilicone seals provide maximum tear resistance and sealing memory**
- **Threaded coupling with self locking for anti-vibration integrity**

Military circular connector qualified to MIL-DTL-38999, Series III for fiber optic MIL-T-29504 style termini. Rugged design offers maximum performance for shock and vibration, environmental, moisture and corrosion resistance and provides effective EMI shielding.



3

Ruggedized Fiber Optic Connectors



## MC3 MKII Fiber Optic Multiway Connectors

### MC3 MKII Fiber Optic Multiway Connectors

#### Product Facts

- **Insert-to-insert keying** assists precision alignment
- **Individually rear insertable/removable optical contacts** enable easy assembly
- **Backshells and adaptors** available for most single and multifiber cable types

#### General Specifications

**Fiber type** – Multi and Singlemode fiber

Ranging from 5 to 200µm core diameters

**Channels** – 5, 8 and 12 Optical channels

**Cable size** – 1.5 mm to 3.0 mm outer jacket

#### Materials

**Shell** – Aluminium; nickel plated

Aluminium; cadmium plate olive drab

Aluminium bronze (special order)

#### Contact body

**Arcap** – Titanium

**Ferrule** – Zirconia

**Alignment sleeve** – Zirconia

**Seals** – Fluorosilicone or nitrile

**Plating** – Aluminium, nickel plated

Aluminium, cadmium plate olive drab

Aluminium bronze (special order)

#### Optical Performance

**Insertion loss** - 0.25dB typical\*

**Return loss** - 40dB typical\*

**Repeatability** - Typically better than 0.1db with 50/125µm fiber

#### Environmental Specification

##### Temperature

**High temperature endurance** - +155°C\*

**Low temperature endurance** - 65°C\*

**Durability** - Greater than 500 mating cycles

##### Vibration

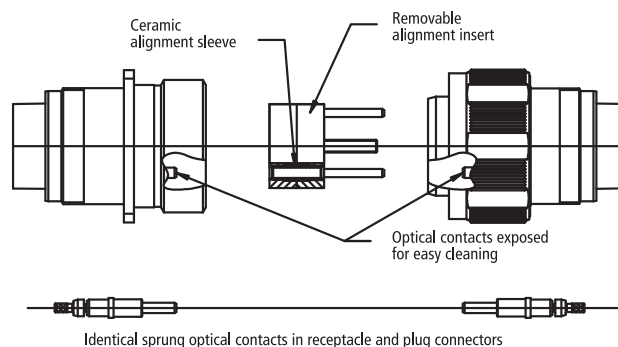
**Sinusoidal** - 5-3000Hz, 30g

**Bump** - 4000 bumps, 40g

The MC3 range of high performance connectors incorporates individual optical contacts inserted from the rear.

The removable socket insert allows for easy access to the optical faces to aid cleaning and maintenance.

The MC3 MkII range has the same removable alignment insert feature as the MC3 for easycleaning (which can be specified in either receptacle or plug), and is suitable for use with most single-mode and multimode optical fibres with core diameters from 5 to 200µm. 5, 8 and 12 optical channels are accommodated in the MIL-C-38999 Series III style connector shells. The MC3 MkII connector range has been tested and approved for use in severe environments.



#### Key Features

- Precision Zirconia ceramic ferrules and alignment sleeves ensure superior, repeatable optical performance with physical contact polishing techniques
- Insert-to-insert keying assists precision alignment
- Individually rear insertable/removable optical contacts enable easy assembly
- Easily removable alignment sleeve insert facilitates simple cleaning and maintenance
- Colored band indicates full mating
- Identical optical contacts are spring loaded in both plug and receptacle to maintain physical contact even under severe shock or vibration conditions (rigid contact option available for receptacle)
- Simple termination process and tooling
- Backshells and adaptors available for most single and multifiber cable types
- MIL-C-38999 Series III anti-vibration coupling mechanism and tri-start thread
- Alternative shell keyway orientations provide protection from inadvertent mis-mating
- Dynamic 'O' ring seal between mating shells provides water submersion capability

\*fiber and polishing process dependent

## MC3 MKII Fiber Optic Multiway Connectors (Continued)

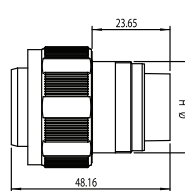
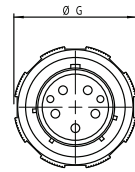
### Insert Arrangement

| Size -<br>Arrangement | A     | B1    | B2    | C1   | C2  | D     | Thread E  | Thread F tri-start<br>dimensions<br>(inches) | ØG    | ØH   | ØJ    | ØK    | ØL    |
|-----------------------|-------|-------|-------|------|-----|-------|-----------|----------------------------------------------|-------|------|-------|-------|-------|
| 19-5                  | 36.58 | 29.35 | 26.98 | 5    | 3.5 | 27.84 | M28 x 1.0 | 1.250                                        | 37.92 | 27.7 | 35.4  | 36.92 | 29.46 |
| 23-8                  | 42.98 | 34.92 | 31.75 | 6.23 | 4   | 33.84 | M34 x 1.0 | 1.500                                        | 44.12 | 33.7 | 41.75 | 43.12 | 35.81 |
| 25-12                 | 46.02 | 38.11 | 34.92 | 6.23 | 4   | 36.84 | M37 x 1.0 | 1.625                                        | 47.35 | 36.7 | 44.93 | 46.35 | 38.99 |

### Dimensional Information

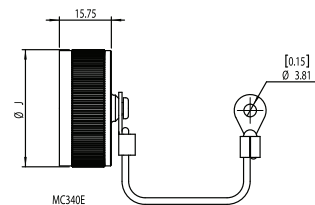
All dimensions in inches (except threads). To complete part number for ordering see 'ordering information'

#### Plug



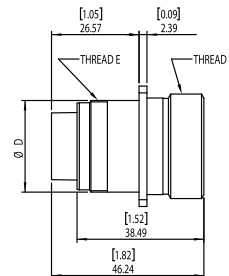
MC306E2

#### Procap

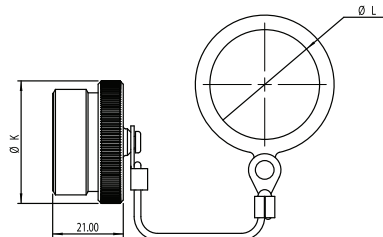
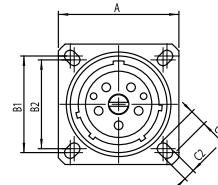


MC340E

#### Receptacle

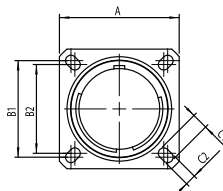
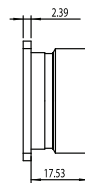


MC300E2



MC320E

#### Dummy Receptacle



MC330E

## MC3 MKII Fiber Optic Multiway Connectors (Continued)

### Optical Contacts (ordered separately)

Optical contacts are supplied with a profile formed optical end face and are available for singlemode or multimode fibers. Contacts are available in either sprung or rigid versions, depending upon application (rigid contacts should be used in bulkhead receptacles only).

#### Rigid Type



455494-\*\*\*1-\*\*2

#### Sprung Type



455500-\*\*\*1-\*\*2

Optical Contacts (ordered separately)

Options are as follows:

\*\*\*1 Optical hole Ø 'A' fiber size (see table 1)

\*\*2 Cable type (see table 2)

Please note: for type 00 (\*\*2) the cable crimp sleeve is not supplied i.e. for terminating buffered fiber.

**Table 1 (\*\*\*1)**

| Rigid Contact                           |                                          | Sprung Contact                          |                                          |
|-----------------------------------------|------------------------------------------|-----------------------------------------|------------------------------------------|
| Part number (multimode) 455***-***1-**2 | Part number (singlemode) 455***-***1-**2 | Part number (multimode) 455***-***1-**2 | Part number (singlemode) 455***-***1-**2 |
| 455494-128-**2                          | 455617-126-**2                           | 455500-128-**2                          | 455500-128-**2                           |
| 455494-145-**2                          | 455617-127-**2                           | 455500-145-**2                          | 455500-145-**2                           |
| 455494-162-**2                          |                                          | 455500-162-**2                          |                                          |
| 455494-176-**2                          |                                          | 455500-176-**2                          |                                          |
| 455494-232-**2                          |                                          | 455500-232-**2                          |                                          |
| 455494-283-**2                          |                                          | 455500-283-**2                          |                                          |
| 455737-232-**2                          |                                          | 455500-1MM-**2                          |                                          |
|                                         |                                          | 455738-232-**2                          |                                          |

**Table 2 (\*\*2)**

| Contact Type   |                | Cable Type   |                    | Crimp Dies (see note) |                    |
|----------------|----------------|--------------|--------------------|-----------------------|--------------------|
| Rigid          | Sprung         | Plain buffer | Tight jacket cable | Crimp Sleeve          | Part number A / F  |
| 455494-***1-00 | 455500-***1-00 | 900µm-       | -                  | -                     | 455608 1.64 / 1.74 |
| 455617-***1-00 | 455616-***1-00 | 900µm        | -                  | -                     | 455608 1.64 / 1.74 |
| 455494-***1-01 | 455500-***1-01 | -            | Ø2.5 OD            | 455610-01             | 455608 3.10 / 3.12 |
| 455617-***1-01 | 455616-***1-01 | -            | Ø2.5 OD            | 455610-01             | 455608 3.10 / 3.12 |
| 455494-***1-02 | 455500-***1-02 | -            | Ø1.8 OD            | 455610-02             | 455608 3.10 / 3.12 |
| 455617-***1-02 | 455616-***1-02 | -            | Ø1.8 OD            | 455610-02             | 455608 3.10 / 3.12 |
| 455494-***1-03 | 455500-***1-03 | -            | Ø3.0 OD            | 455610-03             | 455608 3.56 / 3.48 |
| 455617-***1-03 | 455616-***1-03 | -            | Ø3.0 OD            | 455610-03             | 455608 3.56 / 3.48 |
| 455494-***1-04 | 455500-***1-04 | -            | Ø2.1 OD            | 455610-04             | 455608 3.10 / 3.12 |
| 455617-***1-04 | 455616-***1-04 | -            | Ø2.1 OD            | 455610-04             | 455608 3.10 / 3.12 |
| -              | 455500-1MM-00  | -            | Ø2.2 OD            | -                     | 455697 2.62 / 2.72 |
| 455737-***1-00 | 455738-***1-00 | -            | Ø1.5 OD            | -                     | 455478 2.27 / 2.37 |

Please note: for alternative sizes, please consult technical sales.

| Cable Type / Description                                               | Cable Ø O/D mm                                                                          |
|------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| Multiway cable, with 900µm buffered fiber and peripheral strain relief | 3.5                                                                                     |
|                                                                        | 4.5                                                                                     |
|                                                                        | 5.0                                                                                     |
|                                                                        | 5.5                                                                                     |
|                                                                        | 6.0                                                                                     |
| Multiway cable, various constructions - e.g. central strain relief     | 7.0                                                                                     |
|                                                                        | Backshells are available for a range of multiway cables, please consult technical sales |

Please note: Crimp dies are used with crimp tool 451716 (Erma 29020).

## MC3 MKII Fiber Optic Multiway Connectors (Continued)

### Ordering Information

#### Series:

#### Style:

00 = Bulkhead receptacle  
06 = Plug  
07 = Jam nut receptacle  
20 = Protective plug  
30 = Dummy receptacle  
40 = Protective cap receptacle

#### MkII:

2 for 00 Bulkhead receptacle, 06 plug and 07 Jam nut Receptacle only. Otherwise omitted

#### Shell finish:

N = Nickel plated  
C = Cadmium plated olive drab

#### Shell size - no. of channels:

19-5, 23-8, 25-12

#### Insert type

P, S (S type includes the removable alignment insert)

#### Shell orientation:

N, B, C, E, F and 'U' Universal

#### Modification code:

| MC3 | **E * | -* | **-** | * | * | -F*** |
|-----|-------|----|-------|---|---|-------|
|     |       |    |       |   |   |       |

### Example part numbers:

Connector MC300E2-N-19-5SN  
Protective cap MC340E-N-19  
Dummy receptacle MC330E-N-19

### Accessories / Essential Tooling Information

For comprehensive tooling and consumable listing refer to technical sales.

### Quality Approvals

- Civil Aviation Authority A8-1
- BS EN ISO 9001
- Military Spec Approvals 38999
- BS9000 and CECC
- Underwriters Laboratories
- BS EN ISO9001:2000 (BSI)
- BS/EN 9100:2003 (BSI)
- AS9100 Rev B (BSI)
- AS9120:2002 (BSI)
- EASA Part 21 Subpart G (CAA)
- BS9000 (BSI)
- Underwriters Laboratories (UL)
- Military Spec Approvals 38999 (DSCC)

## MC4 Series - Duplex Fiber Optic Connectors

### MC4 Series - Duplex Fiber Optic Connectors

#### Product Facts

- **Insert-to-insert keying** assists precision alignment
- **Individually rear insertable/removable optical contacts** enable easy assembly
- **Backshells and adaptors** available for most single and multifiber cable types

#### General Specifications

##### Optical

**Attenuation** – Less than 0-4dB (50/125µm)

**Repeatability** – Better than 0.2dB

**Fiber types** – 50, 62.5, 85/125µm  
100/140µm 200/280µm

##### Cable types

Tight jacket 2.5mm dia

Duplex 4.5mm OD

For other cable sizes consult Technical Sales

##### Materials

**Shell** - Aluminium alloy. Nickel plated

**Ferrule** - Zirconia Alignment sleeve: Zirconia

**Seals** - Fluorosilicone

**Backshells** - Aluminium alloy. Nickel plated Mechanical

**Temperature range** -65°C to +155°C\*

The MC4 Duplex optical fiber connector is based upon shell size 9 Mil-C 38999 Series III making this an extremely compact environmentally sealed 2-way connector. The MC4 is suitable for use with most multimode and singlemode fibers with core diameters of 9 to 200µm. Simplex and duplex constructions can

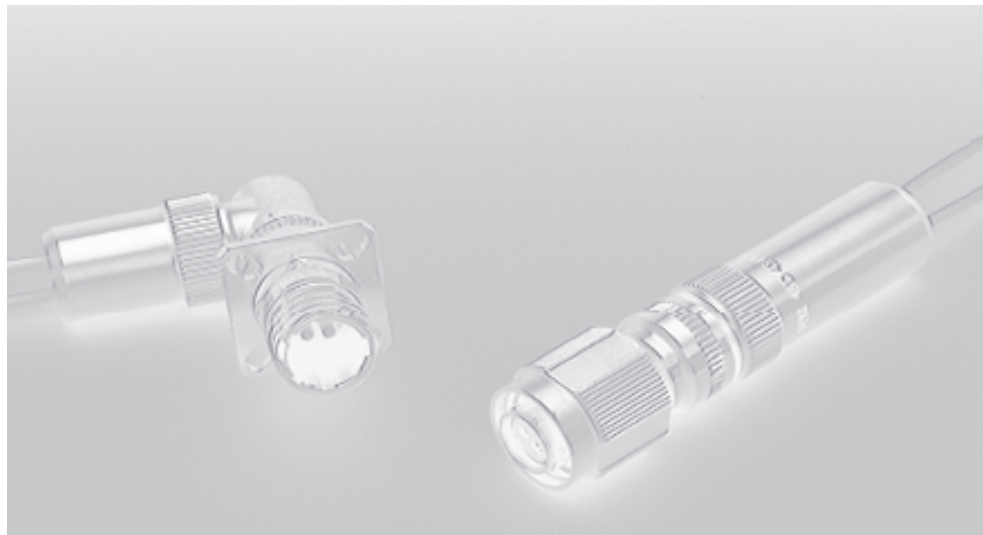
be accommodated with suitable connector backshells.

Precision ceramic ferrules and alignment sleeves ensure optical performance and reliability over an extended service life.

The optical ferrules are sprung loaded in both the plug and receptacle shells.

This provides an axial load equalization ensuring that butt joint contact is maintained even when the connector is subjected to vibration levels in excess of 30g.

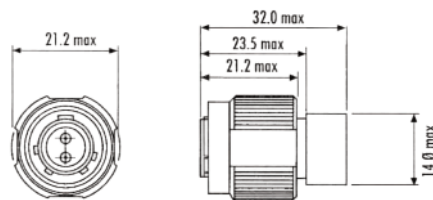
This coupling nut is built in antivibration clicker mechanism to prevent inadvertent uncoupling under adverse vibration conditions.



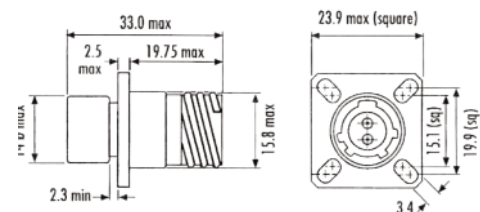
#### Quality Approvals

- Civil Aviation Authority A8-1
- BS EN ISO 9001
- Military Spec Approvals 38999
- Underwriters Laboratories (UL)

#### Backplane Module - PN 2000973-1



#### Daughtercard Module - PN 2000974-1



\*Cable and epoxy dependant  
Mechanical endurance: Not less than 500 matings

## MC4 Series - Duplex Fiber Optic Connectors (Continued)

## Ordering Information

**Series:**

**Style:**

00 = Bulkhead receptacle

06 = Plug

07 = Jam nut

**Shell finish:**

N = Nickel plated

C = Cadmium plated olive drab

**Shell size - no. of channels – 09-2**

**Insert type** – P Pin, S Socket

**Shell orientation** – N, A, B, C, D, E

**Modification code**

A dendrogram illustrating hierarchical clustering of 10 samples. The samples are labeled at the top: MC4, \*\*E-, \*, -09-2, \*, \*, \*, and \_\*\*\*. The dendrogram shows the following structure:

- The root splits into a group of 7 samples and a single sample labeled **\_\*\*\***.
- The 7-sample group splits into a group of 4 samples and a group of 3 samples.
- The 4-sample group splits into a pair (MC4, \*\*E-) and a pair (\*, -09-2).
- The 3-sample group splits into a pair (\*, \*) and a single sample (\*).

Example part number: Bulkhead Receptacle MC400E-C-09-2SN, Plug MC406E-C-09-2PN

## MC4 Essential Tooling

| Part No.   | Description and Use                  | Notes                       |
|------------|--------------------------------------|-----------------------------|
|            | <b>Connector Assembly Tooling</b>    |                             |
| 454335     | Fiber stripping tool                 | Hozan                       |
| 453228     | Fiber cleaving tool                  |                             |
| 454342     | Crimp tool                           |                             |
|            | <b>Polishing Tools and Materials</b> |                             |
| 454899     | Polishing jig                        |                             |
| 454539     | Rubber pads                          | 2 required                  |
| 454539     | Lapping film set comprises:          |                             |
| 454481     | Coarse disk (10 off)                 | available separately        |
| 454482     | DR diamond disc                      | available separately        |
| 454483     | DM diamond disc                      | available separately        |
| 454484     | Polishing disc (10 off)              |                             |
|            | <b>Consumable Materials</b>          |                             |
| 454257     | Epoxy kit (353ND)                    |                             |
| 450490     | Spatula                              |                             |
| 454297     | Syringe (x6)                         |                             |
|            | <b>Ferrules</b>                      |                             |
| 454900-126 | Fiber size 125pm                     | not supplied with connector |
| 454900-141 | Fiber size 140pm                     | not supplied with connector |
| 454900-145 | Fiber size 140pm                     | not supplied with connector |
| 454900-283 | Fiber size 280pm                     | not supplied with connector |

Note: Additional tooling may be required specific to cable types (consult technical sales)

For comprehensive tooling and consumable listing refer to technical sales

## MC5 - High Density Fiber Optic Multiway

### MC5 - High Density Fiber Optic Multiway

#### Product Facts

- **Insert-to-insert keying** assists precision alignment
- **Individually rear insertable/removable optical contacts** enable easy assembly
- **Backshells and adaptors** available for most single and multifiber cable types

#### General Specifications

**Fiber type** – Suitable for fibres with core diameters 5-200µm

**Channels** – 2, 4, 6, 8, 10, 18, and 30 channels

**Cable size** – 1.8 mm, 2.1 mm and 2.5 mm jacket

#### Materials

**Shell** – Composite (qualified to MIL-C-38999)

**Contact body** – Arcap

**Ferrule** – Zirconia

**Alignment sleeve** – Zirconia

**Seals** – Fluorosilicone

**Plating** – Nickel plate

#### Optical Performance

**Insertion loss** – 0.25dB typical\*

**Return loss** – 40 dB typical

**Repeatability** – Typically better than 0.1dB (with 50/125µm fiber)

#### Environmental Specification

##### Temperature

**High temperature endurance** – +150°C, 760 hours

**Low temperature endurance** – -65°C, 500 hours

**Durability** – >1500 mating cycles

##### Vibration

**Sinusoidal** – 5-3000Hz, 40g, 10 hours

**Random** – 25-2000Hz, 5g2/Hz (50g rms), 16 hrs

The MC5 high density range is the very latest advance in high performance multi-channel fiber optic connectors, capable of sustained performance over a wide range of environmental conditions. The MC5 uses the most recent developments in precision ceramic ferrules and lightweight

MIL-C-38999 Series III connector shell materials, combined with purpose designed inserts to ensure the optical performance meets the requirements of high reliability optical systems. Compact sprung loaded, precision optical contacts are individually insertable / removable for

ease of assembly. Extensive testing has confirmed excellent performance under the most demanding environmental conditions with the MC5 chosen as the standard multiway fiber optic connector for the European Fighter Aircraft, Typhoon.



#### Key Features

- Compact 1.25mm precision zirconia ceramic ferrules
- Alignment sleeves ensure superior, repeatable optical performance with physical contact polishing techniques
- Purpose designed inserts, and insert-to-insert keying assist precision alignment
- Individually rear insertable / removable optical contacts enable easy assembly and maintenance
- Easily removable alignment sleeve insert facilitates simple cleaning and maintenance
- Color band indicates full mate condition
- Identical optical contacts are spring loaded in both plug and receptacle to maintain physical contact even under severe shock or vibration conditions (rigid contact option available for receptacle)
- Simple termination process and tooling
- Composite lightweight, high strength, corrosion resistant connector shells
- MIL-C-38999 Series III anti-vibration coupling mechanism, and tri-start thread
- Extensive range including 1,2,4,6,8,10 and 30 way connectors
- Available in both plug socket / receptacle pin and plug pin / receptacle socket configurations

\*fiber and polishing process dependent

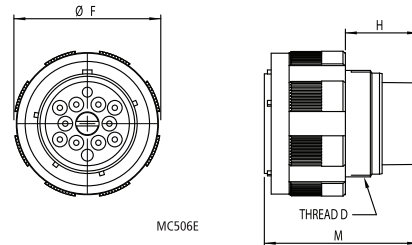


## MC5 - High Density Fiber Optic Multiway (Continued)

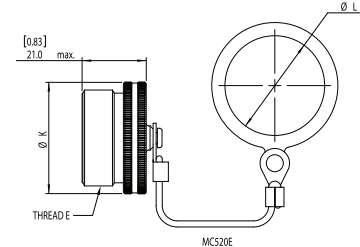
### Dimensional Information

All dimensions in inches (except threads). To complete part number for ordering see 'ordering information'.

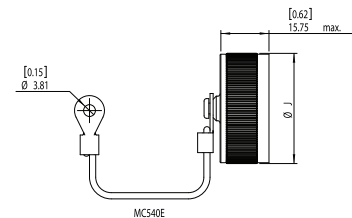
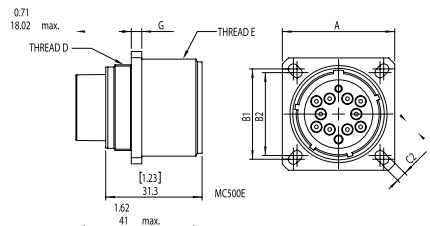
#### Plug



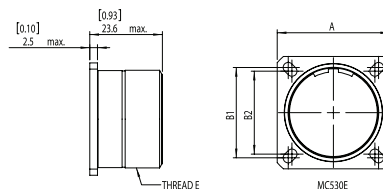
#### Procap



#### Receptacle



#### Dummy Receptacle

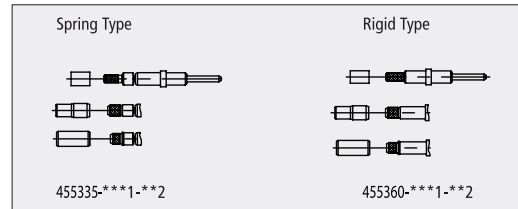


### Dimensional Information (cont)

| Size - Arrangement | A Max | B1    | B2    | C1 Min | C2 Min | Thread D  | Thread E tri-start dimensions (inches) | ØF Max | G Max | H Max | M Max | ØJ Max | ØK Max | ØL Min |
|--------------------|-------|-------|-------|--------|--------|-----------|----------------------------------------|--------|-------|-------|-------|--------|--------|--------|
| 11-2               | 26.4  | 20.62 | 18.26 | 4.84   | 3.16   | M15 X 1.0 | 0.75000                                | 24.94  | 3.52  | 19.9  | 40.86 | N/D    | N/D    | 16.51  |
| 13-4               | 28.81 | 23.01 | 20.62 | 4.84   | 3.16   | M18 X 1.0 | 0.8750                                 | 29.34  | 3.52  | 19.9  | 40.86 | 26.06  | 27.56  | 19.56  |
| 15-6               | 31.2  | 24.61 | 23.01 | 4.31   | 3.16   | M22 X 1.0 | 1.0000                                 | 32.46  | 3.52  | 19.9  | 40.86 | N/D    | N/D    | 22.86  |
| 17-8               | 33.51 | 26.97 | 24.61 | 4.84   | 3.16   | M25 X 1.0 | 1.1875                                 | 35.66  | 3.52  | 19.9  | 40.86 | 34.16  | 35.46  | 26.04  |
| 19-10              | 36.71 | 29.36 | 26.97 | 4.84   | 3.16   | M28 X 1.0 | 1.2500                                 | 38.46  | 3.52  | 19.7  | 40.86 | 35.66  | 37.16  | 29.21  |
| 21-18              | 39.91 | 31.75 | 29.36 | 4.84   | 3.16   | M31 X 1.0 | 1.3750                                 | 41.66  | 4.33  | 19.7  | 40.86 | N/D    | N/D    | 32.39  |
| 23-24              | 43.11 | 34.93 | 31.75 | 6.06   | 3.83   | M34 X 1.0 | 1.5000                                 | 44.86  | 4.33  | 19.7  | 40.86 | 42.06  | 43.36  | 35.56  |
| 25-30              | 46.21 | 38.1  | 34.93 | 6.06   | 3.83   | M37 X 1.0 | 1.6250                                 | 47.98  | 4.33  | 19.7  | 40.86 | 45.16  | 46.6   | 38.74  |

## MC5 Optical Termini (ordered separately)

Optical contacts are supplied with a profile formed optical end face and are available for singlemode or multimode fibers. Contacts are available in either sprung or rigid versions, depending upon application (rigid contacts should be used in bulkhead receptacles only).



Options are as follows:

\*\*\*1 = Optical hole Ø 'A' (fiber size) (see table 1) \*\*2 = Cable type (see table 2)

Please note: for type 00 (\*\*2) the cable crimp sleeve is not supplied i.e. for terminating buffered fiber.

**Table 1 (\*\*\*1)**

| Sprung contact part number | Rigid contact part number |
|----------------------------|---------------------------|
| 455335-***1-**2            | 455360-***1-**2           |
| 455335-125-**2             | 455360-125-**2            |
| 455335-126-**2             | 455360-126-**2            |
| 455335-127-**2             | 455360-127-**2            |
| 455335-128-**2             | 455360-128-**2            |
| 455335-144-**2             | 455360-144-**2            |
| 455335-159-**2             | 455360-159-**2            |
| 455335-172-**2             | 455360-172-**2            |
| 455335-175-**2             | 455360-175-**2            |

**Table 2 (\*\*\*2)**

| Contact        |                | Contact      |                    | Crimp Dies (see note) |                             |
|----------------|----------------|--------------|--------------------|-----------------------|-----------------------------|
| Sprung         | Rigid          | Plain buffer | Tight jacket cable | Part number           | A / F                       |
| 455335-***1-00 | 455360-***1-00 | 900µm        | -                  | 457440                | 1.25 / 1.35                 |
| 455335-***1-01 | 455360-***1-01 | -            | Ø2.1 OD            | 457440                | 2.27 / 2.37                 |
| 455335-***1-02 | 455360-***1-02 | -            | Ø1.8 OD            | 457440                | 2.62 / 2.52 and 2.37 / 2.27 |
| 455335-***1-0  | 455360-***1-03 | -            | Ø2.5 OD            | 457440                | 2.74 / 2.84                 |

Please note: for alternative sizes, consult technical sales.

## MC5 Backshells for Multiway Cables (ordered separately)

| Cable Type / Description                                               | Cable Ø O/D mm                                                                          |
|------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| Multiway cable, with 900µm buffered fiber and peripheral strain relief | 3.5                                                                                     |
|                                                                        | 4.5                                                                                     |
|                                                                        | 5.0                                                                                     |
|                                                                        | 5.5                                                                                     |
|                                                                        | 6.0                                                                                     |
| Multiway cable, various constructions - e.g. central strain relief     | 7.0                                                                                     |
|                                                                        | Backshells are available for a range of multiway cables, please consult technical sales |

Please note: Crimp dies are used with crimp tool 451716 (Erma 29020).

## MC5 - High Density Fiber Optic Multiway (Continued)

### Ordering Information

#### Series:

#### Style:

00 = Bulkhead receptacle  
06 = Plug  
07 = Jam nut  
20 = Protective cap plug  
30 = Dummy receptacle  
40 = Protective receptacle

#### Shell finish:

N Nickel plated

#### Shell size - no. of channels:

11-2, 13-4, 15-6, 17-8, 19-10, 21-18,  
23-24, 25-30

#### Insert type

P, S (S type includes the removable  
alignment insert)

#### Shell orientation:

N, A, B, C

#### Modification code:

MC5

\*\*E-

\*-

\*\*\_\*\*

\*

\*

-F\*\*\*

#### Example part numbers:

Connector MC500E-N-17-8SN

Protective cap MC540E-N-17

Dummy receptacle MC530E-N-17

### Accessories / Essential Tooling Information

MC5 Fiber Optic Module for DMC-M Connectors

The MC5 DMC-M high performance fiber optic modules are manufactured from a high performance material for corrosion resistance and features a rugged construction. The common MC5 optical contact is rigid or sprung loaded and common to both plug and receptacle to maintain physical contact even under severe shock or vibration.

### Quality Approvals

- Civil Aviation Authority A8-1
- BS EN ISO 9001
- Military Spec Approvals 38999
- BS9000 and CECC
- Underwriters Laboratories
- BS EN ISO9001:2000 (BSI)
- BS/EN 9100:2003 (BSI)
- AS9100 Rev B (BSI)
- AS9120:2002 (BSI)
- EASA Part 21 Subpart G (CAA)
- BS9000 (BSI)
- Underwriters Laboratories (UL)
- Military Spec Approvals 38999 (DSCC)

## MC6 - Fiber Optic Ribbon Cable Connector

### MC6 - Fiber Optic Ribbon Cable Connector

#### Product Facts

- **Insert-to-insert keying** assists precision alignment
- **Individually rear insertable/removable optical contacts** enable easy assembly
- **Backshells and adaptors** available for most single and multifiber cable types

#### Fiber Type:

**Channels** – 2 to 72

**Cable size** – Telecom grade cable  
Aerospace grade cable

#### Materials

**Shell** – Composite (MIL-C-38999)

**Contact body** – Nickel/cadmium plated composite polymer

**Ferrule** – Thermoplastic

#### Alignment Pin:

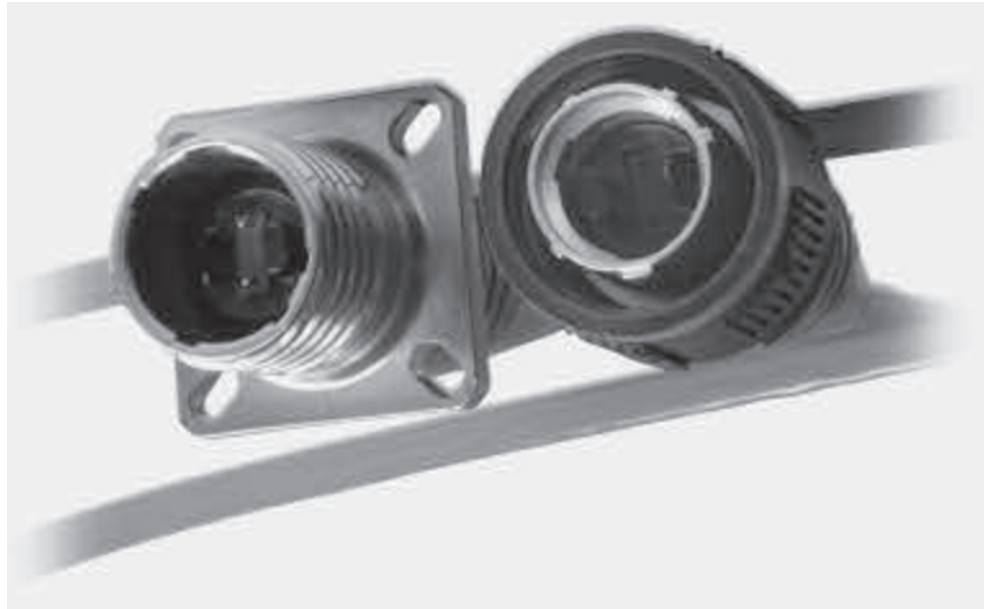
**Seals** – Fluorosilicone

**Plating** – Nickel

The MC6 high density, fiber optic connector series is now further enhanced with the option for industry standard MT Ferrule inserts. The insert accommodates 2 to 72 channels and can be supplied pre-terminated if required. The MC6 uses the

compact MIL-C-38999 Series III, shell size 11 body, also used on the proven MC5 connector. It has a lightweight, corrosion resistant, metal-plated composite shell which provides high strength and durability, combined with EMC shielding.

The result is a very compact, rugged, environmentally sealed solution for a wide range of applications, such as avionics, data bus and in-flight entertainment systems.



#### Key Features

- Common contact single or multimode MT ferrules MIL-C-38999 Series III anti-vibration coupling with tri-start thread
- Easily accessible Angled Physical Contact (APC) and Physical Contact (PC) faces for cleaning and maintenance
- Rear release contact using size 8 extraction tools Retrofit triple rear seal available
- Color band indicating full mating
- The use of industry standard MT interface and a variety of housing options ensures integration into new and existing systems
- Interchangeable with MIL-C-38999 Series III

## MC6 - Fiber Optic Ribbon Cable Connector (Continued)

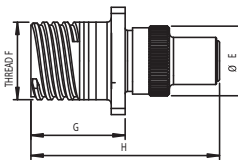
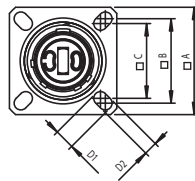
### Optical Performance

For more information contact technical sales on +44 (0) 1424 858358 or fiber@deutsch.net

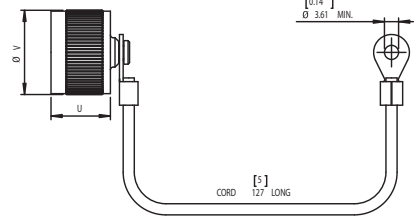
### Dimensional Information

All dimensions in millimeters unless otherwise stated. To complete part number for ordering see Ordering Information.

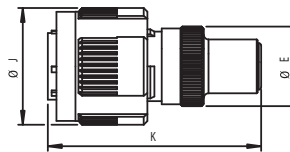
#### MC6 Receptacle



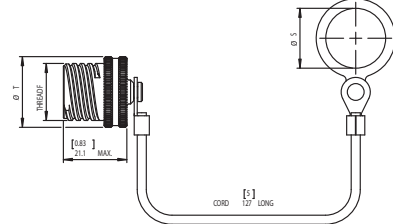
#### Protective Cap Receptacle MC640E-N-11



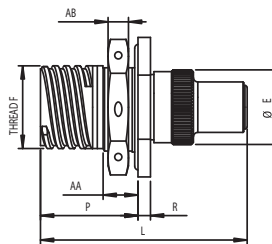
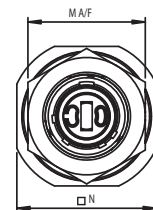
#### MC6 Plug



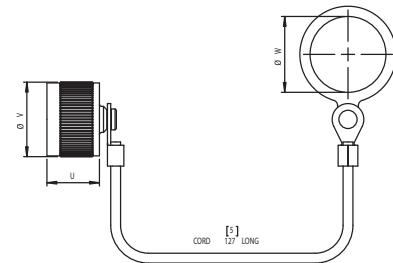
#### Procap Plug MC620E-N-11



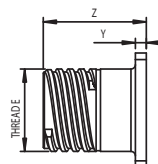
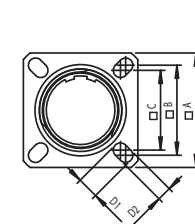
#### Jam Nut



#### Protective Cap Receptacle



#### Dummy Receptacle MC630E-N-11



## MC6 - Fiber Optic Ribbon Cable Connector (Continued)

### Contact and Tooling Information

| A<br>Max | B<br>Nom | C<br>Nom | D1<br>Min | D2<br>Min | ØE<br>Max | Thread F<br>Tri-start (inches) | G<br>Max | H<br>Max | ØJ<br>Max | K<br>Max | L<br>Max |
|----------|----------|----------|-----------|-----------|-----------|--------------------------------|----------|----------|-----------|----------|----------|
| 26.40    | 20.62    | 18.26    | 4.84      | 3.16      | 17.10     | 0.7500"                        | 23.20    | 46.50    | 24.95     | 46.00    | 47.50    |

| M<br>A/F | N<br>Max | P<br>Max | R<br>Max | ØS<br>Min | ØT<br>Max | U<br>Max | ØV<br>Max | ØW<br>Min | ØX<br>Max | Y<br>Max | Z<br>Max | AA<br>Max | AB<br>Max |
|----------|----------|----------|----------|-----------|-----------|----------|-----------|-----------|-----------|----------|----------|-----------|-----------|
| 27       | 32.00    | 22.30    | 2.96     | 19.55     | 23.46     | 16.16    | 22.96     | 22.86     | 8.01      | 2.76     | 23.76    | 7.80      | 4.81      |

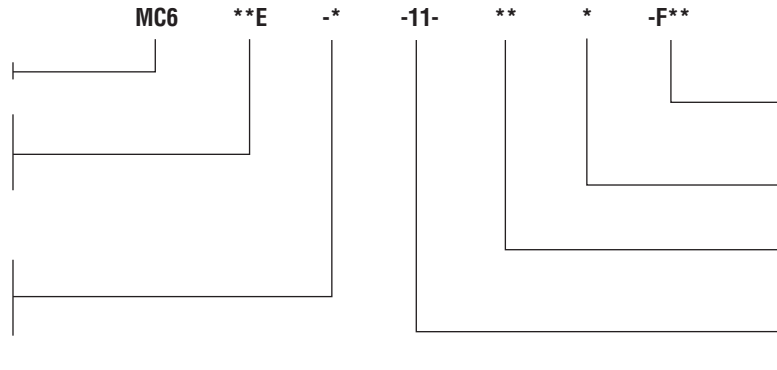
### Ordering Information

**Series:**
**Style:**

00 = Bulkhead receptacle  
06 = Plug  
07 = Jam nut

**Shell finish:**

N Nickel plated  
C = Cadmium plated


**Modifaction code:**

See above

**Shell orientation:**

N,A,B,C

**No. of MT Ferrules:**

01 for size 11

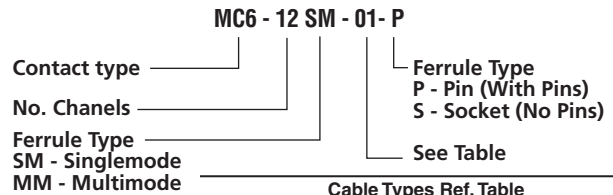
**Shell size:**

11

### Optical Termini



MC6 MT contact


**Ferrule Type**

P - Pin (With Pins)  
S - Socket (No Pins)

See Table

#### Cable Types Ref. Table

| Part No.         | Cable                                       |                      |
|------------------|---------------------------------------------|----------------------|
|                  | Description                                 | Jacket Size          |
| MC6 - ** * - 01* | Ruggedized Aerospace Oval Multi Fiber Cable | 3.95mm x 1.60mm Max. |
| MC6 - ** * - 02* | Round Multi Fiber Cable                     | Ø3.96mm Max.         |

### Accessories / Essential Tooling Information

MC6 Fiber Optic Module for DMC-M Connectors

The MC6 DMC-M high performance fiber optic modules are manufactured from a high performance material for corrosion resistance and features a rugged construction. The common MC6 optical contact is rigid or sprung loaded and common to both plug and receptacle to maintain physical contact even under severe shock or vibration.

### Quality Approvals

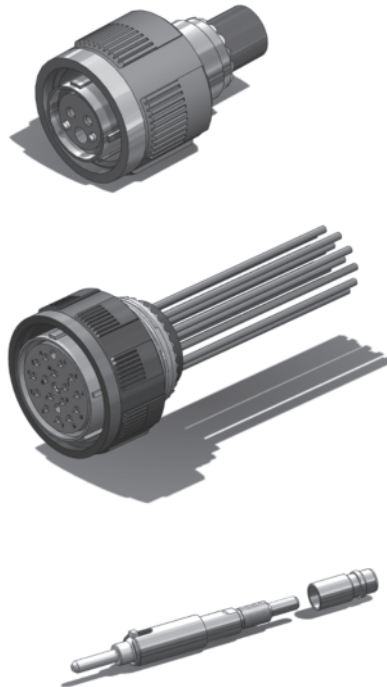
- Civil Aviation Authority A8-1
- BS EN ISO 9001
- Military Spec Approvals 38999
- BS9000 and CECC
- Underwriters Laboratories
- BS EN ISO9001:2000 (BSI)
- BS/EN 9100:2003 (BSI)
- AS9100 Rev B (BSI)
- AS9120:2002 (BSI)
- EASA Part 21 Subpart G (CAA)
- BS9000 (BSI)
- Underwriters Laboratories (UL)
- Military Spec Approvals 38999 (DSCC).

## MC801 Connector

### MC801 Connector

#### Product Facts

- Uses precision ARINC 801 fiber optic termini (typical multi-mode insertion loss is less than 0.15 dB).
- Removable alignment sleeve insert for easy cleaning of fiber optic termini
- Three stages of alignment: shell-to-shell keys, guide pins and ceramic alignment sleeves
- Includes all of the features of standard D38999 straight plug and panel mount receptacle shells
- Scoop-proof connector design
- Option for alternate keys and keyways



**IN  
DEVELOPMENT**

#### Insert Arrangements

11-02 13-04 15-06 17-08

19-12 21-16 23-24 25-32

#### Materials

Composite and Aluminium

#### Finishes

Electroless Nickel and Olive drab cadmium

#### A801 Termini

- Genderless termini allows for use on both sides of a connector
- The Alignment sleeves are contained in a separate carrier which is removable for easier end-face maintenance
- Ultra Precision ceramic ferrules and sleeves ensure accurate fiber-to-fiber alignment
- Termini are keyed to provide anti-rotation
- Termini body is crimped to the cable providing a Pull-Proof solution

#### Performance expected

- Insertion Loss at 850 Nm 0.30 dB max., 0.15 dB typical for multi-mode
- Return Loss 850 Nm -20 dB max - 40 dB typical multi-mode



## Ruggedized Singleway Connector (RSC)

### Ruggedized Singleway Connector (RSC)

#### Product Facts

- **Insert-to-insert keying** assists precision alignment
- **Individually rear insertable/removable optical contacts** enable easy assembly
- **Backshells and adaptors** available for most single and multifiber cable types

**Fiber Type** – 8, 50, 62.5, 85/125µm  
 100/140µm  
 200/230µm  
 200/280µm  
 200/300µm

**Cable size** – 1.6mm to 5mm  
 Simplex tight jacket Kevlar reinforced secondary buffered fiber

#### Materials

**Shell** – Arcap

**Contact body** – Arcap

**Ferrule** – Zirconia

**Alignment sleeve** – Zirconia

**Seals** – Fluorosilicone

**Plating** – Nickel

#### Optical Performance

**Insertion loss** – 0.25dB typical

**Return loss** – -40dB typical\*

**Repeatability** – Better than 0.2dB

#### Temperature

**High temperature endurance** – +155°C\*

**Low temperature endurance** – -65°C\*

**Durability** – not less than 500 matings

TE's RSC range of high performance fiber optic connectors are manufactured from Arcap for corrosion resistance and feature a rugged construction, incorporating environmental sealing and an anti-vibration coupling mechanism. The optical contact is sprung loaded and common to both plug and receptacle to maintain physical contact even under severe shock or vibration. The RSC range is suitable for both singlemode and multimode applications, and features easily accessible fiber faces for cleaning purposes.



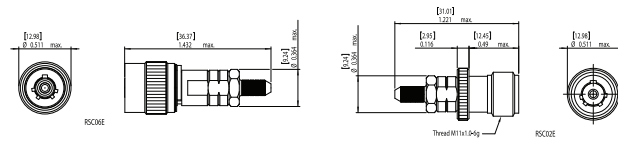
#### Key Features

- Precision Zirconia ceramic ferrule and alignment sleeve to ensure superior repeatable optical performance with physical contact polishing techniques
- Manufactured from Arcap for corrosion resistance
- Easy access to ferrule to facilitate simple cleaning and maintenance
- Common ferrule carriers for the plug and receptacle
- Optical contact is sprung loaded in both the plug and receptacle to maintain physical contact even under severe shock or vibration
- Simple termination process and tooling
- Anti-vibration coupling mechanism
- Six alternative shell keyway orientations provide protection from inadvertent mis-mating
- Able to accommodate various sizes of multimode and singlemode fiber - (8/125, 50/125, 62.5/125, 100/140, 200/280mm)
- Able to accommodate various sizes of simplex cable (1.6mm - 5mm)
- Compatible with HA Connector series

## Ruggedized Singleway Connector (RSC) (Continued)

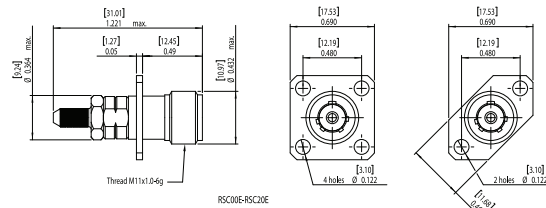
### Dimensional Information

All dimensions in inches (except threads). To complete part number for ordering see 'ordering information'

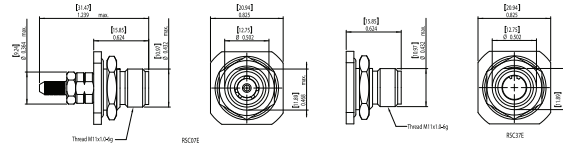


### Plug

### Free Receptacle

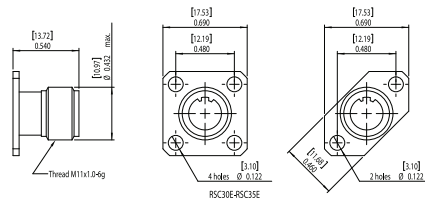


### Receptacles

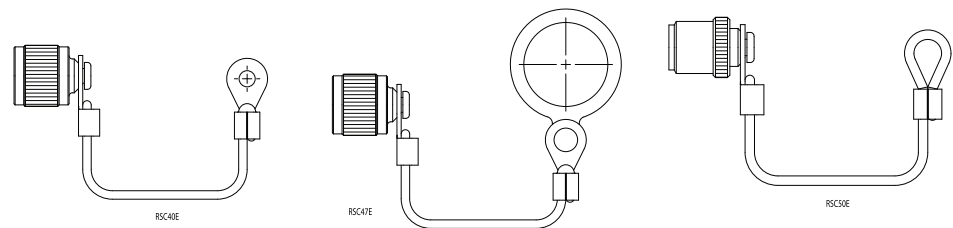


### Jam Nut Receptacle

### Dummy Receptacle



### Dummy Receptacles and Mounting



### Procac

## Ruggedized Singleway Connector (RSC) (Continued)

### Ordering Information

#### Series:

#### Shell style:

00 = Bulkhead receptacle  
06 = Plug  
07 = Jam nut  
20 = Protective cap plug  
30 = Dummy receptacle  
40 = Protective receptacle

#### Shell orientation:

N, A, B, C, D, E

\*Special glass braid

For other cable types, please consult the sales office.

Example part number: RSC06E-N-100  
RSC plug, 'N' orientation, 2.5mm cable

RSC \*\*E- \* -\*\*\*

100 cable diameter 2.5mm O/D  
180 cable diameter 1.8mm O/D  
200 cable diameter 2.0mm O/D  
300 cable diameter 1.65mm O/D  
400 cable diameter 3.0mm O/D  
500 cable diameter 3.2mm O/D  
600 cable diameter 2.1mm O/D  
700 cable diameter 1.6mm O/D\*  
800 cable diameter 3.7mm O/D  
900 cable diameter 5.0mm O/D

### Optical Contacts

(Must be ordered separately)

| Mode       | Fiber size             | Part number  |
|------------|------------------------|--------------|
| Singlemode | 8/125µm                | 456099SM-126 |
|            | 50, 62.5/125µm         | 456099-126   |
|            | 100/140µm              | 456099-145   |
|            | 100/172µm              | 456099-176   |
| Multimode  | 200/220µm              | 456099-224   |
|            | 200/230µm              | 456099-232   |
|            | 200/280µm (flat faced) | 454103-283   |
|            | 200/300µm              | 453800-305   |

Please contact technical support for termination tools and consumables.

### Accessories

| Fixing  | Dummy receptacle part number | Protective cap part number |
|---------|------------------------------|----------------------------|
| 4 hole  | RSC30E                       | RSC40E                     |
| 2 hole  | RSC35E                       |                            |
| Jam nut | RSC37E                       | RSC47E                     |

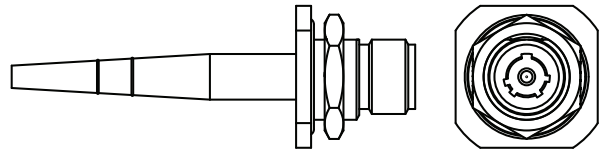
### Hermetic Receptacle (RSC07HE)

#### Key Features

- Compatible with the RSC plug connector
- Leak rate < 1x10<sup>-6</sup> cc/s
- 125°C temperature rating

### Dimensional Information

All dimensions in inches (except threads). To complete part number for ordering see 'ordering information'



### Ordering Information

#### Series:

#### Shell orientation - N, A, B, C, D, E

#### Fiber size - 125, 140, 280µm

#### Pigtail length - cms

Example part number: (pigtail cable 900µm buffer only)  
RSC07HE-N-283-100 receptacle, pigtail, 'N' orientation, 280µm fiber, 100cm cable

RSC07HE - \* - \*\*\* - \*\*\*

### Quality Approvals

- Civil Aviation Authority A8-1
- BS EN ISO 9001
- Military Spec Approvals 38999
- BS9000 and CECC
- Underwriters Laboratories
- BS EN ISO9001:2000 (BSI)
- BS/EN 9100:2003 (BSI)
- AS9100 Rev B (BSI)
- AS9120:2002 (BSI)
- EASA Part 21 Subpart G (CAA)
- BS9000 (BSI)
- Underwriters Laboratories (UL)
- Military Spec Approvals 38999 (DSCC)

## Sealed Circular LC ODVA

### Sealed Circular LC ODVA Conforming Connector

#### Product Facts

- IP67 rated to ensure protection from dust and water immersion
- LC connector qualified to Telcordia GR-326 and TIA/EIA 568B.3
- Temperature range of -40°C to 85°C
- Bayonet-style mechanical lock
- Flame retardant materials per UL 94 V-0
- Dual mounting bulkhead design
- Singlemode and multimode fiber
- Can be used with cable types 9/125, 50/125 and 62.5/125
- LC to LC internal to the box jumpers
- LC connector accepts tactical cable with 4.5 mm – 7.5 mm OD
- ODVA Conforming Plug to X interface on tactical with break out
- ODVA Conforming Plug to Plug on tactical cable
- Build to customer need

#### Applications

The LC ODVA Conforming Connector is ideal for:

- Harsh environments where chemicals, corrosive gases and liquids are commonplace
- Inside and outside industrial plant and equipment that interface with industrial Ethernet networks
- Remote interface applications such as towers and antennae as well as FTTX in PON and at the home applications
- Mobile routers and internet hardware



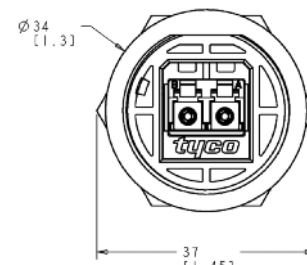
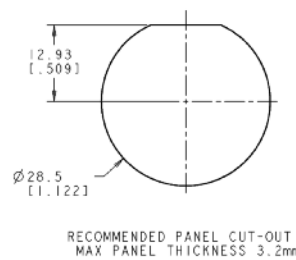
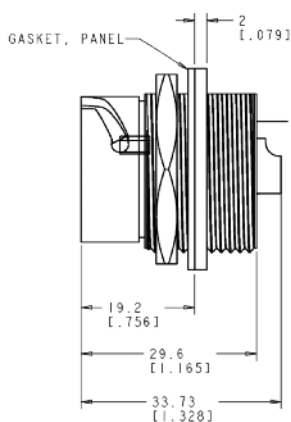
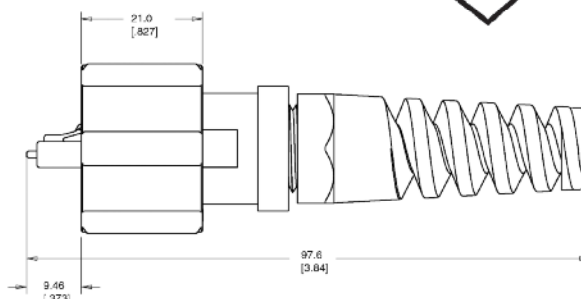
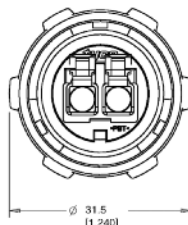
**Plug Part Numbers:**  
1828618-1 (Multimode)  
1828618-2 (Singlemode)

**Receptacle Part Numbers:**  
1828619-1 (Multimode)  
1828619-2 (Singlemode)

**Plug & Receptacle Cap Part Numbers:**  
Plug Cap 1828740-1  
Receptacle Cap 1918177-1

#### ASSEMBLY CAPABILITIES

TE Connectivity has extensive Rugged Optic Harness capabilities. Please consult your local TE Sales representative for assistance.



#### Standard Cable Assemblies

| Part Number | Description                            |
|-------------|----------------------------------------|
| 1828935-X   | ODVA LC Interface, 62.5, 2 Fiber       |
| 1828936-X   | ODVA LC Interface, Singlemode, 2 Fiber |

Note: X = length in meters

Note: All part numbers are RoHS compliant.

### Rugged Circular Connectors

#### EMPIRE

##### Product Facts

- Facilitates the implementation of fiber sensors within composites
- Protection of fiber at composite entry/exit point
- Receptacle connector physically embedded within composite material
- Available as panel edge or surface mount configuration

A unique, patent pending Fiber Optic connector technology that allows designers to reliably connect embedded optical fibers to external monitoring equipment, eliminating the problems of fixed 'flying lead' connections to the structure. See TE.com for additional information.



#### Fiber Optic Cable Assemblies and Harnesses

##### Product Facts

- Custom designs available
- Custom lengths for harnessing
- Dedicated Fiber Optic harness facility
- Capability to work closely with customer to fully define requirements

TE also has dedicated design and manufacturing resources available to provide rugged and reliable Fiber optic harnesses for Aerospace, Military communications, Railways, Autosport and Industrial equipment.



## Rugged Board Level Connector

### Ruggedized Optical Backplane Interconnect for VITA 66

#### Product Facts

- Receptacle designed to maximize optical performance
- Connectors accommodate up to two MT ferrules
- Locating post features helps ensure proper position on the backplane and module boards
- Common protective cover is made of anti-static material
- Plug (daughtercard) connector housing contains a slot feature to facilitate cleaning the MT interfaces
- Receptacle (backplane) connector includes two robust guide pins for blind-mating
- Receptacle connector insert floats relative to the shell, providing  $\pm 0.25\text{mm}$  planar floating alignment capability
- Connector mounting screws contain pre-applied Nylok patch to withstand vibration

#### Mechanical

**Mating Force (per 12-fiber MT ferrule)** – Min: 7.8N [1.75 lb]  
Max: 11.8N [2.65lb]

**Durability** – 100 cycles, tested per EIA-455-21

**Shock** – 50G, sawtooth, 11 msec pulse duration, tested per TIA/EIA-455-14, condition E

**Random Vibration** – 11.95 G (rms), 50-2000 Hz, 2 hrs per plane - tested per TIA/EIA-455-11, test condition V1-D

#### Materials

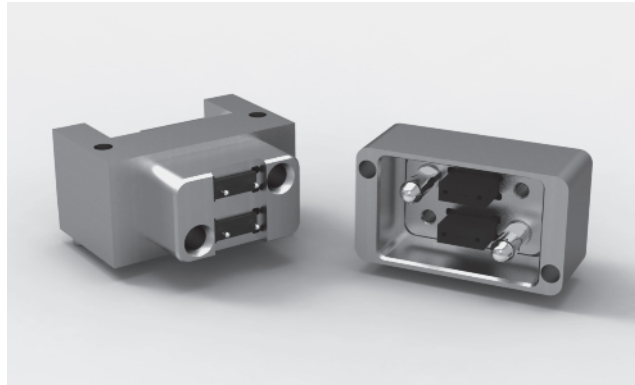
**Connector shell & housing** – Aluminum alloy 6061, clear-chromate conversion-coated (RoHS compliant)

**Alignment posts & screws** – Stainless Steel, 300 series, passivated (RoHS-compliant)

TE Connectivity's (TE) Ruggedized Optical Backplane interconnect system provides a high-density, blind-mate optical interconnect in a backplane/daughtercard configuration. The fiber optic (ribbon) cable

interconnect is fed through the backplane to removable system modules using MT ferrules. TE offers the optical system in both a receptacle (backplane) and mating plug (daughtercard) connectors which interconnect up to two MT ferrules, each accomo-

dating up to 24 fiber paths. Other options are available using industry standard ARINC 801 fiber terminus and TE's Expanded Beam, Pro Beam interface in a four-fiber configuration.

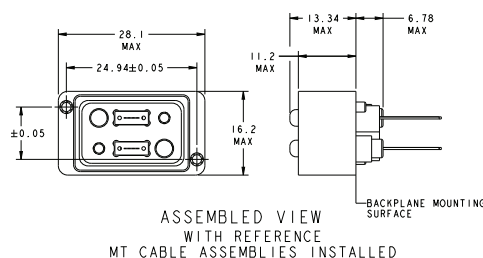


#### Key Features

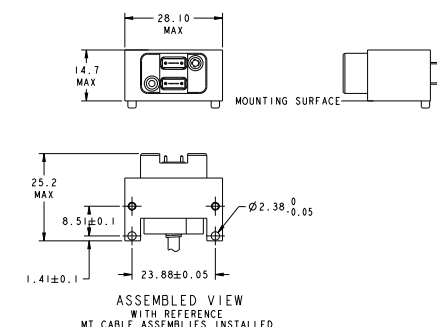
- Receptacle designed to maximize optical performance
- Connectors accommodate up to two MT ferrules
- Locating post features helps ensure proper position on the backplane and module boards
- Common protective cover is made of anti-static material
- Plug (daughtercard) connector housing contains a slot feature to facilitate cleaning the MT interfaces
- Receptacle (backplane) connector includes two robust guide pins for blind-mating
- Receptacle connector insert floats relative to the shell, providing  $\pm 0.25\text{mm}$  planar floating alignment capability
- Connector mounting screws contain pre-applied Nylok patch to withstand vibration

| Interface                            | Part No.  |              |
|--------------------------------------|-----------|--------------|
|                                      | Backplane | Daughtercard |
| VITA 66.1: MT                        | 2000973-1 | 2000974-1    |
| MT Ferrule Kit (12 Fiber, Multimode) | 2102866-1 | 2102866-2    |

#### Backplane Module - PN 2000973-1



#### Daughtercard Module - PN 2000974-1



## Navy CID Approved Epoxy Applied

### Tight Jacketed LC Connectors

#### Product Facts

- Multimode or singlemode
- Simplex or duplex
- Tested using MIL-PRF-85045/16 2.0 mm cable
- LC Commercial Item Description (CID) interim approval by the Naval Surface Warfare Center, Dahlgren Division

#### Application

- In Flight Networks
- Shipboard Applications
- Aero Market

The Tight Jacket LC Connector is a robust design for rugged applications including but not limited to:

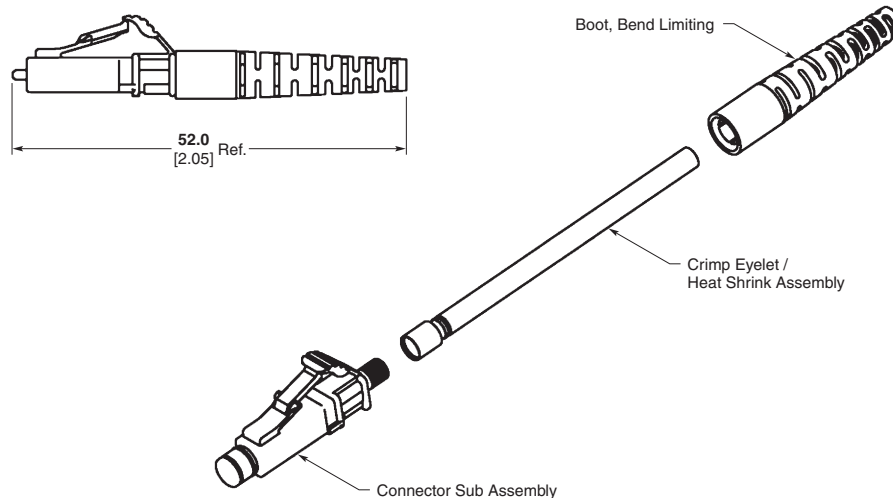
- Extreme temperatures -55°C to +110°C
- Excessive vibration or physical shock

Test reports available upon request.



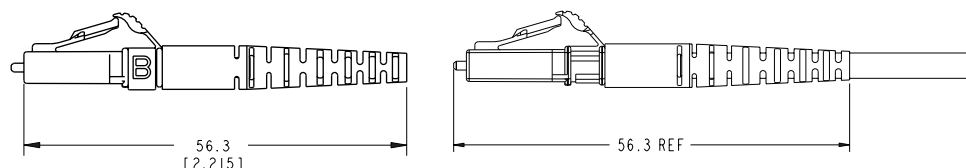
The tight jacketed LC Connectors are non pull-proof versions of the standard connectors that are designed for use with tight construction cable. Unlike

standard connectors, this design allows the jacket and buffer to move together, reducing the chances of micro-bends and fiber breakage.



| Fiber Type                                | Kit Part Number | Description                               |
|-------------------------------------------|-----------------|-------------------------------------------|
| Singlemode<br>(blue body & straight boot) | 6828095-X       | Simplex, 1.6–2.0 mm                       |
|                                           | 6828130-X       | Duplex, 1.6–2.0 mm                        |
|                                           | 1918228-X       | Simplex, 2.4 mm                           |
|                                           | 2123524-X       | Duplex, 1.6–2.0 mm, transceiver optimized |
| Multimode<br>(beige body & straight boot) | 6828094-X       | Simplex, 1.6–2.0 mm                       |
|                                           | 6828129-X       | Duplex, 1.6–2.0 mm                        |
|                                           | 1918153-X       | Simplex, 2.4 mm                           |
|                                           | 2123265-X       | Simplex, 2.4 mm, transceiver optimized    |

**Note:** X = -1 for individual package, -2 for bulk package.  
Instruction Sheet 408-10014. See <http://www.te.com/documents>.  
Duplex Clip Available (Part Number 1754371-1).



**Note:** All part numbers are RoHS compliant.



## SC Connectors

### Tight Jacketed SC Connectors

#### Product Facts

- Multimode or singlemode
- Simplex or duplex
- Tested using MIL-PRF-85045/16 2.0 mm cable
- SC Commercial Item Description (CID) interim approval by Naval Surface Warfare Center, Dahlgren Division

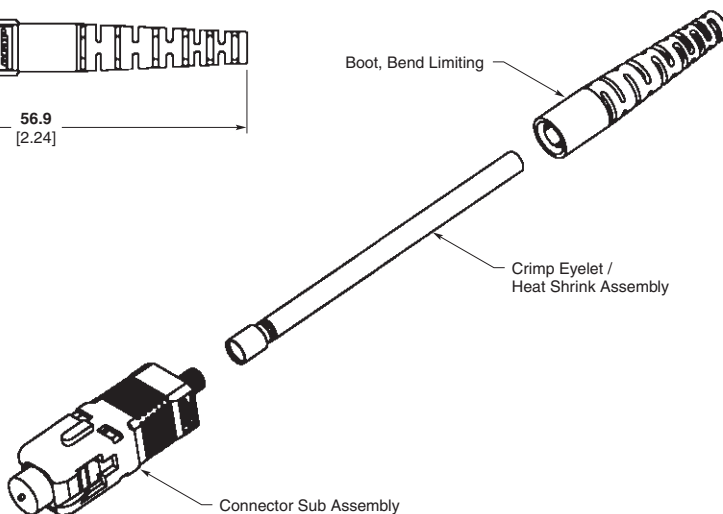
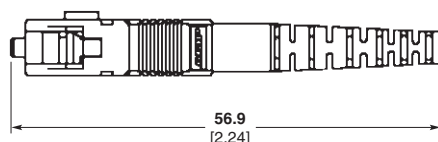
#### Application

- In Flight Networks
- Shipboard Applications
- Aero Market



The tight jacketed SC Connectors are non pull-proof versions of the standard connectors that are designed for use with tight construction cable. Unlike

standard connectors, this design allows the jacket and buffer to move together, reducing the chances of micro-bends and fiber breakage.



### Tight Jacketed SC Connector Kits

| Fiber Type                                | Kit Part Number | Description         |
|-------------------------------------------|-----------------|---------------------|
| Singlemode<br>(blue body & straight boot) | 6828100-X       | Simplex, 1.6–2.0 mm |
|                                           | 1828573-X       | Duplex, 1.6–2.0 mm  |
|                                           | 1918227-X       | Simplex, 2.4 mm     |
| Multimode<br>(beige body & straight boot) | 6828099-X       | Simplex, 1.6–2.0 mm |
|                                           | 1828574-X       | Duplex, 1.6–2.0 mm  |
|                                           | 1918154-X       | Simplex, 2.4 mm     |

**Note:** X = -1 for individual package, -2 for bulk package.  
Instruction Sheet 408-10015. See <http://www.te.com/documents>.

**Note:** All part numbers are RoHS compliant.

## LC Plus — Navy Approved

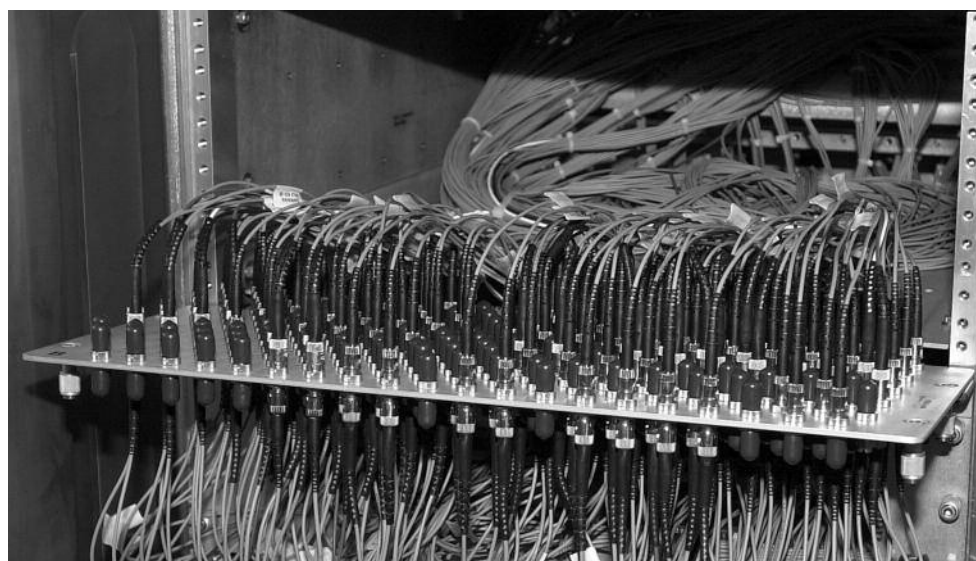
**LC, SC and LightCrimp Plus ST Approved by U.S. Navy for Use On Board Ships**

**LightCrimp Plus ST Fiber Optic Connector Features and Benefits:**

- LightCrimp Plus technology delivers the ability to terminate the fiber optic ST connector with mechanical tools by the ferrule being factory polished and terminated to the connector body
- The mechanical process enables a simple strip, clean, cleave crimp process that improves process time and eases the complexity of the installation

### Termination Kits:

- The LightCrimp Plus MM ST part 2064757-1 has a dedicated termination kit, part number 2064764-1, suggested for its implementation. TE provides a wide variety of tools required to prepare and terminate LightCrimp Plus ST connectors.



Whether you're designing local area networks, communications systems or equipment, innovative fiber optic applications begin with innovative fiber optic products. TE Connectivity offers a complete line of fiber optic products to help your designs make light work for you.

TE's comprehensive fiber connector line delivers virtually all industry-standard connections, including LightCrimp Plus ST-Style and epoxy applied Tight Jacketed LC and SC and many others. They bring fiber to the desk at a cost that is competitive with copper.

### LightCrimp Plus ST Fiber Optic Connectors

TE LightCrimp Plus ST-Style connectors are available in single or multimode configurations and can be crimped to the fiber. Any, they can install in under two minutes, without epoxy.

TE recently obtained approval from the U.S. Navy for its Multimode LightCrimp Plus ST Connector. This connector has been added to the "Navy Recommended Fiber Optic Components Parts List" located at <https://fiberoptics.nswc.navy.mil/>,

and is currently listed under the TE part number **(2064757-1)**. In addition, it is listed under the CID number A-A-59917. This approval is the latest in this series and joins the approved status of the LC and SC tight construction epoxy optic connectors listed on the components parts list.



**LightCrimp Plus ST**

\* Commercial Item Description

---

**LC Plus — Navy Approved** (Continued)

---

**Combination  
LIGHTCRIMP PLUS  
SC/ST/LC Termination Kit  
Part Number 1985162-1**

**Note:** All part numbers are RoHS compliant.

## LightCrimp Splice

### Product Facts

- Terminates 250  $\mu$ m coated, 900  $\mu$ m tight-buffered fibers and 2.0 mm jacketed cable
- Attenuation (typical):  $\leq 0.1$  dB
- Return Loss (at ambient; 18°–28° C):  
 $\geq 20$  dB multimode  
 $\geq 35$  dB single-mode
- Operating Temperature: -25 to 70° C
- Storage Temperature: -40 to 85° C
- Tensile retention:  
250  $\mu$ m coated: 2.0 N  
900  $\mu$ m buffered: 3.0 N  
Jacketed: 50.0 N
- Fast, easy fiber splicing
- No epoxy required
- No set-up required
- No workstation required
- Ideal for low-fiber count cables
- Same LightCrimp Splice for single-mode and multimode 125  $\mu$ m diameter fibers
- Kit includes rugged case



LightCrimp splices provide rugged, miniaturized form-factor that assures consistent crimp quality, dependability, and performance that rivals fusion splices. LightCrimp splices have been tested in accordance with IEC 61300 procedures, with an operating temperature range extending from -25° C to +70° C.

LightCrimp splices have been designed to meet TIA 568-C.3, IEC 61753 Cat U, and EN optical requirements.

LightCrimp splices provide the proven performance based on technology used to install more than one million LightCrimp Plus connectors.

**Navy approved CID commercial item.**  
**Description #A-A59917**

| Description                                                              | Part Number |
|--------------------------------------------------------------------------|-------------|
| LightCrimp Splice for 250 $\mu$ m, 900 $\mu$ m and 2.0 mm Jacketed Cable | 1985368-1   |
| LightCrimp Splice Termination Tool Kit                                   | 2064764-1   |



### LightCrimp PLUS Kit Part Number 1985801-1

Capable of terminating:  
In Line Mechanical Splice  
Part Number 1985368-1  
and LightCrimp PLUS  
LC/SC

#### Part Numbers:

- 2123277-1 & -2 Simplex MM LC
- 2123278-1 & -2 Duplex MM LC
- 2123279-1 Simplex SM
- 2123280-1 Duplex SM



### Offshore Optical Connectors and Cable Assembly

#### 9316 Optic

##### Product Facts

- Dry Mate connection
- Explosion proof area
- Multiway up to 12 FO
- Operating pressure up to 40 bar
- Single or Multimode fibers can be combined
- Backshell custom design available

9316 series has been designed to withstand the most severe environments in marine and offshore applications.

A special care was taken concerning:

- Easy handling
- Mechanical stress
- Use in polluted environments
- Use in hazardous areas



#### Showet

##### Product Facts

- Hybrid product 4 FO and 4 copper contacts
- SplashZone connector
- Operating pressure up to 80 bar
- Single or Multimode fibers can be combined

Combines optical and copper connectivity in a single shell. Supporting both signals and control copper cabling and single-mode and multimode optical fibers to allow the replacement of multiple connectors by one.

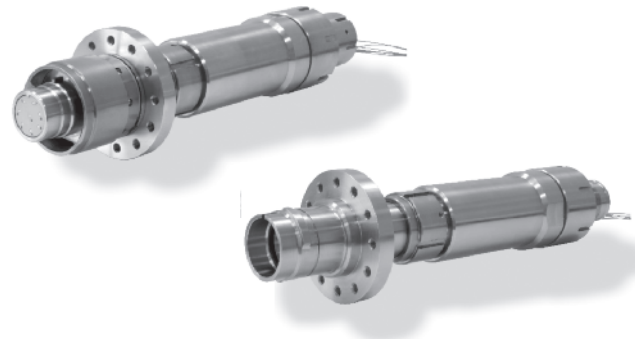


#### MOD

##### Product Facts

- Explosion proof area
- SplashZone connector
- Multiway up to 8 FO
- Operating pressure up to 40 bar
- Single or Multimode fibres can be combined

MOD is an explosion-proof connector suited to topside application, quick connect/disconnect coupling for reliable operation in hazardous environments such as FPSO turrets.



#### D03000

##### Product Facts

- Optical Subsea Wet Mateable
- ROV, Bulkhead, Stab plate and Diver versions
- Custom design available
- Back Reflection <-45dB
- Insertion loss <0.5dB
- 100 matings
- Single or Multimode fibers can be combined

D03000 is a high performing choice for optical applications requiring up to 12 channels and the ability to withstand operational water depths to 4500 m.

Optimized for Subsea Fiber Optic Distribution systems and connections to Subsea Trees.





## Table of Contents

### ARINC 600 Connectors

|                                                                                                     |              |
|-----------------------------------------------------------------------------------------------------|--------------|
| Introduction                                                                                        | 4-2          |
| ARINC 600 Next Generation Connector                                                                 | 4-3, 4-4     |
| Ordering Information                                                                                | 4-5          |
| Shell Size 1                                                                                        | 4-6          |
| Shell Size 2                                                                                        | 4-7          |
| Shell Size 3                                                                                        | 4-8, 4-9     |
| Contact Inserts and Arrangement Codes                                                               | 4-10 to 4-13 |
| Fiber Optic Inserts and Cavity Reducers                                                             | 4-14         |
| Keying                                                                                              | 4-15, 4-16   |
| Contact Style/Shell Modification Codes                                                              | 4-17, 4-18   |
| Crimp, Snap-In Contacts                                                                             | 4-19         |
| Posted Contacts                                                                                     | 4-20, 4-21   |
| COAXICON Contacts                                                                                   | 4-22 to 4-25 |
| Traffic Alert and Collision Avoidance System (TCAS) Connectors and<br>Mode S Transponder Connectors | 4-26, 4-27   |
| Single Mod ARINC 600                                                                                | 4-28 to 4-30 |
| EMI/Ground Spring                                                                                   | 4-31         |
| Recommended Panel Cutouts                                                                           | 4-32, 4-33   |
| Accessories                                                                                         | 4-33         |
| Application Tooling and Insertion/Extraction Tooling                                                | 4-34         |
| Cross Reference                                                                                     | 4-35 to 4-37 |
| MIL 600 Style Connectors                                                                            | 4-38 to 4-44 |

### ARINC 404 Connectors

|                                                    |              |
|----------------------------------------------------|--------------|
| Introduction                                       | 4-45         |
| Ordering Information                               | 4-46         |
| One- and Two-Insert Shells                         | 4-47         |
| Three- and Four-Insert Shells                      | 4-48         |
| Contact Inserts                                    | 4-49         |
| Modifications                                      | 4-50, 4-51   |
| Keying (Table on pages 4-15 & 4-16)                | 4-52         |
| Custom Order Codes                                 | 4-52         |
| Size 22 Contacts — Pin Diameter .030 [0.76]        | 4-53         |
| Size 20 Contacts — Pin Diameter .040 [1.02]        | 4-53         |
| Size 16 Contacts — Pin Diameter .062 [1.58]        | 4-54         |
| Size 12 Contacts — Pin Diameter .096 [2.39]        | 4-54         |
| Application Tooling & Insertion/Extraction Tooling | 4-55         |
| COAXICON Contacts                                  | 4-56 to 4-58 |
| Plugs, Boots and Caps                              | 4-59         |
| 106-Contact Inserts for Flexible Flat Cable        | 4-59         |
| Flexible Flat Cable Applications                   | 4-60         |
| Special Shells and Inserts                         | 4-61         |
| Cross Reference                                    | 4-62, 4-63   |
| Military Cross Reference                           | 4-64 to 4-70 |

|                                              |              |
|----------------------------------------------|--------------|
| HexaShield High-Performance EMC/EMI Adapters | 4-71 to 4-76 |
|----------------------------------------------|--------------|

## Introduction

### Product Facts

- Designed to meet relevant ARINC 600 Connector specifications
- Available in three sizes as well as custom versions
- Low mating-force contacts — suitable for ARINC 404 and ARINC 600 Connectors
- Full range of contact inserts
- Custom backshells available in configurations to suit any application. Contact TE Connectivity for detailed information.

### Specifications

**Temperature Range** —  
-85°F to 257°F [-65°C to 125°C]

**Mating and Unmating Forces** —  
(Max. after 3 cycles)

Size 1 — 27 pounds [120 N]

Size 2 — 60 pounds [267 N]

Size 3 — 105 pounds [467 N]

**Contact Retention against axial load** —

Size 22 — 12 pounds [53 N]

Size 20 — 20 pounds [89 N]

Size 16 — 25 pounds [111 N]

Size 12 — 30 pounds [133 N]

Coaxial — 35 pounds [156 N]

(In testing, exposure to rated loads produced no contact damage and resulted in displacement less than .015 [0.38])

**Voltage/Current Ratings** —

| Contact | AWG | Max. Current (A) |
|---------|-----|------------------|
| Size 22 | 22  | 5.0              |
| Size 20 | 20  | 7.5              |
| Size 16 | 16  | 13.0             |
| Size 12 | 12  | 23.0             |

**Durability** — 500 cycles min. — mating and unmating (In testing, wired mated connectors cycled at a rate slower than 300 cycles per hour, showed no apparent damage or contact resistance greater than rated values)

**High Temperature Tolerance** —  
1000 hours min. at 257°F [125°C]  
(Wired, mated connectors)

**Salt Spray Tolerance** — As specified by MIL-STD-1344, method 1001, Condition B

**Fluid Imperviousness** — MIL-L-23699; MIL-H-5606: 1:3 mix isopropyl alcohol and mineral spirits (Test immersions of mated connectors in these fluids caused no evident deterioration)

**Vibration and Shock Tolerance** — Per MIL-STD-1344, methods 2004-1 and 2005-1 (Testing to these conditions, including vibration for 8 hours in each of 3 mutually perpendicular axes, caused no visible cracking, breaking or loosening of parts, and no discontinuities exceeding 1 microsecond)



**Humidity Tolerance** — Insulation resistance 1 megohm min., 1-2 hours after exposure to humidity per MIL-STD-1344, Method 1002-1, Type II; 5000 megohm min. after 24 hours at 77°F [25°C].

**Dielectric Withstanding Voltage** — (Min.) 1500 VAC, RMS 60 Hz at sea level; 500 VAC, RMS 60 Hz at 50,000 ft. [15240 M] (Testing at rated voltages for 60 seconds produced no flash over and 1 mA leakage, max.)

**Insulation Resistance** — 1000 megohms min. (Test conducted on unmated connector after 30 min. exposure to 248°F-257°F [120°C-125°C])

**Contact Resistance** — Mated pairs tested per MIL-STD-1344, Method 3004-1

**Technical Document** — ARINC 600 Product Specification 108-10050

ARINC 600 Connectors are used in virtually all airframes and today's state-of-the-art avionics equipment. From collision avoidance (TCAS, TAWS) to in-flight entertainment/networking, new avionics equipment demands higher data transmission rates. Whether it's Fibre Channel, or 100-Base-T or 100-Base-FX Ethernet and beyond, TE has the insert

configurations and copper and fiber hardware (Quadrex contacts, RF, ARINC 801 inserts and Mini-Expanded Beam Fiber Optics) to meet the need. Standard industry configurations are available. For designs that require custom configurations, TE will work with you to provide the connector solution required.

ARINC 600 Connectors represent a new generation of standardized rack and panel connectors for aircraft applications. Compared to the preceding ARINC 404 standard, the new avionics connectors feature significantly reduced mating forces; increased numbers of contacts in housings proportioned to thinner black-box shapes; and floating, front-release keying.

ARINC 600 Connectors capitalize on the new design by adding unique features while maintaining intermateability. For instance, TE contact inserts

are field replaceable and manufactured to precise tolerances.

TE contacts for ARINC 600 Connectors are applied with standard crimping tools—the same ones used for ARINC 404 contacts. Automatic crimping equipment is available for higher productivity and lower applied costs. The benefits of ARINC 600 reduced engagement force contacts (for example: size 22 contacts averaging 1.5 ounces [0.42 N]) can be realized in ARINC 404 connectors through the use of the interchangeable ARINC 600 contacts. ARINC 600 coaxial contacts also are crimp applied for reliable, solder-free installation.

It is easy to specify ARINC 600 Connectors by descriptive part numbers. An example of a descriptive part number is shown on page 4-5, with an explanation of each component of the part number and page references for complete information.



## ARINC 600 Next Generation Connector

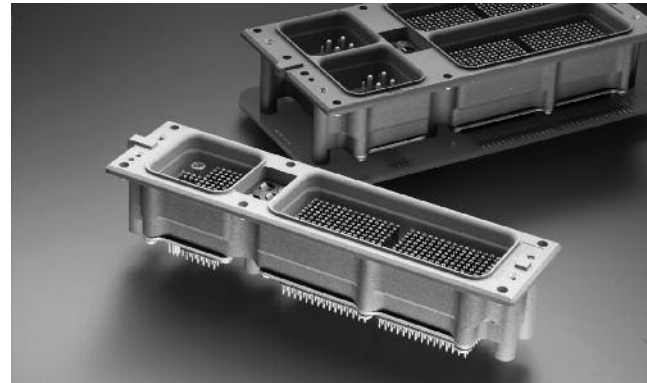
### Product Facts

- Completely inter-mateable with existing ARINC 600 plug connectors
- “Monoblock” single-piece inserts that simplify the manufacturing process, saving cost
- Stamped and formed, selectively plated size 22 contacts provide substantial cost savings while delivery excellent performance and reliability
- Equivalent electrical performance vs. current design
- Available in either Solder Tail or Press-fit (eye of the needle) designs
- Up to 10% weight savings per connector (depending on insert arrangement)

### Description

Whether it's collision avoidance, in-flight entertainment, or air-to-ground communications, today's Avionics manufacturers face a challenging economic environment and an ever-increasing demand for weight

reduction. In response to these market demands, TE has developed a revolutionary Next Generation ARINC 600 receptacle connector that offers the “perfect solution” for Avionics manufacturers seeking reduced cost and weight.

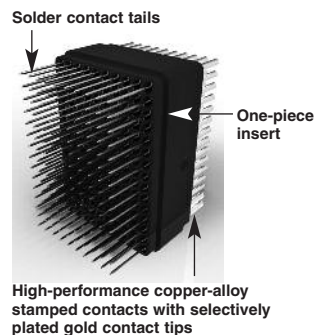


### Applications

Avionics boxes: IFE, IFN, Flight control and communications  
Military ground vehicles

### Size 22 Stamped & Formed Solder Tail Contact System

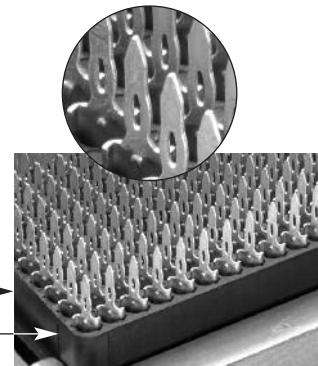
**Solder tail contact design for complete backwards compatibility with legacy contact and PCB designs**



### Size 22 Stamped & Formed Press-fit Contact System

**Press-fit, “eye-of-the-needle” contact tail design for applied cost savings during printed circuit board assembly**

“Eye of Needle”  
press fit contact tails  
One-piece insert



### Standards and Specifications

**Product Specifications** —  
(Solder Tail): 108-2423  
(EON Design): 108-2384

**ARINC 600 - 18** — Air Transport  
Avionics Equipment Interfaces

**Product Validation Test Report** —  
502-1263

**Application Specification (EON Design)** — 114-13272

### Mechanical

**Mating and Unmating Forces (Max. after 3 cycles)** —

Size 2 — 60 pounds (267 N)  
Size 3 — 105 pounds (467 N)

**Contact Retention against Axial Load** —

Size 22 — 12 pounds (53 N)

**Durability** — 500 cycles min — mating and unmating (In testing, wired mated connectors cycled at a rate slower than 300 cycles per hour, showed no apparent damage or contact resistance greater than rated values)

**Vibration and Shock Tolerance** — Per MIL-STD-1344, methods 2004-1 and 2005-1 (Testing to these conditions, including vibration for 8 hours in each of 3 mutually perpendicular axes, caused no visible cracking, breaking or loosening of parts, and no discontinuities exceeding 1 microsecond)

### Environmental

**Temperature Range** —

-85°F to 257°F (-65°C to 125°C)

Process capability rating: the contact and insert shall be capable of withstanding wave solder processing (270°C for 10

seconds) and vapor phase processing (260°C for 2 minutes)

**High Temperature Tolerance** — 1000 hours min. at 257°F (125°C) (Wired, mated connectors)

**Salt Spray Tolerance** — As specified by MIL-STD-1344, method 1001, Condition B

**Fluid Imperviousness** — MIL-L-23699; MIL-H-5606: 1:3 mix isopropyl alcohol and mineral spirits (Test immersions of mated connectors in these fluids caused no evident deterioration)

**Humidity Tolerance** — Insulation resistance 1 megohm min., 1-2 hours after exposure to humidity per MIL-STD-1344, Method 1002-1, Type II; 5000 megohms min. after 24 hours at 77°F (25°C)

### Electrical

**Dielectric Withstanding Voltage** — (Min.) 1500 VAC rms 60 Hz at sea level; 500 VAC rms 60 Hz at 50,000 ft. (15240 m) — (Tested at rated voltages for 60 seconds produced no flash over and 1 mA leakage, max.)

**Insulation Resistance** — 1000 megohms min. (Test conducted on unmated connector after 30 min. exposure to 248°F-257°F (120°C-125°C))

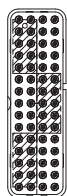
**Contact Resistance** — Mated pairs tested per MIL-STD-1344, Method 3004-1

### Voltage/Current Ratings —

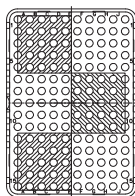
| Contact | AWG | Max. Current (A) |
|---------|-----|------------------|
| Size 22 | 22  | 5.0              |

## ARINC 600 Next Generation Connector (Continued)

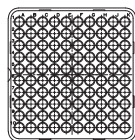
| P/N       | Connector Description                       | Module A | Module B | Module C | Module D | Module E | Module F |
|-----------|---------------------------------------------|----------|----------|----------|----------|----------|----------|
| 1218049-4 | ARINC600,RCPT ASSY,SZ2,SPCL,MONOBLK         | 150      | 150      | 13C2     |          |          |          |
| 1218098-3 | ARINC600,CONN ASY,RCPT,SZ3,FR,NG            | 150      | 150      | 13C2     | 150      | 150      | 13C2     |
| 1218644-3 | RCPT ASSY,SIZE2,FR,ARINC600,NG              | 150      | 150      | 13C2     |          |          |          |
| 1218657-2 | RCPT ASSY,SZ2,FR,ARINC600,NG                | 150      | 150      | 13C2     |          |          |          |
| 1484373-2 | ARINC600,RCPT ASSY,SZ 2,NG                  | 150      | 11Q11    | 13C2     |          |          |          |
| 1663556-2 | RCPT ASSY,SZ2,ARINC600,NG                   | 120T2    | 120T2    | 11Q2     |          |          |          |
| 1757544-3 | ARINC600,RCPT ASSY,SZ2,150/36F36/13C2       | 150      | 36F36    | 13C2     |          |          |          |
| 1757544-4 | ARINC600,RCPT ASSY,SZ2,150/36F36/13C2       | 150      | 36F36    | 13C2     |          |          |          |
| 1757691-2 | A600R,SZ2,(C4/120T2/13C2),Next Gen          | C4       | 120T2    | 13C2     |          |          |          |
| 1757814-2 | A600R,SZ3,150/150/13C/150/150/DUMM,NG       | 150      | 150      | 13C2     | 150      | 150      | BLANK    |
| 1757875-2 | A600,RCPT 120T2/150/13C2,NG                 | 120T2    | 150      | 13C2     |          |          |          |
| 1883712-2 | A600R,SZ2,RCPT 150/150/85, Next Gen         | 150      | 150      | 85       |          |          |          |
| 1883712-3 | A600R,SZ2,RCPT 150/150/85, Next Gen         | 150      | 150      | 85       |          |          |          |
| 1883910-2 | A600R,SZ3,RCPT 150X4/13C2/100,NG            | 150      | 150      | 13C2     | 150      | 150      | 100      |
| 1996549-2 | A600R,SZ3,150/150/13C2/150/150/13C2         | 150      | 150      | 13C2     | 150      | 150      | 13C2     |
| 1996655-2 | A600R,SZ3,150/150/11Q2X2,sel. loading,NG    | 150      | 150      | 11Q2     | 150      | 150      | 11Q2     |
| 1996689-3 | A600 RECEPT, SZ2,(11Q11/150/59) NG          | 11Q11    | 150      | 59       |          |          |          |
| 2101123-2 | A600 SZ2,RCPT150,110,11Q2,sel. loaded,NG    | 150      | 110      | 11Q2     |          |          |          |
| 2101246-2 | A600R,SZ2,150/150/13C2,sel.load,NG          | 150      | 150      | 13C2     |          |          |          |
| 2101300-2 | A600R,SZ2,150/11Q11/13C2,NG                 | 150      | 11Q11    | 13C2     |          |          |          |
| 2101472-2 | A600R,SZ8,150/150/11Q2/150/150/11Q2,NG      | 150      | 150      | 11Q2     | 150      | 150      | 11Q2     |
| 2101697-1 | ARINC600,SZ2,RDPT,150/150/13C2,s&f conts    | 150      | 150      | 13C2     |          |          |          |
| 2101867-2 | A600 SZ2,RECEPT,Q11/150/13C2,NG             | 11Q11    | 150      | 13C2     |          |          |          |
| 2101882-2 | A600 SZ3,150/85/150/150/Q6,CHRM,FR.250      | 150      | BLANK    | 85       | 150      | 150      | 6Q6      |
| 2157023-2 | A600 SZ1,RECEPTACLE ASSY,60/60/5Q2          | 60       | 60       | 5Q2      |          |          |          |
| 2157232-1 | ARINC600,RCPT,SZ2,150/150/100,STP/FRM       | 150      | 150      | 100      |          |          |          |
| 2157609-2 | ARINC600,RCPT,SZ3,150X4/11Q2X2,NG           | 150      | 150      | 11Q2     | 150      | 150      | 11Q2     |
| 2157736-1 | ARINC600,RCPT,SZ1,30T2/60 (s/f)/4           | 30T2     | 60       | 4C4      |          |          |          |
| 2157747-1 | ARINC600,RCPT,SZ2,150/150/100               | 150      | 150      | 100      |          |          |          |
| 2157778-1 | ARINC600,RCPT,SZ3,150X4/100X2               | 150      | 150      | 100      | 150      | 150      | 100      |
| 2221242-2 | SZ2, Rec Assy,150/150/13C2, Next Gen SL     | 150      | 150      | 13C2     |          |          |          |
| 2221246-1 | SZ2, Recept Assy,150/150/34, NG             | 150      | 150      | 34       |          |          |          |
| 2221247-1 | SZ2, Recept Assy,150/150/13C2, Next Gen     | 150      | 150      | 13C2     |          |          |          |
| 2221248-1 | SZ2, Recept Assy,150/150/Blank, Next Gen,SL | 150      | 150      | Blank    |          |          |          |
| 2221249-1 | SZ2, Recept Assy,150/150/100, Next Gen,SL   | 150      | 150      | 100      |          |          |          |
| 2221251-1 | SZ1, Recept Assy,60/60/Blank, Next Gen,SL   | 60       | 60       | Blank    |          |          |          |
| 2221252-1 | SZ2, Recept Assy,150/150/13C2, Next Gen     | 150      | 150      | 13C2     |          |          |          |
| 2221350-1 | SZ2, Rec Assy,120T2/150/100, Select Load    | 120T2    | 150      | 100      |          |          |          |
| 2221351-1 | SZ3, Rec Assy,150/150/59/150/150/100,NG     | 150      | 150      | 59       | 150      | 150      | 100      |
| 2221352-1 | SZ3, Rec,110/150/68Q2/11Q11/11Q11/6Q6,NG    | 110      | 150      | 68Q2     | 11Q11    | 11Q11    | 6Q6      |
| 2221353-1 | SZ3, Rec,121/11Q11/100/150/11Q11/100,NG     | 121      | 11Q11    | 100      | 150      | 11Q11    | 100      |
| 2221354-1 | SZ3, Rec,121/150/68Q2/150/11Q11/6Q6,NG      | 121      | 150      | 68Q2     | 150      | 11Q11    | 6Q6      |
| 2221355-1 | SZ3, Rec,121/150/100/150/11Q11/6Q6,NG       | 121      | 150      | 100      | 150      | 11Q11    | 6Q6      |
| 2221356-1 | SZ3, Rec,121/150/68Q2/11Q11/11Q11/6Q6,NG    | 121      | 150      | 68Q2     | 11Q11    | 11Q11    | 6Q6      |
| 2221376-1 | SZ3, Rec,150/150/13C2/150/150/100,NG        | 150      | 150      | 13C2     | 150      | 150      | 100      |
| 2221379-1 | SZ2, Rec. Assy,150/150/85,NG                | 150      | 150      | 85       |          |          |          |
| 2221380-1 | SZ2, Rec. Assy,150/150/13C2,NG              | 150      | 150      | 13C2     |          |          |          |
| 2221424-1 | SZ3, Rec,121/150/59/11Q11/11Q11/6Q6,NG      | 150      | 150      | 59       | 11Q11    | 11Q11    | 6Q6      |
| 2221473-1 | SZ1, Rec Assy,30T2/60/4,SZ12                | 30T2     | 60       | C4       |          |          |          |
| 2221549-2 | ARINC600,RCPT ASSY,SZ2,60/60/100, NG        | 60       | 60       | 100      |          |          |          |
| 2221614-2 | SZ3, Rec,10T10/121/100/121/121/13C2,NG      | 10T10    | 121      | 100      | 121      | 121      | 13C2     |
| 2221825-1 | SZ2, Rec. Assy,150/126/100,NG               | 150      | 126      | 100      |          |          |          |
| 2221902-1 | SZ1, Rec. Assy,60/60/5C2                    | 60       | 60       | 5C2      |          |          |          |
| 2221904-1 | SZ2, Rec. Assy,150/150/68Q2                 | 150      | 150      | 68Q2     |          |          |          |
| 2221905-1 | SZ2, Rec. Assy,150/150/85                   | 150      | 150      | 85       |          |          |          |
| 2221906-1 | SZ2, Rec. Assy,150/150/13C2                 | 150      | 150      | 13C2     |          |          |          |
| 2221908-1 | SZ2, Rec. Assy,150/150/13C2                 | 150      | 150      | 13C2     |          |          |          |
| 2221951-3 | SZ2, Rec. Assy,150/121/13C2 NG              | 150      | 121      | 13C2     |          |          |          |
| 2221968-2 | A600, Rec. Assy,SZ2, (C4/120T2/13C2), NG    | C4       | 120T2    | 13C2     |          |          |          |
| 2221981-1 | SZ3, REC, 150/150/13C2/150/150/68Q2, NG     | 150      | 150      | 13C2     | 150      | 150      | 68Q2     |
| 2286064-1 | ARINC600 RECEPT ASSY 150/150/13C2           | 150      | 150      | 13C2     |          |          |          |
| 2286150-1 | 120T2/11Q11/11Q2 RECEPT                     | 120T2    | 11Q11    | 11Q2     |          |          |          |
| 2286395-1 | ARINC600 RECEPT 121/150/6Q6                 | 121      | 150      | 6Q6      |          |          |          |
| 2286543-1 | 150/110/11Q2 SELECT LOAD                    | 150      | 110      | 11Q2     |          |          |          |



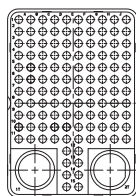
60 pos



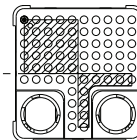
150 pos



100 pos



120 T2



68Q2

## Ordering Information

### Descriptive Part Numbering System

Use this guide to construct descriptive part numbers for ARINC 600 Connectors. Consult the referenced pages for additional information.

#### Materials

**Shell** — Die cast aluminum or machined aluminum per ASTM-B-85

**Insert Retention Plates** — Aluminum alloy

**Finish** — Chemical conversion coating per MIL-C-5541, Class 1A or 3 or electroless nickel per MIL-C-26074, Class 3 or 4, Grade B

**Screws and Lockwashers** — Steel with chromate over zinc or stainless steel

**Polarizing Keyways** — Zinc alloy

**Polarizing Posts** — Aluminum alloy or stainless steel

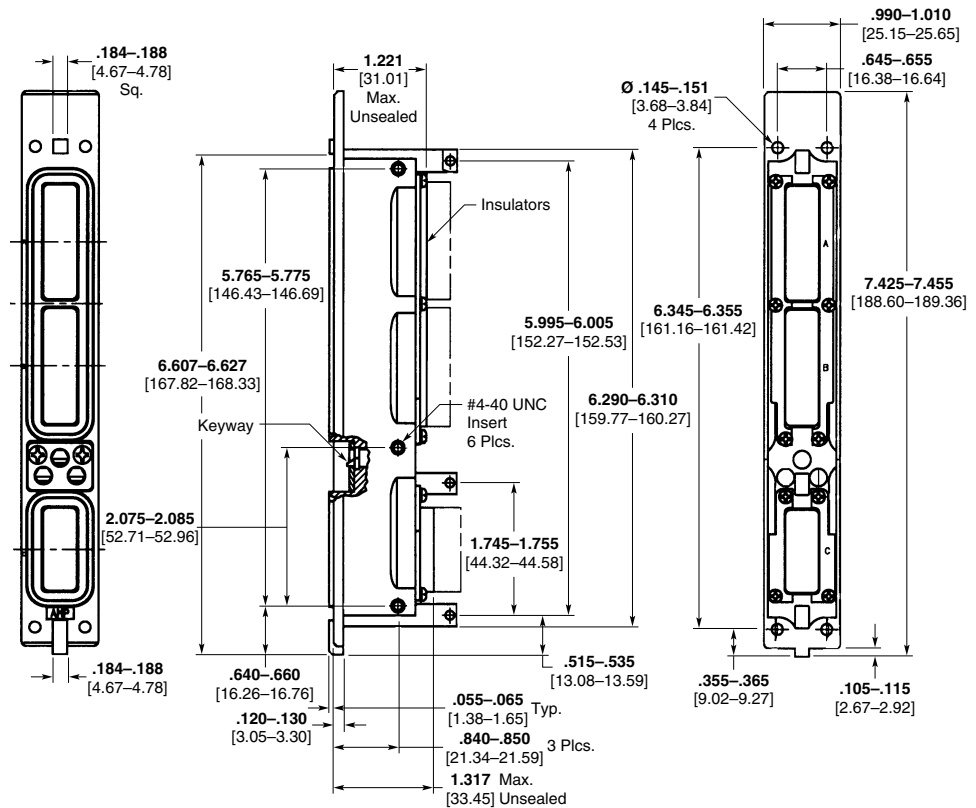
**Insulators** — Thermoset or Thermoplastic

### Sample Descriptive Part Number

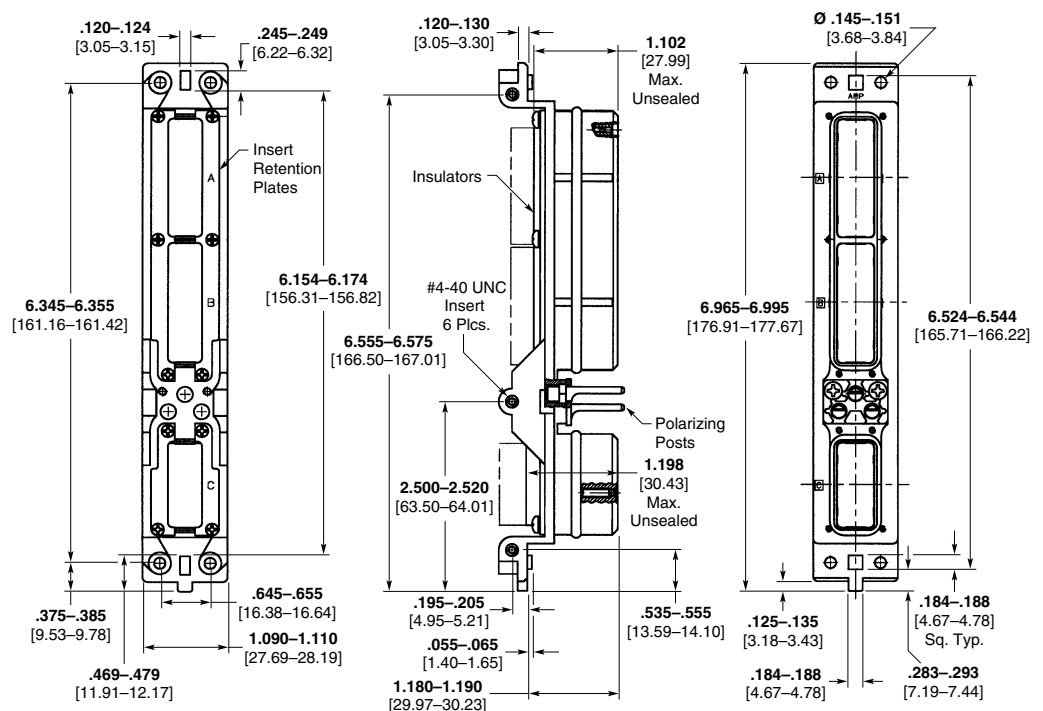
| NIC66                                                                                              | E                                                                                                                                                                                                                                                                                                                                                                                            | 11                                                                                                                                                                                                                                                                                                                                                                                                                                      | A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 01                                                                | AA                                                                                                                                                                                                                                                                                                                | 1                                                                                                                                                                                                                                                                                                                  |
|----------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Series Designation<br>All ARINC 600 Connectors (For "Single Mod" ARINC Connectors, see page 4-28.) | Shell Size/Plating<br>(See pages 4-6 through 4-9)<br>Shells With Chromate Conversion Coating<br>E—Size 1 Receptacle<br>F—Size 1 Plug<br>G—Size 2 Receptacle<br>H—Size 2 Plug<br>J—Size 3 Receptacle<br>K—Size 3 Plug<br>Shells With Electroless Nickel Plating<br>EN—Size 1 Receptacle<br>FN—Size 1 Plug<br>GN—Size 2 Receptacle<br>HN—Size 2 Plug<br>JN—Size 3 Receptacle<br>KN—Size 3 Plug | Contact Inserts & Arrangement Codes<br>(See pages 4-10 through 4-13) Describes size, number of contacts, style of contacts and arrangement of inserts. Insert styles are further defined by both <b>Class</b> and <b>Contact Style/Shell Modifications</b> below. Insert arrangement codes are not defined for connectors using either Quadrax or Expanded Beam Fiber Optic inserts. Contact TE Connectivity for specific part numbers. | Class<br>A—Nonenvironmental, rear release (unsealed inserts)<br>B—Environmental, rear release (sealed inserts)<br>C—Environmental, rear release without O-ring or sealant around inserts (sealed inserts)<br>F—Class C with cantilever style EMI/grounding spring (plug connectors only)<br>G—Class A with cantilever style EMI/grounding spring (plug connectors only)<br>H—Class C with canted coil style EMI/grounding spring (plug connectors only)<br>J—Class A with canted coil style EMI/grounding spring (plug connectors only)<br>FA—Nonenvironmental, front release/remove size 22 contacts (other contact sizes rear release/remove)<br>FF—Nonenvironmental, all contact sizes front release/remove except size 1 COAX remains rear removal | Keying<br>(See pages 4-15 and 4-16) Describes arrangement of keys | Contact Style/Shell Modifications<br>(See pages 4-17 and 4-18) Describes connector mounting configuration and contact style. The insert style is further modified by the contact style specified. Even when the connectors are ordered unloaded, the appropriate code must be used so that contacts fit properly. | Contact Loading<br>0—Contacts included with connector, as indicated in contact style code above (no digit in this space also indicates connector includes contacts). COAXICON contacts must always be ordered separately.<br>1—Contacts not included with connector; must be ordered separately by TE Part Number. |

## Shell Size 1

### Receptacle

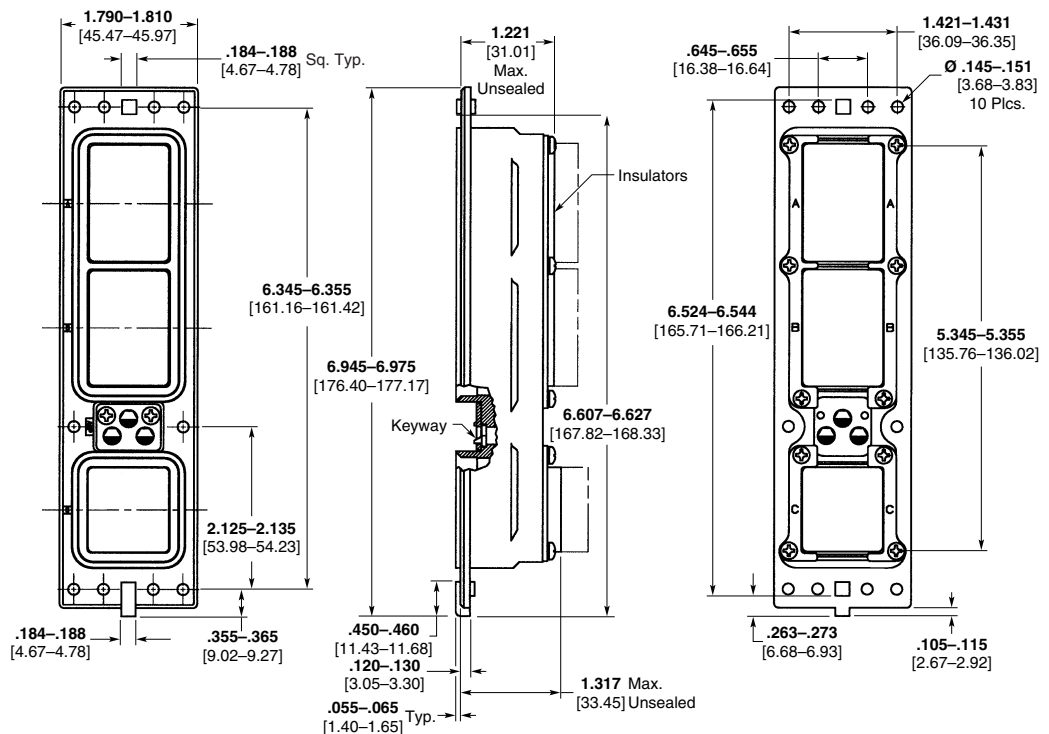


### Plug

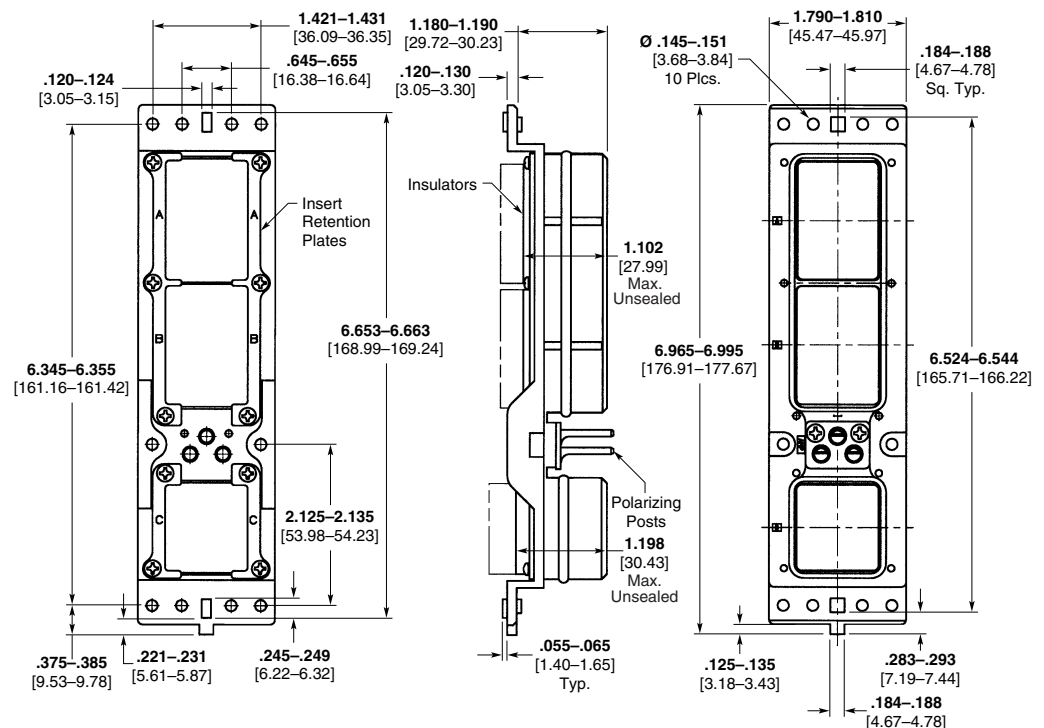


## Shell Size 2

### Receptacle

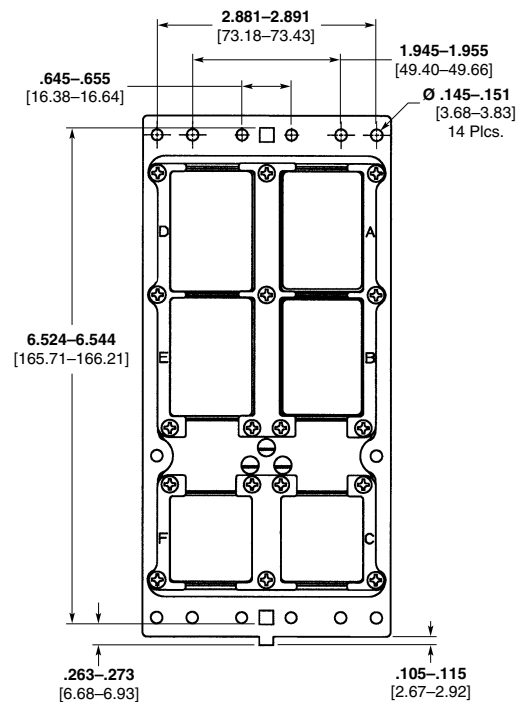
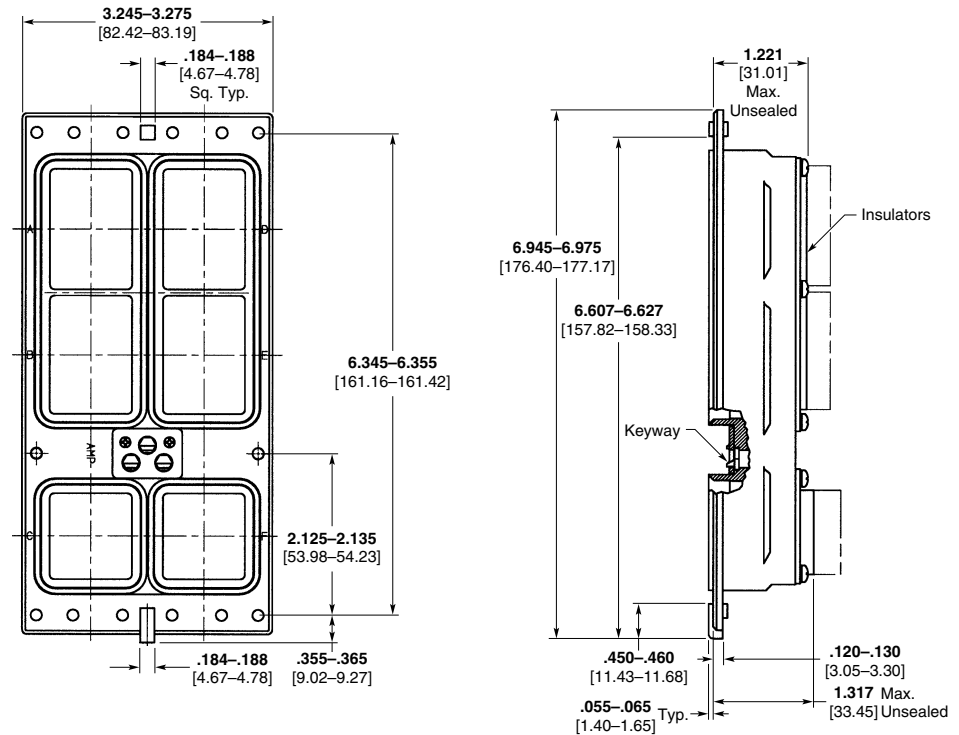


### Plug



## Shell Size 3

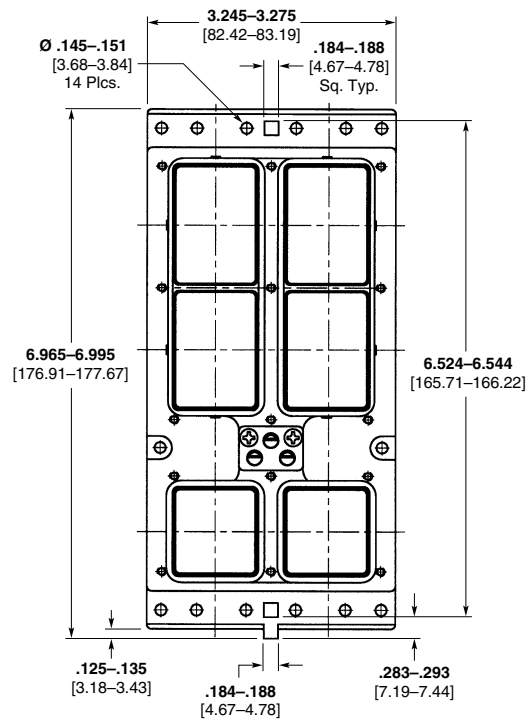
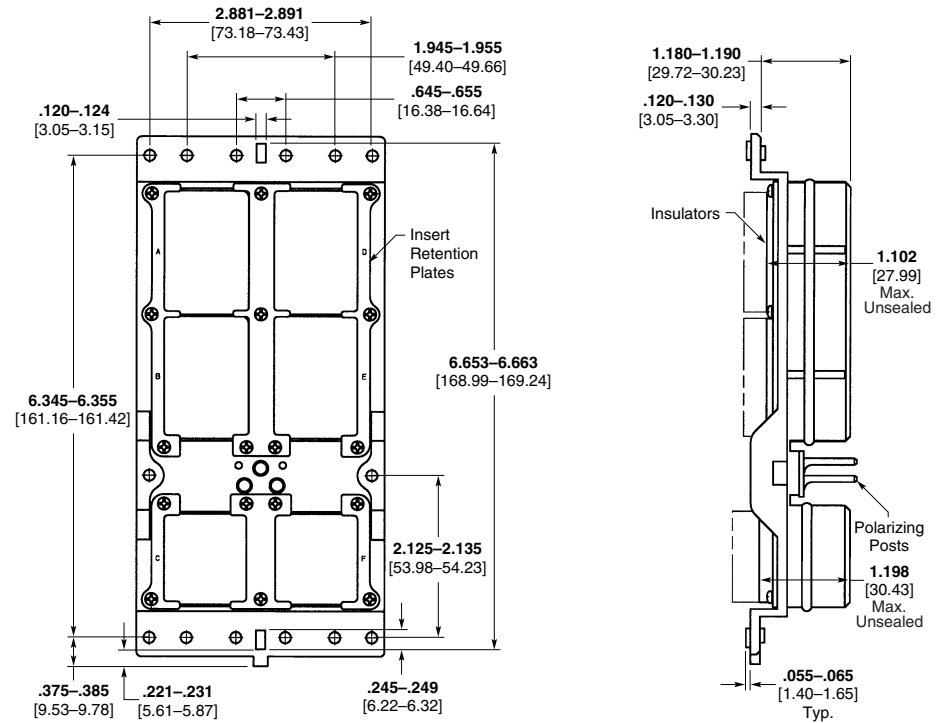
### Receptacle





### Shell Size 3 (Continued)

#### Plug

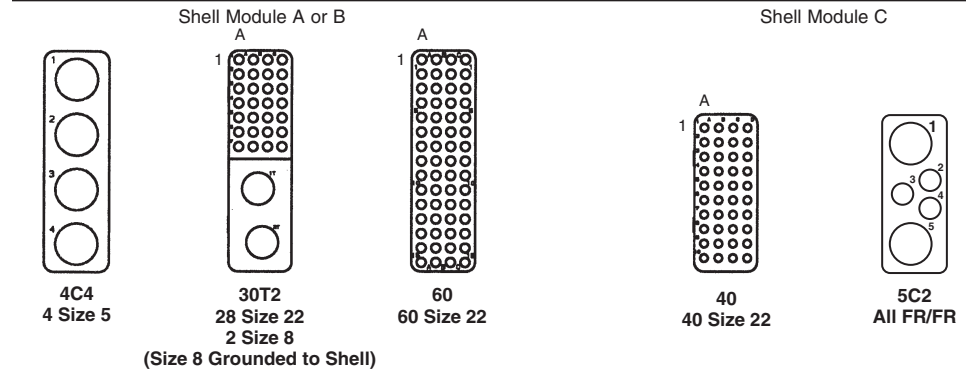
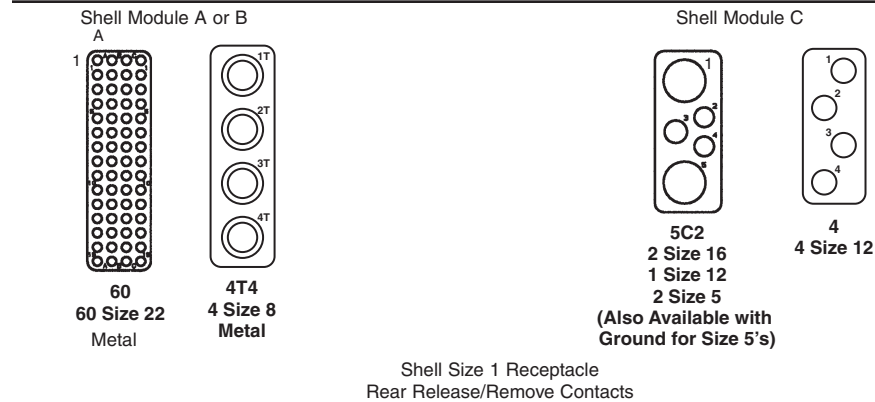
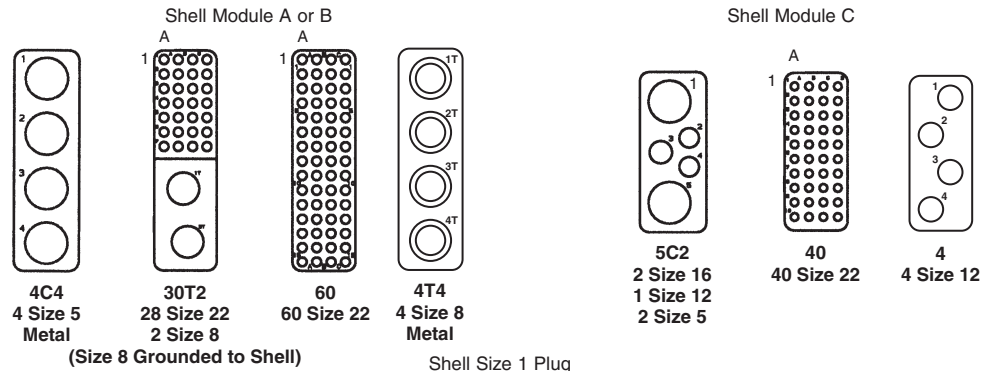




## Contact Inserts and Arrangement Codes

### Shell Size 1

**Note:** For Expanded Beam Fiber Optic Inserts, see page 4-14.



| Shell Size | Arrangement Code | Module A | Module B | Module C |
|------------|------------------|----------|----------|----------|
| 1          | 11               | 60       | 60       | 5C2      |
| 1          | 12               | 60       | BLANK    | BLANK    |
| 1          | 13               | BLANK    | 60       | BLANK    |
| 1          | 14               | BLANK    | 60       | 5C2      |
| 1          | 15               | 60       | 60       | 40       |
| 1          | 16               | OPEN     | 60       | 5C2      |
| 1          | 71               | 30T2     | 30T2     | 40       |
| 1          | 102              | 60       | 60       | OPEN     |
| 1          | 104              | 60       | OPEN     | 5C2      |
| 1          | 105              | OPEN     | OPEN     | 5C2      |
| 1          | 106              | 60       | 4C4      | 40       |
| 1          | 107              | 30T2     | 30T2     | 40       |
| 1          | 110              | 60       | 60       | 4        |
| 1          | 111              | OPEN     | 30T2     | 40       |
| 1          | 112              | 60       | 4C4      | 5C2      |
| 1          | 113              | 60       | OPEN     | OPEN     |

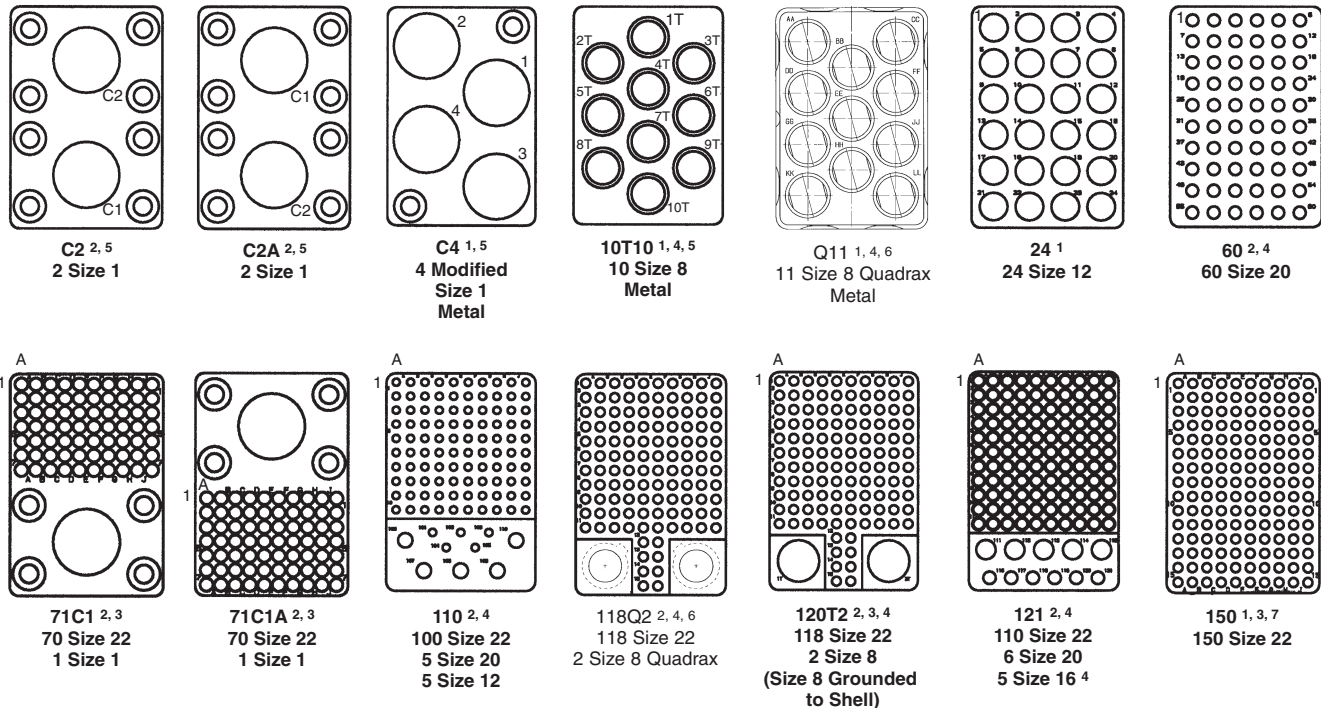
Arrangement codes not shown are available upon request. Contact TE Connectivity.

## Contact Inserts and Arrangement Codes (Continued)

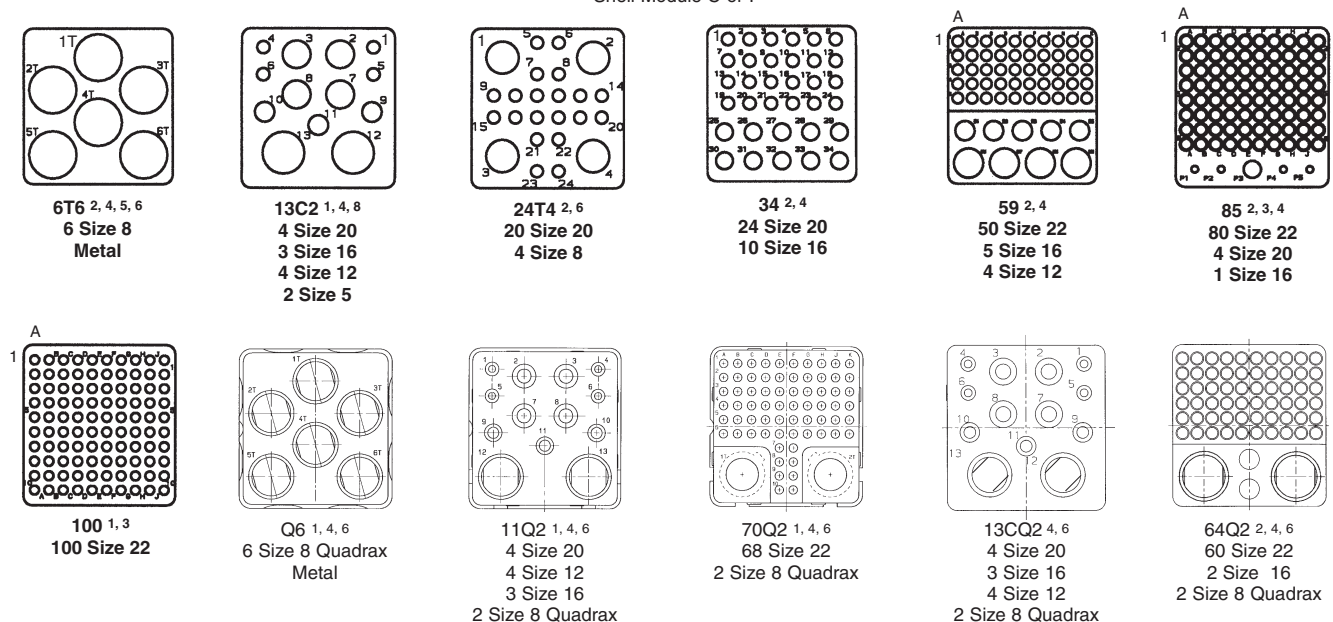
### Shell Size 2 or 3

**Note:** For ARINC 801 Inserts and Expanded Beam Fiber Optic Inserts, see page 4-14.

Shell Module A, B, D or E



Shell Module C or F



- Notes:**
1. Available for plug or receptacle with rear release/remove contacts.
  2. Available for plug only with rear release/remove contacts.
  3. Available for receptacle only with front release/remove size 22 contacts and rear release/remove other size contacts.
  4. Available for receptacle only with all contacts front release/remove.

5. Available for receptacle only with all contacts front release/rear remove.
6. Standard size 8 contacts will not fit in Quadrax size 8 inserts. Also, Quadrax size 8 contacts will not fit into standard size 8 inserts.
7. Available for plug with front release/remove contacts.
8. Available with grounding for size 5's.

**Note:** Engaging faces of receptacle inserts are shown

## Contact Inserts and Arrangement Codes (Continued)

### Shell Size 2

| Shell Size | Arrangement Code | Module A | Module B | Module C |
|------------|------------------|----------|----------|----------|
| 2          | 20               | 71C1A    | 71C1     | 13C2     |
| 2          | 21               | 150      | 150      | 13C2     |
| 2          | 22               | 71C1     | 150      | 13C2     |
| 2          | 23               | 71C1     | 71C1     | 13C2     |
| 2          | 25               | 150      | 71C1     | 13C2     |
| 2          | 26               | 150      | 150      | 100      |
| 2          | 27               | C2       | 71C1     | 13C2     |
| 2          | 28               | C2       | 71C1A    | 85       |
| 2          | 29               | 150      | 150      | BLANK    |
| 2          | 30               | 71C1A    | 71C1A    | 13C2     |
| 2          | 50               | 71C1     | 71C1A    | 13C2     |
| 2          | 51               | BLANK    | 150      | 13C2     |
| 2          | 52               | 150      | 150      | 85       |
| 2          | 53               | C4       | 150      | 13C2     |
| 2          | 54               | 150      | 73C3     | 13C2     |
| 2          | 55               | 150      | BLANK    | 13C2     |
| 2          | 56               | 150      | C2       | 13C2     |
| 2          | 57               | 24       | 150      | 13C2     |
| 2          | 58               | 24       | 24       | 6T6      |
| 2          | 59               | C4       | C4       | 13C2     |
| 2          | 72               | 120T2    | 120T2    | 100      |
| 2          | 74               | 121      | 121      | 6T6      |
| 2          | 75               | 121      | 10T10    | 6T6      |
| 2          | 80               | 120T2    | 150      | 100      |
| 2          | 81               | 120T2    | 120T2    | 6T6      |
| 2          | 82               | 71C1A    | 150      | 13C2     |
| 2          | 83               | 150      | C4       | 34       |
| 2          | 84               | C4       | C4       | 34       |
| 2          | 85               | 150      | 150      | 34       |
| 2          | 86               | 150      | 121      | 100      |
| 2          | 207              | 71C1     | 150      | 100      |
| 2          | 208              | 150      | 71C1     | 100      |
| 2          | 209              | 71C1     | 71C1     | 100      |
| 2          | 212              | 71C1     | 71C1     | OPEN     |
| 2          | 216              | C2A      | 71C1A    | 85       |
| 2          | 220              | 71C1     | C2A      | 85       |
| 2          | 234              | 60       | 60       | 13C2     |
| 2          | 237              | 150      | 120T2    | 100      |
| 2          | 240              | 120T2    | 10T10    | 13C2     |
| 2          | 241              | 150      | 150      | 6T6      |

| Shell Size | Arrangement Code | Module A | Module B | Module C |
|------------|------------------|----------|----------|----------|
| 2          | 242              | 150      | 10T10    | 13C2     |
| 2          | 245              | 71C1     | 71C1     | 85       |
| 2          | 253              | C2A      | 150      | 13C2     |
| 2          | 254              | C2A      | 71C1A    | 100      |
| 2          | 255              | C2A      | 71C1A    | 13C2     |
| 2          | 256              | C2A      | 71C1     | 13C2     |
| 2          | 257              | C2A      | C2A      | 13C2     |
| 2          | 259              | C4       | C4       | 85       |
| 2          | 262              | 150      | 60       | 34       |
| 2          | 266              | 121      | 121      | 85       |
| 2          | 268              | 60       | 121      | 59       |
| 2          | 269              | 10T10    | 150      | 13C2     |
| 2          | 270              | 150      | 150      | 59       |
| 2          | 271              | C4       | 120T2    | 13C2     |
| 2          | 272              | 10T10    | 10T10    | 85       |
| 2          | 273              | 121      | 60       | 6T6      |
| 2          | 275              | 121      | 60       | 34       |
| 2          | 279              | 150      | 121      | 13C2     |
| 2          | 284              | 120T2    | 120T2    | 13C2     |
| 2          | 286              | 60       | 60       | 34       |
| 2          | 287              | 150      | 121      | 59       |
| 2          | 288              | 150      | 11Q11    | 13C2     |
| 2          | 289              | C4       | 60       | 100      |
| 2          | 290              | 150      | 150      | 68Q2     |
| 2          | 291              | 121      | 121      | 59       |
| 2          | 292              | 121      | 121      | 6Q6      |
| 2          | 293              | 121      | 11Q11    | 6Q6      |
| 2          | 294              | C4       | 11Q11    | 59       |
| 2          | 295              | 11Q11    | 150      | 13C2     |
| 2          | 296              | 11Q11    | 11Q11    | 11Q2     |
| 2          | 297              | 11Q11    | 60       | 68Q2     |
| 2          | 298              | 120T2    | BLANK    | 85       |
| 2          | 299              | F36      | 150      | 85       |
| 2          | 300              | 120T2    | 120T2    | 11Q2     |
| 2          | 401              | 150      | 100      | 11Q2     |
| 2          | 402              | 150      | 60       | 100      |
| 2          | 403              | 71C1A    | 118Q2    | 12F5C2   |
| 2          | 404              | 11Q11    | 150      | 59       |
| 2          | 405              | 24       | 24       | 100      |
| 2          | 406              | 120T2    | 150      | 13C2     |

**Note:** Arrangement codes not shown are available upon request. Contact TE Connectivity.

## Contact Inserts and Arrangement Codes (Continued)

### Shell Size 3

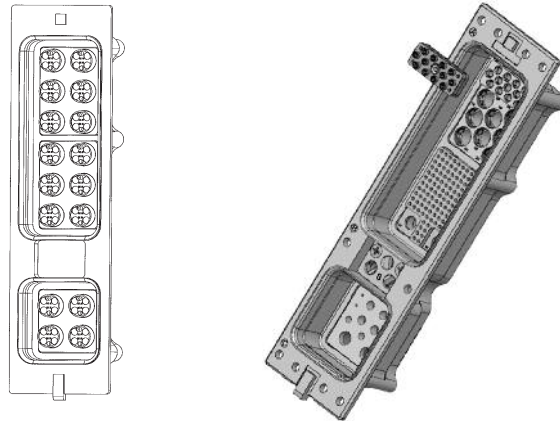
| Shell Size | Arrangement Code | Module A | Module B | Module C | Module D | Module E | Module F |
|------------|------------------|----------|----------|----------|----------|----------|----------|
| 3          | 31               | 150      | 150      | 13C2     | 150      | 150      | 13C2     |
| 3          | 32               | 150      | 150      | 100      | 150      | 150      | 13C2     |
| 3          | 33               | 150      | 150      | 13C2     | 150      | 150      | 100      |
| 3          | 34               | 150      | 150      | 100      | 150      | 150      | 100      |
| 3          | 36               | C4       | C4       | 13C2     | BLANK    | 150      | 100      |
| 3          | 37               | 150      | 150      | 85       | 150      | 150      | 85       |
| 3          | 76               | 120T2    | 150      | 34       | 120T2    | 150      | 34       |
| 3          | 77               | 121      | 121      | 6T6      | 121      | 121      | 6T6      |
| 3          | 306              | 150      | 71C1     | 13C2     | 150      | 71C1     | 13C2     |
| 3          | 307              | 71C1     | 71C1     | 13C2     | 71C1     | 71C1     | 13C2     |
| 3          | 308              | C2A      | C2A      | 13C2     | C2A      | 150      | 100      |
| 3          | 309              | 150      | 150      | 13C2     | 150      | 71C1     | 100      |
| 3          | 319              | 121      | 120T2    | 6T6      | 121      | 120T2    | 6T6      |
| 3          | 320              | 150      | 60       | 100      | 150      | 60       | 100      |
| 3          | 322              | 150      | 150      | 100      | 150      | 150      | 34       |
| 3          | 323              | 150      | 150      | 100      | 71C1     | 71C1     | 100      |
| 3          | 325              | 150      | 150      | 13C2     | C2A      | C2A      | 13C2     |
| 3          | 326              | 150      | 71C1     | 100      | 150      | 150      | 100      |
| 3          | 327              | 150      | 71C1     | 100      | 150      | 150      | 13C2     |
| 3          | 328              | C2A      | C2A      | 13C2     | 150      | 150      | 13C2     |
| 3          | 331              | 71C1     | 150      | 100      | 150      | 150      | 100      |
| 3          | 332              | C4       | C4       | 13C2     | C4       | C4       | 85       |
| 3          | 333              | 71C1     | 71C1     | 100      | 71C1     | 71C1     | 100      |
| 3          | 335              | 71C1     | C4       | 100      | 71C1     | C4       | 100      |
| 3          | 338              | C2A      | 150      | 100      | 150      | 150      | 100      |
| 3          | 339              | C2A      | C2A      | 100      | C2A      | C2A      | 100      |
| 3          | 340              | C2A      | C2A      | 13C2     | C2A      | C2A      | 13C2     |
| 3          | 341              | C4       | C4       | 100      | C4       | C4       | 100      |
| 3          | 342              | C4       | C4       | 13C2     | C4       | C4       | 13C2     |
| 3          | 344              | 24       | 150      | 13C2     | 24       | 150      | 13C2     |
| 3          | 346              | 150      | 24       | 100      | 150      | 150      | 34       |
| 3          | 347              | 150      | 150      | 6T6      | 121      | 10T10    | 13C2     |
| 3          | 348              | 150      | 150      | 11Q2     | 150      | 150      | 11Q2     |
| 3          | 349              | 150      | 150      | 13C2     | 120T2    | 120T2    | 100      |
| 3          | 350              | C4       | C4       | 13C2     | 150      | 150      | 100      |
| 3          | 351              | 150      | 150      | 13C2     | 150      | 6MS      | BLANK    |
| 3          | 352              | 150      | 150      | 59       | 150      | 6MS      | BLANK    |
| 3          | 353              | 150      | 150      | 59       | 150      | 6MS      | 100      |
| 3          | 354              | 150      | 150      | 59       | 150      | 150      | 59       |
| 3          | 355              | 150      | 150      | 59       | 150      | 150      | 100      |
| 3          | 356              | 150      | 150      | 34       | 150      | 150      | 34       |
| 3          | 357              | 24       | 24       | 34       | 150      | 150      | 100      |
| 3          | 358              | C4       | 120T2    | 100      | 150      | 150      | 13C2     |
| 3          | 359              | 11Q11    | 11Q11    | 6Q6      | 11Q11    | 11Q11    | 6Q6      |
| 3          | 360              | 11Q11    | 11Q11    | 100      | 11Q11    | 121      | 6Q6      |
| 3          | 361              | 11Q11    | 150      | 11Q2     | 150      | 150      | 68Q2     |
| 3          | 362              | 110      | 11Q11    | 6Q6      | 24       | 150      | 6Q6      |
| 3          | 363              | 150      | 120T2    | 100      | 150      | 120T2    | 59       |
| 3          | 364              | C4       | 118Q2    | 11Q2     | C4       | 118Q2    | 11Q2     |
| 3          | 365              | 11Q11    | 11Q11    | 85       | 11Q11    | 11Q11    | 85       |

**Note:** Arrangement codes not shown are available upon request. Contact TE Connectivity.

## Fiber Optic Inserts and Cavity Reducers

Inserts available to accept TE Connectivity Mini-Expanded Beam Fiber Optic Cable Assemblies and ARINC 801 1.25mm Optical Termini. Custom design configurations can be provided.

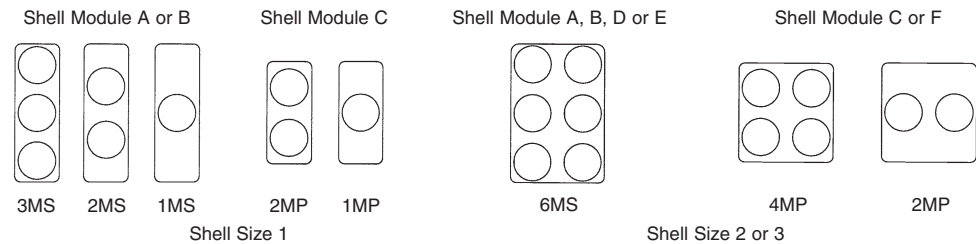
Contact TE for more information about Fiber Optic Connectors and Cable Assemblies, see Section 3.



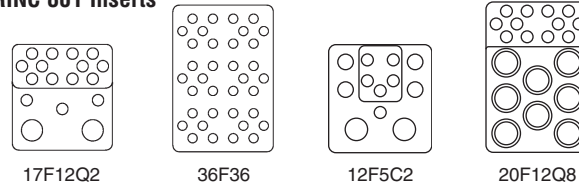
### Product Facts

- For Mini-Expanded Beam inserts
- Insert holders designed to ARINC 600, Supplement 18 or to specific customer needs
- For use in 100 base-FX Ethernet LAN applications per ARINC 664 and 763
- Drop-in insert holders utilize standard ARINC 600 retainers
- Sealing available

### Mini-Expanded Beam



### ARINC 801 Inserts



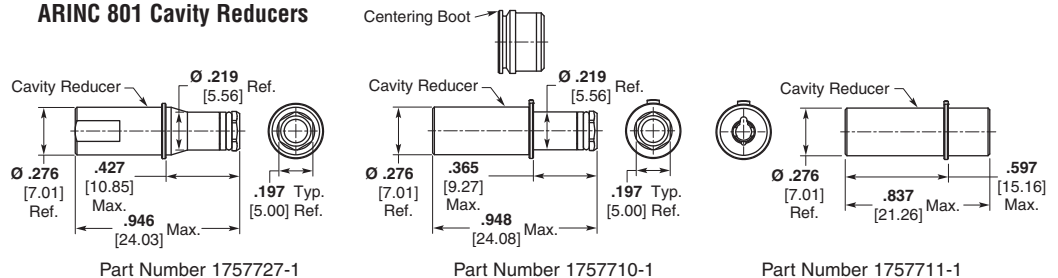
ARINC 801 Inserts and Cavity Reducers accept ARINC 801 Fiber Optic Termini.

### ARINC 801 Optical Termini

#### Product Facts

- Optical termini for use with GPR, ARINC 600, circular MIL-DTL-38999 connectors
- Industry Standard 1.25mm ceramic ferrule
- Compatible with 1.5-2.2mm Tight jacket and loose tube cable construction:
  - MT - Tight jacket cable
  - ML - Loose tube cable
- SM / MM versions

### ARINC 801 Cavity Reducers



| Size 8 Quadrx                                                        | Part Number | ARINC 801 Cavity Reducer                           |
|----------------------------------------------------------------------|-------------|----------------------------------------------------|
| Pin Quadrx adapter for ARINC 801 termini in Quadrx FR type cavity    | 1757727-1   | Quadrx cavity reducer (FR/FR) for receptacle shell |
| Pin Quadrx adapter for ARINC 801 termini in Quadrx RR type cavity    | 1757710-1   | Quadrx cavity reducer (RR/RR) for receptacle shell |
| Socket Quadrx adapter for ARINC 801 termini in Quadrx RR type cavity | 1757711-1   | Quadrx cavity reducer (RR/RR) for plug shell       |

### ARINC 801 Optical Termini Part Numbers

| Cable Dia.   | Cable Structure<br>ML (loose & tight)<br>MT (ultra tight) | S/M Fiber<br>125,3 µm<br>PC/UPC | S/M Fiber<br>125,3 µm<br>APC | M/M Fiber<br>128 µm<br>PC |
|--------------|-----------------------------------------------------------|---------------------------------|------------------------------|---------------------------|
| 0.9mm Buffer | —                                                         | *                               | *                            | *                         |
| 1.5 - 2.2mm  | ML                                                        | 1918614-1                       | 1918616-1                    | 1828199-1                 |
| 1.5 - 2.2mm  | MT                                                        | 1918615-1                       | 1918617-1                    | 1828200-1                 |

Consult your local TE Sales Representative for additional options.

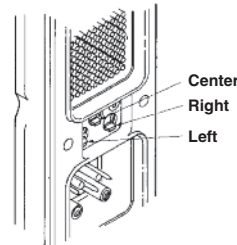
\* Contact TE for availability.

## Keying

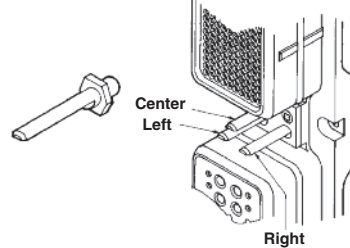
### Notes:

1. Darkened portion of diagram indicates extended post of plug key; light portion indicates key hole in receptacle keyway.
2. If the keying code is omitted, keying is assembled in the 01 arrangement; the keying code is not stamped on the connector.
3. If the keying code is 00, keying is supplied unassembled.
4. Diagrams show mating face of connector, "Top" up.

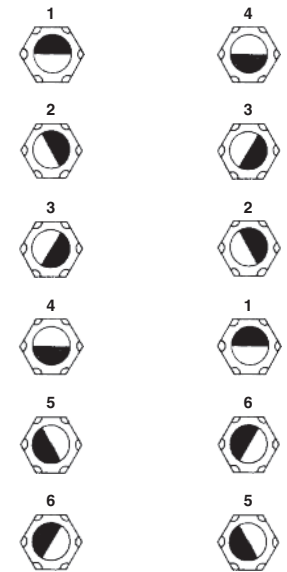
### Receptacle



### Plug



Extended Post of Plug Key → Mates to → Key Hole in Receptacle



| Keying Components    | Quantity Required Per Connector | Part Numbers |           |
|----------------------|---------------------------------|--------------|-----------|
|                      |                                 | Receptacle   | Plug      |
| Male Key Post        | 3                               | —            | 1218693-2 |
| Female Keyway        | 3                               | 208019-1     | —         |
| Plate                | 1                               | 1218692-1    | 1218692-1 |
| Screw                | 2                               | 208021-1     | 208021-1  |
| Kit Containing Above | 1                               | 448013-1     | 448012-1  |

| Keying Code | Plug      |             |            | Receptacle  |               |              |
|-------------|-----------|-------------|------------|-------------|---------------|--------------|
|             | Left Post | Center Post | Right Post | Left Keyway | Center Keyway | Right Keyway |
| 00          | —         | —           | —          | —           | —             | —            |
| 01          | 1         | 1           | 1          | 4           | 4             | 4            |
| 02          | 2         | 1           | 1          | 4           | 4             | 3            |
| 03          | 3         | 1           | 1          | 4           | 4             | 2            |
| 04          | 4         | 1           | 1          | 4           | 4             | 1            |
| 05          | 5         | 1           | 1          | 4           | 4             | 6            |
| 06          | 6         | 1           | 1          | 4           | 4             | 5            |
| 07          | 1         | 1           | 6          | 5           | 4             | 4            |
| 08          | 2         | 1           | 6          | 5           | 4             | 3            |
| 09          | 3         | 1           | 6          | 5           | 4             | 2            |
| 10          | 4         | 1           | 6          | 5           | 4             | 1            |
| 11          | 5         | 1           | 6          | 5           | 4             | 6            |
| 12          | 6         | 1           | 6          | 5           | 4             | 5            |
| 13          | 1         | 1           | 5          | 6           | 4             | 4            |
| 14          | 2         | 1           | 5          | 6           | 4             | 3            |
| 15          | 3         | 1           | 5          | 6           | 4             | 2            |
| 16          | 4         | 1           | 5          | 6           | 4             | 1            |
| 17          | 5         | 1           | 5          | 6           | 4             | 6            |
| 18          | 6         | 1           | 5          | 6           | 4             | 5            |
| 19          | 1         | 1           | 4          | 1           | 4             | 4            |
| 20          | 2         | 1           | 4          | 1           | 4             | 3            |
| 21          | 3         | 1           | 4          | 1           | 4             | 2            |
| 22          | 4         | 1           | 4          | 1           | 4             | 1            |
| 23          | 5         | 1           | 4          | 1           | 4             | 6            |
| 24          | 6         | 1           | 4          | 1           | 4             | 5            |
| 25          | 1         | 1           | 3          | 2           | 4             | 4            |
| 26          | 2         | 1           | 3          | 2           | 4             | 3            |
| 27          | 3         | 1           | 3          | 2           | 4             | 2            |
| 28          | 4         | 1           | 3          | 2           | 4             | 1            |
| 29          | 5         | 1           | 3          | 2           | 4             | 6            |
| 30          | 6         | 1           | 3          | 2           | 4             | 5            |
| 31          | 1         | 1           | 2          | 3           | 4             | 4            |
| 32          | 2         | 1           | 2          | 3           | 4             | 3            |
| 33          | 3         | 1           | 2          | 3           | 4             | 2            |
| 34          | 4         | 1           | 2          | 3           | 4             | 1            |
| 35          | 5         | 1           | 2          | 3           | 4             | 6            |
| 36          | 6         | 1           | 2          | 3           | 4             | 5            |
| 37          | 1         | 2           | 1          | 4           | 3             | 4            |
| 38          | 2         | 2           | 1          | 4           | 3             | 3            |

| Keying Code | Plug      |             |            | Receptacle  |               |              |
|-------------|-----------|-------------|------------|-------------|---------------|--------------|
|             | Left Post | Center Post | Right Post | Left Keyway | Center Keyway | Right Keyway |
| 39          | 3         | 2           | 1          | 4           | 3             | 2            |
| 40          | 4         | 2           | 1          | 4           | 3             | 1            |
| 41          | 5         | 2           | 1          | 4           | 3             | 6            |
| 42          | 6         | 2           | 1          | 4           | 3             | 5            |
| 43          | 1         | 2           | 6          | 5           | 3             | 4            |
| 44          | 2         | 2           | 6          | 5           | 3             | 3            |
| 45          | 3         | 2           | 6          | 5           | 3             | 2            |
| 46          | 4         | 2           | 6          | 5           | 3             | 1            |
| 47          | 5         | 2           | 6          | 5           | 3             | 6            |
| 48          | 6         | 2           | 6          | 5           | 3             | 5            |
| 49          | 1         | 2           | 5          | 6           | 3             | 4            |
| 50          | 2         | 2           | 5          | 6           | 3             | 3            |
| 51          | 3         | 2           | 5          | 6           | 3             | 2            |
| 52          | 4         | 2           | 5          | 6           | 3             | 1            |
| 53          | 5         | 2           | 5          | 6           | 3             | 6            |
| 54          | 6         | 2           | 5          | 6           | 3             | 5            |
| 55          | 1         | 2           | 4          | 1           | 3             | 4            |
| 56          | 2         | 2           | 4          | 1           | 3             | 3            |
| 57          | 3         | 2           | 4          | 1           | 3             | 2            |
| 58          | 4         | 2           | 4          | 1           | 3             | 1            |
| 59          | 5         | 2           | 4          | 1           | 3             | 6            |
| 60          | 6         | 2           | 4          | 1           | 3             | 5            |
| 61          | 1         | 2           | 3          | 2           | 3             | 4            |
| 62          | 2         | 2           | 3          | 2           | 3             | 3            |
| 63          | 3         | 2           | 3          | 2           | 3             | 2            |
| 64          | 4         | 2           | 3          | 2           | 3             | 1            |
| 65          | 5         | 2           | 3          | 2           | 3             | 6            |
| 66          | 6         | 2           | 3          | 2           | 3             | 5            |
| 67          | 1         | 2           | 2          | 3           | 3             | 4            |
| 68          | 2         | 2           | 2          | 3           | 3             | 3            |
| 69          | 3         | 2           | 2          | 3           | 3             | 2            |
| 70          | 4         | 2           | 2          | 3           | 3             | 1            |
| 71          | 5         | 2           | 2          | 3           | 3             | 6            |
| 72          | 6         | 2           | 2          | 3           | 3             | 5            |
| 73          | 1         | 3           | 1          | 4           | 2             | 4            |
| 74          | 2         | 3           | 1          | 4           | 2             | 3            |
| 75          | 3         | 3           | 1          | 4           | 2             | 2            |
| 76          | 4         | 3           | 1          | 4           | 2             | 1            |
| 77          | 5         | 3           | 1          | 4           | 2             | 6            |

### Keying (Continued)

| Keying Code | Plug      |             |            | Receptacle  |               |              |
|-------------|-----------|-------------|------------|-------------|---------------|--------------|
|             | Left Post | Center Post | Right Post | Left Keyway | Center Keyway | Right Keyway |
| 78          | 6         | 3           | 1          | 4           | 2             | 5            |
| 79          | 1         | 3           | 6          | 5           | 2             | 4            |
| 80          | 2         | 3           | 6          | 5           | 2             | 3            |
| 81          | 3         | 3           | 6          | 5           | 2             | 2            |
| 82          | 4         | 3           | 6          | 5           | 2             | 1            |
| 83          | 5         | 3           | 6          | 5           | 2             | 6            |
| 84          | 6         | 3           | 6          | 5           | 2             | 5            |
| 85          | 1         | 3           | 5          | 6           | 2             | 4            |
| 86          | 2         | 3           | 5          | 6           | 2             | 3            |
| 87          | 3         | 3           | 5          | 6           | 2             | 2            |
| 88          | 4         | 3           | 5          | 6           | 2             | 1            |
| 89          | 5         | 3           | 5          | 6           | 2             | 6            |
| 90          | 6         | 3           | 5          | 6           | 2             | 5            |
| 91          | 1         | 3           | 4          | 1           | 2             | 4            |
| 92          | 2         | 3           | 4          | 1           | 2             | 3            |
| 93          | 3         | 3           | 4          | 1           | 2             | 2            |
| 94          | 4         | 3           | 4          | 1           | 2             | 1            |
| 95          | 5         | 3           | 4          | 1           | 2             | 6            |
| 96          | 6         | 3           | 4          | 1           | 2             | 5            |
| 97          | 1         | 3           | 3          | 2           | 2             | 4            |
| 98          | 2         | 3           | 3          | 2           | 2             | 3            |
| 99          | 3         | 3           | 3          | 2           | 2             | 2            |
| 100         | 4         | 3           | 3          | 2           | 2             | 1            |
| 101         | 5         | 3           | 3          | 2           | 2             | 6            |
| 102         | 6         | 3           | 3          | 2           | 2             | 5            |
| 103         | 1         | 3           | 2          | 3           | 2             | 4            |
| 104         | 2         | 3           | 2          | 3           | 2             | 3            |
| 105         | 3         | 3           | 2          | 3           | 2             | 2            |
| 106         | 4         | 3           | 2          | 3           | 2             | 1            |
| 107         | 5         | 3           | 2          | 3           | 2             | 6            |
| 108         | 6         | 3           | 2          | 3           | 2             | 5            |
| 109         | 1         | 4           | 1          | 4           | 1             | 4            |
| 110         | 2         | 4           | 1          | 4           | 1             | 3            |
| 111         | 3         | 4           | 1          | 4           | 1             | 2            |
| 112         | 4         | 4           | 1          | 4           | 1             | 1            |
| 113         | 5         | 4           | 1          | 4           | 1             | 6            |
| 114         | 6         | 4           | 1          | 4           | 1             | 5            |
| 115         | 1         | 4           | 6          | 5           | 1             | 4            |
| 116         | 2         | 4           | 6          | 5           | 1             | 3            |
| 117         | 3         | 4           | 6          | 5           | 1             | 2            |
| 118         | 4         | 4           | 6          | 5           | 1             | 1            |
| 119         | 5         | 4           | 6          | 5           | 1             | 6            |
| 120         | 6         | 4           | 6          | 5           | 1             | 5            |
| 121         | 1         | 4           | 5          | 6           | 1             | 4            |
| 122         | 2         | 4           | 5          | 6           | 1             | 3            |
| 123         | 3         | 4           | 5          | 6           | 1             | 2            |
| 124         | 4         | 4           | 5          | 6           | 1             | 1            |
| 125         | 5         | 4           | 5          | 6           | 1             | 6            |
| 126         | 6         | 4           | 5          | 6           | 1             | 5            |
| 127         | 1         | 4           | 4          | 1           | 1             | 4            |
| 128         | 2         | 4           | 4          | 1           | 1             | 3            |
| 129         | 3         | 4           | 4          | 1           | 1             | 2            |
| 130         | 4         | 4           | 4          | 1           | 1             | 1            |
| 131         | 5         | 4           | 4          | 1           | 1             | 6            |
| 132         | 6         | 4           | 4          | 1           | 1             | 5            |
| 133         | 1         | 4           | 3          | 2           | 1             | 4            |
| 134         | 2         | 4           | 3          | 2           | 1             | 3            |
| 135         | 3         | 4           | 3          | 2           | 1             | 2            |
| 136         | 4         | 4           | 3          | 2           | 1             | 1            |
| 137         | 5         | 4           | 3          | 2           | 1             | 6            |
| 138         | 6         | 4           | 3          | 2           | 1             | 5            |
| 139         | 1         | 4           | 2          | 3           | 1             | 4            |
| 140         | 2         | 4           | 2          | 3           | 1             | 3            |
| 141         | 3         | 4           | 2          | 3           | 1             | 2            |
| 142         | 4         | 4           | 2          | 3           | 1             | 1            |
| 143         | 5         | 4           | 2          | 3           | 1             | 6            |
| 144         | 6         | 4           | 2          | 3           | 1             | 5            |
| 145         | 1         | 5           | 1          | 4           | 6             | 4            |
| 146         | 2         | 5           | 1          | 4           | 6             | 3            |
| 147         | 3         | 5           | 1          | 4           | 6             | 2            |

| Keying Code | Plug      |             |            | Receptacle  |               |              |
|-------------|-----------|-------------|------------|-------------|---------------|--------------|
|             | Left Post | Center Post | Right Post | Left Keyway | Center Keyway | Right Keyway |
| 148         | 4         | 5           | 1          | 4           | 6             | 1            |
| 149         | 5         | 5           | 1          | 4           | 6             | 6            |
| 150         | 6         | 5           | 1          | 4           | 6             | 5            |
| 151         | 1         | 5           | 6          | 5           | 6             | 4            |
| 152         | 2         | 5           | 6          | 5           | 6             | 3            |
| 153         | 3         | 5           | 6          | 5           | 6             | 2            |
| 154         | 4         | 5           | 6          | 5           | 6             | 1            |
| 155         | 5         | 5           | 6          | 5           | 6             | 6            |
| 156         | 6         | 5           | 6          | 5           | 6             | 5            |
| 157         | 1         | 5           | 5          | 6           | 6             | 4            |
| 158         | 2         | 5           | 5          | 6           | 6             | 3            |
| 159         | 3         | 5           | 5          | 6           | 6             | 2            |
| 160         | 4         | 5           | 5          | 6           | 6             | 1            |
| 161         | 5         | 5           | 5          | 6           | 6             | 6            |
| 162         | 6         | 5           | 5          | 6           | 6             | 5            |
| 163         | 1         | 5           | 4          | 1           | 6             | 4            |
| 164         | 2         | 5           | 4          | 1           | 6             | 3            |
| 165         | 3         | 5           | 4          | 1           | 6             | 2            |
| 166         | 4         | 5           | 4          | 1           | 6             | 1            |
| 167         | 5         | 5           | 4          | 1           | 6             | 6            |
| 168         | 6         | 5           | 4          | 1           | 6             | 5            |
| 169         | 1         | 5           | 3          | 2           | 6             | 4            |
| 170         | 2         | 5           | 3          | 2           | 6             | 3            |
| 171         | 3         | 5           | 3          | 2           | 6             | 2            |
| 172         | 4         | 5           | 3          | 2           | 6             | 1            |
| 173         | 5         | 5           | 3          | 2           | 6             | 6            |
| 174         | 6         | 5           | 3          | 2           | 6             | 5            |
| 175         | 1         | 5           | 2          | 3           | 6             | 4            |
| 176         | 2         | 5           | 2          | 3           | 6             | 3            |
| 177         | 3         | 5           | 2          | 3           | 6             | 2            |
| 178         | 4         | 5           | 2          | 3           | 6             | 1            |
| 179         | 5         | 5           | 2          | 3           | 6             | 6            |
| 180         | 6         | 5           | 2          | 3           | 6             | 5            |
| 181         | 1         | 6           | 1          | 4           | 5             | 4            |
| 182         | 2         | 6           | 1          | 4           | 5             | 3            |
| 183         | 3         | 6           | 1          | 4           | 5             | 2            |
| 184         | 4         | 6           | 1          | 4           | 5             | 1            |
| 185         | 5         | 6           | 1          | 4           | 5             | 6            |
| 186         | 6         | 6           | 1          | 4           | 5             | 5            |
| 187         | 1         | 6           | 6          | 5           | 5             | 4            |
| 188         | 2         | 6           | 6          | 5           | 5             | 3            |
| 189         | 3         | 6           | 6          | 5           | 5             | 2            |
| 190         | 4         | 6           | 6          | 5           | 5             | 1            |
| 191         | 5         | 6           | 6          | 5           | 5             | 6            |
| 192         | 6         | 6           | 6          | 5           | 5             | 5            |
| 193         | 1         | 6           | 5          | 6           | 5             | 4            |
| 194         | 2         | 6           | 5          | 6           | 5             | 3            |
| 195         | 3         | 6           | 5          | 6           | 5             | 2            |
| 196         | 4         | 6           | 5          | 6           | 5             | 1            |
| 197         | 5         | 6           | 5          | 6           | 5             | 6            |
| 198         | 6         | 6           | 5          | 6           | 5             | 5            |
| 199         | 1         | 6           | 4          | 1           | 5             | 4            |
| 200         | 2         | 6           | 4          | 1           | 5             | 3            |
| 201         | 3         | 6           | 4          | 1           | 5             | 2            |
| 202         | 4         | 6           | 4          | 1           | 5             | 1            |
| 203         | 5         | 6           | 4          | 1           | 5             | 6            |
| 204         | 6         | 6           | 4          | 1           | 5             | 5            |
| 205         | 1         | 6           | 3          | 2           | 5             | 4            |
| 206         | 2         | 6           | 3          | 2           | 5             | 3            |
| 207         | 3         | 6           | 3          | 2           | 5             | 2            |
| 208         | 4         | 6           | 3          | 2           | 5             | 1            |
| 209         | 5         | 6           | 3          | 2           | 5             | 6            |
| 210         | 6         | 6           | 3          | 2           | 5             | 5            |
| 211         | 1         | 6           | 2          | 3           | 5             | 4            |
| 212         | 2         | 6           | 2          | 3           | 5             | 3            |
| 213         | 3         | 6           | 2          | 3           | 5             | 2            |
| 214         | 4         | 6           | 2          | 3           | 5             | 1            |
| 215         | 5         | 6           | 2          | 3           | 5             | 6            |
| 216         | 6         | 6           | 2          | 3           | 5             | 5            |



## Contact Style/Shell Modification Codes

- AA Crimp, Snap-In Contacts, Rear Release, Standard Mounting  
 AB .025 [0.64] Square Post — 208215-1 Contacts, 1-Wrap High, Snap-In, Standard Mounting  
 AC .025 [0.64] Square Post — 208215-2 Contacts, 2-Wrap High, Snap-In, Standard Mounting  
 AD .025 [0.64] Square Post — 208215-3 Contacts, 3-Wrap High, Snap-In, Standard Mounting  
 BA (4) Floating Bushings

#6-32 Clinch Nuts, see Table 1 on page 4-18 for clinch nut locations

- CA (10) #6-32 Clinch Nuts  
 CB (4) #6-32 Clinch Nuts  
 CC (6) #6-32 Clinch Nuts  
 CD (8) #6-32 Clinch Nuts  
 CE (14) #6-32 Clinch Nuts

### Captivated Contact Codes

- DA Captivated Inserts — No Contacts  
 DF 208275-7 (.150 [3.81] Extension), Standard Mounting  
 DG 208275-3 (.190 [4.83] Extension), Standard Mounting  
 DH 208275-4 (.250 [6.35] Extension), Standard Mounting

Clinch Nuts with Captivated Contacts, see Table 1 on page 4-18 for clinch nut locations

- EA (4) #6-32 Clinch Nuts, and 208275-7 Signal Contacts  
 EB (4) #6-32 Clinch Nuts, and 208275-3 Signal Contacts  
 EC (4) #6-32 Clinch Nuts, and 208275-4 Signal Contacts

### Front Release, standard mounting

- FA Indicates Front Release Inserts without Contacts  
 FB Standard Mounting, 211245-2 Contacts  
 FC Standard Mounting, 211245-4 Contacts  
 FD Standard Mounting, 211245-6 Contacts  
 FE Standard Mounting, 211431-2 Contacts  
 FF Standard Mounting, 211431-4 Contacts  
 FG Standard Mounting, 211431-6 Contacts  
 FH Standard Mounting, 211431-8 Contacts

Front Release Contacts and Clinch Nuts, see Table 1 on page 4-18 for clinch nut locations

- GA (4) #4-40 Clinch Nuts, 211431-4 Contacts  
 GB (6) #4-40 Clinch Nuts, 211431-4 Contacts  
 GC (6) #4-40 Clinch Nuts, 211431-6 Contacts  
 GD (6) #6-32 Clinch Nuts, 211431-4 Contacts  
 GE (10) #4-40 Clinch Nuts, 211431-8 Contacts  
 GF (6) #6-32 Clinch Nuts, 211431-2 Contacts  
 GG (4) #4-40 Clinch Nuts, 211431-2 Contacts  
 GH (4) #6-32 Clinch Nuts, 211431-2 Contacts  
 GJ (6) #6-32 Clinch Nuts, 211431-8 Contacts  
 GK (4) #6-32 Clinch Nuts, 211431-8 Contacts  
 GL (10) #6-32 Clinch Nuts, 211431-4 Contacts  
 GM (4) #6-32 Clinch Nuts, 211431-4 Contacts  
 GN (4) #6-32 Clinch Nuts, 211245-2 Contacts  
 FJ (10) #6-32 Clinch Nuts, 211245-4 Contacts  
 FK (6) #6-32 Clinch Nuts, 211245-4 Contacts

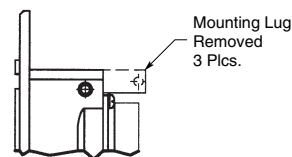
#4-40 Clinch Nuts, see Table 1 on page 4-18 for clinch nut locations

- SA (4) #4-40 Clinch Nuts  
 SB (6) #4-40 Clinch Nuts  
 SC (10) #4-40 Clinch Nuts  
 SD (8) #4-40 Clinch Nuts  
 SE (14) #4-40 Clinch Nuts  
 SF (6) #4-40 Clinch Nuts (Special)

Size 1 Receptacle Shell with Lugs Removed, see drawing below.  
 See Table 1 on page 4-18 for clinch nut locations.

- HA Size 1 Receptacle Shell  
 HB Size 1 Receptacle Shell — (4) #4-40 Clinch Nuts  
 HC Size 1 Receptacle Shell — with 211431-4 contacts, standard mounting

Size 1 Receptacle



Modification Code  
 HA, HB, and HC only

## Contact Style/Shell Modification Codes (Continued)

**Table 1**

| Clinch Nut Locations on Mounting Flange<br>(Unless otherwise noted with modification code) |            |                                    |                                    |
|--------------------------------------------------------------------------------------------|------------|------------------------------------|------------------------------------|
| Quantity                                                                                   | Shell Size |                                    |                                    |
|                                                                                            | 1          | 2                                  | 3                                  |
| 4                                                                                          | All        | 4 corners                          | 4 corners                          |
| 6                                                                                          | N/A        | 4 corners and 2 at polarizing keys | 4 corners and 2 at polarizing keys |
| 6 code SF only                                                                             | N/A        | See Figure 3                       | N/A                                |
| 8                                                                                          | N/A        | See Figure 4                       | See Figure 1                       |
| 10                                                                                         | N/A        | All                                | See Figure 2                       |
| 14                                                                                         | N/A        | N/A                                | All                                |

Size 3 Receptacle

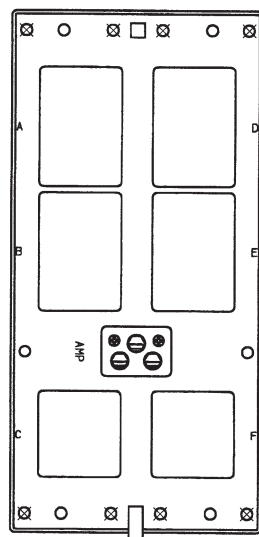


Figure 1  
x = Clinch Nut Installed  
in These Holes

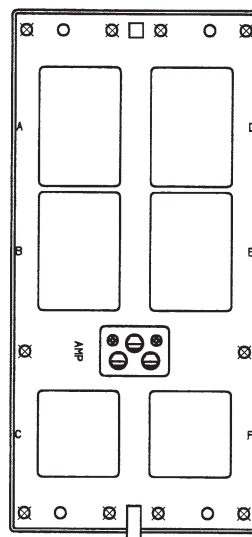


Figure 2  
x = Clinch Nut Installed  
in These Holes

Size 2 Receptacle

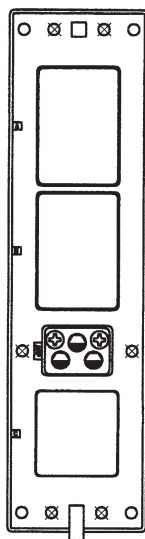


Figure 3  
Modification Code SF Only  
x = Clinch Nut Installed  
in These Holes

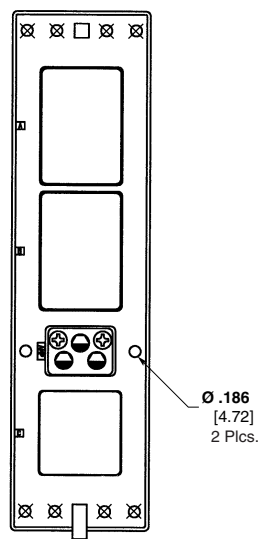


Figure 4  
x = Clinch Nut Installed  
in These Holes

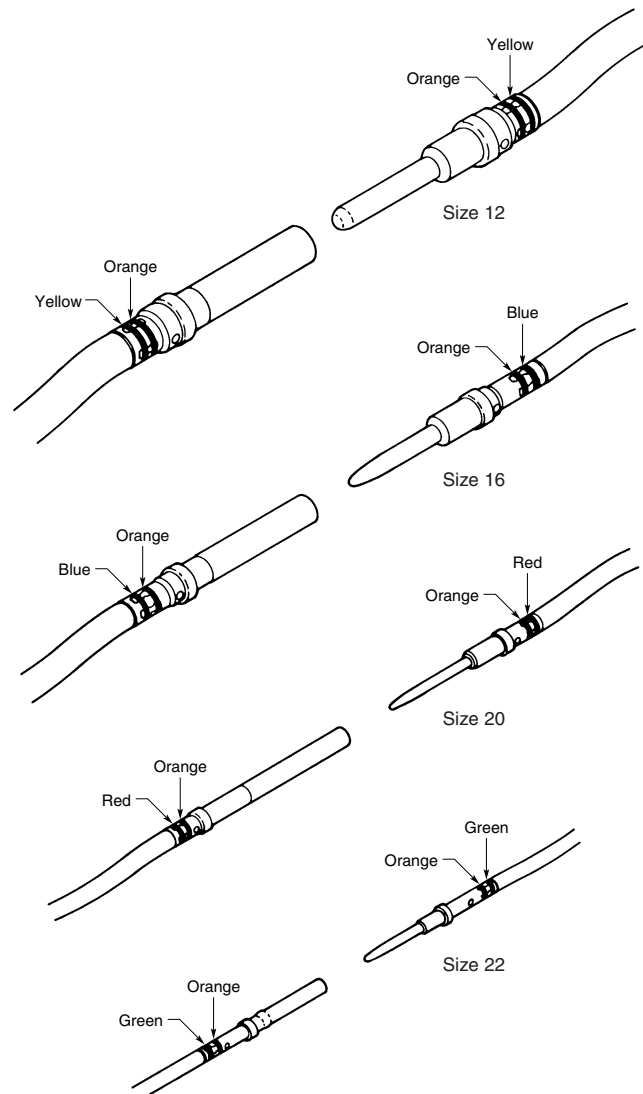
## Crimp, Snap-In Contacts

### Contact Loading Codes

0 (or blank) — Contacts included

1 — Contacts not included; must be ordered separately by TE Connectivity Part Number.

**Note:** When connectors are ordered with contacts, the contact style section (AA in the example code at the top of this page) must be specified so that the proper, unloaded inserts are included. COAXICON contacts are not supplied in connector kits and must be ordered separately.



### Insertion and Extraction



Typical Tool

### Crimp, Snap-In, Rear-Release Contacts (also suitable for ARINC 404)

| Average Contact Size | Wire Size |                 | Color Code | Average Engagement Force | Part Numbers |                | Tooling Part Numbers |             |                           | Color Code |
|----------------------|-----------|-----------------|------------|--------------------------|--------------|----------------|----------------------|-------------|---------------------------|------------|
|                      | AWG       | mm <sup>2</sup> |            |                          | Pin Contact  | Socket Contact | Crimp Tool           | Positioner  | Insertion/Extraction Tool |            |
| 22                   | 26-22     | 0.12-0.4        | Green      | 1.5 oz.<br>[.42 N]       | 208262-3     | 208264-2       | M22520/2-01          | M22520/2-23 | 91066-1                   | Green      |
| 20                   | 24-20     | 0.2-0.6         | Red        | 2.0 oz.<br>[.56 N]       | 208265-3     | 208267-2       | M22520/2-01          | M22520/2-08 | 91066-4                   | Red        |
| 16                   | 20-16     | 0.5-1.4         | Blue       | 3.0 oz.<br>[.83 N]       | 208268-3     | 208270-2       | M22520/1-01          | M22520/1-02 | 91066-3                   | Blue       |
| 12                   | 14-12     | 2-3             | Yellow     | 12.0 oz.<br>[3.34 N]     | 208271-3     | 208273-2       | M22520/1-01          | M22520/1-11 | 445147-1                  | —          |

## Posted Contacts

### Size 22 Posted Contacts

#### Contact Loading

0 (or blank) — Contacts included

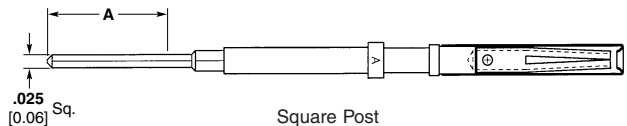
1 — Contacts not included; must be ordered separately.



Square or Rounded Posts



Round Post



Square Post

### Size 22, Snap-In, Rear Release Socket Contacts

Use Insertion/Extraction Tool  
Part Number 91066-1

#### with .025 [0.64] Square Posts

| Number of Wraps | Post Extension from Rear of Insert (Dim. A) | Part Number |
|-----------------|---------------------------------------------|-------------|
| 1               | <b>0.275</b><br>6.98                        | 208215-1    |
| 2               | <b>0.390</b><br>9.91                        | 208215-2    |
| 3               | <b>0.520</b><br>13.21                       | 208215-3    |

#### with Round Posts

| Minimum Post Extension from Rear (Dim. A) | Post Diameter (Dim. B) | Part Number |
|-------------------------------------------|------------------------|-------------|
| <b>0.190</b><br>4.82                      | <b>0.025</b><br>0.64   | 445814-1    |
| <b>0.230</b><br>5.84                      | <b>0.025</b><br>0.64   | 445814-2    |
| <b>0.180</b><br>4.57                      | <b>0.020</b><br>0.51   | 445814-3    |

### Size 22, Snap-In, Front Release Socket Contacts

Use Insertion/Extraction Tool  
Part Number 445815-1

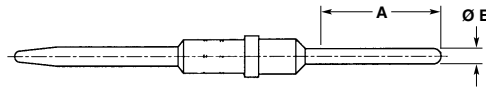
#### with Round Posts

| Minimum Post Extension from Rear of Insert (Dim. A) | Post Diameter (Dim. B) | Part Number | Solder Dipped |
|-----------------------------------------------------|------------------------|-------------|---------------|
| <b>0.150</b><br>3.81                                | <b>0.025</b><br>0.64   | 211431-2    | No            |
| <b>0.250</b><br>6.35                                | <b>0.025</b><br>0.64   | 211431-4    | No            |
| <b>0.375</b><br>9.52                                | <b>0.025</b><br>0.64   | 211431-6    | No            |
| <b>0.500</b><br>12.70                               | <b>0.025</b><br>0.64   | 211431-8    | No            |
| <b>0.150</b><br>3.81                                | <b>0.0195</b><br>0.50  | 1-211431-0  | No            |
| <b>0.250</b><br>6.35                                | <b>0.0195</b><br>0.50  | 1-211431-2  | No            |
| <b>0.150</b><br>3.81                                | <b>0.030</b><br>0.76   | 1-211431-3  | Yes           |
| <b>0.375</b><br>9.52                                | <b>0.030</b><br>0.76   | 1-211431-4  | Yes           |
| <b>0.250</b><br>6.35                                | <b>0.025</b><br>0.64   | 1-211431-5  | Yes           |

#### with .025 [0.64] Square Posts

| Number of Wraps | Post Extension from Rear of Insert (Dim. A) | Part Number |
|-----------------|---------------------------------------------|-------------|
| 1               | <b>0.250</b><br>6.35                        | 211245-2    |
| 2               | <b>0.375</b><br>9.52                        | 211245-4    |
| 3               | <b>0.500</b><br>12.70                       | 211245-6    |

## Posted Contacts (Continued)



Size 16  
Part Number 448139

**Front Release/Remove**  
**Size 12, Posted Pin Contacts**  
**Use Insertion/Extraction Tool**  
**Part Number 445147-1**

| Minimum Post Extension from Rear of Insert (Dim. A) | Post Diameter (Dim. B)        | Part Number | Solder Dipped |
|-----------------------------------------------------|-------------------------------|-------------|---------------|
| <b>0.264</b><br>6.70                                | <b>.079-.083</b><br>2.01-2.11 | 448140-3    | No            |
| <b>0.379</b><br>9.62                                | <b>.079-.083</b><br>2.01-2.11 | 448140-6    | No            |
| <b>0.264</b><br>6.70                                | <b>.079-.083</b><br>2.01-2.11 | 448140-9    | Yes           |
| <b>0.143</b><br>3.63                                | <b>.079-.083</b><br>2.01-2.11 | 448140-8    | No            |

**Front Release/Remove**  
**Size 16, Posted Pin Contacts**  
**Use Insertion/Extraction Tool**  
**Part Number 91066-3**

| Minimum Post Extension from Rear of Insert (Dim. A) | Post Diameter (Dim. B)        | Part Number | Solder Dipped |
|-----------------------------------------------------|-------------------------------|-------------|---------------|
| <b>0.379</b><br>9.62                                | <b>.048-.052</b><br>1.22-1.32 | 448139-6    | No            |
| <b>0.264</b><br>6.70                                | <b>.048-.052</b><br>1.22-1.32 | 1-448139-1  | No            |
| <b>0.233</b><br>5.91                                | <b>.048-.052</b><br>1.22-1.32 | 1-448139-4  | No            |
| <b>0.264</b><br>6.70                                | <b>.048-.052</b><br>1.22-1.32 | 1-448139-5  | Yes           |
| <b>0.143</b><br>3.63                                | <b>.061-.064</b><br>1.55-1.63 | 448139-8    | No            |

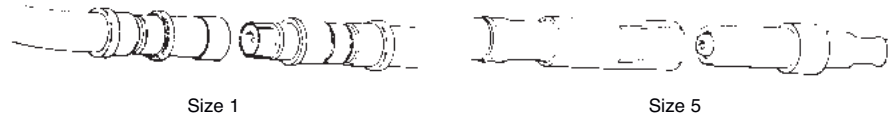
**Front Release/Remove**  
**Size 20, Posted Pin Contacts**  
**Use Insertion/Extraction Tool**  
**Part Number 91066-4**

| Minimum Post Extension from Rear of Insert (Dim. A) | Post Diameter (Dim. B)        | Part Number | Solder Dipped |
|-----------------------------------------------------|-------------------------------|-------------|---------------|
| <b>0.379</b><br>9.62                                | <b>.030-.034</b><br>0.76-0.86 | 2-448138-3  | No            |
| <b>0.236</b><br>5.99                                | <b>.030-.034</b><br>0.76-0.86 | 1-448138-2  | No            |
| <b>0.272</b><br>6.90                                | <b>.030-.034</b><br>0.76-0.86 | 1-448138-5  | No            |
| <b>0.272</b><br>6.90                                | <b>.030-.034</b><br>0.76-0.86 | 1-448138-6  | Yes           |
| <b>0.236</b><br>5.99                                | <b>.030-.034</b><br>0.76-0.86 | 1-448138-7  | Yes           |

## COAXICON Contacts

### COAXICON Contacts

COAXICON Contacts are not supplied in connector kits; they must be ordered separately.



#### Size 1 Contacts

##### Performance Characteristics

**Nominal Impedance** — 50 ohms

**Frequency Range** — 0 to 5 GHz

**Operating Temperature** — -85°F to +329°F [-65°C to +165°C]

**Operating Voltage (Rated)** — 1000 VAC rms, 60 Hz at Sea Level

**Contact Resistance (Milliohms)** — 1.0 max. — Center Contact  
0.2 max. — Outer Contact

**Insulation Resistance** — 5,000 megohms min. @ 500 vdc per MIL-STD-1344, Method 3003 or MIL-STD-202, Method 302, Cond. B

##### Dielectric Withstanding Voltage (60 Hz, rms) —

RG 214/U  
2500 at Sea Level

RG 142/U  
1900 at Sea Level

**VSWR** — 1.35 to 1.00 at 5 GHz

**Insertion/Withdrawal Force** —  
Insertion (max.) 15 lb [66.72 N]  
Withdrawal (min.) 1 lb [4.45 N]

##### Cable Retention —

RG 214/U  
125 lb [556 N] min.

RG 142/U  
60 lb [266.9 N] min.

**Thermal Shock** — per MIL-STD-1344, Method 1003, Cond. A or MIL-STD-202, Method 107, Cond. A

**Physical Shock** — per MIL-STD-1344, Method 2004, Cond. D or MIL-STD-202, Method 213, Cond. D except 300 G max.

**Vibration** — per MIL-STD-1344, Method 2005, Cond. VI, Letter J or MIL-STD-202, Method 204, Cond. E except 42 G max.

**Humidity Temperature Cycling** — per MIL-STD-1344, Method 1002, Type II, Cond. A or MIL-STD-202, Method 106

**Salt Spray** — per MIL-STD-1344, Method 1001, Cond. B or MIL-STD-202, Method 101, Cond. B

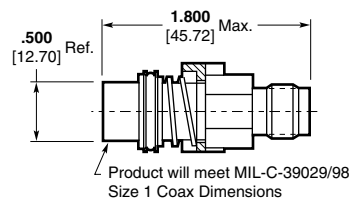
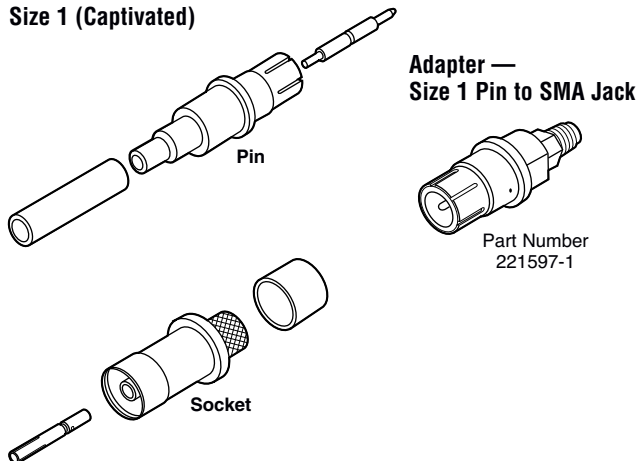
**Temperature Life** — per MIL-STD-1344, Method 1005, Cond. D or MIL-STD-202, Method 108, Cond. D

##### Material and Finish

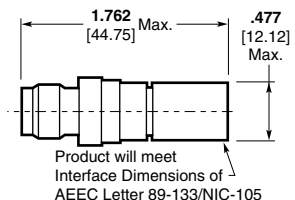
**Contact** — Beryllium Copper per ASTM-B-196/ASTM-B-197, Brass per ASTM-B-16, PTFE per ASTM-D-1710, Silicon Rubber per ZZ-R-765, Gold plate per MIL-G-45204, Nickel plate per QQ-N-290

**Ferrule** — Copper per ASTM-B-188, Tin plate per ASTM-B-545

#### Size 1 (Captivated)



Adapter Standard Size 1  
Socket to TNC  
Part Number 449908-1



TCAS Size 1  
Socket to TNC Adapter  
Part Number 447346-1

## COAXICON Contacts (Continued)

| Contact Size                                               | RG/U Cable                 | Contact Part No. |                                  | “O” Crimp Tooling |                 |                      | Military Hex Crimp Tooling |               |                 |               | Compression Crimp Tooling |                   |                  |
|------------------------------------------------------------|----------------------------|------------------|----------------------------------|-------------------|-----------------|----------------------|----------------------------|---------------|-----------------|---------------|---------------------------|-------------------|------------------|
|                                                            |                            |                  |                                  | Center Contact    |                 |                      | Center Contact             |               | Ferrule         |               |                           |                   |                  |
|                                                            |                            | Pin              | Socket                           | Tool (M22520/)    | Positioner/ Die | Ferrule              | Tool (M22520/)             | Die (M22520/) | Tool (M22520/)  | Die (M22520/) | Tool (M22520/)            | Locator (M22520/) | Dies (M22520/)   |
| O Crimp                                                    |                            |                  |                                  |                   |                 |                      |                            |               |                 |               |                           |                   |                  |
| Size 1<br>(for use with 71C1, 71C1A, C2 and C2A inserts)   | 402 Semi-Rigid .141 [3.58] | 225837-1         | —                                | 601966-1 (2-01)   | 1-601966-9      | 91905-11 or 91904-11 | —                          | —             | —               | —             | —                         | —                 | —                |
|                                                            | 402 Semi-Rigid .141 [3.58] | 222018-1         | —                                | —                 | —               | —                    | —                          | —             | —               | —             | 59980-1 (36-01)           | 220220-2 (36-06)  | 312253-1 (36-03) |
|                                                            | 405 Semi-Rigid .086 [2.18] | 222018-2         | —                                | —                 | —               | —                    | —                          | —             | —               | —             | 59980-1 (36-01)           | 220220-2 (36-06)  | 312253-2 (36-02) |
|                                                            | 214                        | —                | 225831-1 211229-1*               | 220015-1          | —               | 220015-1             | —                          | —             | —               | —             | —                         | —                 | —                |
|                                                            | 142, 142A, 142B            | —                | 225831-3 446709-1*               | 91902-11          | —               | 91902-11             | —                          | —             | —               | —             | —                         | —                 | —                |
|                                                            | 393                        | —                | 225831-6 446709-3*               | 220015-1          | —               | 220015-1             | —                          | —             | —               | —             | —                         | —                 | —                |
|                                                            | Tflex 402                  | —                | 1757492-1                        | —                 | —               | —                    | —                          | —             | —               | —             | —                         | —                 | —                |
| Military Hex Crimp                                         |                            |                  |                                  |                   |                 |                      |                            |               |                 |               |                           |                   |                  |
| Size 1<br>(for use with 71C1, 71C1A, C2 and C2A inserts)   | 214                        | 447095-1         | 447087-1                         | —                 | —               | —                    | 608650-1 (5-01)            | (5-25)        | 608650-1 (5-01) | (5-25)        | —                         | —                 | —                |
|                                                            | 213                        | 447095-2         | 447087-2 446709-5*               | —                 | —               | —                    | 608650-1 (5-01)            | (5-25)        | 608650-1 (5-01) | (5-25)        | —                         | —                 | —                |
|                                                            | 142, 142A, 142B            | 447095-3         | 447087-3 446709-6*               | —                 | —               | —                    | 608650-1 (5-01)            | (5-11)        | 608650-1 (5-01) | (5-11)        | —                         | —                 | —                |
|                                                            | 393                        | 447095-4         | 447087-4 446709-7* 5-447087-4*** | —                 | —               | —                    | 608650-1 (5-01)            | (5-25)        | 608650-1 (5-01) | (5-25)        | —                         | —                 | —                |
|                                                            | ECS 311201                 | —                | 447087-5 446709-2*               | —                 | —               | —                    | 608650-1 (5-01)            | (5-29)        | 608650-1 (5-01) | (5-29)        | —                         | —                 | —                |
|                                                            | SMA Adapter                | 1757180-1        | —                                | —                 | —               | —                    | —                          | —             | —               | —             | —                         | —                 | —                |
| Modified Size 1 Straight Exit<br>(for use with C4 inserts) | 214                        | —                | 446549-3*                        | —                 | —               | —                    | M22520/5-01**              | —             | —               | M22520/5-25   | —                         | —                 | M22520/5-25      |
|                                                            | 142                        | —                | 446549-1 5-446549-1***           | —                 | —               | —                    | M22520/5-01**              | —             | —               | M22520/5-11   | —                         | —                 | M22520/5-11      |
|                                                            | 393                        | —                | 446549-5*                        | —                 | —               | —                    | M22520/5-01**              | —             | —               | M22520/5-25   | —                         | —                 | M22520/5-25      |
|                                                            | Times AA5886               | —                | 446549-6*                        | —                 | —               | —                    | M22520/5-01**              | —             | —               | M22520/5-25   | —                         | —                 | M22520/5-04      |
|                                                            | Times AA5887               | —                | 446549-2*                        | —                 | —               | —                    | M22520/5-01**              | —             | —               | M22520/5-29   | —                         | —                 | M22520/5-29      |
|                                                            | ESC 311201                 | —                | 446549-4*                        | —                 | —               | —                    | M22520/5-01**              | —             | —               | M22520/5-29   | —                         | —                 | M22520/5-29      |
|                                                            | SMA Adapter                | 446748-1         | —                                | —                 | —               | —                    | —                          | —             | —               | —             | —                         | —                 | —                |
|                                                            | OSP Adapter                | 1218713-1        | —                                | —                 | —               | —                    | —                          | —             | —               | —             | —                         | —                 | —                |
|                                                            | QMA Adapter                | 1757859-1        | —                                | —                 | —               | —                    | —                          | —             | —               | —             | —                         | —                 | —                |
|                                                            | Posted Contact             | 1757669-1        | —                                | —                 | —               | —                    | —                          | —             | —               | —             | —                         | —                 | —                |

\*Socket with mounting hardware. Mounting hardware for Size 1 Straight Exit Contacts includes: backup plate, spring, retaining ring, O-ring, washers and screws.

\*\*TE Connectivity does not sell Hand Tool M22520/5-01. However, it can be purchased from: Daniels Manufacturing Corp, 6103 Anno Ave., Orlando, FL 32809, 800-327-2432.

\*\*\*RoHS compliant Part Number.

**Notes:** 1. SDE die used with hand tool frame 354940-1.

2. Hardware kit for Size 1 COAXICON Socket Contacts (used on 71C1 or C2 inserts) includes all mounting hardware required (retention plate, washers, O-ring, spring, screws and retention clip). Kit Number 447118-1 (5-447118-1 RoHS Kit Number).

3. Size 1 COAXICON Pin Contacts require retention plate 211216-2 and four screws 211558-1.

4. Size 1 COAXICON Pin Contacts with SMA adapter require retention plate 1757203-2 and four screws 211558-1.



## COAXICON Contacts (Continued)

### Size 5 and 8 Contacts

#### Performance Characteristics for size 5 contacts

**Nominal Impedance**—50 ohms

**Frequency Range**—0 to 500 MHz

**Operating Temperature**— -85°F to +329°F [-65°C to +165°C]

**Operating Voltage (Rated)**—  
325 VAC rms, 60 Hz

**Contact Resistance (Milliohms)**—

Size 5 with RG 58/U cable:

Center Contact—10

Outer Contact—1.5

#### Insulation Resistance

5,000 megohms min. @ 500 vdc per MIL-STD-1344, Method 3003 or MIL-STD-202, Method 302, Cond. B

#### Dielectric Withstanding Voltage (60 Hz, rms)

Sizes 5 with RG 58/U and 316/U cable:  
750 - Sea Level  
350 - 50,000 ft [15 240 m]

**VSWR**—1.3 to 1.0 @ 500 MHz

#### Insertion/Withdrawal Force

Size 5:

| Insertion Force<br>Maximum |       | Withdrawal Force<br>Minimum |      |
|----------------------------|-------|-----------------------------|------|
| lb                         | [N]   | lb                          | [N]  |
| 5                          | 22.24 | 1                           | 4.45 |

#### Cable Retention

Sizes 5:

60 lb [266.9 N]

#### Durability

—500 cycles

**Thermal Shock**—per MIL-STD-1344, Method 1003, Cond. A or MIL-STD-202, Method 107, Cond. A

**Physical Shock**—per MIL-STD-1344, Method 2004, Cond. A or MIL-STD-202, Method 213, Cond. A

**Vibration**—per MIL-STD-1344, Method 2005, Cond. IV or MIL-STD-202, Method 204, Cond. D

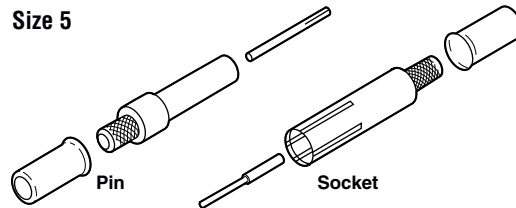
**Moisture Resistance**—per MIL-STD-202, Method 106, omit steps 7a and 7b

**Salt Spray**—48 hours per MIL-STD-1344, Method 1001, Cond. B or MIL-STD-202, Method 101, Cond. B

#### Material and Finish

**Contact**—Beryllium copper per ASTM-B-196/ASTM-B-197, Brass per ASTM-B-16, PTFE per ASTM-D-1710, Gold plate per MIL-G-45204, Nickel plate per QQ-N-290

**Ferrule**—Copper per ASTM-B-188, tin plate per ASTM-B-545



Size 5  
Extraction Tool  
Part Number 91074-1

| Contact Size       | RG/U Cable                             | Contact Part No.         |                          | “O” Crimp Tooling |                 |          | Military Hex Crimp Tooling |                 |                 |               |
|--------------------|----------------------------------------|--------------------------|--------------------------|-------------------|-----------------|----------|----------------------------|-----------------|-----------------|---------------|
|                    |                                        |                          |                          | Center Contact    |                 |          | Center Contact             |                 | Ferrule         |               |
|                    |                                        | Pin                      | Socket                   | Tool (M22520/)    | Positioner/ Die | Ferrule  | Tool (M22520/)             | Die (M22520/)   | Tool (M22520/)  | Die (M22520/) |
| O Crimp            |                                        |                          |                          |                   |                 |          |                            |                 |                 |               |
| 5                  | 58C                                    | 225790-1                 | 225791-1                 | 601966-1 (2-01)   | 1-601966-6 K345 | 91905-1* | —                          | —               | —               | —             |
|                    | 400, 142, 142A, 142B                   | 225790-2                 | 225791-2                 | 91904-1*          | —               | 91905-1* | —                          | —               | —               | —             |
|                    | 141A                                   | 225790-1                 | 225791-1                 | 91904-1*          | —               | 91905-1* | —                          | —               | —               | —             |
|                    | 402 Semi-Rigid .141 [3.58]             | 225790-3                 | 225791-6                 | 91904-1*          | —               | 91905-1* | —                          | —               | —               | —             |
|                    | 174, 188, 316                          | 225790-5                 | 225791-3                 | 601966-1 (2-01)   | 1-601966-6 K345 | 91905-1* | —                          | —               | —               | —             |
|                    | 180, 195                               | 225790-4                 | 225791-8                 | 601966-1 (2-01)   | 1-601966-6 K345 | 91905-1* | —                          | —               | —               | —             |
|                    | 179, 187                               | 225790-6<br>5-225790-6** | 225791-4<br>5-225791-4** | 601966-1 (2-01)   | 1-601966-6 K345 | 91905-1* | —                          | —               | —               | —             |
|                    | 178, 196                               | 225790-7                 | 225791-5                 | 601966-1 (2-01)   | 1-601966-6 K345 | 220020-1 | —                          | —               | —               | —             |
|                    | 223                                    | 225790-2                 | 225791-2                 | 601966-1 (2-01)   | 1-601966-6 K345 | 91905-1* | —                          | —               | —               | —             |
|                    | BMS 13-65-OF                           | —                        | 1757892-1                | —                 | —               | —        | —                          | —               | —               | —             |
| Military Hex Crimp |                                        |                          |                          |                   |                 |          |                            |                 |                 |               |
| 5                  | 316 Double Shield<br>188 Double Shield | 225790-8<br>5-225790-8** | 1-225791-0               | —                 | —               | —        | 601966-1 (2-01)            | 1-601966-6 K345 | 608650-1 (5-01) | (Y159)        |
|                    | 58C, 141A                              | 447850-1                 | 447851-1                 | —                 | —               | —        | 601966-1 (2-01)            | 1-601966-6 K345 | 608650-1 (5-01) | (5-45B)       |
|                    | 142, 142A, 142B                        | 447850-2                 | 447851-2                 | —                 | —               | —        | 601966-1 (2-01)            | 1-601966-6 K345 | 608650-1 (5-01) | (5-45B)       |
|                    | 402 Semi-Rigid .141 [3.58]             | 447850-3                 | 447851-3                 | —                 | —               | —        | 601966-1 (2-01)            | 1-601966-6 K345 | 608650-1 (5-01) | (5-45A)       |
|                    | 174, 188, 316                          | 447850-4                 | 447851-4                 | —                 | —               | —        | 601966-1 (2-01)            | 1-601966-6 K345 | 608650-1 (5-01) | (5-37B)       |

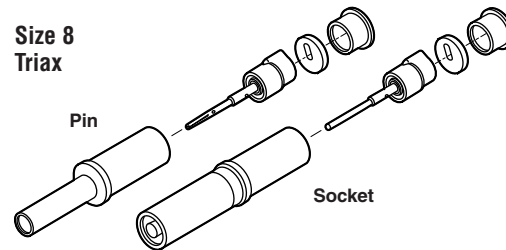
\*SDE die used with hand tool frame 354940-1.

\*\*RoHS compliant Part Number.

## COAXICON Contacts (Continued)

### Size 8 TWINAX/TRIAX/COAX Contacts

#### Size 8 Triax



#### Size 8 Contact Extraction Tooling

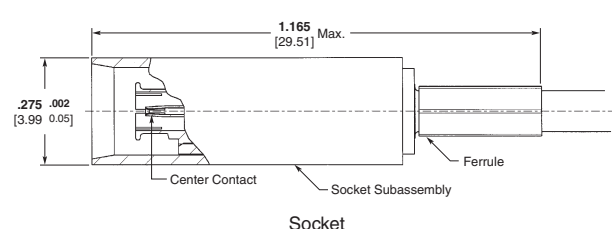
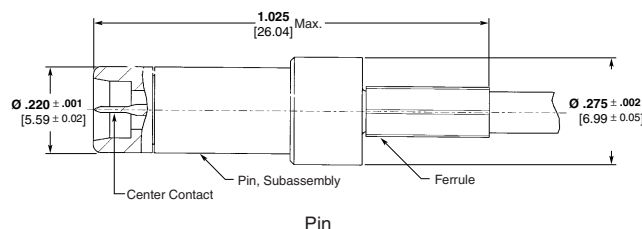
| Contact Style              | Tool Part Number |
|----------------------------|------------------|
| Rear Release/Rear Remove   | 58284-1          |
| Front Release/Front Remove | 58284-1          |
| Front Release/Rear Remove  | 448703-1         |

| Contact Size | Style | Cable                                               | Contact Part No.            |           | Crimp Tooling                                                                                                             | Crimp Tooling             |          |
|--------------|-------|-----------------------------------------------------|-----------------------------|-----------|---------------------------------------------------------------------------------------------------------------------------|---------------------------|----------|
|              |       |                                                     | Pin                         | Socket    |                                                                                                                           | Center Contact            | Ferrule  |
| 8 TWINAX     | RR/RR | M17/176-00002                                       | —                           | 222191-4  | Hand Tool Frame                                                                                                           | —                         | —        |
|              | RR/RR | Tensolite 24463/9P025X-2(LD) or 24463/9B017X-2 (LD) | —                           | 222191-5  | M22520/5-01 (TE Connectivity 608650-1) Crimping Die TE 58316-1 or Daniels Y793 or Y793A or TE Hand Crimping Tool 91907-1* | —                         | —        |
|              | RR/RR | M17/176-00002                                       | 222190-4 (short engagement) | —         |                                                                                                                           | —                         | —        |
|              | RR/RR | Tensolite 24463/9P025X-2(LD) or 24463/9B017X-2 (LD) | 222190-3 (short engagement) | —         |                                                                                                                           | —                         | —        |
|              | RR/RR | Tensolite 24463/9P025X-2(LD) or 24463/9B017X-2(LD)  | 448313-2 (long engagement)  | —         |                                                                                                                           | —                         | —        |
|              | FR/RR | Tensolite 24463/9P025X-2(LD) or 24463/9B017X-2(LD)  | 448312-2 (long engagement)  | —         |                                                                                                                           | —                         | —        |
| 8 TRIAX      | FR/FR | Posted (.250 [6.35] min. post extension)            | 448541-1 (long engagement)  | —         | —                                                                                                                         | —                         | —        |
| 8 Coax       | RR/RR | M/A-COM FC11Z                                       | —                           | 448543-1  | —                                                                                                                         | —                         | 91907-1* |
|              | RR/RR | M/A-COM FC14Z                                       | —                           | 448543-2  | —                                                                                                                         | —                         | 91907-1* |
|              | RR/RR | RG/U-316, 188                                       | 1218687-3 (long engagement) | 1218820-1 | —                                                                                                                         | M22520/2-01 (TE 601966-1) | 91907-1* |
|              | RR/RR | RG/U-142                                            | 1218689-1 (long engagement) | 1218821-1 | —                                                                                                                         | —                         | 91907-1* |
|              | RR/RR | BMS 13-65-OF                                        | —                           | 1757891-1 | —                                                                                                                         | —                         | —        |
|              | RR/RR | Adams Russell FC14Z, BMS 13-65-OF                   | —                           | 448543-2  | —                                                                                                                         | —                         | —        |
|              | RR/RR | DMS2345-62AU                                        | —                           | 448543-3  | —                                                                                                                         | —                         | —        |
|              | RR/RR | BMS 13-65-OF (.218 [5.54] hex crimp)                | 1757624-1**                 | —         | —                                                                                                                         | —                         | —        |
|              | FR/RR | M/A-COM FC11Z                                       | 448542-1 (long engagement)  | —         | —                                                                                                                         | M22520/2-01 (TE 601966-1) | 91907-1* |
|              | FR/RR | M/A-COM FC14Z                                       | 448542-2 (long engagement)  | —         | —                                                                                                                         | —                         | 91907-1* |
|              | FR/FR | Posted (.250 [6.35] min. post extension)            | 448540-2 (long engagement)  | —         | —                                                                                                                         | —                         | —        |

\*SDE die used with hand tool frame 354940-1.

\*\*Designed for QuadraX cavity, no key on contact.

**Note:** Size 8 QUADRAX Contacts shown on pages 4-79 to 4-81.



### Size 5 Coax Contacts, Spring Loaded 75 Ohm

| Style                    | Cable    | Contact Part No. |          | Crimp Tooling                                                                                            |                                                                                                 |
|--------------------------|----------|------------------|----------|----------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|
|                          |          | Pin              | Socket   | Center Contact                                                                                           | Braid                                                                                           |
| Rear Release/Rear Remove | RG/U-179 | 443971-1         | 443972-1 | Daniels HMR Tool AFM8 or TE Connectivity 601966-1 with Daniels positioner K1289 (socket) or K1288S (pin) | Daniels HX4 with Die-set Y196 cavity A or TE Connectivity 35940-1 with Die-set 58483-1 Cavity B |

## Traffic Alert and Collision Avoidance System (TCAS) Connectors and Mode S Transponder Connectors

### Product Facts

#### Plug Connector

- **TE Connectivity modified Size 1 coaxial contacts use standard military crimp tooling for reliable connections without the need for special tooling**
- **TE plug allows repair or replacement of the coaxial contacts without connector disassembly. Two front-release captivated screws release the backup plate**
- **TE connector conforms to the ARINC 600 specification, for connector intermateability and contact interchangeability**

#### Receptacle Connector

- **TE modified Size 1 coaxial contact incorporates a SMA jack for easy assembly**
- **TE connector conforms to the ARINC 600 specification, for connector intermateability and contact interchangeability**

| Connector         | Description                                             | Part Numbers            | Descriptive Part Number |
|-------------------|---------------------------------------------------------|-------------------------|-------------------------|
| TCAS Plug         | Semi-environmental w/o contacts                         | 445717-1                | NIC66 K 36 C 40 AA 1    |
|                   | Semi-environmental w/contacts, w/o coaxial contacts     | 445717-2                | NIC66 K 36 C 40 AA 0    |
|                   | Non-environmental w/o contacts                          | 445717-3<br>5-445717-3* | NIC66 K 36 A 40 AA 1    |
|                   | Non-environmental w/contacts, w/o coaxial contacts      | 445717-4                | NIC66 K 36 A 40 AA 0    |
|                   | Non-environmental w/o contacts, (8) #6-32 clinch nuts   | 445717-5                | NIC66 K 36 A 40 CD 1    |
|                   | Semi-environmental w/o contacts, (10) #4-40 clinch nuts | 445717-6                | NIC66 K 36 A 40 SC 1    |
| TCAS Receptacle   | Front release w/o contacts                              | 445718-1                | NIC66 J 36 FA 40 FA 1   |
| Mode S Plug       | Non-environmental w/contacts, w/o coaxial contacts      | 208972-5                | NIC66 H 23 A 01 AA 0    |
|                   | Non-environmental w/o contacts                          | 208972-7                | NIC66 H 23 A 01 AA 1    |
|                   | Environmental w/contacts, w/o coaxial contacts          | 208973-5                | NIC66 H 23 B 01 AA 0    |
|                   | Semi-environmental w/o contacts                         | 208973-6                | NIC66 H 23 C 01 AA 1    |
| Mode S Receptacle | Front release w/o contacts                              | 211991-1                | NIC66 G 23 FA 01 FA 1   |

**Note:** All standard ARINC 600 shell modifications are available.

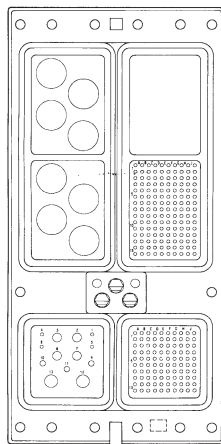
\* RoHS compliant Part Number.

The TCAS System includes one mated pair of Size 3 ARINC 600 connectors, called TCAS Connectors. The plug connector is mounted in the rack, and the receptacle connector is in the avionics box.

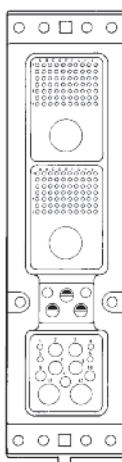
The TCAS System also includes one or two mated pairs of Size 2 ARINC 600 Connectors, called Mode S Transponder Connectors. The plug connectors are mounted in the rack, and the receptacle connectors are in the avionics box.

## Traffic Alert and Collision Avoidance System (TCAS) Connectors and Mode S Transponder Connectors (Continued)

### Contact Requirements



**TCAS Connector Insert Arrangement  
(Receptacle Mating Face Shown)**



**Mode S Transponder Insert Arrangement**

#### Plug Contacts

| No. of Contacts | Contact Size | Contact Sex | Part Number |
|-----------------|--------------|-------------|-------------|
| 250             | 22           | pin         | 208262-3    |
| 4               | 20           | socket      | 208267-2    |
| 3               | 16           | socket      | 208270-2    |
| 4               | 12           | socket      | 208273-2    |
| 2               | 5 coax       | socket      | ***         |
| 8               | 1 coax-Mod.  | socket      | **          |

#### Receptacle Contacts

| No. of Contacts | Contact Size | Contact Sex | Part Number |
|-----------------|--------------|-------------|-------------|
| 250             | 22           | socket      | *           |
| 4               | 20           | pin         | 208265-3    |
| 3               | 16           | pin         | 208268-3    |
| 4               | 12           | pin         | 208271-3    |
| 2               | 5 coax       | pin         | ***         |
| 8               | 1 coax-Mod.  | pin         | **          |

\* See page 4-20 for part numbers.

\*\* See page 4-25 for part numbers.

\*\*\* See page 4-24 for part numbers.

#### Plug Contacts

| No. of Contacts | Contact Size | Contact Sex | Part Number |
|-----------------|--------------|-------------|-------------|
| 140             | 22           | pin         | 208262-3    |
| 4               | 20           | socket      | 208267-2    |
| 3               | 16           | socket      | 208270-2    |
| 4               | 12           | socket      | 208273-2    |
| 2               | 5 coax       | socket      | ***         |
| 2               | 1 coax       | socket      | **          |

#### Receptacle Contacts

| No. of Contacts | Contact Size | Contact Sex | Part Number |
|-----------------|--------------|-------------|-------------|
| 140             | 22           | socket      | *           |
| 4               | 20           | pin         | 208265-3    |
| 3               | 16           | pin         | 208268-3    |
| 4               | 12           | pin         | 208271-3    |
| 2               | 5 coax       | pin         | ***         |
| 2               | 1 coax       | pin         | **          |

\* See page 4-20 for part numbers.

\*\* See page 4-23 for part numbers.

\*\*\* See page 4-24 for part numbers.

## Single Mod ARINC 600

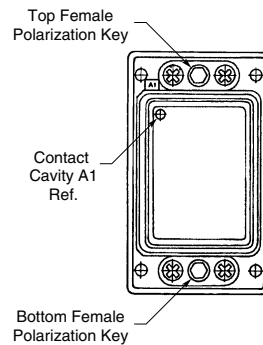
### Descriptive Numbering

|                                                                                              | NIC66S | P | A | 150 | A | 01 | A |
|----------------------------------------------------------------------------------------------|--------|---|---|-----|---|----|---|
| <b>Series Designation</b>                                                                    |        |   |   |     |   |    |   |
| <b>Shell Style/Plating</b>                                                                   |        |   |   |     |   |    |   |
| P—Plug with Chromate Conversion Coating                                                      |        |   |   |     |   |    |   |
| PN—Plug with Electroless Nickel Plating                                                      |        |   |   |     |   |    |   |
| R—Receptacle with Chromate Conversion Coating                                                |        |   |   |     |   |    |   |
| RN—Receptacle with Electroless Nickel Plating                                                |        |   |   |     |   |    |   |
| <b>Class</b>                                                                                 |        |   |   |     |   |    |   |
| A—Nonenvironmental, rear release                                                             |        |   |   |     |   |    |   |
| B—Environmental, rear release                                                                |        |   |   |     |   |    |   |
| C—Environmental, rear release without O-Ring or sealant around inserts                       |        |   |   |     |   |    |   |
| FA—Nonenvironmental, front release size 22 contacts (other contact sizes rear release)       |        |   |   |     |   |    |   |
| FF—Nonenvironmental, all contact sizes front release except size 1 coax remains rear removal |        |   |   |     |   |    |   |
| <b>Insert*</b>                                                                               |        |   |   |     |   |    |   |
| See inserts on pages 4-10 and 4-11                                                           |        |   |   |     |   |    |   |
| Use size 2 or 3 Module A, B, D and E inserts                                                 |        |   |   |     |   |    |   |
| <b>Mounting Modifier</b>                                                                     |        |   |   |     |   |    |   |
| A—Standard Mounting, .146–.156 [3.71–3.96] dia. holes                                        |        |   |   |     |   |    |   |
| B—(4) #4-40 Clinch Nuts                                                                      |        |   |   |     |   |    |   |
| C—(4) #6-32 Clinch Nuts                                                                      |        |   |   |     |   |    |   |
| <b>Keying</b>                                                                                |        |   |   |     |   |    |   |
| 01-36, see keying codes on page 4-30                                                         |        |   |   |     |   |    |   |
| <b>Contact Loading</b>                                                                       |        |   |   |     |   |    |   |
| X—Contacts Not Included With Connector (used also for Expanded Beam Fiber Optic Inserts)     |        |   |   |     |   |    |   |
| A—Rear release crimp contacts included                                                       |        |   |   |     |   |    |   |
| B—Front release .025 [.64] dia. x .150 [3.81] solder post size 22 sockets loaded             |        |   |   |     |   |    |   |
| C—Front release .025 [.64] dia. x .250 [6.35] solder post size 22 sockets loaded             |        |   |   |     |   |    |   |
| D—Front release .025 [.64] dia. x .375 [9.53] solder post size 22 sockets loaded             |        |   |   |     |   |    |   |
| E—Front release .025 [.64] dia. x .500 [12.70] solder post size 22 sockets loaded            |        |   |   |     |   |    |   |
| F—Front release .025 [.64] square x .250 [6.35] (1 wrap) size 22 sockets loaded              |        |   |   |     |   |    |   |
| G—Front release .025 [.64] square x .375 [9.52] (2 wrap) size 22 sockets loaded              |        |   |   |     |   |    |   |
| H—Front release .025 [.64] square x .500 [12.70] (3 wrap) size 22 sockets loaded             |        |   |   |     |   |    |   |
| <b>See Contacts on pages 4-19 to 4-25</b>                                                    |        |   |   |     |   |    |   |

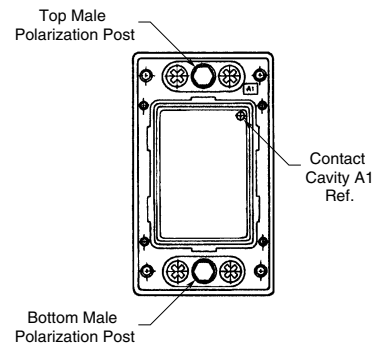
\* Expanded Beam Fiber Optic inserts can also be used — must use signal cavity inserts identified as 1JS, 2JS, 3JS, or 6MS. See page 4-14 or contact TE Connectivity for more information.

## Single Mod ARINC 600 (Continued)

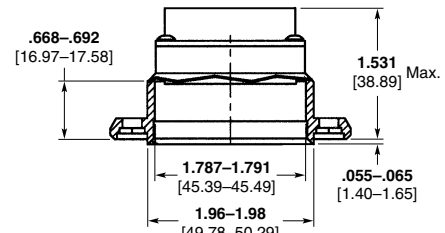
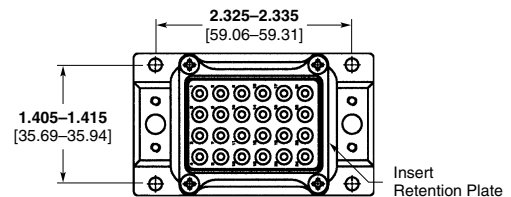
### Keying and Polarization



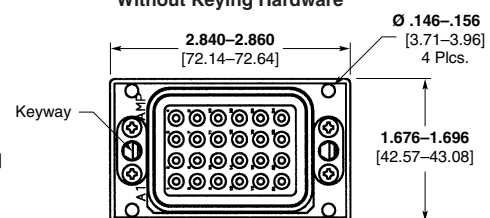
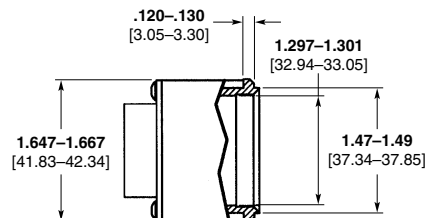
Receptacle (Box Side)



Plug (Rack Side)

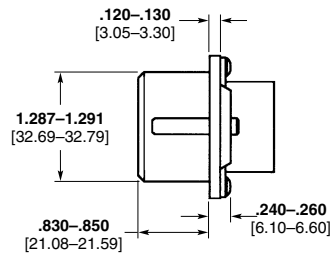


View Shown  
Without Keying Hardware



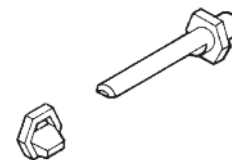
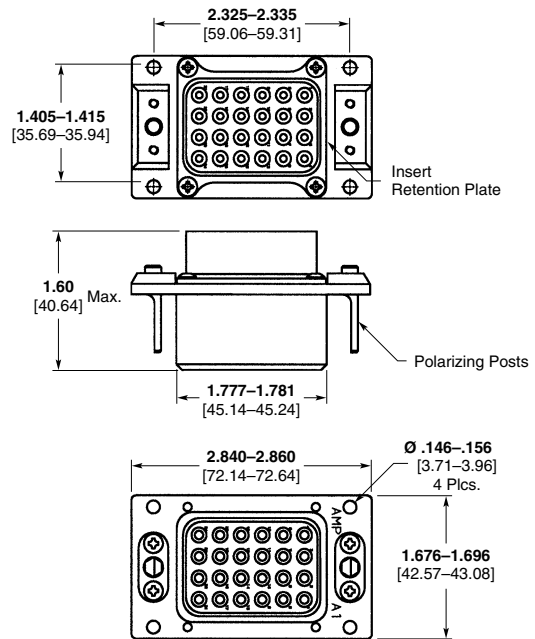
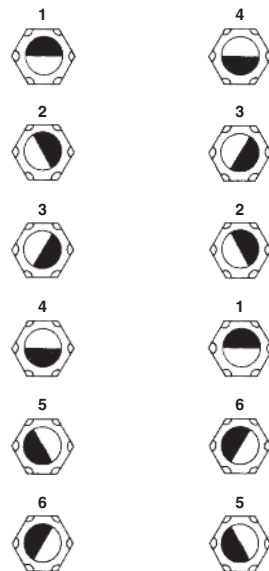
Single Mod Receptacle

## Single Mod ARINC 600 (Continued)



Single Mod Plug

Extended Post of Plug Key → Mates to → Key Hole in Receptacle



| Keying Code | Receptacle |            | Plug     |             |
|-------------|------------|------------|----------|-------------|
|             | Top Key    | Bottom Key | Top Post | Bottom Post |
| 01          | 1          | 1          | 4        | 4           |
| 02          | 3          | 4          | 2        | 1           |
| 03          | 2          | 4          | 3        | 1           |
| 04          | 1          | 4          | 4        | 1           |
| 05          | 6          | 4          | 5        | 1           |
| 06          | 5          | 4          | 6        | 1           |
| 07          | 4          | 5          | 1        | 6           |
| 08          | 3          | 5          | 2        | 6           |
| 09          | 2          | 5          | 3        | 6           |
| 10          | 1          | 5          | 4        | 6           |
| 11          | 6          | 5          | 5        | 6           |
| 12          | 5          | 5          | 6        | 6           |
| 13          | 4          | 6          | 1        | 5           |
| 14          | 3          | 6          | 2        | 5           |
| 15          | 2          | 6          | 3        | 5           |
| 16          | 1          | 6          | 4        | 5           |
| 17          | 6          | 6          | 5        | 5           |
| 18          | 5          | 6          | 6        | 5           |

| Keying Code | Receptacle |            | Plug     |             |
|-------------|------------|------------|----------|-------------|
|             | Top Key    | Bottom Key | Top Post | Bottom Post |
| 19          | 4          | 1          | 1        | 4           |
| 20          | 3          | 1          | 2        | 4           |
| 21          | 2          | 1          | 3        | 4           |
| 22          | 4          | 4          | 1        | 1           |
| 23          | 6          | 1          | 5        | 4           |
| 24          | 5          | 1          | 6        | 4           |
| 25          | 4          | 2          | 1        | 3           |
| 26          | 3          | 2          | 2        | 3           |
| 27          | 2          | 2          | 3        | 3           |
| 28          | 1          | 2          | 4        | 3           |
| 29          | 6          | 2          | 5        | 3           |
| 30          | 5          | 2          | 6        | 3           |
| 31          | 4          | 3          | 1        | 2           |
| 32          | 3          | 3          | 2        | 2           |
| 33          | 2          | 3          | 3        | 2           |
| 34          | 1          | 3          | 4        | 2           |
| 35          | 6          | 3          | 5        | 2           |
| 36          | 5          | 3          | 6        | 2           |

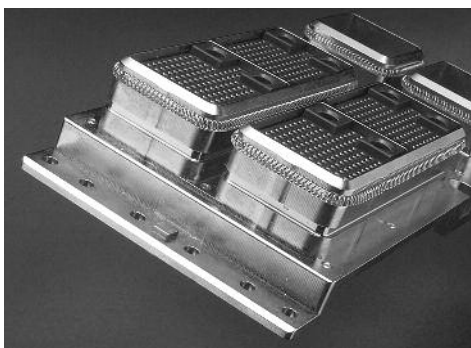


## EMI/Ground Spring

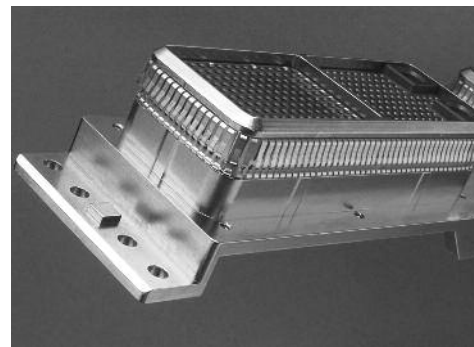
### EMI/Ground Spring Performance Data Comparison

|                                                                                                              | Cantilever Style                 | Canted Coil Style           |
|--------------------------------------------------------------------------------------------------------------|----------------------------------|-----------------------------|
| Mating/Un-mating Force Results<br>Design Objective = < 15 lbs for size 2 shell                               | 6 lbs/3 lbs                      | 14 lbs/6 lbs                |
| Durability                                                                                                   | 500 min. mating/un-mating cycles |                             |
| EMI Test Results (Size 2 Shell) 100 to 1,000 MHz<br>Design Objective = 65 dB @ 100 MHz and 60 dB @ 1,000 MHz | 89 dB min.<br>93 dB average      | 88 dB min.<br>92 dB average |
| Field Repairable                                                                                             | No                               | Yes                         |

### Canted Coil Spring Design



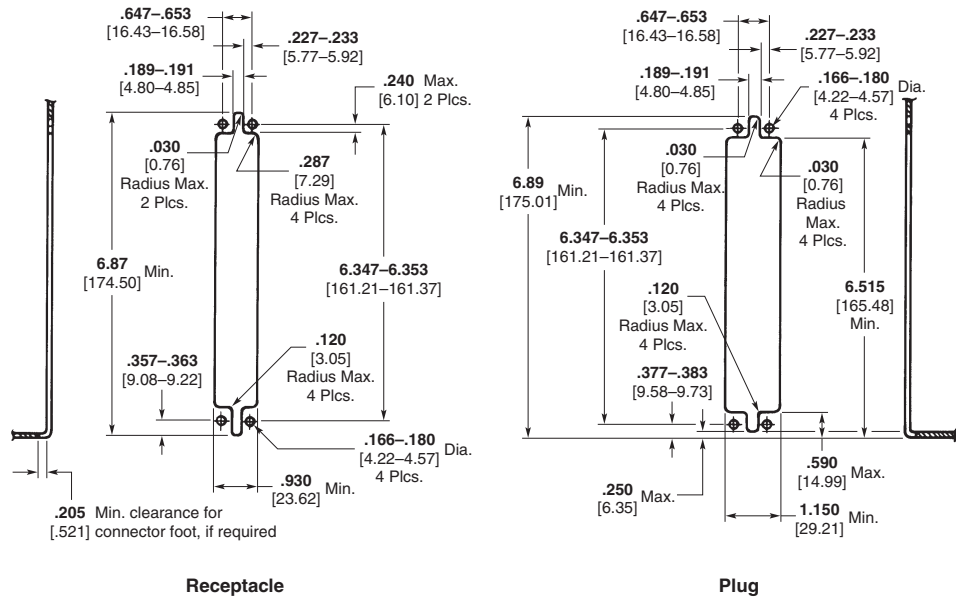
### Cantilever Spring Design



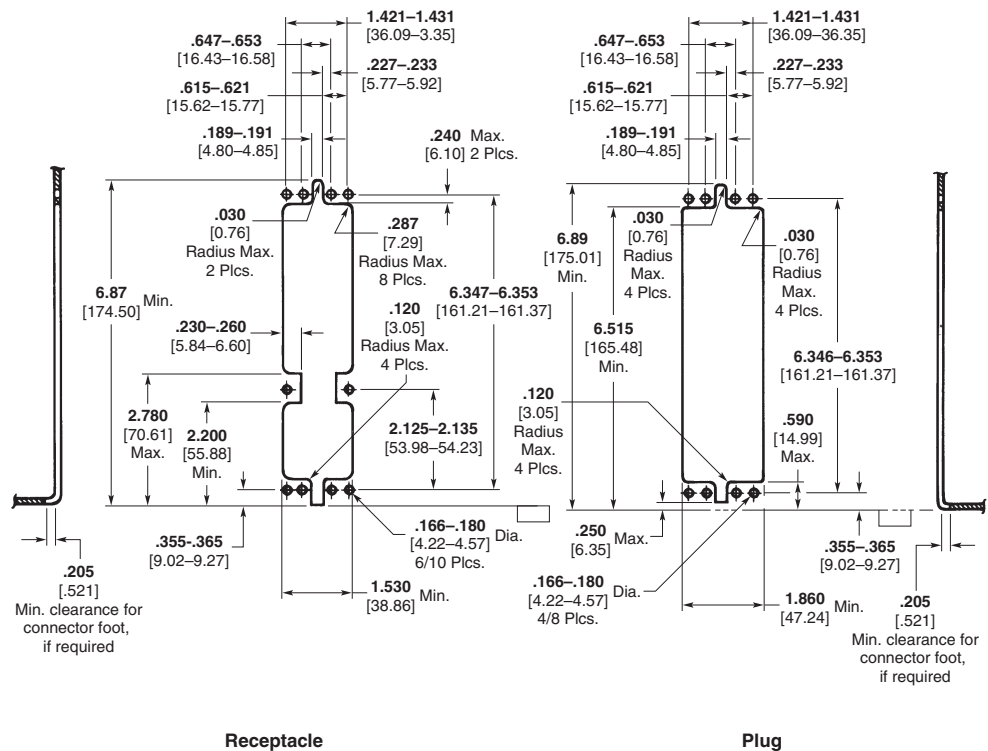
**Note:** ARINC 600 connectors can be supplied with either canted coil spring or cantilever spring design, contact TE Connectivity.

## Recommended Panel Cutouts

### Shell Size 1



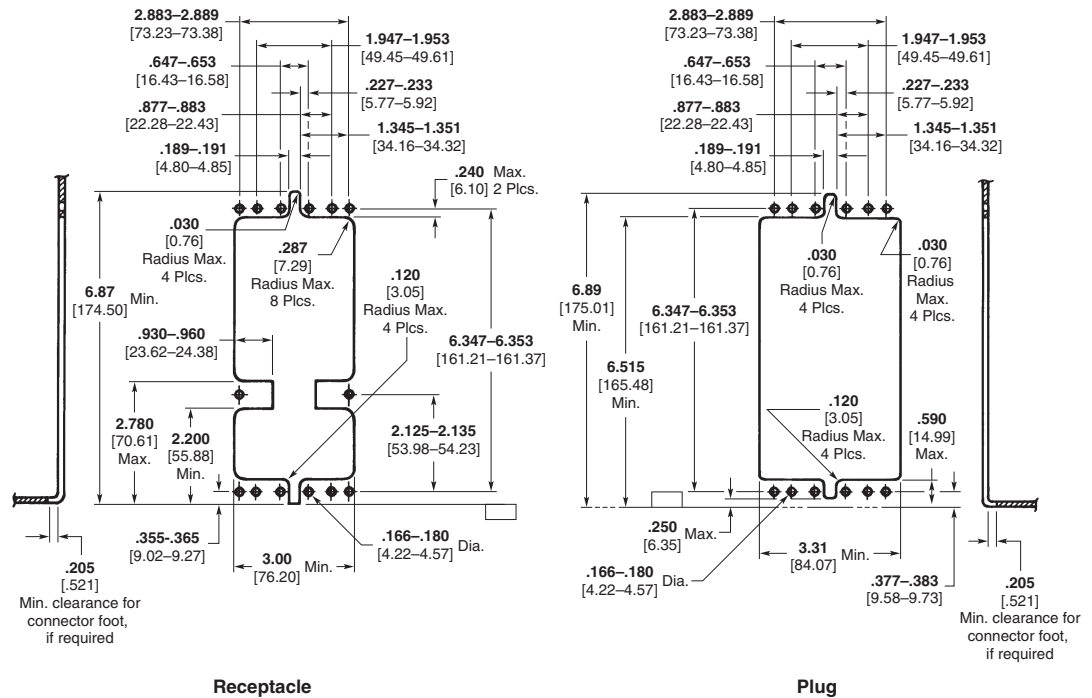
### Shell Size 2



**Note:** These drawings are for reference only. For detailed mounting instructions, see the ARINC 600 specification.

## Recommended Panel Cutouts (Continued)

### Shell Size 3



## Accessories

### Materials and Finish

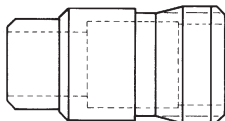
**Body** — Copper alloy, .000015 [0.000381] min. gold per MIL-G-45204 over .000040 [0.00102 min. nickel per QQ-N-290

**End Cap** — PTFE

PTFE is a trademark of E.I. du Pont de Nemours and Company.

### Cavity Reducer Pin

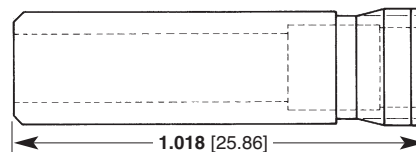
Part Number 446743-1



Size 5 coax to size 12 contact cavity reducer. Insert into size 5 coax cavity to convert to a size 12 power contact cavity.

### Cavity Reducer Socket

Part Number 446744-1



### Dust Covers, Conductive

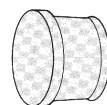


| Connector Size(s) | Part Number |
|-------------------|-------------|
| 1                 | 211600-1    |
| 2 & 3             | 211600-2    |

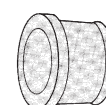
### Coaxial Sealing Plug and Boot

Material — Silicone Rubber

Size 5



Plug—Part Number 205975-1



Boot for RG-58C cable—Part Number 205402-2  
Boot for RG-180, -190 cable—Part Number 205402-3

## Sealing Plugs

Size 22



Part Number 204760-1  
White PTFE

Size 20



Part Number 203839-1  
Red thermoplastic

Size 16



Part Number 203839-2  
Blue thermoplastic

Size 12



Part Number 205574-1  
Yellow thermoplastic

## Application Tooling and Insertion/Extraction Tooling

### Hand Crimping Tools

These standard military-type hand tools terminate screw-machined pins and sockets to wire with an 8-indent crimp per MIL-C-22520. They are ideal for prototype, field maintenance and other applications where volume is not a factor.

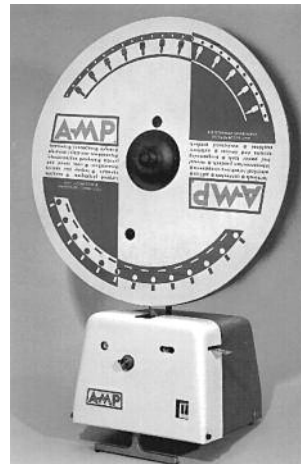
Tool Number 601967-1 is suitable for crimping wire range 26 AWG [0.12–0.15 mm<sup>2</sup>] to 12 AWG [3 mm<sup>2</sup>]. Tool Number 601966-1 is suitable for crimping wire range 32 AWG [0.03 mm<sup>2</sup>] to 20 AWG [0.5–0.6 mm<sup>2</sup>].



**Part Number 601966-1**  
**MIL Number M22520/2-01**

### AMP-TAPEMATIC 4/8 Indent Stripper-Crimper Machine, 599406-7

Portable bench machine that strips wire and crimps tape-mounted, closed-barrel pin and socket contacts for AMPLIMITE Military, ARINC and CPC connectors. The stripping and crimping heads are accessible through separate openings in the front of the machine. Wire strip length and crimp height are adjustable. The stripping head is pre-set to the proper cutting depth of four standard wire sizes.



### Specifications

**Width** — 12.5 [317]  
**Depth** — 12.5 [317]  
**Height** — 10 [254] without reel  
**Weight** — 45 lb [20 kg]  
**Electrical** — 120 VAC, 60 Hz, 1.3 A  
**Wire Range** — 28–20 AWG  
[0.08–0.5 mm<sup>2</sup>]

### Application Tooling Instruction Sheet Cross Reference

| Tool Number | Instruction Sheet |
|-------------|-------------------|
| 601966-1    | 408-7516          |
| 601967-1    | 408-7516          |
| 599406-7    | 408-7516          |

### Insertion/Extraction Tools, ARINC 600

| Tool Part Number | Product Line | Contact Size | Contact Type             | Color Code | Style                                                   |
|------------------|--------------|--------------|--------------------------|------------|---------------------------------------------------------|
| 91066-1          | ARINC 600    | 22           | Signal                   | Green      | Rear Release/Rear Remove                                |
| 91066-4          | ARINC 600    | 20           | Signal                   | Red        | Rear Release/Rear Remove and Front Release/Front Remove |
| 91066-3          | ARINC 600    | 16           | Signal                   | Blue       | Rear Release/Rear Remove and Front Release/Front Remove |
| 445147-1         | ARINC 600    | 12           | Signal                   | —          | Rear Release/Rear Remove and Front Release/Front Remove |
| 445815-1         | ARINC 600    | 22           | Signal                   | —          | Front Release/Front Remove                              |
| 58284-1          | ARINC 600    | 8            | Twinax/Triax/Coax/Quadax | —          | Rear Release/Rear Remove and Front Release/Front Remove |
| 448703-1         | ARINC 600    | 8            | Twinax/Triax/Coax        | —          | Front Release/Rear Remove                               |
| 91074-1          | ARINC 600    | 5            | Twinax/Triax/Coax        | —          | Rear Release/Rear Remove and Front Release/Front Remove |

## Cross Reference

For convenience, certain connectors have been assigned conventional TE Connectivity production part numbers, as shown in this table. These parts may be ordered using the TE numbers or by using descriptive part numbers.

| Description                      | TE Designation  | Part Number | RoHS Part Number |
|----------------------------------|-----------------|-------------|------------------|
| Size 1 Receptacle, Unsealed      | NIC66E11A00AA0  | 1-208599-1  | —                |
|                                  | NIC66E11A00AA1  | 1-208599-5  | —                |
|                                  | NIC66E11A01AA0  | 208599-1    | 5-208599-1       |
|                                  | NIC66E11A01AA1  | 208599-2    | —                |
|                                  | NIC66E11A03AA1  | 208599-7    | 5-208599-7       |
|                                  | NIC66E11A11AA0  | 1-208599-0  | —                |
|                                  | NIC66E11A12AA0  | 1-208599-3  | —                |
|                                  | NIC66E11A12CB0  | 208599-4    | —                |
|                                  | NIC66E11A16AA0  | 208599-9    | —                |
|                                  | NIC66E11A19CB1  | 208599-3    | —                |
|                                  | NIC66E11A22AA1  | 208599-5    | —                |
|                                  | NIC66E11A23AA0  | 208599-8    | —                |
|                                  | NIC66E11A50AA0  | 208599-6    | —                |
|                                  | NIC66E11B01AA0  | 208600-1    | —                |
| Size 1 Receptacle, Sealed        | NIC66E11B01AA1  | 208600-2    | —                |
|                                  | NIC66E11B54AA0  | 208600-3    | —                |
| Size 1 Receptacle, Front Release | NIC66E11FA01FA1 | 448482-1    | —                |
|                                  | NIC66E11FA01FF0 | 448482-2    | —                |
| Size 1 Plug, Unsealed            | NIC66F11A00AA0  | 208597-7    | —                |
|                                  | NIC66F11A01AA0  | 208597-1    | —                |
|                                  | NIC66F11A01AA1  | 208597-2    | —                |
|                                  | NIC66F11A03AA0  | 208597-4    | —                |
|                                  | NIC66F11A03CB1  | 208597-9    | —                |
|                                  | NIC66F11A06CB1  | 1-208597-3  | —                |
|                                  | NIC66F11A08AA1  | 1-208597-2  | 6-208597-2       |
|                                  | NIC66F11A08CB0  | 1-208597-5  | —                |
|                                  | NIC66F11A10AA1  | 1-208597-6  | 6-208597-6       |
|                                  | NIC66F11A13AA0  | 208597-5    | —                |
|                                  | NIC66F11A13AA1  | 208597-6    | —                |
|                                  | NIC66F12A02AA0  | 208597-8    | —                |
|                                  | NIC66F12A02CB0  | 1-208597-4  | —                |
|                                  | NIC66F14A01AA0  | 1-208597-0  | —                |
| Size 1 Plug, Sealed              | NIC66F11B01AA0  | 208598-1    | —                |
|                                  | NIC66F11B01AA1  | 208598-2    | 5-208598-2       |
|                                  | NIC66F11B22AA1  | 208598-4    | —                |
|                                  | NIC66F11C00AA1  | 1-208598-2  | —                |
|                                  | NIC66F11C01AA1  | 208598-3    | —                |
| Size 2 Receptacle, Unsealed      | NIC66G21A00AA0  | 1-208970-4  | —                |
|                                  | NIC66G21A01AA0  | 208970-1    | —                |
|                                  | NIC66G21A01AA1  | 208970-4    | —                |
|                                  | NIC66G21A01AC0  | 208970-2    | —                |
|                                  | NIC66G21A01BA1  | 208970-5    | —                |
|                                  | NIC66G21A01CA0  | 1-208970-1  | —                |
|                                  | NIC66G21A01CC0  | 2-208970-3  | —                |
|                                  | NIC66G21A01CC1  | 208970-6    | 5-208970-6       |
|                                  | NIC66G21A01SB1  | 208970-3    | 5-208970-3       |
|                                  | NIC66G21A01SC1  | 1-208970-8  | —                |
|                                  | NIC66G21A02AA0  | 1-208970-3  | —                |
|                                  | NIC66G21A02AA1  | 1-208970-2  | —                |
|                                  | NIC66G21A02CC0  | 2-208970-2  | —                |
|                                  | NIC66G21A05CC0  | 2-208970-4  | —                |
| Size 2 Receptacle, Sealed        | NIC66G21A09CC0  | 1-208970-0  | —                |
|                                  | NIC66G21A19AA0  | 1-208970-7  | —                |
|                                  | NIC66G26A01AA0  | 1-208970-6  | —                |
|                                  | NIC66G21B01AA0  | 208971-1    | —                |
|                                  | NIC66G21B01AA1  | 208971-2    | —                |
|                                  | NIC66G21B04AA0  | 208971-4    | —                |
|                                  | NIC66G21B05AA0  | 208971-3    | —                |

## Cross Reference (Continued)

| Description                      | TE Designation  | Part Number | RoHS Part Number |
|----------------------------------|-----------------|-------------|------------------|
| Size 2 Receptacle, Front Release | NIC66G20FA00FA1 | 3-211991-3  | —                |
|                                  | NIC66G20FA01FA1 | 3-211991-4  | —                |
|                                  | NIC66G20FA03FB0 | 2-211991-0  | —                |
|                                  | NIC66G20FA08FB0 | 2-211991-1  | —                |
|                                  | NIC66G21FA FA1  | 211991-2    | —                |
|                                  | NIC66G21FA00CC1 | 211991-9    | —                |
|                                  | NIC66G21FA01CC1 | 1-211991-0  | —                |
|                                  | NIC66G25FA01FA1 | 211991-3    | —                |
|                                  | NIC66G21FA01FC0 | 1-211991-1  | —                |
|                                  | NIC66G21FA01GD0 | 211991-5    | —                |
|                                  | NIC66G21FA01GJ0 | 3-211991-5  | —                |
|                                  | NIC66G21FA01SB1 | 211991-6    | —                |
|                                  | NIC66G21FA02FF0 | 1-211991-4  | —                |
|                                  | NIC66G21FA04FF0 | 3-211991-0  | —                |
|                                  | NIC66G21FA06GF0 | 2-211991-7  | —                |
|                                  | NIC66G21FA07GD0 | 3-211991-7  | —                |
|                                  | NIC66G21FA09GD0 | 1-211991-6  | —                |
|                                  | NIC66G22FA00CC1 | 2-211991-4  | —                |
|                                  | NIC66G23FA00CC1 | 2-211991-2  | —                |
|                                  | NIC66G23FA01FA1 | 211991-1    | —                |
|                                  | NIC66G23FA02FA1 | 1-211991-7  | —                |
|                                  | NIC66G23FA09FA1 | 211991-4    | —                |
|                                  | NIC66G25FA00CC1 | 2-211991-3  | —                |
|                                  | NIC66G26FA01FA1 | 211991-8    | —                |
|                                  | NIC66G26FA68GD0 | 1-211991-2  | —                |
|                                  | NIC66G29FA01FA1 | 1-211991-8  | —                |
|                                  | NIC66G29FA02FA1 | 3-211991-6  | —                |
| Size 2 Plug, Unsealed            | NIC66H20A AA0   | 2-208972-8  | —                |
|                                  | NIC66H20A00AA0  | 3-208972-5  | 8-208972-5       |
|                                  | NIC66H20A08AA1  | 4-208972-0  | 9-208972-0       |
|                                  | NIC66H21A00AA0  | 1-208972-6  | —                |
|                                  | NIC66H21A01AA0  | 208972-1    | 5-208972-1       |
|                                  | NIC66H21A01AA1  | 208972-2    | —                |
|                                  | NIC66H21A02AA0  | 1-208972-4  | —                |
|                                  | NIC66H21A02AA1  | 1-208972-2  | —                |
|                                  | NIC66H21A03AA0  | 3-208972-6  | —                |
|                                  | NIC66H21A06AA0  | 3-208972-7  | —                |
|                                  | NIC66H21A14AA0  | 1-208972-1  | —                |
|                                  | NIC66H22A01AA1  | 208972-8    | —                |
|                                  | NIC66H22A13AA0  | 2-208972-0  | —                |
|                                  | NIC66H23A00CB1  | 3-208972-2  | —                |
|                                  | NIC66H23A01AA0  | 208972-5    | —                |
|                                  | NIC66H23A01AA1  | 208972-7    | 5-208972-7       |
|                                  | NIC66H23A01CB1  | 1-208972-8  | —                |
|                                  | NIC66H23A02AA0  | 2-208972-3  | —                |
|                                  | NIC66H23A05AA0  | 2-208972-1  | —                |
|                                  | NIC66H25A01AA0  | 208972-9    | —                |
|                                  | NIC66H25A01AA1  | 1-208972-0  | —                |
|                                  | NIC66H26A00AA1  | 3-208972-4  | —                |
|                                  | NIC66H26A01AA0  | 1-208972-5  | —                |
|                                  | NIC66H26A01AA1  | 1-208972-3  | —                |
|                                  | NIC66H26A01SA1  | 2-208972-2  | —                |
|                                  | NIC66H51A00AA0  | 2-208972-4  | —                |
|                                  | NIC66H52A00AA0  | 3-208972-0  | 8-208972-0       |
|                                  | NIC66H52A03AA0  | 3-208972-9  | 8-208972-9       |
|                                  | NIC66H53A01AA0  | 2-208972-5  | —                |
|                                  | NIC66H53A08AA0  | 449836-1    | —                |
|                                  | NIC66H54A01AA1  | 2-208972-9  | —                |
|                                  | NIC66H56A09AA0  | 449837-1    | —                |
|                                  | NIC66H272A00AA0 | 1218867-2   | —                |

## Cross Reference (Continued)

| Description                      | TE Designation  | Part Number | RoHS Part Number |
|----------------------------------|-----------------|-------------|------------------|
| Size 2 Plug, Sealed              | NIC66H20B03AA0  | 2-208973-8  | —                |
|                                  | NIC66H20B08AA0  | 2-208973-9  | —                |
|                                  | NIC66H20B40AA1  | 3-208973-8  | —                |
|                                  | NIC66H20C00AA0  | 3-208973-1  | —                |
|                                  | NIC66H21B01AA0  | 208973-1    | —                |
|                                  | NIC66H21B01AA1  | 1-208973-0  | —                |
|                                  | NIC66H21B04AA0  | 1-208973-3  | —                |
|                                  | NIC66H21B05AA0  | 1-208973-2  | —                |
|                                  | NIC66H21B06CD0  | 3-208973-3  | —                |
|                                  | NIC66H21B06CD1  | 3-208973-4  | —                |
|                                  | NIC66H21B40AA1  | 3-208973-9  | —                |
|                                  | NIC66H21C00AA0  | 3-208973-0  | —                |
|                                  | NIC66H21C01AA0  | 208973-3    | —                |
|                                  | NIC66H21C06CD0  | 3-208973-5  | 8-208973-5       |
|                                  | NIC66H21C09AA0  | 3-208973-2  | —                |
|                                  | NIC66H21C29AA0  | 2-208973-0  | —                |
|                                  | NIC66H23B01AA0  | 208973-5    | —                |
|                                  | NIC66H23B08AA0  | 1-208973-4  | —                |
|                                  | NIC66H23C01AA1  | 208973-6    | —                |
|                                  | NIC66H25C01AA0  | 208973-7    | —                |
|                                  | NIC66H25C01AA1  | 208973-8    | —                |
|                                  | NIC66H26B01AA1  | 2-208973-2  | —                |
|                                  | NIC66H26B02AA1  | 1-208973-1  | —                |
|                                  | NIC66H52B03AA0  | 4-208973-0  | 9-208973-0       |
| Size 3 Receptacle, Unsealed      | NIC66J31A00AA0  | 208974-4    | —                |
|                                  | NIC66J31A01AA0  | 208974-1    | —                |
|                                  | NIC66J31A01AA1  | 208974-3    | —                |
|                                  | NIC66J34A01AA0  | 208974-5    | —                |
| Size 3 Receptacle, Sealed        | NIC66J31B01AA0  | 208975-1    | —                |
|                                  | NIC66J31B01AA1  | 208975-3    | —                |
| Size 3 Receptacle, Front Release | NIC66J31FA00CA1 | 1-211992-1  | —                |
|                                  | NIC66J31FA01FA1 | 211992-1    | —                |
|                                  | NIC66J31FA01FF0 | 211992-4    | —                |
|                                  | NIC66J31FA01FH0 | 211992-5    | —                |
|                                  | NIC66J31FA03FA1 | 211992-6    | —                |
|                                  | NIC66J31FA27FA1 | 211992-7    | —                |
|                                  | NIC66J32FA00FA1 | 211992-3    | —                |
| Size 3 Plug, Unsealed            | NIC66K31A00AA0  | 208976-5    | —                |
|                                  | NIC66K31A01AA0  | 208976-1    | —                |
|                                  | NIC66K31A01AA1  | 208976-3    | —                |
|                                  | NIC66K32A01AA0  | 208976-7    | —                |
|                                  | NIC66K33A01AA0  | 208976-6    | 5-208976-6       |
|                                  | NIC66K33A01AA1  | 208976-2    | —                |
|                                  | NIC66K34A01AA0  | 208976-8    | —                |
|                                  | NIC66K36A40CD1  | 445717-5    | —                |
| Size 3 Plug, Sealed              | NIC66K31B01AA0  | 208977-1    | —                |
|                                  | NIC66K31B01AA1  | 208977-3    | —                |
|                                  | NIC66K31B01BA0  | 208977-8    | —                |
|                                  | NIC66K31C01AA1  | 208977-5    | —                |
|                                  | NIC66K33B01AA1  | 208977-2    | —                |
|                                  | NIC66K33C01AA1  | 208977-4    | —                |
|                                  | NIC66K34C01AA1  | 208977-7    | —                |
|                                  | NIC66K36C40CD1  | 1-445717-7  | 6-445717-7       |



## MIL 600 Style Connectors

### Product Facts

- **Conforms to MIL-DTL-83527**
- **Sizes: 2, 3, 4**
- **Variety of contact inserts available**
- **Sealing features include grommets, interfacial seals, and wedge stabilizers**
- **Provides EMI shielding**

### Material and Finish

**Shell** — Aluminum 2024 T4  
**Retainer Plates** — Aluminum alloy  
**Finish** — Chemical chromate conversion over cadmium plate per QQ-P-416  
**Polarizing Posts** — Zinc alloy per ASTM B-86 with electroless nickel plating  
**Polarizing Keys** — Stainless steel 303, passivated  
**Inserts** — Thermoset or Thermoplastic  
**Grommets, Seals** — Fluorosilicone rubber

### Specifications

**Temperature Range** —  
-65°C to +125°C  
**Mating and Unmating Forces** —  
Max after 10 cycles; connectors have a full complement of contacts  
Size 2 — 325 lbs  
Size 3 — 400 lbs  
Size 4 — 475 lbs  
Contact Retention against axial load —  
Per MIL-STD-1344, Method 2007  
Size 22 — 12.0 lbs  
Size 20 — 20.0 lbs  
Size 16 — 25.0 lbs  
Size 12 — 30.0 lbs  
Size 8 — 25.0 lbs (twinax)  
Size 5 — 25.0 lbs (coax)

### Voltage/Current Ratings —

| Contact | AWG | Max Current (A) |
|---------|-----|-----------------|
| Size 22 | 22  | 5.0             |
| Size 20 | 20  | 7.5             |
| Size 16 | 16  | 13.0            |
| Size 12 | 12  | 23.0            |

### Dielectric Withstanding Voltage —

| Per MIL-STD-1344, Method 3001 |          |                |
|-------------------------------|----------|----------------|
| Altitude                      | AC Volts | 60 Hz rms      |
|                               | Mated    | Unmated        |
| Sea level                     | —        | 1300 (size 22) |
| Sea level                     | —        | 1500 (others)  |
| 50,000 ft                     | 800      | 550            |
| 70,000 ft                     | 800      | 350            |
| 100,000 ft                    | 800      | 200            |

### Insulation Resistance —

Per MIL-STD-1344, Method 3003  
1000 megohms min. at ambient and at 150°C

**Contact Resistance** — Per MIL-STD-1344, Method 3004 and 3002

**Durability** — Per MIL-STD-1344, Method 2016; 500 cycles minimum

**Salt Spray Tolerance** — Per MIL-STD-1344, Method 1001, test condition A; no evidence of exposure of base metal or build-up of corrosion that affects connector testing

**Humidity Tolerance** — Per MIL-STD-1344, Method 1002, Type II  
Insulation Resistance greater than 1000 megohms before, during and after test

**Fluid Immersion** — Per MIL-STD-1344, Method 1016, fluids tested:  
i) isopropyl alcohol, j) 1-1-1 trichloroethane, k) Freon TMC; no evidence of deterioration, distortion or material reversion

**Temperature Cycling** — Per MIL-STD-1344, Method 1003 except steps 2 and 4 are 2 minutes maximum duration; step 1 is -65°C; step 3 is +150°C

**High Temperature Tolerance** —  
1000 hours min. at 150°C for wired, mated connectors

**Vibration Testing** — Per MIL-STD-1344, Method 2005 (Functional Test Curve: 2 hrs in each of 3 axes; Endurance Test Curve: 2.5 hrs in each of 3 axes); no discontinuity exceeding 1 microsecond, no visible evidence of cracking, breaking or loosening of parts

**Shock Testing** — Per MIL-STD-1344, Method 2004 (Test condition H: 30G, 11 ms, half sine); no discontinuity exceeding 1 microsecond, no visible evidence of cracking, breaking or loosening of parts

**EMI Shielding** — Per DOD-83527 (for a Size 2 shell)

| EMI Shielding Eff. Frequency (MHz) | Leakage Attenuation (dB) |
|------------------------------------|--------------------------|
| 100                                | 65                       |
| 200                                | 63                       |
| 300                                | 63                       |
| 400                                | 62                       |
| 800                                | 60                       |
| 1000                               | 60                       |

**Shell-to-Shell Conductivity** — Per MIL-STD-1344, Method 3007; Potential drop does not exceed 2.5 millivolts

## MIL-DTL-83527 Style Connectors

| Descriptive Number          | TE Connectivity Part Number |
|-----------------------------|-----------------------------|
| M6E2RC150-34WAA01A          | 1218044-1                   |
| M6E2PC150-34WAA01A          | 443965-1                    |
| M6E2PC150-34WAA01A          | 443102-1                    |
| M6E2RC150-100WAA01A         | 447142-1                    |
| M6E2PC24-34WAA01Z           | 447280-1                    |
| M6E2PC150-34WAA01A          | 443102-1                    |
| M6E2PC150-34WAA01A          | 443965-1                    |
| M6E2PC150-100WAA01A         | 447141-1                    |
| M6E3PC150-100-150-100WAA01A | 447143-1                    |
| M6E3RC150-100-150-100WAA01A | 447144-1                    |

**MIL 600 Style Connectors (Continued)**

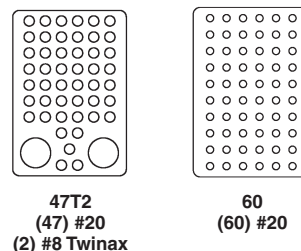
**MIL-DTL-83527 Connector  
Sample Descriptive  
Part Number**

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |             |            |                             |          |           |            |          |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------|------------|-----------------------------|----------|-----------|------------|----------|
| <b>MIL 600 connector in accordance with MIL-DTL-83527</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | <b>M6 E</b> | <b>4RC</b> | <b>150-100-24-34-60-100</b> | <b>W</b> | <b>AA</b> | <b>001</b> | <b>A</b> |
| <b>Sealing</b><br>E = Sealed per M83527: rear grommet, interfacial seal [rcpt only], o-ring around insert<br>F = Interfacial seal [rcpt only], o-ring around insert (no grommet)<br>G = O-ring around insert (no interfacial seal or grommet)<br>U = unsealed<br><br><b>Shell size &amp; plating (see pages 4-42 to 4-44)</b><br>2 = shell size 2 with two insert cavities (A, B)<br>3 = shell size 3 with four insert cavities (A, B, C, D)<br>4 = shell size 4 with six insert cavities (A, B, C, D, E, F)<br><br><b>Shell Type</b><br>R = receptacle (for box)<br>P = plug (for rack or chassis)<br><br><b>Shell Plating</b><br>C = Cadmium plating (MIL-DTL-83527 standard plating)<br>N = Nickel plating<br><br><b>Insert Arrangement</b><br>Indicates the insert arrangements used within the shell. See available M83527 inserts below. If the shell has six inserts (as in this example) then six insert arrangements are identified. In this example, 150 is for the A cavity, 100 is for B cavity, 24 is for C cavity and so on.<br><br><b>Insert style (rear release/remove only)</b><br>W = All contacts rear release/rear remove, Military contacts per MIL-DTL-83527<br><br><b>Shell Modifications</b><br>AA = standard .151 inch [3.8 mm] diameter mounting holes<br><br><b>Keying (see page 4-15 and 4-16 for keying codes)</b><br><br><b>Contact Order Code (Contact part numbers listed on page 4-40)</b><br>Z = no contacts provided<br>A = rear release crimp signal & power contacts (size 22 through size 12) included; coax/triax/quadrax contacts ordered separately |             |            |                             |          |           |            |          |

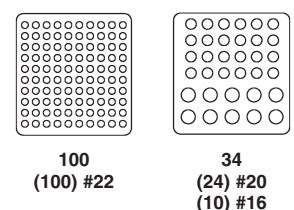
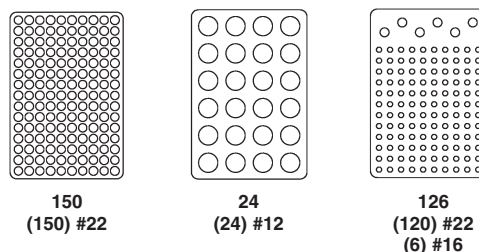
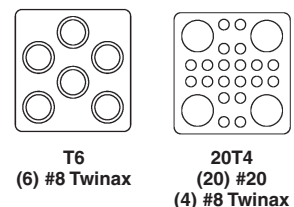
Custom designs can be configured. Contact TE Connectivity for custom versions not defined above.

**MIL-DTL-83527 Inserts**

Available Insert Arrangements for Cavities A, C & E



Available Insert Arrangements for Cavities B, D & F

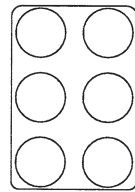


## MIL 600 Style Connectors (Continued)

### Insert Arrangements — Fiber Optics

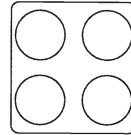
#### Mini-Expanded Beam

Shell Module A, B, D or E

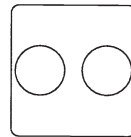


6MS

Shell Module C or F

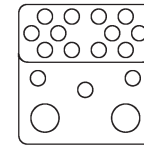


4MP



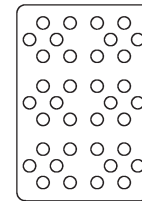
2MP

#### Contact Arrangement



17F12Q2

#### Contact Arrangement



36F36

For ARINC 801 Optical Termini details, see page 4-14

For Mini Expanded Beam insert details, see section 3.

### Military 600 Connector Contact Selection Guide Crimp, Snap-In, Rear-Release Contacts

#### Pin Contacts

| Contact Size | Wire Size AWG | Color Code   | Contact Part Number | MIL Part Number (Reference) | Ins/Ext Tool Part Number |
|--------------|---------------|--------------|---------------------|-----------------------------|--------------------------|
| 22           | 22-26         | Gm/Wh/Violet | 211901-5            | MIL-C-39029/93-597          | 91066-1                  |
| 20           | 20-24         | Grn/Wh/Gray  | 208265-5            | MIL-C-39029/93-598          | 91066-4                  |
| 16           | 16-20         | Grn/Or/Wh    | 213122-5            | MIL-C-39029/93-539          | 91066-3                  |
| 12           | 12-14         | Grn/Ye1/Blk  | 213123-5            | MIL-C-39029/93-540          | 445147-1                 |

#### Socket Contacts

| Contact Size | Wire Size AWG | Color Code  | Contact Part Number | MIL Part Number (Reference) | Ins/Ext Tool Part Number |
|--------------|---------------|-------------|---------------------|-----------------------------|--------------------------|
| 22           | 22-26         | Blu/Blk/Brn | 208264-4            | MIL-C-39029/94-601          | 91066-1                  |
| 20           | 20-24         | Blu/Blk/Red | 208267-4            | MIL-C-39029/94-602          | 91066-4                  |
| 16           | 16-20         | Blu/Blk/Or  | 208270-4            | MIL-C-39029/94-603          | 91066-3                  |
| 12           | 14-Dec        | Blu/Blk/Yel | 208273-4            | MIL-C-39029/94-604          | 445147-1                 |

#### Size 8 Concentric Twinax Contacts

| Contact Style | For Cable     | Contact Part Number | Ins/Ext Tool Part Number |
|---------------|---------------|---------------------|--------------------------|
| Pin           | M17-176-00002 | 222190-4            | 58284-1                  |
| Socket        | M17-176-00002 | 222191-4            | 58584-1                  |

#### Size 12 Shielded Contacts

| Contact Style | For Cable     | Contact Part Number | MIL Part Number (Reference)     | Ins/Ext Tool Part Number |
|---------------|---------------|---------------------|---------------------------------|--------------------------|
| Pin           | M17-176-00002 | 213156-1            | M39029/74-400                   | 445147-1                 |
| Socket        | M17-176-00002 | 213157-1            | M39029/73-397 (with exceptions) | 445147-1                 |

## MIL 600 Style Connectors (Continued)

### MIL-DTL-83527 Shell Configurations with ARINC 600 Style Inserts and Contacts Sample Descriptive Part Number

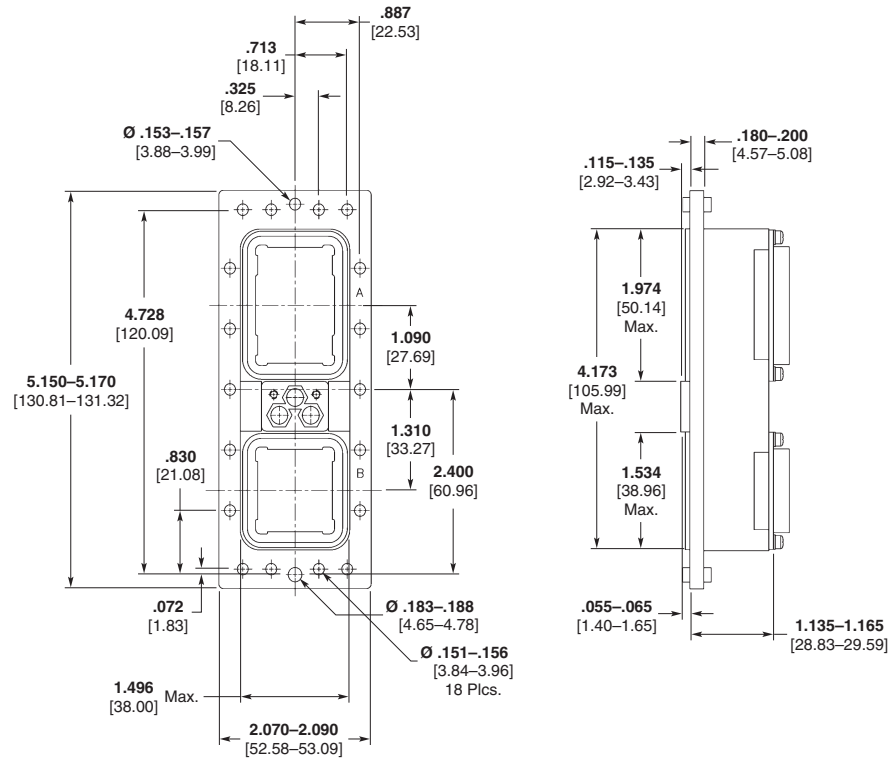
**Note:** These connectors do not meet the performance requirements of MIL-DTL-83527.

| A6 P 4RN 150-13C2-Q11-24-6MP-100 W AA 01 A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |  |  |  |  |  |  |  |  |  |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|--|--|--|--|--|--|
| <b>MIL-DTL-83527 shell with ARINC 600 inserts and contacts</b><br><b>Sealing (no interfacial seals available)</b><br>P = Rear grommet only, no RTV sealant between insert & shell<br>R = Rear grommet, RTV sealant between insert & shell<br>S = RTV sealant between insert & shell, no grommet<br>U = unsealed<br><b>Shell size &amp; plating (see pages 4-42 to 4-44)</b><br>2 = shell size 2 with two insert cavities (A, B)<br>3 = shell size 3 with four insert cavities (A, B, C, D)<br>4 = shell size 4 with six insert cavities (A, B, C, D, E, F)<br><b>Shell Type</b><br>R = receptacle (for box)<br>P = plug (for rack or chassis)<br><b>Shell Plating</b><br>C = Cadmium plating (MIL-DTL-83527 standard plating)<br>N = Nickel plating<br><b>Insert Arrangement (See available ARINC 600 style inserts on pages 4-10 and 4-11)</b><br>Indicates the insert arrangements used within the shell.<br>If the shell has six inserts (as in this example) then six insert arrangements are identified.<br>In this example, 150 is for the A cavity, 13C2 is for B cavity, Q11 is for C cavity and so on.<br><b>Note: ARINC 600 style inserts do not include interfacial seals or o-rings and do not meet the MIL-DTL-83527 contact locations.</b><br><b>Insert style (front release/remove or rear release/remove); all contacts are ARINC 600 style contacts</b><br>W = All contacts rear release/rear remove (plug or receptacle)<br>X = All contacts front release/front remove (receptacle only)<br>Y = All signal (size 22) front release/front remove; all other sizes rear release/rear remove (receptacle only)<br><b>Note: ARINC 600 contacts are not Military qualified contacts and do not meet the MIL-DTL-83527 contact locations.</b><br><b>Shell Modifications</b><br>AA = standard .151 inch [3.8 mm] diameter mounting holes<br><b>Keying (see page 4-15 for keying codes)</b><br><b>Contact Order Code (see pages 4-19 to 4-25 and 442 to 4-47 for ARINC 600 style contacts)</b><br>Z = no contacts provided<br>A = rear release crimp signal & power contacts (size 22 through size 12) included; coax/triax/quadrax contacts ordered separately.<br>B = .250 post extension front release contacts loaded into connector; all other contacts are ordered separately.<br>C = .250 post extension front release contacts loaded into connector; rear release crimp contacts (size 20 through size 12) included with connector kit; rear release crimp coax/triax/quadrax contacts ordered separately.<br>D = same as B except .150 post extension.<br>E = same as C except .150 post extension.<br>F = same as B except .375 post extension.<br>G = same as C except .375 post extension.<br>H = same as B except .500 post extension.<br>J = same as C except .500 post extension. |  |  |  |  |  |  |  |  |  |

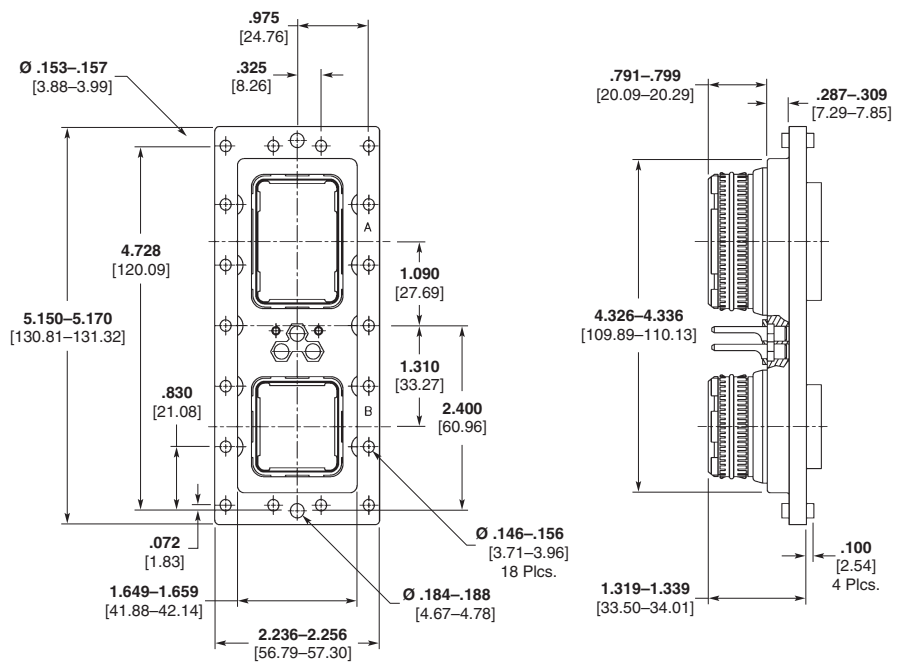
Custom designs can be configured. Contact TE Connectivity for custom versions not defined above.

### MIL 600 Style Connectors (Continued)

## Receptacle Size 2

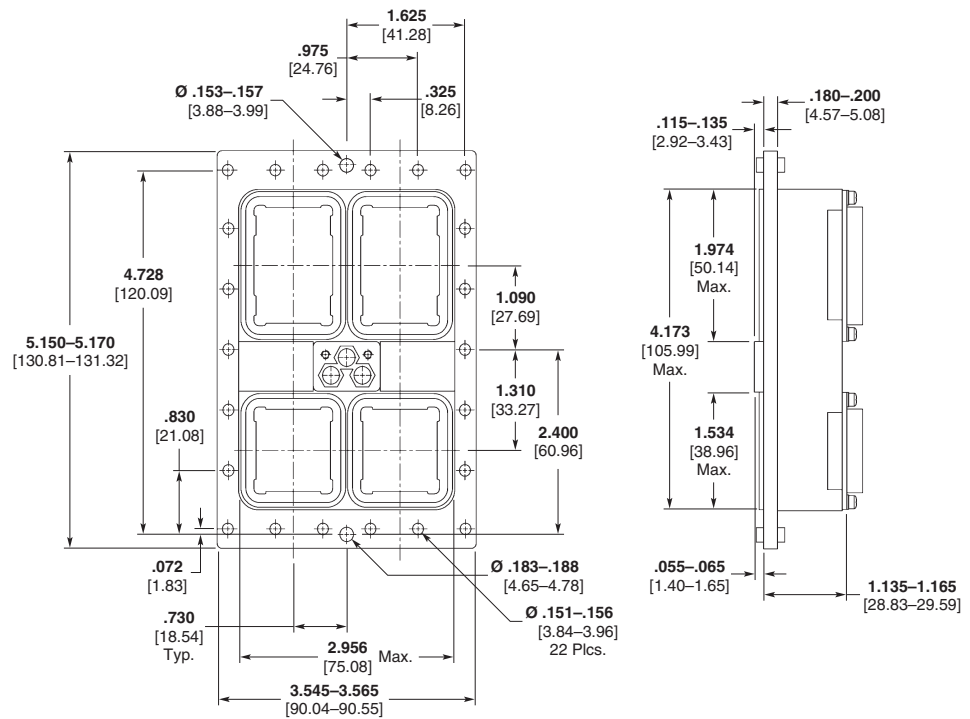


## Plug Size 2

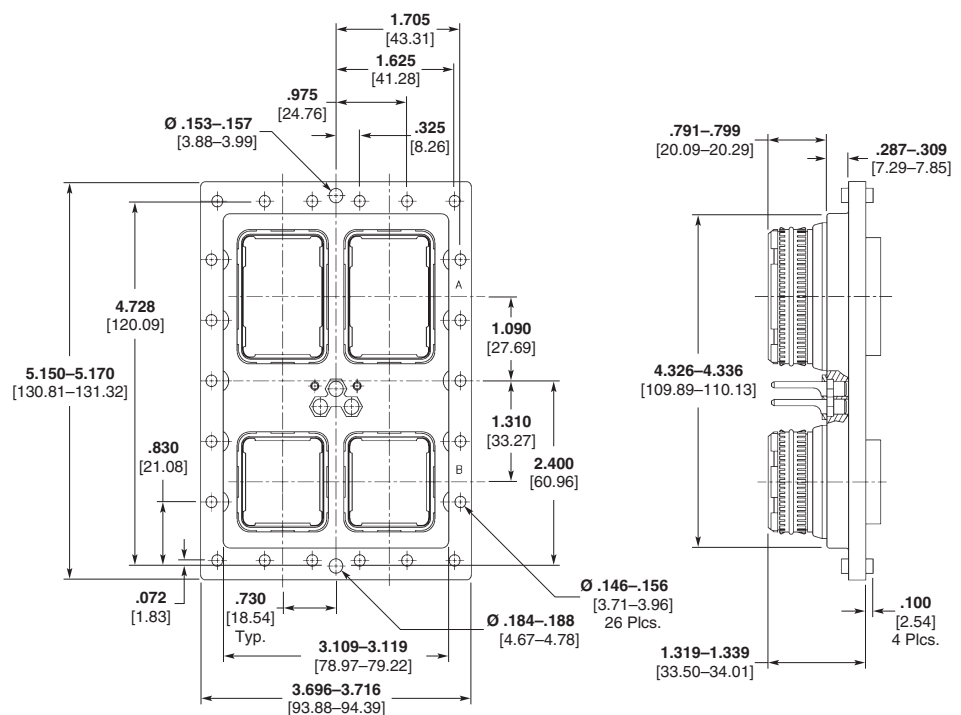


### MIL 600 Style Connectors (Continued)

### Receptacle Size 3

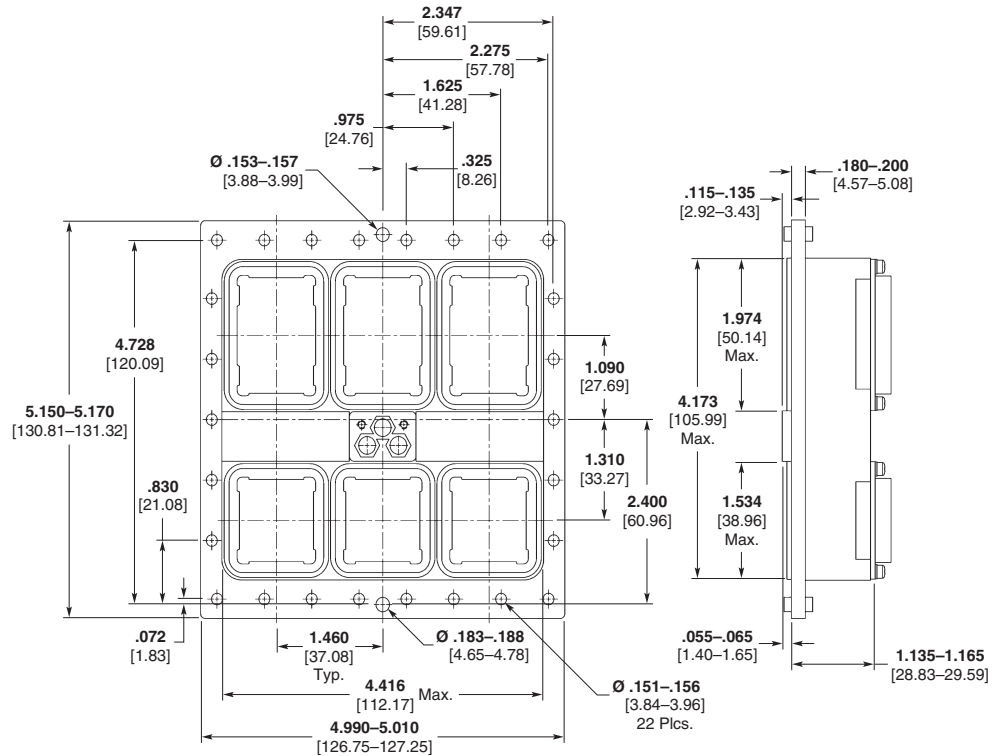


### Plug Size 3

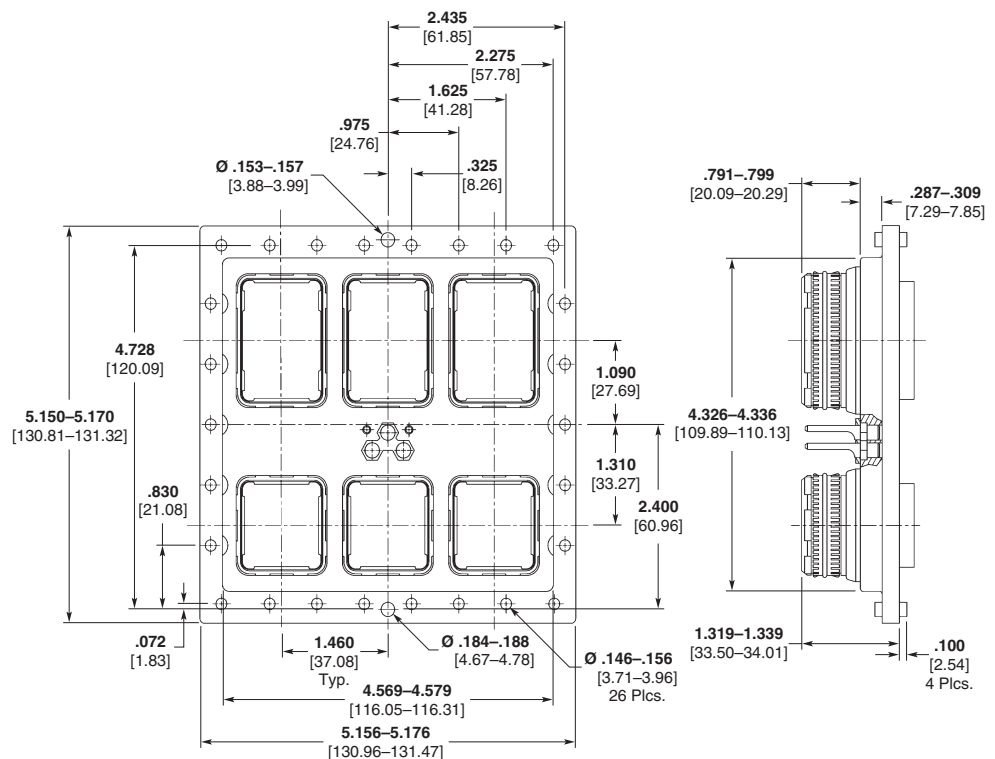


### MIL 600 Style Connectors (Continued)

### Receptacle Size 4



### Plug Size 4





## Introduction

Connectors with wide range of shell configurations/modifications, contact arrangements and contacts to meet ARINC 404 Specifications. The descriptive part numbering scheme described on the following pages can be used for ordering.

### Commercial Series

R — Unsealed

RM — Interface seal on pin insert

RME — Environmentally sealed

### Unkeyed Single-Insert Series

RMA — Standard size, unkeyed single-insert connectors, unsealed

RMAE — same as RMA, except sealed

### Military Series

M — MIL equivalent, unsealed

MM — MIL equivalent, interface seal on pin inserts

MME — MIL equivalent, environmentally sealed

### Miniature Series

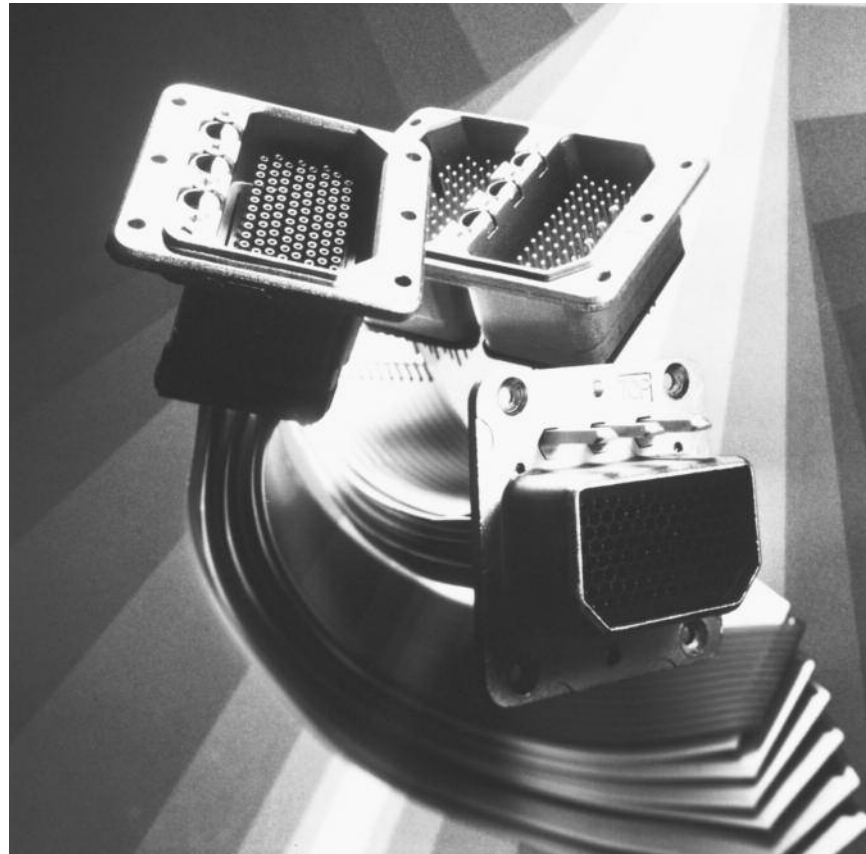
RA — Unsealed

RE — Sealed

Special connectors are also available — including connectors for flexible flat cable, for wire wrap-type terminations, and with contacts for board-mount applications.

Screw-machined pin and socket contacts for connector inserts — signal contact sizes 22, 20, 16 and 12 for terminating wire range of 30 through 12 AWG [0.05–3 mm]. Crimp snap styles for rear-remove, rear-release applications are most common. They can be supplied both in loose-piece form, or can be tape-mounted for high-speed application.

Coax contact sizes 1, 3, 5, 7, 10 and 15 are available.



### Material Specifications

**Shell** — Die-cast aluminum alloy per QQ-A-591; cadmium plated with yellow chromate conversion, or electroless nickel plated per QQ-P-416

**Insert Retention Plates** — (M, MM, R, RM, RME series) Aluminum alloy, blue anodized per MIL-A-8625 or electroless nickel plated per QQ-P-416; (MME series) Aluminum alloy, powder coat blue epoxy; (RA, RE series) Stainless steel, passivated

**Screws and Washers** — Stainless steel, passivated

**Dielectric Hard** — Epoxy

**Dielectric, Interface Seal (Receptacle only) and Wire Sealing Grommets** — Silicone rubber

**Keying Posts and Nuts (Plug Only)** — Stainless steel, passivated

**Keyways (Receptacle Only)** — Commercial — Aluminum

### Performance Specifications

Environmentally sealed RME series connectors are designed per Military Specification MIL-C-81659 and all signal pin and socket contacts per MIL-C-39029.

**Insulation Resistance** — 5000 megohms

**Dielectric Withstanding Voltage (Unmated at Sea Level)** —

Test (contact arrangements 32C2, 33C4, 67 & 106) 1000 volts rms (all other contact arrangements, except C2 & C3) 1500 volts rms Operate (contact arrangements 33C4, 67 & 106) 400 volts rms (all other contact arrangements, except C2 & C3) 500 volts rms

**Temperature Range** — -85°F to 257°F [-65°C to +125°C]

**Contact Current Rating (tested in free air per MIL-C-34029)** —

(See pages 4-56 to 4-58 for information on coaxial contacts)

Size 22 (22 AWG wire) [0.3–0.4 mm<sup>2</sup>]

5.0 amps

Size 20 (20 AWG wire) [0.5–0.6 mm<sup>2</sup>]

7.5 amps

Size 16 (16 AWG wire) [1.25–1.4 mm<sup>2</sup>]

13.0 amps

Size 12 (12 AWG wire) [3 mm<sup>2</sup>]

23.0 amps

**Contact Retention** —

Size 22 15 lb. (min.) [67 N]

Size 20 20 lb. (min.) [89 N]

Size 16 25 lb. (min.) [92 N]

Size 12 30 lb. (min.) [134 N]

**Durability (Mating and Unmating)** — 500 cycles

**Salt Spray** — MIL-STD-1344, Method 1001, Condition B

**Vibration** — MIL-STD-1344, Method 2005, Condition IV

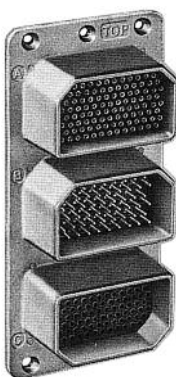
## Ordering Information

### Descriptive Part Numbering System

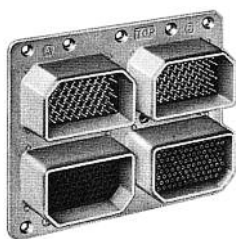
Use this page as a guide to construct part numbers for complete connector packages. Contacts must be ordered separately, except as specified in the Custom Order Code.



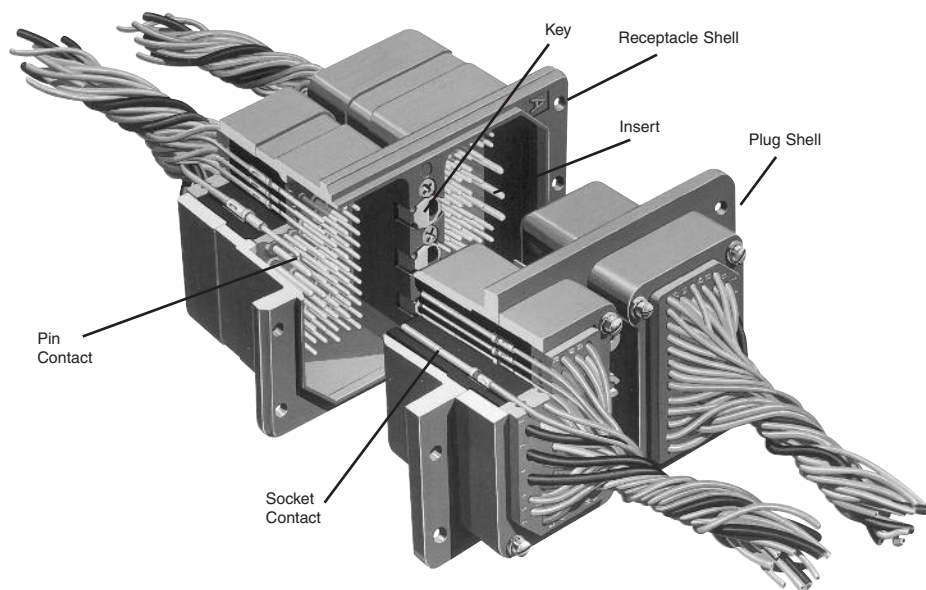
Single-insert receptacle connector shown  
RM 1 R 106S-00 01 (200)



Three-insert plug connector shown  
RM 3 P 106S 57P 106-00 00 (200)



Four-insert plug connector shown  
RME 4 P 106P 106P 106 106S 00 00 (250)



**Note:** Two-Insert Recept. Shell Dim. (Typ.)—3.075 [78.11] L x 2.000 [50.8] W x 1.665 [42.29] Depth

### Sample Descriptive Part Number

RME 2 P 57 S 57 S — 00 01 (201)

#### Shell

Series designator:

R, M—no seals

RM, MM—interface seal on pin inserts

RME, MME—environmentally sealed

RMA—standard insert size, no keying, unsealed

RMAE—standard interface, no keying, environmentally sealed

RA—miniature, unsealed

RE—miniature, environmentally sealed

#### Shell size

1, 2, 3 or 4 inserts, modules A, B, C, D

#### Shell configuration

P—Plug

R—Receptacle

#### Contact inserts

**Contact arrangement** (Module A) (see page 4-47)

**Contact type** (Module A)

P—Pin

S—Socket

**Contact arrangement** (Module B) (see page 4-47)

**Contact type** (Module B)

**Modifications to shell mounting** (see pages 4-50 and 4-51)

**Keying** (see page 4-52)

**Custom order instructions** (see page 4-52)

**Contacts** (see pages 4-53 and 4-54 for ordering details)

#### Sealing boots

#### SPECIAL CONNECTORS

- Wrap-type assemblies
- Assemblies for flexible flat cable

- RA, RE shells and inserts
- RMA shell

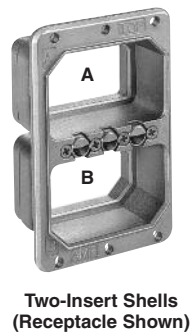
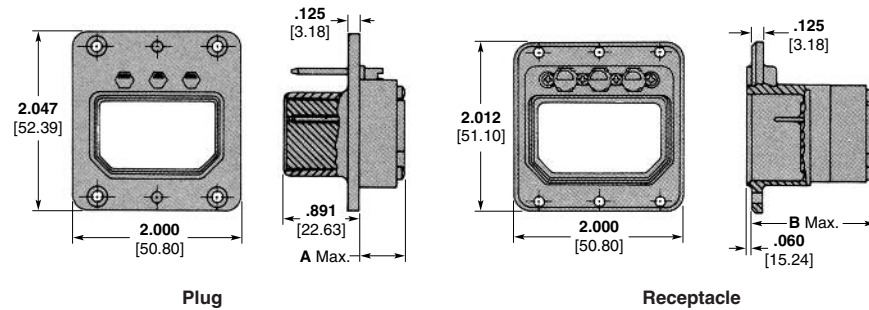
**Note:** RMA/RMAE are only available in single-insert unkeyed shells.

## One- and Two-Insert Shells

Example: RME 1 P 57S — 00 01 (200)

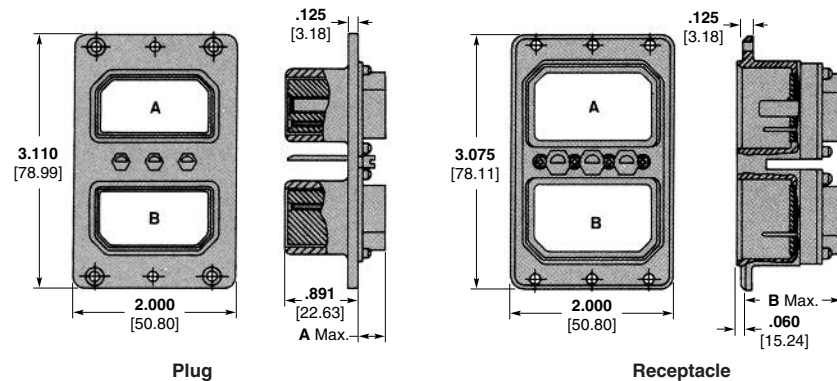


One-Insert Shells  
(Receptacle Shown)



Two-Insert Shells  
(Receptacle Shown)

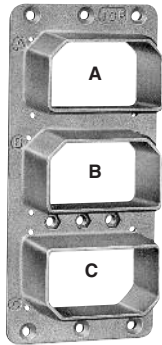
Example: RM 2 P 57S 57S — 00 01 (200)



Maximum extension of connector behind flange, with insert.

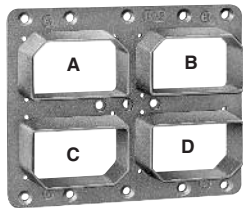
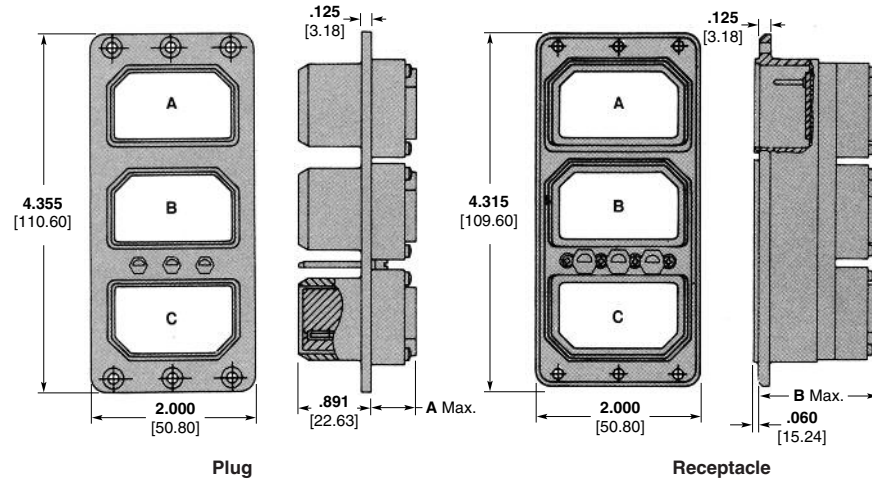
| Contact Arrangement | Dimensions    |               |                     |                |
|---------------------|---------------|---------------|---------------------|----------------|
|                     | A Max. (Plug) |               | B Max. (Receptacle) |                |
|                     | R, M, RM, MM  | RME, MME      | R, M, RM, MM        | RME, MME       |
| C2                  | .075<br>1.91  | .075<br>1.91  | 1.016<br>25.81      | 1.016<br>25.81 |
| C3                  | .075<br>1.91  | .075<br>1.91  | 1.016<br>25.81      | 1.016<br>25.81 |
| 8                   | .314<br>7.98  | .534<br>13.56 | 1.253<br>31.83      | 1.465<br>37.21 |
| C8                  | .512<br>13.00 | —             | 1.452<br>36.88      | —              |
| D8                  | .314<br>7.98  | .534<br>13.56 | 1.253<br>31.83      | 1.465<br>37.21 |
| 26                  | .314<br>7.98  | .534<br>13.56 | 1.253<br>31.83      | 1.465<br>37.21 |
| 32C2                | .529<br>13.44 | .734<br>18.64 | 1.465<br>37.21      | 1.665<br>42.29 |
| 32C4                | .410<br>10.41 | .615<br>15.62 | 1.350<br>33.86      | 1.555<br>39.50 |
| 33C4                | .529<br>13.44 | .734<br>18.64 | 1.465<br>37.21      | 1.665<br>42.29 |
| 40                  | .314<br>7.98  | .534<br>13.56 | 1.253<br>31.83      | 1.465<br>37.21 |
| 40C1                | .529<br>13.44 | .734<br>18.64 | 1.465<br>37.21      | 1.665<br>42.29 |
| 45                  | .314<br>7.98  | .534<br>13.56 | 1.253<br>31.83      | 1.465<br>37.21 |
| 57                  | .314<br>7.98  | .534<br>13.56 | 1.253<br>31.83      | 1.465<br>37.21 |
| 67                  | .314<br>7.98  | .534<br>13.56 | 1.253<br>31.83      | 1.465<br>37.21 |
| 106                 | .075<br>1.91  | .279<br>7.09  | 1.016<br>25.81      | 1.219<br>30.96 |

## Three- and Four-Insert Shells



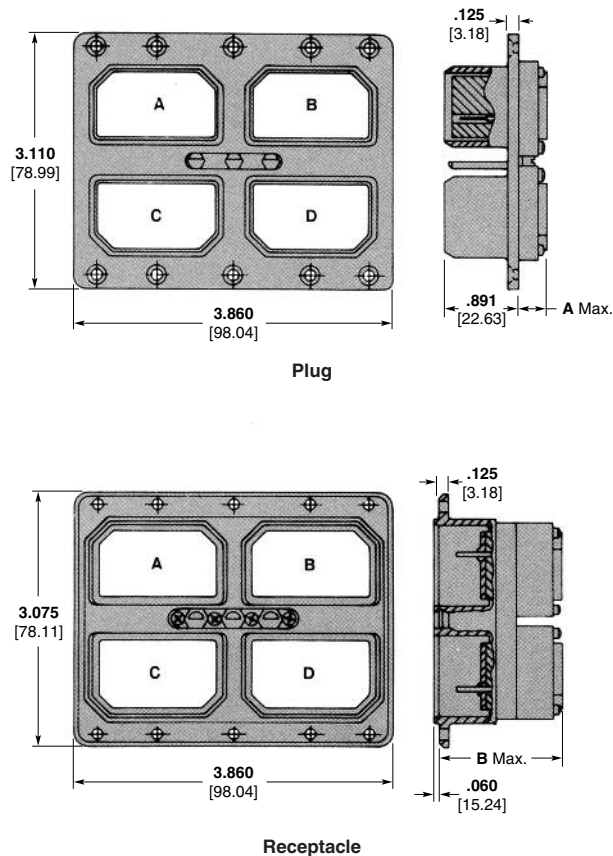
Three-Insert Shells  
(Plug Shown)

Example: RME 3 P 57S 57S 57S — 00 01 (200)



Four-Insert Shells  
(Plug Shown)

Example: RME 4 P 57S 57S 57S 57S — 00 01 (200)



**Note:** Dimensions A and B refer to maximum connector depth with contact inserts installed. These dimensions are tabulated on page 4-47.



## Contact Inserts

### Inserts for Series R, RM, RME; M, MM, MME, and RMA



Arrangement 106, environmental version shown

#### Legend

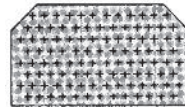
- Size 22 contact cavity
- Size 20 contact cavity
- Size 16 contact or Size 15 COAXICON contact cavity
- Size 12 contact cavity
- COAXICON contact cavity, except Size 15

**Notes:** 1. Size 22 socket contacts extend beyond the mating face of inserts; size 22 pin contacts are recessed. Size 20, 16 and 12 pins are exposed; size 20, 16 and 12 sockets are recessed.  
2. Mating face of pin-contact insert is shown. Socket-contact insert face is mirror image.

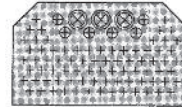


Arrangement 33C4 shown

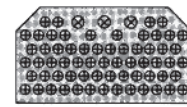
Example: RME 2 P 57S 67S — 00 01 (201)



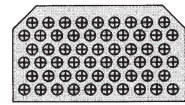
Arrangement 106  
106 Size 22 contacts



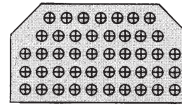
Arrangement 88  
79 Size 22 contacts,  
6 Size 20 contacts,  
3 Size 16 contacts or  
3 Size 15 COAXICON contacts



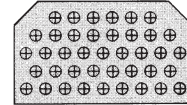
Arrangement 67  
64 Size 20 contacts,  
3 Size 16 contacts or  
3 Size 15 COAXICON contacts



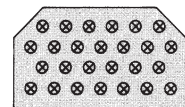
Arrangement 57  
57 Size 20 contacts



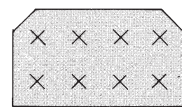
Arrangement 45  
45 Size 20 contacts



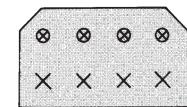
Arrangement 40  
40 Size 20 contacts



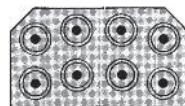
Arrangement 26  
26 Size 16 contacts or  
26 Size 15 COAXICON contacts



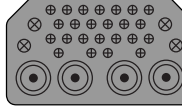
Arrangement 8  
8 Size 12 contacts



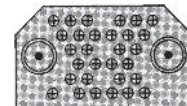
Arrangement D8  
4 Size 12 contacts,  
4 Size 16 contacts or  
4 Size 15 COAXICON contacts



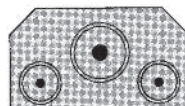
Arrangement C8  
8 Size 9 COAXICON contacts  
For unsealed connectors only



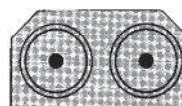
Arrangement 32C4  
4 Size 16 contacts,  
24 Size 20 contacts and  
4 Size 9 COAXICON contacts



Arrangement 32C2  
30 Size 20 contacts,  
2 Size 5 COAXICON contacts



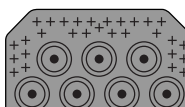
Arrangement C3  
1 Size 3 COAXICON contact,  
2 Size 7 COAXICON contacts  
For unsealed connectors only  
(Consult TE for availability.)



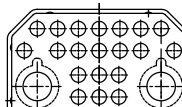
Arrangement C2  
2 Size 1 COAXICON contacts  
For unsealed connectors only  
(Consult TE for availability.)



Arrangement 40C1  
39 Size 20 contacts,  
1 Size 5 COAXICON contact



Arrangement 36C7  
7 Size 5 COAXICON contacts,  
29 Size 22 contacts



Arrangement 2202  
2 Size 8 Quadrx contacts  
20 Size 16 contacts



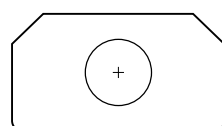
Arrangement 33C4  
25 Size 20 contacts  
4 Size 16 contacts or  
4 Size 15 COAXICON contacts,  
4 Size 5 COAXICON contacts

### Inserts for Fiber Optic Connectors

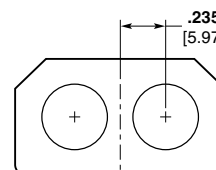
Inserts available to accept Mini-Expanded Beam Fiber Optic Cable Assemblies. Custom design configurations can be provided.

Contact TE Connectivity for additional information, or see page 4-14 in ARINC 600 section, and Expanded Beam Fiber Optics section 3.

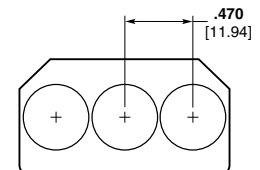
### ARINC 404 Insert Holders for Mini Expanded Beam Contacts



ARINC 404, 1 Position, M1



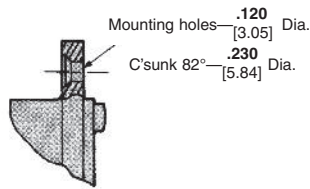
ARINC 404, 2 Position, M2



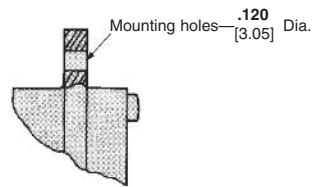
ARINC 404, 3 Position, M3

## Modifications

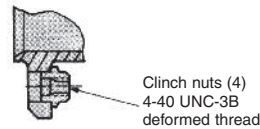
Example: RME 2 P 57S 57S — 00 01 (201)



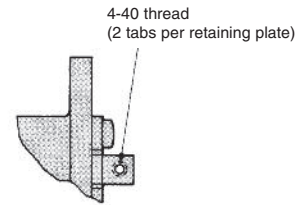
**Modification 00**  
(no modification, plug)



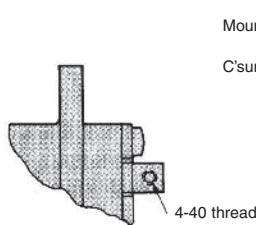
**Modification 00**  
(no modification, receptacle)



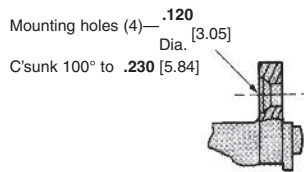
**Modification 01**



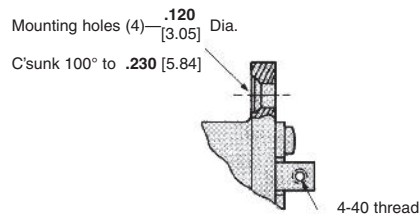
**Modification 02**  
(R, RM, M, MM—attaching tabs)



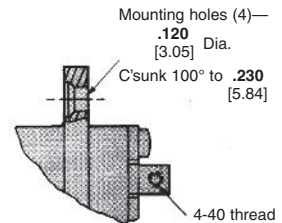
**Modification 02, 70**  
(RME, MME—threaded holes)



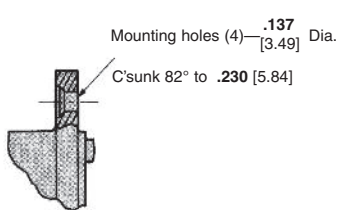
**Modification 03**



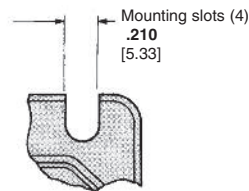
**Modification 04**  
(R, RM, M, MM—attaching tabs)



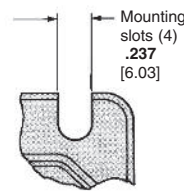
**Modification 04**  
(RME, MME—threaded holes)



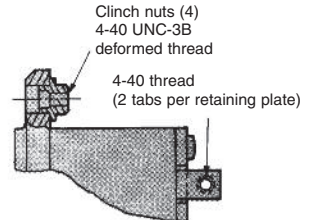
**Modification 08**



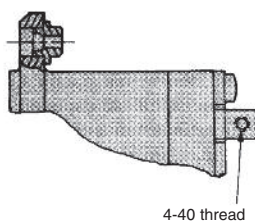
**Modification 12**



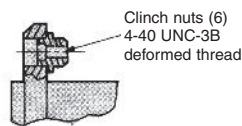
**Modification 13**



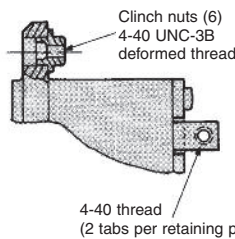
**Modification 17**  
(R, RM, M, MM—attaching tabs)



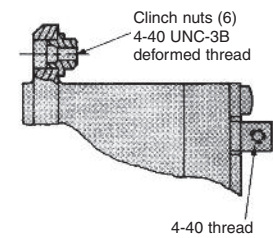
**Modification 17**  
(RME, MME—threaded holes)



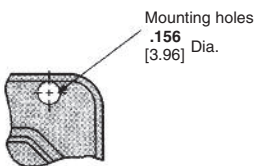
**Modification 18**



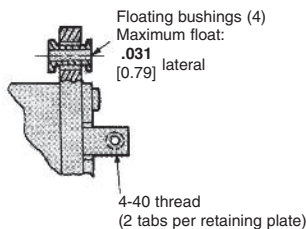
**Modification 19**  
(R, RM, M, MM—attaching tabs)



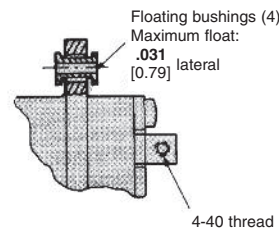
**Modification 19**  
(RME, MME—threaded holes)



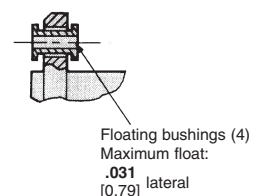
**Modification 20**



**Modification 22**  
(R, RM, M, MM—attaching tabs)



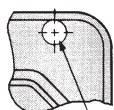
**Modification 22, 71**  
(RME, MME—threaded holes)



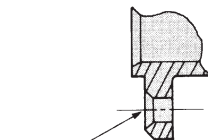
**Modification 23, 39**

# Modifications (Continued)

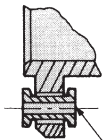
**Example:** RME 2 P 57S 57S — 39 01 (201)



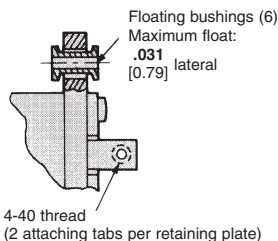
**Modification 25**



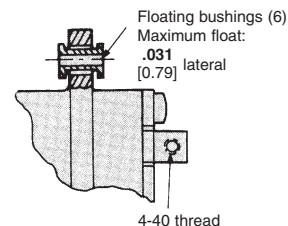
**Modification 26**



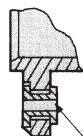
**Modification 29**



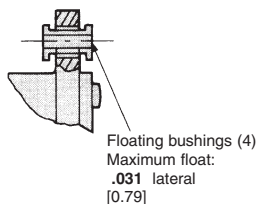
**Modification 30**  
(R, RM, M, MM—attaching tabs)



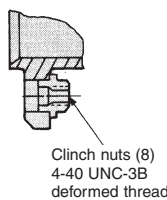
**Modification 30**  
(RME, MME—threaded holes)



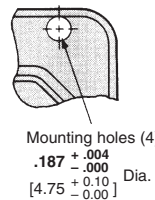
**Modification 33**



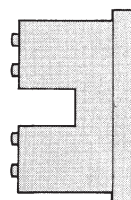
**Modification 39**



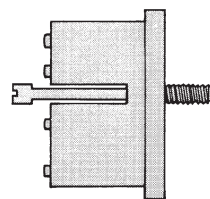
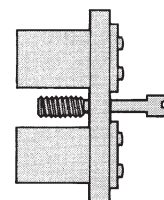
**Modification 42**  
(4-Insert Shells)



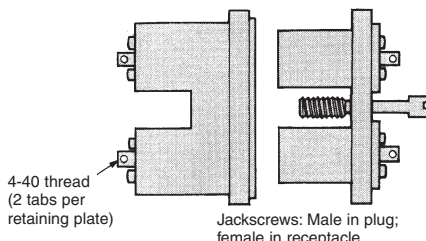
**Modification 46**



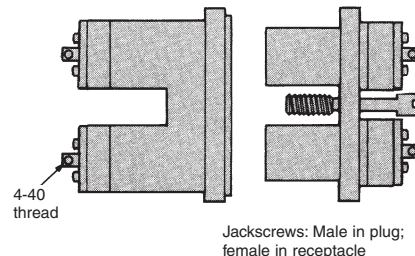
**Modification 50**



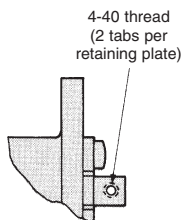
**Modification 51**



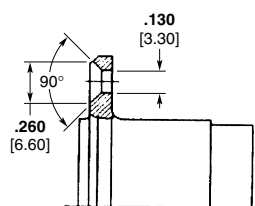
**Modification 52**  
(R, RM, M, MM—attaching tabs)



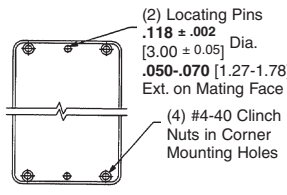
**Modification 52**  
(RME, MME—threaded holes)



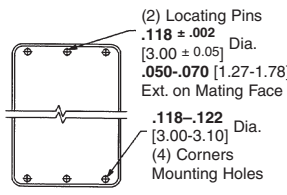
**Modification 72**  
modification 46,  
plus tabs above



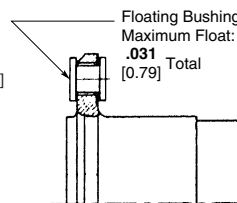
**Modification 73 (without tabs)**  
**Modification 74 (with tabs)**  
Size 1, 2, 3 shells — 4 c'sunk holes  
Size 4 shells — 6 c'sunk holes



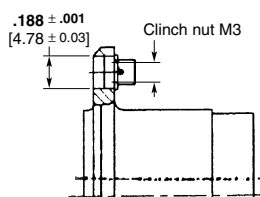
**Modification 76**



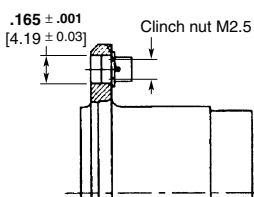
**Modification 77**



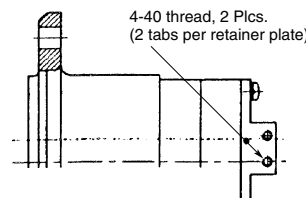
**Modification 78**



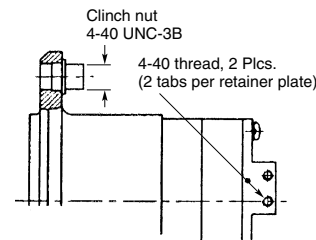
**Modification 79**



**Modification 80**



**Modification 88**

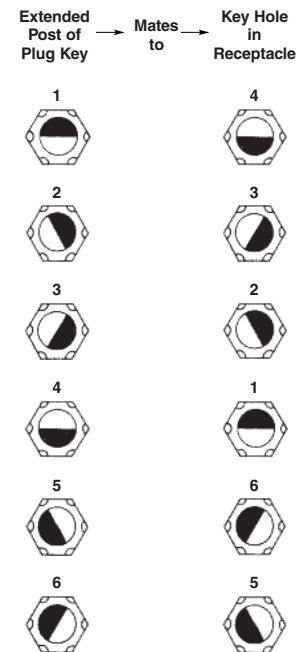
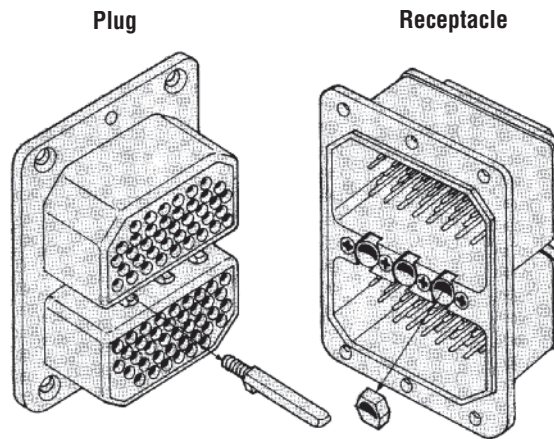


**Modification 89**



## Keying

Example: RME 2 P 57 S 57 S — 00 01 (201)



- Notes:**
1. Darkened portion of diagram indicates extended post of plug key, light portion indicates key hole in receptacle insert.
  2. Keying code stamped on housing.
  3. If keying code is not specified, key inserts are supplied in 01 position; code is not stamped on housing.
  4. If code 00 is specified, keys are omitted and must be ordered separately; code is not stamped on housing.
  5. Key diagrams show mating face of connector "TOP" up.

Refer to ARINC 600 pages 4-15 and 4-16 for keying codes.

## Custom Order Code

Example: RME 2 P 57 S 57 S — 00 01 (201)

| Code | Description                                                                                                                                                                 |
|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 200  | Standard connector kit, <b>including signal contacts</b> ; order coaxial contacts separately.<br>Shell finish: cadmium plated per QQ-P-416 with yellow chromate conversion. |
| 201  | 200 Custom Order Code <b>without contacts</b> , contacts must be ordered separately by part number.                                                                         |
| 202  | 201 Custom Order Code with assembled connector, keying unassembled and packaged in a separate container, contacts must be ordered separately by part number.                |
| 203  | 200 Custom Order Code with inserts and retainer plates unassembled.                                                                                                         |
| 204  | 200 Custom Order Code with spare contacts—3% of contact population per connector per contact size.                                                                          |
| 206  | 200 Custom Order Code with keying unassembled and packaged in a separate container.                                                                                         |
| 250  | 200 Custom Order Code, except shell and retainer plates plated electroless nickel.                                                                                          |
| 400  | 200 Custom Order Code, except contacts are low insertion force, ARINC 600.                                                                                                  |

## Size 22 Contacts — Pin Diameter .030 [0.76]

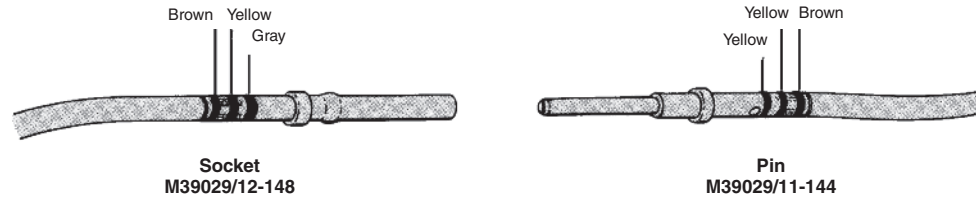
### Standard Contacts

#### Materials

**Pin and Socket Body** — Copper alloy, plated gold over nickel

**Socket Sleeve** — Passivated stainless steel

**Application Tooling** — See page 4-55



| Contact Type                                                                                             | Wire Size<br>AWG<br>mm <sup>2</sup> | Insulation<br>Diameter<br>(Max.) | Tape Mounted Contacts |        | Loose Piece Contacts |          | Hand Crimping Tool |             | AMP-TAPETRONIC<br>Stripper-Crimper |            |
|----------------------------------------------------------------------------------------------------------|-------------------------------------|----------------------------------|-----------------------|--------|----------------------|----------|--------------------|-------------|------------------------------------|------------|
|                                                                                                          |                                     |                                  | Pin                   | Socket | Pin                  | Socket   | Tool               | Positioner  | Machine                            | Funnel     |
| MIL-C-39029                                                                                              | 26-22<br>0.12-0.4                   | .054<br>1.37                     | 204873-3              | —      | 204873-4             | 205103-3 | M22520/2-01        | M22520/2-23 | 599406-7                           | 1-125905-2 |
| <b>Low Force, ARINC 600 connector contacts, suitable for use in ARINC 404 connectors (see page 4-19)</b> |                                     |                                  |                       |        |                      |          |                    |             |                                    |            |
| Low Force<br>ARINC 600*                                                                                  | 26-22<br>0.12-0.4                   | .054<br>1.37                     | —                     | —      | 208262-3             | 208264-2 | M22520/2-01        | M22520/2-23 | —                                  | —          |

\*Color coding, two bands: orange and green.

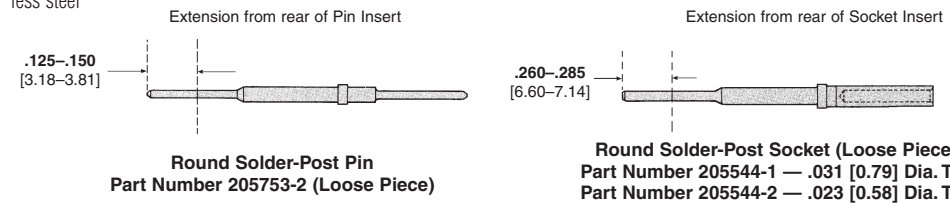
### Round Solder-Post Contacts, Solder Post Diameter .031 [0.79]

**Note:** Round solder-post contacts are for use in RM series connectors.

#### Materials

**Pin and Socket Body** — Copper alloy, plated gold over copper

**Socket Sleeve** — Passivated stainless steel



Insertion and extraction tool for all ARINC 404 size 22 contacts:  
MS81969/1-01  
Part Number 91066-1

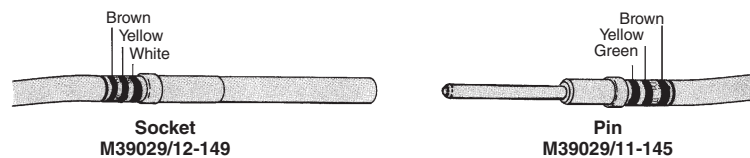
## Size 20 Contacts — Pin Diameter .040 [1.02]

### Standard Contacts

#### Materials

**Pin and Socket Body** — Copper alloy, plated gold over nickel

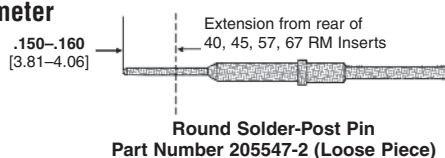
**Socket Sleeve** — Passivated stainless steel



| Contact Type                                                                                             | Wire Size<br>AWG<br>mm <sup>2</sup> | Insulation<br>Diameter<br>(Max.) | Tape Mounted Contacts |          | Loose Piece Contacts |          | Hand Crimping Tool |             | AMP-TAPETRONIC<br>Stripper-Crimper |            |
|----------------------------------------------------------------------------------------------------------|-------------------------------------|----------------------------------|-----------------------|----------|----------------------|----------|--------------------|-------------|------------------------------------|------------|
|                                                                                                          |                                     |                                  | Pin                   | Socket   | Pin                  | Socket   | Tool               | Positioner  | Machine                            | Funnel     |
| MIL-C-39029                                                                                              | 24-20<br>0.2-.06                    | .071<br>1.80                     | 204938-4              | 205116-2 | 204938-3             | 205116-1 | M22520/2-01        | M22520/2-08 | 599406-7                           | 125905-1   |
| Type XVII                                                                                                | 30-26<br>0.05-0.15                  | .071<br>1.80                     | 205791-4              | —        | 205791-3             | 205116-5 | M22520/2-01        | M22520/2-08 | 599406-7                           | 2-125905-4 |
| <b>Low Force, ARINC 600 connector contacts, suitable for use in ARINC 404 connectors (see page 4-19)</b> |                                     |                                  |                       |          |                      |          |                    |             |                                    |            |
| Low Force<br>ARINC 600*                                                                                  | 24-20<br>0.2-0.6                    | .071<br>1.80                     | 208265-4              | —        | 208265-3             | 208267-2 | M22520/2-01        | M22520/2-08 | 599406-7                           | 125905-1   |

\*Color coding, two bands: orange and red.

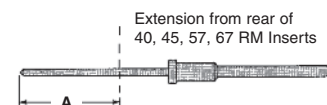
### Round Solder-Post Contact, Solder Post Diameter .031 [0.79]



**Material** — Copper alloy, plated gold over nickel

### Wrap-Type Posted Pin, .025 [0.64] Square Post

| A             | Part Number |
|---------------|-------------|
| .430<br>10.92 | 206210-2    |
| .685<br>17.4  | 206210-4    |
| .185<br>4.7   | 206210-6    |



Insertion and Extraction Tool for all ARINC 404 size 20 contacts:  
MS81969/1-02  
Part Number 91067-2

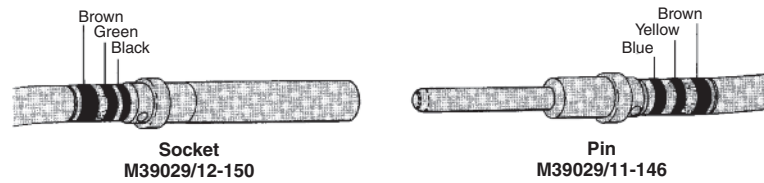
## Size 16 Contacts — Pin Diameter .062 [1.58]

### Standard Contacts

#### Materials

**Pin and Socket Body** — Copper alloy, plated gold over nickel

**Socket Sleeve** — Passivated stainless steel



| Contact Type | Wire Size<br>AWG<br>mm² | Insulation<br>Diameter<br>(Max.) | Tape Mounted Contacts |          | Loose Piece Contacts |          | Hand Crimping Tool |             | AMP-TAPETRONIC<br>Stripper-Crimper |          |
|--------------|-------------------------|----------------------------------|-----------------------|----------|----------------------|----------|--------------------|-------------|------------------------------------|----------|
|              |                         |                                  | Pin                   | Socket   | Pin                  | Socket   | Tool               | Positioner  | Machine                            | Funnel   |
| MIL-C-39029  | <b>20-16</b><br>0.5-1.4 | <b>.103</b><br>2.62              | —                     | 205117-2 | 204978-3             | 205117-1 | M22520/1-01        | M22520/1-02 | 599406-5                           | 125905-6 |

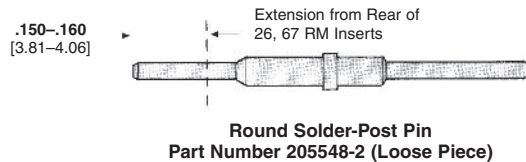
### Low Force, ARINC 600 connector contacts, suitable for use in ARINC 404 connectors (see page 4-19)

|                         |                         |                     |   |   |          |          |             |             |   |   |
|-------------------------|-------------------------|---------------------|---|---|----------|----------|-------------|-------------|---|---|
| Low Force<br>ARINC 600* | <b>20-16</b><br>0.5-1.4 | <b>.103</b><br>2.62 | — | — | 208268-3 | 208270-2 | M22520/1-01 | M22520/1-02 | — | — |
|-------------------------|-------------------------|---------------------|---|---|----------|----------|-------------|-------------|---|---|

\*Color coding, two bands: orange and blue.

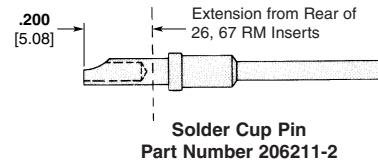
### Round Solder-Post Contact Solder Post Diameter .062 [15.75]

**Material** — Copper alloy, plated gold over nickel



### Solder Cup Pin

**Material** — Copper alloy, plated gold over nickel



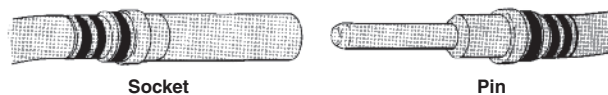
Insertion and Extraction Tool for all size 16 contacts: MS81969/1-03, Part Number 91066-3

## Size 12 Contacts — Pin Diameter .094 [2.39]

### Materials

**Pin and Socket Body** — Copper alloy, plated gold over nickel

**Socket Sleeve** — Passivated stainless steel

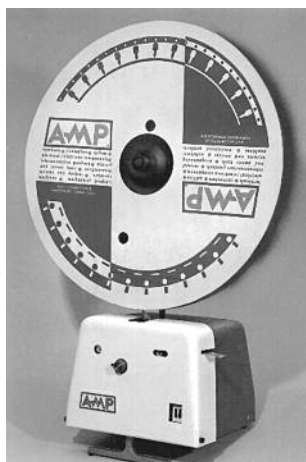


| Contact Type                                                                                             | Wire Size<br>AWG<br>mm² | Insulation<br>Diameter<br>(Max.) | Part Numbers         |          |                    |             |
|----------------------------------------------------------------------------------------------------------|-------------------------|----------------------------------|----------------------|----------|--------------------|-------------|
|                                                                                                          |                         |                                  | Loose Piece Contacts |          | Hand Crimping Tool |             |
|                                                                                                          |                         |                                  | Pin                  | Socket   | Tool               | Positioner  |
| MIL-C-39029                                                                                              | <b>14-12</b><br>2-3     | <b>.190</b><br>4.83              | 205763-5             | 205851-2 | M22520/1-01        | M22520/1-11 |
| <b>Low Force, ARINC 600 connector contacts, suitable for use in ARINC 404 connectors (see page 4-19)</b> |                         |                                  |                      |          |                    |             |
| Low Force<br>ARINC 600*                                                                                  | <b>14-12</b><br>2-3     | <b>.190</b><br>4.83              | 208271-3             | 208273-2 | M22520/1-01        | M22520/1-11 |

\*Color coding, two bands: orange and yellow.

Insertion and Extraction Tool for all size 12 contacts: Part Number 445147-1

## Application Tooling



**AMP-TAPEMATIC  
Stripper/Crimper**  
Machine Part Number 599406-7

Portable bench machine that strips wire and crimps tape-mounted, closed-barrel pin and socket contacts for AMPLIMITE Military, ARINC and CPC connectors. The stripping and crimping heads are accessible through separate openings in the front of the machine. Wire strip length and crimp height are adjustable. The stripping head is pre-set to the proper cutting depth of four standard wire sizes.

### Specifications

**Width** — 12.5 [317]

**Depth** — 12.5 [317]

**Height** — 10 [254] without reel

**Weight** — 45 lb [20 kg]

**Electrical** — 120 VAC, 60 Hz, 1.3 A

**Wire Range** — 28-20 AWG  
[0.08-0.5 mm<sup>2</sup>]



**Hand Crimping Tool**  
(Tool Number 601966-1)  
Part Number M22520/2-01

This standard military-type hand tool terminates screw-machined pins and sockets to wire with an 8-indent, M22520/2 crimp. It is ideally suited for prototype, field maintenance and other applications where volume production is not a factor.

## Application Tooling Instruction Sheet Cross Reference

| Tool Number | Instruction Sheet |
|-------------|-------------------|
| 601966-1    | 408-7516          |
| 601967-1    | 408-7516          |
| 599406-7    | 408-7516          |

## Insertion/Extraction Tools, ARINC 404

| Tool Part Number | Product Line | Contact Size | Contact Type | Color Code | Style                    |
|------------------|--------------|--------------|--------------|------------|--------------------------|
| 91066-1          | ARINC 404    | 22           | Signal       | Green      | Rear Release/Rear Remove |
| 91067-2          | ARINC 404    | 20           | Signal       | Red        | Rear Release/Rear Remove |
| 91066-3          | ARINC 404    | 16           | Signal       | Blue       | Rear Release/Rear Remove |
| 445147-1         | ARINC 404    | 12           | Signal       | —          | Rear Release/Rear Remove |
| 91066-3          | ARINC 404    | 15           | Coax         | Blue       | Rear Release/Rear Remove |
| 91074-1          | ARINC 404    | 9            | Coax         | —          | Rear Release/Rear Remove |
| N/A captivated   | ARINC 404    | 7            | Coax         | —          | Rear Release/Rear Remove |
| 91074-1          | ARINC 404    | 5            | Coax         | —          | Rear Release/Rear Remove |
| N/A captivated   | ARINC 404    | 3            | Coax         | —          | Rear Release/Rear Remove |
| N/A captivated   | ARINC 404    | 1            | Coax         | —          | Rear Release/Rear Remove |

## COAXICON Contacts

### Size 1 Contacts

(For use in ARINC 404 and ARINC 600 Connectors)

#### Performance Characteristics

**Nominal Impedance** — 50 ohms

**Frequency Range** — 0 to 5 GHz

**Operating Temperature** —  
-85°F to 329°F [-65°C to +165°C]

**Operating Voltage (Rated)** —  
1000 VAC rms, 60 Hz at Sea Level

**Contact Resistance (Milliohms)** —  
1.0 max. — Center Contact  
0.2 max. — Outer Contact

**Insulation Resistance** — 5,000  
megohms min. @500 vdc per MIL-STD-1344, Method 3003 or MIL-STD-202, Method 302, Cond. B

#### Dielectric Withstanding Voltage (60 Hz, rms) —

RG 214/U  
2500 at Sea Level

RG 142/U  
1900 at Sea Level

**VSWR** — 1.35 to 1.00 at 5 GHz

**Insertion/Withdrawal Force** —  
Insertion (max.) 15 lb [66.72 N]  
Withdrawal (min.) 1 lb [4.45 N]

**Cable Retention** —  
RG 214/U  
125 lb [556 N] min.  
RG 142/U  
60 lb [266.9 N] min.

**Thermal Shock** — per MIL-STD-1344, Method 1003, Cond. A or MIL-STD-202, Method 107, Cond. A

**Physical Shock** — per MIL-STD-1344, Method 2004, Cond. D or MIL-STD-202, Method 213, Cond. D except 300 G max.

**Vibration** — per MIL-STD-1344, Method 2005, Cond. VI, Letter J or MIL-STD-202, Method 204, Cond. E except 42 G max.

**Humidity Temperature Cycling** — per MIL-STD-1344, Method 1002, Type II, Cond. A or MIL-STD-202, Method 106

**Salt Spray** — per MIL-STD-1344, Method 1001, Cond. B or MIL-STD-202, Method 101, Cond. B

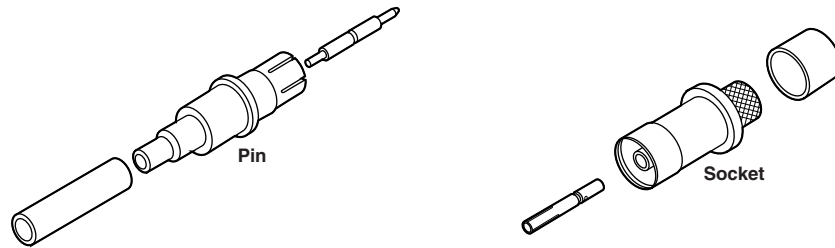
**Temperature Life** — per MIL-STD-1344, Method 1005, Cond. D or MIL-STD-202, Method 108, Cond. D

#### Material and Finish

**Contact** — Beryllium Copper per ASTM-B-196/ASTM-B-197, Brass per ASTM-B-16, PTFE per ASTM-D-1710, Silicon Rubber per ZZ-R-765, Gold plate per MIL-G-45204, Nickel plate per QQ-N-290

**Ferrule** — Copper per ASTM-B-188, Tin plate per ASTM-B-545

### Size 1 (Captivated)



| Contact Size | RG/U Cable                 | Contact Part No. |          | “O” Crimp Tooling |                               |          | Compression Crimp Tooling |                   |                  |
|--------------|----------------------------|------------------|----------|-------------------|-------------------------------|----------|---------------------------|-------------------|------------------|
|              |                            | Pin              | Socket   | Tool (M22520/)    | Center Contact Positioner/Die | Ferrule  | Tool (M22520/)            | Locator (M22520/) | Dies (M22520/)   |
| 1            | 402 Semi-Rigid .141 [3.58] | 225837-1         | —        | 601966-1 (2-01)   | 1-601966-9                    | 91905-1* | —                         | —                 | —                |
|              | 402 Semi-Rigid .141 [3.58] | 222018-1         | —        | —                 | —                             | —        | 59980-1 (36-01)           | 220220-2 (36-06)  | 312253-1 (36-03) |
|              | 405 Semi-Rigid .086 [2.18] | 222018-2         | —        | —                 | —                             | —        | 59980-1 (36-01)           | 220220-2 (36-06)  | 312253-2 (36-02) |
|              | 214                        | —                | 225831-1 | 220015-1          | —                             | 220015-1 | —                         | —                 | —                |
|              | 142, 142A, 142B            | —                | 225831-3 | 91902-1*          | —                             | 91902-1* | —                         | —                 | —                |
|              | 393                        | —                | 225831-6 | 220015-1          | —                             | 220015-1 | —                         | —                 | —                |

\* SDE die used with tool frame 354940-1

## COAXICON Contacts (Continued)

### Size 3 Contacts

(For use in ARINC 404 Connectors)

#### Performance Characteristics

**Nominal Impedance** — 50 ohms

**Frequency Range** — 0 to 5 GHz

**Operating Temperature** —  
-85°F to 329°F [-65°C to +165°C]

**Operating Voltage (Rated)** —  
500 V rms, 60 Hz at Sea Level

**Contact Resistance (Milliohms)** —  
Center Contact — 2.1 max.  
Outer Contact — 0.2 max.

**Insulation Resistance** —  
5,000 megohms min. @ 500 vdc per  
MIL-STD-1344, Method 3003 or MIL-  
STD-202, Method 302, Cond. B

**Dielectric Withstanding Voltage**  
(60 Hz, rms) —  
1500 V rms at Sea Level

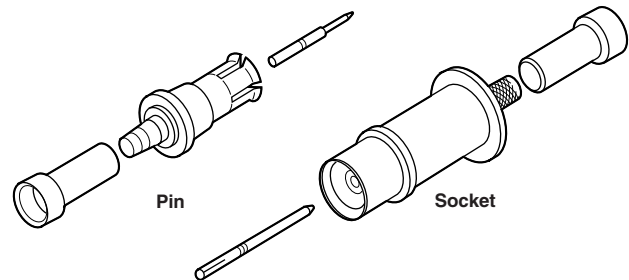
**VSWR** — 1.3 to 1.0 at 5 GHz

#### Material and Finish

**Contact** — Beryllium Copper per  
ASTM-B-196/ASTM-B-197, Brass per  
ASTM-B-16, PTFE per ASTM-D-1710,  
Silicon Rubber per ZZ-R-765, Gold plate  
per MIL-G-45204, Nickel plate per  
QQ-N-290, Tin plate per MIL-L-46064A

**Ferrule** — Copper per ASTM-B-188,  
Tin plate per ASTM-B-545

### Size 3 (Captivated)



| Contact<br>Size    | RG/U<br>Cable      | Contact Part No. |          | "O" Crimp Tooling  |                                                    |          |
|--------------------|--------------------|------------------|----------|--------------------|----------------------------------------------------|----------|
|                    |                    | Pin              | Socket   | Tool<br>(M22520/)  | Center Contact<br>Positioner/<br>Die               | Ferrule  |
| 3                  | 58C                | 226053-1         | 225792-3 | 601966-1<br>(2-01) | 2-601966-4 <sup>1</sup><br>1-601966-8 <sup>2</sup> | 91905-1* |
|                    | 225                | —                | 225792-5 | 220015-1           | —                                                  | 220015-1 |
|                    | 214                | —                | 225792-1 | 220015-1           | —                                                  | 220015-1 |
| 3<br>(Right-Angle) | 142, 142A,<br>142B | 228011-1         | —        | 601966-1<br>(2-01) | 1-601966-8                                         | 91905-1* |

<sup>1</sup> Use with pin contact

<sup>2</sup> Use with socket contact

\* SDE die used with tool frame 354940-1

### Size 5, 9 and 15 Contacts

(For use in ARINC 404 Connectors)

#### Performance Characteristics for size 5, 9 and 15 contacts

**Nominal Impedance** — 50 ohms

**Frequency Range** — 0 to 500 MHz

**Operating Temperature** —  
-85°F to 329°F [-65°C to +165°C]

**Operating Voltage (Rated)** —  
325 VAC rms, 60 Hz

**Contact Resistance (Milliohms)** —  
Sizes 5 and 9 with RG 58/U cable:

Center Contact — 10

Outer Contact — 1.5

Size 15 with RG 316/U cable:

Center Contact — 15

Outer Contact — 2

**Insulation Resistance** —  
5,000 megohms min. @ 500 vdc  
per MIL-STD-1344, Method 3003 or  
MIL-STD-202, Method 302, Cond. B

**Dielectric Withstanding Voltage**  
(60 Hz, rms) —

Sizes 5 and 9 with RG 58/U and 316/U  
cable:

750 at Sea Level

350 at 50,000 ft [15 240 m]

Size 15 with RG 316/U, 178/U and  
196/U cable:

325 at Sea Level

150 at 50,000 ft [15 240 m]

**VSWR** — 1.3 to 1.0 @ 500 MHz

**Insertion/Withdrawal Force** —  
Sizes 5 and 9:

| Insertion Force<br>Maximum |       | Withdrawal Force<br>Minimum |      |
|----------------------------|-------|-----------------------------|------|
| lb                         | [N]   | lb                          | [N]  |
| 5                          | 22.24 | 1                           | 4.45 |

Size 15:

| Insertion Force<br>Maximum |      | Withdrawal Force<br>Minimum |      |
|----------------------------|------|-----------------------------|------|
| oz                         | [N]  | oz                          | [N]  |
| 35                         | 6.95 | 5                           | 1.39 |

#### Cable Retention

Sizes 5 and 9:

60 lb [266.9 N]

Size 15:

10 lb [44.5 N]

**Durability** — 500 cycles

**Thermal Shock** — per MIL-STD-  
1344, Method 1003, Cond. A or MIL-  
STD-202, Method 107, Cond. A

**Physical Shock** — per MIL-STD-  
1344, Method 2004, Cond. A or MIL-  
STD-202, Method 213, Cond. A

**Vibration** — per MIL-STD-1344,  
Method 2005, Cond. IV or MIL-STD-  
202, Method 204, Cond. D

**Moisture Resistance** — per MIL-  
STD-202, Method 106, omit steps 7a  
and 7b

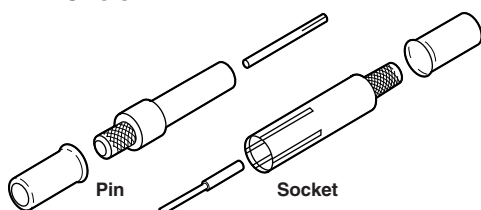
**Salt Spray** — 48 hours per MIL-STD-  
1344, Method 1001, Cond. B or  
MIL-STD-202, Method 101, Cond. B

#### Material and Finish

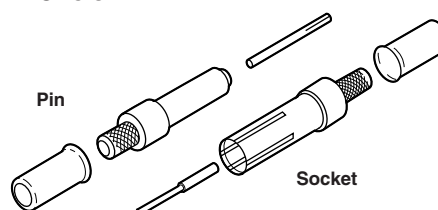
**Contact** — Beryllium copper per  
ASTM-B-196/ASTM-B-197, Brass per  
ASTM-B-16, PTFE per ASTM-D-1710,  
Gold plate per MIL-G-45204, Nickel  
plate per QQ-N-290

**Ferrule** — Copper per ASTM-B-188,  
tin plate per ASTM-B-545

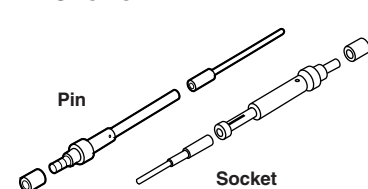
### Size 5



### Size 9



### Size 15



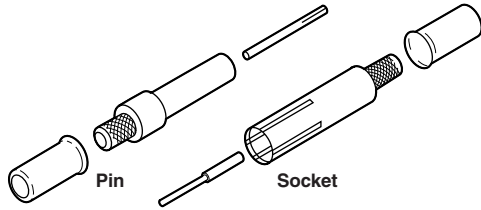


## COAXICON Contacts (Continued)

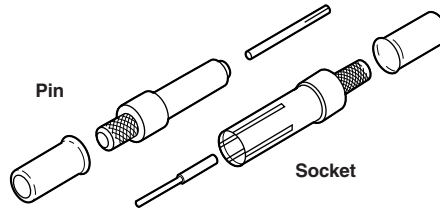
### Size 5, 9 and 15 Contacts

(Continued)

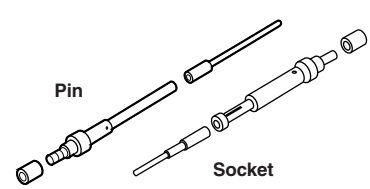
#### Size 5



#### Size 9



#### Size 15



| Contact Size         | RG/U Cable                             | Contact Part No.        |                         | "O" Crimp Tooling |                 |                 | Military Hex Crimp Tooling |                 |                 |               |
|----------------------|----------------------------------------|-------------------------|-------------------------|-------------------|-----------------|-----------------|----------------------------|-----------------|-----------------|---------------|
|                      |                                        | Pin                     | Socket                  | Center Contact    |                 |                 | Center Contact             |                 | Ferrule         |               |
|                      |                                        |                         |                         | Tool (M22520/)    | Positioner/Die  | Ferrule         | Tool (M22520/)             | Die (M22520/)   | Tool (M22520/)  | Die (M22520/) |
| 5                    | 58C                                    | 225790-1                | 225791-1                | 601966-1 (2-01)   | 1-601966-6 K345 | 91905-1**       | —                          | —               | —               | —             |
|                      | 400, 142, 142A, 142B                   | 225790-2                | 225791-2                | 220066-2          | —               | 91905-1**       | —                          | —               | —               | —             |
|                      | 141A                                   | 225790-1                | 225791-1                | 220066-2          | —               | 91905-1**       | —                          | —               | —               | —             |
|                      | 402 Semi-Rigid .141 [3.58]             | 225790-3                | 225791-6                | 220066-2          | —               | 91905-1**       | —                          | —               | —               | —             |
|                      | 174, 188, 316                          | 225790-5                | 225791-3                | 601966-1 (2-01)   | 1-601966-6 K345 | 91905-1**       | —                          | —               | —               | —             |
|                      | 180, 195                               | 225790-4                | 225791-8                | 601966-1 (2-01)   | 1-601966-6 K345 | 91905-1**       | —                          | —               | —               | —             |
|                      | 179, 187                               | 225790-6<br>5-225790-6* | 225791-4<br>5-225791-4* | 601966-1 (2-01)   | 1-601966-6 K345 | 91905-1**       | —                          | —               | —               | —             |
|                      | 178, 196                               | 225790-7                | 225791-5                | 601966-1 (2-01)   | 1-601966-6 K345 | 220020-1        | —                          | —               | —               | —             |
|                      | 223                                    | 225790-2                | 225791-2                | 601966-1 (2-01)   | 1-601966-6 K345 | 91905-1**       | —                          | —               | —               | —             |
|                      | 316 Double Shield<br>188 Double Shield | 225790-8                | 1-225791-0              | —                 | —               | —               | 601966-1 (2-01)            | 1-601966-6 K345 | 608650-1 (5-01) | (Y159)        |
| Military Hex Crimp 5 | 316 Double Shield<br>188 Double Shield | 225790-8<br>5-225790-8* | 1-225791-0              | —                 | —               | —               | 601966-1 (2-01)            | 1-601966-6 K345 | 608650-1 (5-01) | (Y159)        |
|                      | 58C, 141A                              | 447850-1                | 447851-1                | —                 | —               | —               | 601966-1 (2-01)            | 1-601966-6 K345 | 608650-1 (5-01) | (5-45B)       |
|                      | 142, 142A, 142B                        | 447850-2                | 447851-2                | —                 | —               | —               | 601966-1 (2-01)            | 1-601966-6 K345 | 608650-1 (5-01) | (5-45B)       |
|                      | 402 Semi-Rigid .141 [3.58]             | 447850-3                | 447851-3                | —                 | —               | —               | 601966-1 (2-01)            | 1-601966-6 K345 | 608650-1 (5-01) | (5-45A)       |
|                      | 174, 188, 316                          | 447850-4                | 447851-4                | —                 | —               | —               | 601966-1 (2-01)            | 1-601966-6 K345 | 608650-1 (5-01) | (5-37B)       |
| 9                    | 58C<br>141A                            | 225935-1                | 225936-2                | 601966-1 (2-01)   | 1-601966-6 K345 | 91905-1**       | —                          | —               | —               | —             |
|                      | 174, 188<br>316                        | 225935-4<br>5-225935-4* | 225936-3<br>5-225936-3* | 601966-1 (2-01)   | 1-601966-6 K345 | 91905-1**       | —                          | —               | —               | —             |
|                      | 142A, 142B                             | 225935-5                | 225936-5                | 601966-1 (2-01)   | 1-601966-6 K345 | 91905-1**       | —                          | —               | —               | —             |
|                      | 316 Double Shield<br>188 Double Shield | 225935-6                | 225936-9                | —                 | —               | —               | 601966-1 (2-01)            | 1-601966-6 K345 | 608650-1 (5-01) | (Y159)        |
|                      | 179, 187                               | 225935-7                | 225936-7                | 601966-1 (2-01)   | 1-601966-6 K345 | 91905-1**       | —                          | —               | —               | —             |
| 15                   | 188, 316                               | 226782-1                | 226781-1                | 601966-1 (2-01)   | 2-601966-6      | 601963-2 (4-01) | —                          | —               | —               | —             |
|                      | 179, 187                               | 226782-2<br>5-226781-2* | 226781-2<br>5-226781-2* | 601966-1 (2-01)   | 2-601966-6      | 601963-2 (4-01) | —                          | —               | —               | —             |
|                      | 178, 196                               | 226782-3<br>5-226782-3* | 226781-3                | 601966-1 (2-01)   | 2-601966-6      | 601963-2 (4-01) | —                          | —               | —               | —             |

\* RoHS compliant Part Numbers.

\*\* SDE die used with tool frame 354940-1.

#### Extraction tools:

Size 5 and 9 —

Part Number 91074-1

Size 15 —

Part Number 91066-3



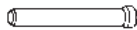
## Plugs, Boots and Caps

### Sealing Plugs

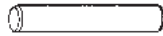
**Size 22**  
Part Number 204760-1  
White PTFE



**Size 20**  
Part Number 203839-1  
Red thermoplastic



**Size 16**  
Part Number 203839-2  
Blue thermoplastic



**Size 12**  
Part Number 205574-1  
Yellow thermoplastic

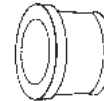


### Coaxial Sealing Plug and Boot

**Size 5**  
Plug—Part Number 205975-1

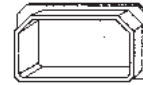


Boot for RG-58C cable—  
Part Number 205402-2  
Boot for RG-180, -190 cable—  
Part Number 205402-3

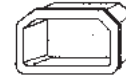


### Dust Covers

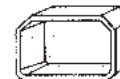
Conductive Receptacle Cap  
Part Number 445918-1  
Conductive Plug Cap  
Part Number 447162-1



Plug Cap  
Part Number 205282-1



Receptacle Cap  
Part Number 205283-1



## 106-Contact Inserts for Flexible Flat Cable



These custom-made assemblies use TE Connectivity Flexible Flat Conductor Cable which has .050 [1.27] wide conductors, .003 [0.08] thick, on .100 [2.54] centers (or similar, customer-specified cable). The inserts mate with 106-contact

inserts, shown on page 4-49, with size 22 contacts.

The adaptability of flexible flat cable to many uses, the wide variety of contact styles available, and the high quality of TE assembled harnesses make these

inserts particularly attractive. Among their outstanding features are that they require no soldering, welding or potting, and the inserts are repairable by replacement of individual cables.

### Flexible Flat Conductor Cable

■ Recognized under the Component Program of Underwriters Laboratories Inc., File No. E53793



Consult TE for additional information.

### Specifications

**Temperature Rating** —  
-67°F to 221°F [-55°C to +105°C]

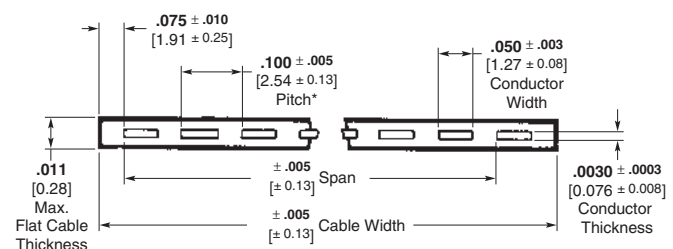
**Voltage Rating** — 300 volts per UL Style No. 2646

**Current Rating** — 3 amperes, equivalent 27 AWG [0.1 mm<sup>2</sup>]

**Insulation Resistance** — 5000 megohms (min.)

**Insulation Material** — Polyester

**Flammability** — Self-extinguishing per applicable UL requirement



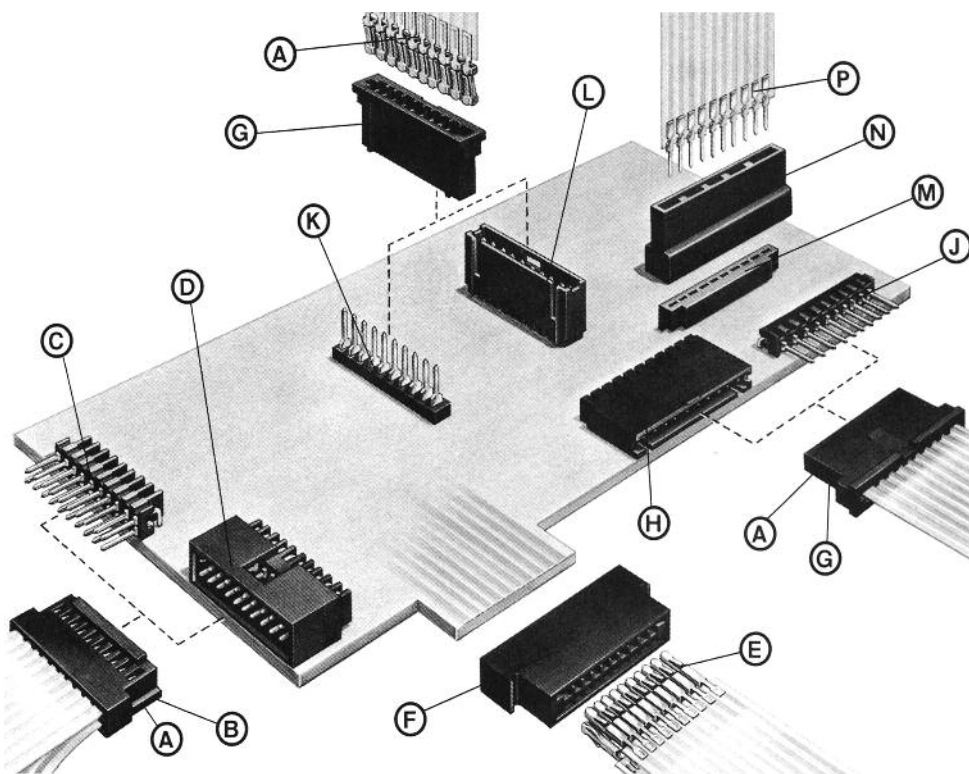
\*Tolerance non-cumulative

## Flexible Flat Cable Applications

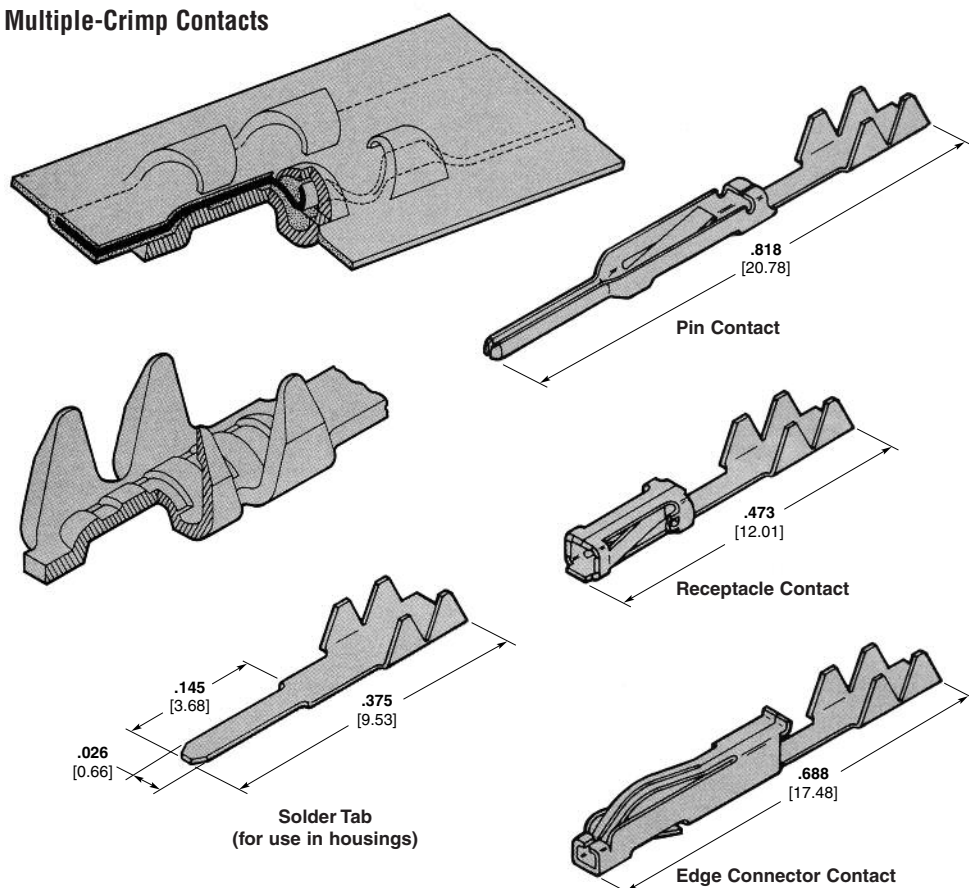
### Design Options

Some of the many possible applications for flexible flat cable are illustrated here. Additionally, individual cables can be divided for termination with a mixture of various contact styles. For more information consult TE Connectivity.

- A** Receptacle contacts
- B** Double row receptacle housing
- C** .025 [0.64] square post, double-row, right-angle header
- D** .025 [0.64] square post, double-row, right-angle header, shrouded
- E** PC edge connector contacts
- F** PC edge connector housing
- G** Receptacle housing
- H** .025 [0.64] square post, single-row, right-angle header, shrouded
- J** .025 [0.64] square post, single-row, right-angle header
- K** .025 [0.64] square post, single-row, straight header
- L** .025 [0.64] square post, single-row, straight header, shrouded
- M** Polarized SIP Socket
- N** Solder tab housing
- P** Solder tab contacts



### Multiple-Crimp Contacts



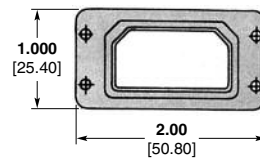
## Special Shells and Inserts

### Miniature Connectors

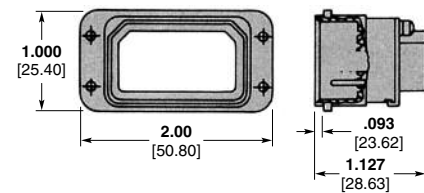
#### RA Series (unsealed)



Example: RA 1 P 32S 00 200

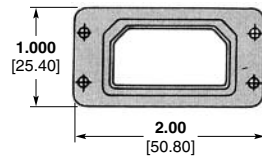


Plug (RA1P)

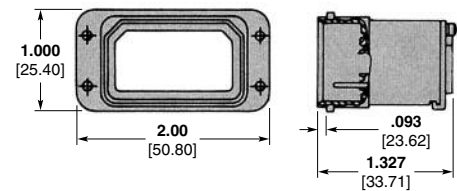


Receptacle (RA1R)

#### RE Series (environmentally sealed)



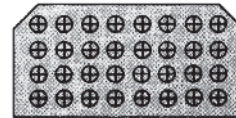
Plug (RE1P)



Receptacle (RE1R)

#### Contact Inserts for Miniature Connectors

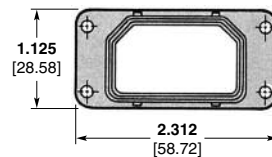
These inserts accept standard contacts shown on pages 4-53 and 4-54.



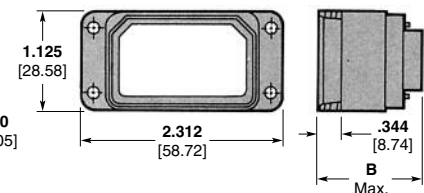
Arrangement 32  
32 Size 20 Contacts

### Standard Size, Unkeyed Connectors

#### RMA Series (unsealed)



Plug



Receptacle

#### RMAE Series (environmentally sealed)

These connectors use inserts shown on page 4-49. The shells are similar to standard series shells, except they are lighter weight and offer no keying provision.

| Contact Arrangement        | Dimensions     |                |                     |                |
|----------------------------|----------------|----------------|---------------------|----------------|
|                            | A Max. (Plug)  |                | B Max. (Receptacle) |                |
|                            | RMA            | RMAE           | RMA                 | RMAE           |
| 106                        | 1.120<br>28.45 | 1.320<br>33.53 | 1.250<br>31.75      | 1.450<br>36.83 |
| 8, D8, 26, 40, 45, 57, 67  | 1.220<br>30.99 | 1.420<br>36.07 | 1.350<br>34.29      | 1.550<br>39.40 |
| C8, 32C2, 32C4, 33C4, 40C1 | 1.420<br>36.07 | 1.420<br>36.07 | 1.550<br>39.37      | 1.550<br>39.37 |

## Cross Reference

| Descriptive Part No.     | Part No.    | RoHS Part No. |
|--------------------------|-------------|---------------|
| M2P106P106P-2300(204)    | 0-1218229-1 | —             |
| M2R57P57P-0004(201)      | 0-1218368-1 | —             |
| M2RC8P106S-0104(200)     | 0-1218919-1 | —             |
| MM2R106S106S-0100(201)   | 0-1218476-1 | —             |
| MME1P106P-2301(204)      | 0-1484157-1 | —             |
| MME1P40S-0300(201)       | 0-1218230-1 | —             |
| MME1P57P-2301(204)       | 0-1218638-1 | —             |
| MME1R106S-0001(204)      | 0-1484158-1 | —             |
| MME1R57S-0001(204)       | 0-1218639-1 | —             |
| MME2P106PC8S-7101(201)   | 0-1218239-1 | —             |
| MME2P33C4S106P-29(204)   | 0-1218735-1 | —             |
| MME2P33C4SD8S-00(200)    | 0-1218720-1 | —             |
| MME2P57P57P-00(204)      | 0-1218814-1 | 5-1218814-1   |
| MME2P57S57S-00(201)      | 0-1218706-1 | 5-1218706-1   |
| MME2R33C4P106S-00(204)   | 0-1218745-1 | —             |
| MME2R33C4PD8P-00(200)    | 0-1218619-2 | —             |
| MME2R33C4PD8P-00(201)    | 0-1218619-1 | 5-1218619-1   |
| MME2R40P40P-0001(204)    | 0-1218236-1 | —             |
| MME2R57S57S-00(200)      | 0-1484033-1 | —             |
| MME2R57S57S-00(201)      | 0-1484033-2 | 5-1484033-2   |
| MME3R26P26P26P-1801(200) | 0-1218155-1 | —             |
| R1P106S-2301(201)        | 0-0213431-1 | —             |
| R1P8S-0201(200)          | 0-1218133-1 | —             |
| R1R106P-0001(201)        | 0-0213432-1 | —             |
| R1R57P-0101(250)         | 0-1484148-1 | —             |
| R2P26S33C4S-0001(200)    | 0-1218637-1 | 5-1218637-1   |
| R2P57S26S-0301(200)      | 0-1218361-1 | —             |
| R2P57S57S-0001(200)      | 0-0213433-1 | —             |
| R2P67S106P-3300(202)     | 2-0445564-0 | —             |
| R2P67S67S-0000(400)      | 0-1218101-1 | —             |
| R2R106S106S-0104(201)    | 0-0443098-1 | —             |
| R2R106S106S-2301(200)    | 0-0213434-6 | —             |
| R2R106S106S-2301(201)    | 0-0213434-7 | —             |
| R2R26P45P-0101(200)      | 0-0213434-1 | —             |
| R2R32C4P106S-0101(201)   | 0-1218404-1 | —             |
| R2R45P45P-0101(200)      | 0-0213434-2 | —             |
| R2R57P26P-0301(201)      | 0-1218205-1 | —             |
| R2R57P57P-0001(201)      | 0-1218146-1 | —             |
| R2R67P67P-0001(200)      | 0-0213434-3 | —             |
| R2R67P67P-0001(201)      | 0-0213434-4 | —             |
| R2R67P67P-0101(200)      | 0-0213434-5 | 5-0213434-5   |
| RA1R32P-00(201)          | 0-1218080-1 | —             |
| RE1P32S-00(200)          | 0-1218176-1 | —             |
| RM1P106P-00(202)         | 0-1218314-1 | —             |
| RM1P26S-0001(200)        | 0-0213435-2 | —             |
| RM1P33C4S-0001(201)      | 0-0213435-3 | —             |
| RM1P33C4S-0001(200)      | 0-1218182-1 | —             |
| RM1P40C1P-0001(200)      | 0-0213435-5 | —             |
| RM1P40C1S-0001(200)      | 0-0213435-6 | —             |
| RM1P40S-0001(201)        | 0-0213435-4 | —             |
| RM1P40S-0001(200)        | 0-1218350-1 | —             |
| RM1P45S-00(200)          | 0-1218479-2 | —             |
| RM1P45S-0000(200)        | 0-1218479-1 | 5-1218479-1   |
| RM1P57S-00(200)          | 0-0213435-7 | —             |
| RM1P57S-00(201)          | 0-0213435-8 | —             |
| RM1P57S-0001(200)        | 0-1218401-1 | —             |
| RM1P67S-00(200)          | 0-0213435-9 | —             |
| RM1P67S-0001(200)        | 0-1218042-1 | —             |
| RM1P67S-2366(200)        | 0-1218756-1 | —             |

| Descriptive Part No.     | Part No.    | RoHS Part No. |
|--------------------------|-------------|---------------|
| RM1P8S-0301(200)         | 0-1218237-1 | —             |
| RM1PD8P-0001(200)        | 0-0213435-1 | 5-0213435-1   |
| RM1R106S-01(200)         | 0-1218724-1 | —             |
| RM1R32C4P-0101(200)      | 0-1218039-1 | —             |
| RM1R33C4P-0001(201)      | 0-0213436-2 | —             |
| RM1R33C4P-0101(200)      | 0-1218040-1 | —             |
| RM1R33C4P-0101(201)      | 0-1218040-2 | —             |
| RM1R40C1S-2301(200)      | 0-0213436-3 | —             |
| RM1R40P-0301(201)        | 0-1218363-1 | —             |
| RM1R67P-00(200)          | 0-0213436-4 | —             |
| RM1R67P-0101(200)        | 0-1218041-1 | —             |
| RM1R67P-0101(201)        | 0-1218041-2 | —             |
| RM1R67P-1848(200)*       | 0-1218656-1 | —             |
| RM1RD8S-0001(200)        | 0-0213436-1 | 5-0213436-1   |
| RM2P106P106P-00(200)     | 0-0213437-9 | —             |
| RM2P106P106P-00(201)     | 1-0213437-0 | —             |
| RM2P106P106P-0000(201)   | 0-0445564-4 | —             |
| RM2P106P106P-00(202)     | 4-0445564-0 | —             |
| RM2P106P106P-0401(201)   | 1-0445564-4 | —             |
| RM2P106S106S-0201(200)   | 3-0445564-6 | —             |
| RM2P26PC8P-0001(200)     | 0-0213437-1 | 5-0213437-1   |
| RM2P26S26S-0001(200)     | 0-0213437-2 | 5-0213437-2   |
| RM2P26S26S-2301(201)     | 0-1218046-1 | 5-1218046-1   |
| RM2P32C2P32C2P-0000(201) | 0-0445564-0 | —             |
| RM2R32C2P40C1P-0001(200) | 0-1218145-1 | —             |
| RM2P32C2S26S-0031(200)   | 0-1218876-1 | 5-1218876-1   |
| RM2P33C4S33C4S-0001(200) | 0-1218528-1 | —             |
| RM2P33C4S33C4S-0301(200) | 0-0213437-4 | —             |
| RM2P33C4SC8S-0001(201)   | 0-0213437-3 | —             |
| RM2P33C4SD8S-0301(200)   | 0-1218228-1 | —             |
| RM2P40C1P40C1P-0000(201) | 0-0445564-1 | —             |
| RM2P40S40S-02(206)       | 2-0445564-6 | —             |
| RM2P40S67S-0301(200)     | 0-1218226-1 | —             |
| RM2P45S45S-0001(200)     | 2-0445564-4 | —             |
| RM2P45S57S-00(200)       | 0-0206442-1 | —             |
| RM2P57P57P-0000(201)     | 0-0445564-2 | —             |
| RM2P57S57S-00(200)       | 0-0213437-5 | —             |
| RM2P67P67P-0000(201)     | 0-0445564-3 | —             |
| RM2P67S32C2S-0001(200)   | 0-0213437-6 | 5-0213437-6   |
| RM2P67S32C2S-0001(201)   | 0-0213437-7 | —             |
| RM2P67S67S-00(202)       | 4-0445564-1 | —             |
| RM2P67S67S-0301(200)     | 0-0213437-8 | —             |
| RM1P67S67S-5001(200)     | 0-1218045-1 | —             |
| RM2PC8SC8S-0301(201)     | 1-0445564-7 | —             |
| RM2R106P106P-0001(201)   | 1-0213438-3 | —             |
| RM2R106S106S-00(200)     | 1-0213438-4 | —             |
| RM2R106S106S-00(202)     | 0-0446913-9 | —             |
| RM2R106S106S-0101(201)   | 0-1218934-1 | —             |
| RM2R106SD8P-0001(200)    | 1-0213438-2 | —             |
| RM2R26P26P-0001(200)     | 0-0213438-2 | 5-0213438-2   |
| RM2R26SC8S-0001(200)     | 0-0213438-1 | 5-0213438-1   |
| RM2R32C2P40C1P-0001(201) | 0-0213438-3 | —             |
| RM2R33C4P33C4P-0101(200) | 0-1218490-1 | —             |
| RM2R33C4P33C4P-2301(200) | 0-0213438-6 | —             |
| RM2R33C4P57P-0101(400)   | 0-1218299-1 | —             |
| RM2R33C4S33C4S-0001(200) | 0-0213438-5 | —             |
| RM2R33C4SC8S-0001(201)   | 0-0213438-4 | —             |
| RM2R40C1P67P-00(200)*    | 0-1218473-1 | —             |
| RM2R40P40P-0104(200)     | 0-1218342-1 | —             |

\*Assembly loaded with posted contacts



## Cross Reference (Continued)

| Descriptive Part No.         | Part No.    | RoHS Part No. |
|------------------------------|-------------|---------------|
| RM2R40P67P-3301(200)         | 0-1218227-1 | —             |
| RM2R57P57P-0104(200)         | 0-1218348-1 | —             |
| RM2R67P26P-00(200)           | 0-0213438-7 | —             |
| RM2R67P32C2P-0001(200)       | 0-0213438-8 | —             |
| RM2R67P40C1P-0101(200)       | 0-0213438-9 | —             |
| RM2R67P57P-00(200)           | 1-0213438-0 | —             |
| RM2R67P67P-0000(200)         | 0-0446913-0 | —             |
| RM2R67P67P-00(202)           | 2-0445564-2 | —             |
| RM2R67P67P-0101(200)         | 1-0213438-1 | —             |
| RM2RC3P67P-0019(201)         | 0-1218206-1 | —             |
| RM2R67P32C2P-0101(200)       | 0-0448584-1 | —             |
| RM3P32C2S67S32C2S-0001(201)  | 0-1218349-1 | —             |
| RM3P40S32C2SC2S-0301(200)    | 0-1218224-1 | —             |
| RM3PC8S32C2S106P-0001(200)   | 0-0443969-1 | —             |
| RM3R40P32C2PC2P-3301(200)    | 0-1218225-1 | —             |
| RM2R40P40P-0104(200)         | 0-1218342-1 | —             |
| RM3RC8P32C2P106S-0001(200)*  | 0-0443970-1 | —             |
| RM4P106P106P106P88P-00(200)  | 0-0443174-1 | —             |
| RM4R88S106S106S106S-00(200)* | 0-0443089-1 | —             |
| RMA1P26P-00(201)             | 0-1218202-1 | —             |
| RMA1P26S-00(201)             | 0-1218201-1 | —             |
| RMA1P45S-39(201)             | 0-1218959-1 | —             |
| RMA1P8S-39(201)              | 0-1218957-1 | —             |
| RMA1R26P00(201)              | 0-1218203-1 | —             |
| RMA1R45P-01(201)             | 0-1218960-1 | —             |
| RMA1R8P-01(201)              | 0-1218958-1 | —             |
| RME1P106P-0301(201)          | 0-1218354-1 | —             |
| RME1P33C4S-0001(200)         | 0-0213439-1 | 5-0213439-1   |
| RME1P40C1S-01(250)           | 0-1484241-1 | —             |
| RME1P40C1S-01(251)           | 0-1484241-2 | —             |
| RME1P40S-0101(200)           | 0-1218352-1 | —             |
| RME1R106S-0201(201)          | 0-1218402-1 | —             |
| RME1R33C4P-0001(200)         | 0-0213440-2 | —             |
| RME1R40C1P-01(250)           | 0-1484240-1 | —             |
| RME1R40C1P-01(251)           | 0-1484240-2 | —             |
| RME1R40P-0001(200)           | 0-0213440-3 | —             |
| RME1R8P-0101(200)            | 0-0213440-1 | —             |
| RME2P106P106P-00(201)        | 0-0213441-6 | —             |
| RME2P106P106P-0001(200)      | 0-0213441-5 | —             |

| Descriptive Part No.        | Part No.    | RoHS Part No. |
|-----------------------------|-------------|---------------|
| RME2P106P106P-0301(200)     | 0-0213441-7 | —             |
| RME2P106P106P-0399(254)     | 2-0445564-3 | —             |
| RME2P106P26P-0001(201)      | 1-0445564-3 | —             |
| RME2P106PD8S-5101(200)      | 2-0445564-1 | —             |
| RME2P106S106S-0001(200)     | 0-0213441-8 | —             |
| RME2P106S26P-0001(201)      | 1-0445564-5 | —             |
| RME2P106S26P-5001(201)      | 0-1218207-1 | —             |
| RME2P33C4S57S-0001(400)     | 0-1218300-1 | —             |
| RME2P40S40S-0015(200)       | 0-1218356-1 | —             |
| RME2P45S45S-0001(200)       | 0-0445564-5 | —             |
| RME2P45S8P-29 (204)         | 0-1218895-1 | —             |
| RME2P67S67S-0001(200)       | 0-0213441-2 | 5-0213441-2   |
| RME2P67S67S-0101(200)       | 0-0213441-3 | —             |
| RME2P67S67S-0301(200)       | 0-0213441-4 | —             |
| RME2P67S67S-5001(200)       | 0-1218214-1 | —             |
| RME2P67SD8S-0001(200)       | 0-0213441-1 | —             |
| RME2P67SD8S-0001(201)       | 2-0445564-7 | —             |
| RME2P77C2P77C2P-0001(250)   | 0-0448235-1 | —             |
| RME2P8S77C2P-0001(250)      | 0-0448235-2 | —             |
| RME2PC8SC8S-0301(251)       | 0-0445564-6 | —             |
| RME2R106P106P-0001(201)     | 0-0446913-3 | —             |
| RME2R106P26S-2301(200)      | 0-0446913-1 | —             |
| RME2R106S106S-0001(200)     | 0-0446913-4 | —             |
| RME2R106S106S-2301(201)     | 0-0213442-5 | —             |
| RME2R106S33C4P-0001(201)    | 0-0213442-3 | —             |
| RME2R40P8P-0101(201)        | 0-0213442-1 | —             |
| RME2R45P8S-00(200)          | 0-1218894-1 | —             |
| RME2R67P26P-5002(200)       | 0-1484014-1 | —             |
| RME2R67P67P-3301(201)       | 0-1218343-1 | 5-1218343-1   |
| RME2R67PD8P-0001(200)       | 0-0213442-2 | —             |
| RME2R77C2S77C2S-0001(250)   | 0-0448227-1 | —             |
| RME2R8P77C2S-0001(250)      | 0-0448227-2 | —             |
| RME2RC8S67S-00(200)         | 0-1218353-1 | —             |
| RME3P106P106P106S-0001(200) | 0-1218297-1 | —             |
| RME3P57P26P26P-2600(201)    | 0-1218159-1 | —             |
| RME3P88S106S106S-0001(400)  | 0-1218358-1 | —             |
| RME3R57S26S26S-3300(201)    | 0-1218158-1 | —             |
| RME3R67P106S67P-7611(204)   | 0-1218723-1 | —             |

\*Assembly loaded with posted contacts

## Cross Reference

The commercial equivalent connectors listed include contacts in quantities as specified by MIL-C-81659. Military connectors may be ordered without contacts by placing the (201) custom ordering code (page 4-52) behind the TE Connectivity Descriptive Part Number. Connectors with keying installed may also be ordered by specifying it in the TE Descriptive Part Number (page 4-46).

| REF MIL Designation   | TE Commercial Equivalent | ITT Cannon Designation   |
|-----------------------|--------------------------|--------------------------|
| MIL-C-81659/29A2-0001 | MME1P26P-00              |                          |
| MIL-C-81659/29A2-0002 | MME1P26S-00              | DPXBNE-26M-33S-00        |
| MIL-C-81659/29A2-0009 | MME1P40P-00              |                          |
| MIL-C-81659/29A2-0010 | MME1P40S-00              | DPXBNE-40M-33S-00        |
| MIL-C-81659/29A2-0017 | MME1P45P-00              |                          |
| MIL-C-81659/29A2-0018 | MME1P45S-00              | DPXBNE-45M-33S-00        |
| MIL-C-81659/29A2-0025 | MME1P57P-00              |                          |
| MIL-C-81659/29A2-0026 | MME1P57S-00              | DPXBNE-57M-33S-00        |
| MIL-C-81659/29A2-0033 | MME1P67P-00              |                          |
| MIL-C-81659/29A2-0034 | MME1P67S-00              | DPXBNE-67M-33S-00        |
| MIL-C-81659/29A2-0041 | MME1P106P-00             | DPXBNE-A106-33P-00       |
| MIL-C-81659/29A2-0042 | MME1P106S-00             |                          |
| MIL-C-81659/29A2-0083 | MME1PD8P-00              |                          |
| MIL-C-81659/29A2-0084 | MME1PD8S-00              | DPXBNE-D8M-33S-00        |
| MIL-C-81659/31A2-0001 | MME1R26P-00              | DPXBNE-26M-34P-00        |
| MIL-C-81659/31A2-0002 | MME1R26S-00              |                          |
| MIL-C-81659/31A2-0009 | MME1R40P-00              | DPXBNE-40M-34P-00        |
| MIL-C-81659/31A2-0010 | MME1R40S-00              |                          |
| MIL-C-81659/31A2-0017 | MME1R45P-00              | DPXBNE-45M-34P-00        |
| MIL-C-81659/31A2-0018 | MME1R45S-00              |                          |
| MIL-C-81659/31A2-0025 | MME1R57P-00              | DPXBNE-57M-34P-00        |
| MIL-C-81659/31A2-0026 | MME1R57S-00              |                          |
| MIL-C-81659/31A2-0033 | MME1R67P-00              | DPXBNE-67M-34P-00        |
| MIL-C-81659/31A2-0034 | MME1R67S-00              |                          |
| MIL-C-81659/31A2-0041 | MME1R106P-00             |                          |
| MIL-C-81659/31A2-0042 | MME1R106S-00             | DPXBNE-A106-34S-00       |
| MIL-C-81659/31A2-0083 | MME1RD8P-00              | DPXBNE-D8M-34P-00        |
| MIL-C-81659/31A2-0084 | MME1RD8S-00              |                          |
| MIL-C-81659/33A2-0003 | MME2P26P26P-00           |                          |
| MIL-C-81659/33A2-0004 | MME2P26S26S-00           | DPX2NE-26MS26MS-33B-00   |
| MIL-C-81659/33A2-0011 | MME2P40P40P-00           |                          |
| MIL-C-81659/33A2-0012 | MME2P40S40S-00           | DPX2NE-40MD40MD-33B-00   |
| MIL-C-81659/33A2-0019 | MME2P45P45P-00           |                          |
| MIL-C-81659/33A2-0020 | MME2P45S45S-00           | DPX2NE-45MS45MS-33B-00   |
| MIL-C-81659/33A2-0027 | MME2P57P57P-00           |                          |
| MIL-C-81659/33A2-0028 | MME2P57S57S-00           | DPX2NE-57MS57MS-33B-00   |
| MIL-C-81659/33A2-0035 | MME2P67P67P-00           |                          |
| MIL-C-81659/33A2-0036 | MME2P67S67S-00           | DPX2NE-67MS67MS-33B-00   |
| MIL-C-81659/33A2-0043 | MME2P106P106P-00         | DPX2NE-A106PA106P-33B-00 |
| MIL-C-81659/33A2-0044 | MME2P106S106S-00         |                          |
| MIL-C-81659/33A2-0057 | MME2P106S26P-00          |                          |
| MIL-C-81659/33A2-0058 | MME2P106P26S-00          | DPX2NE-A106P26MS-33B-00  |
| MIL-C-81659/33A2-0059 | MME2P26P106S-00          |                          |
| MIL-C-81659/33A2-0060 | MME2P26S106P-00          | DPX2NE-26MSA106P-33B-00  |
| MIL-C-81659/33A2-0071 | MME2P67P106S-00          |                          |
| MIL-C-81659/33A2-0072 | MME2P67S106P-00          | DPX2NE-67MSA106P-33B-00  |
| MIL-C-81659/33A2-0089 | MME2P106S67P-00          |                          |
| MIL-C-81659/33A2-0090 | MME2P106P67S-00          | DPX2NE-A106P67MS-33B-00  |
| MIL-C-81659/33A2-0133 | MME2P57P106S-00          | DPX2NE-57MSA106P-33B-00  |
| MIL-C-81659/33A2-0134 | MME2P57S106P-00          |                          |
| MIL-C-81659/33A2-0147 | MME2P57P26P-00           |                          |
| MIL-C-81659/33A2-0148 | MME2P57S26S-00           | DPX2NE-57MS26MS          |
| MIL-C-81659/35A2-0003 | MME2R26P26P-00           | DPX2NE-26MP26MP-34B-00   |
| MIL-C-81659/35A2-0004 | MME2R26S26S-00           |                          |
| MIL-C-81659/35A2-0011 | MME2R40P40P-00           | DPX2NE-40MP40MP          |
| MIL-C-81659/35A2-0012 | MME2R40S40S-00           |                          |
| MIL-C-81659/35A2-0019 | MME2R45P45P-00           | DPX2NE-45MP45MP          |
| MIL-C-81659/35A2-0020 | MME2R45S45S-00           |                          |
| MIL-C-81659/35A2-0027 | MME2R57P57P-00           | DPX2NE-57MP57MP          |
| MIL-C-81659/35A2-0028 | MME2R57S57S-00           |                          |

MIL-C-81659/35A2 Continued on page 4-65

## Cross Reference (Continued)

| REF MIL Designation   | TE Commercial Equivalent | ITT Cannon Designation |
|-----------------------|--------------------------|------------------------|
| MIL-C-81659/35A2-0035 | MME2R67P67P-00           | DPX2NE-67MP67MP        |
| MIL-C-81659/35A2-0036 | MME2R67S67S-00           |                        |
| MIL-C-81659/35A2-0043 | MME2R106P106P-00         |                        |
| MIL-C-81659/35A2-0044 | MME2R106S106S-00         | DPX2NE-A106SA106S      |
| MIL-C-81659/35A2-0057 | MME2R106S26P-00          | DPX2NE-A106S26MP       |
| MIL-C-81659/35A2-0058 | MME2R106P26S-00          |                        |
| MIL-C-81659/35A2-0059 | MME2R26P106S-00          | DPX2NE-26MPA106S       |
| MIL-C-81659/35A2-0060 | MME2R26S106P-00          |                        |
| MIL-C-81659/35A2-0071 | MME2R67P106S-00          | DPX2NE-67MPA106S       |
| MIL-C-81659/35A2-0072 | MME2R67S106P-00          |                        |
| MIL-C-81659/35A2-0089 | MME2R106S67P-00          | DPX2NE-A106S67MP       |
| MIL-C-81659/35A2-0090 | MME2R106P67S-00          |                        |
| MIL-C-81659/35A2-0133 | MME2R57P106S-00          | DPX2NE-57MPA106S       |
| MIL-C-81659/35A2-0134 | MME2R57S106P-00          |                        |
| MIL-C-81659/35A2-0147 | MME2R57P26P-00           | DPX2NE-57MP26MP        |
| MIL-C-81659/35A2-0148 | MME2R57S26S-00           |                        |
| MIL-C-81659/37A2-0005 | MME3P26P26P26P-00        |                        |
| MIL-C-81659/37A2-0006 | MME3P26S26S26S-00        | DPX3NE-78M-33S-00      |
| MIL-C-81659/37A2-0013 | MME3P40P40P40P-00        | DPX3NE-120M-33S-00     |
| MIL-C-81659/37A2-0014 | MME3P40S40S40S-00        |                        |
| MIL-C-81659/37A2-0021 | MME3P45P45P45P-00        |                        |
| MIL-C-81659/37A2-0022 | MME3P45S45S45S-00        | DPX3NE-135M-33S-00     |
| MIL-C-81659/37A2-0029 | MME3P57P57P57P-00        | DPX3NE-171M-33S-00     |
| MIL-C-81659/37A2-0030 | MME3P57S57S57S-00        |                        |
| MIL-C-81659/37A2-0037 | MME3P67P67P67P-00        |                        |
| MIL-C-81659/37A2-0038 | MME3P67S67S67S-00        | DPX3NE-201M-33S-00     |
| MIL-C-81659/37A2-0045 | MME3P106P106P106P-00     | DPX3NE-A318-33P-00     |
| MIL-C-81659/37A2-0046 | MME3P106S106S106S-00     |                        |
| MIL-C-81659/37A2-0075 | MME3P67P67P106S-00       |                        |
| MIL-C-81659/37A2-0076 | MME3P67S67S106P-00       | DPX3NE-240M-33PS-00    |
| MIL-C-81659/37A2-0079 | MME3P67P106S67P-00       |                        |
| MIL-C-81659/37A2-0080 | MME3P67S106P67S-00       | DPX3NE-A240M-33PS-00   |
| MIL-C-81659/37A2-0091 | MME3P106S106S67P-00      |                        |
| MIL-C-81659/37A2-0092 | MME3P106P106P67S-00      | DPX3NE-279M-33PS-00    |
| MIL-C-81659/39A2-0005 | MME3R26P26P26P-00        | DPX3NE-78M-34P-00      |
| MIL-C-81659/39A2-0006 | MME3R26S26S26S-00        |                        |
| MIL-C-81659/39A2-0013 | MME3R40P40P40P-00        | DPX3NE-120M-34P-00     |
| MIL-C-81659/39A2-0014 | MME3R40S40S40S-00        |                        |
| MIL-C-81659/39A2-0021 | MME3R45P45P45P-00        | DPX3NE-135M-34P-00     |
| MIL-C-81659/39A2-0022 | MME3R45S45S45S-00        |                        |
| MIL-C-81659/39A2-0029 | MME3R57P57P57P-00        | DPX3NE-171M-34P-00     |
| MIL-C-81659/39A2-0030 | MME3R57S57S57S-00        |                        |
| MIL-C-81659/39A2-0037 | MME3R67P67P67P-00        | DPX3NE-201M-34P-00     |
| MIL-C-81659/39A2-0038 | MME3R67S67S67S-00        |                        |
| MIL-C-81659/39A2-0045 | MME3R106P106P106P-00     |                        |
| MIL-C-81659/39A2-0046 | MME3R106S106S106S-00     | DPX3NE-A318-34S-00     |
| MIL-C-81659/39A2-0075 | MME3R67P67P106S-00       | DPX3NE-240M-34SP-00    |
| MIL-C-81659/39A2-0076 | MME3R67S67S106P-00       |                        |
| MIL-C-81659/39A2-0079 | MME3R67P106S67P-00       | DPX3NE-A240M-34SP-00   |
| MIL-C-81659/39A2-0080 | MME3R67S106P67S-00       |                        |
| MIL-C-81659/39A2-0091 | MME3R106S106S67P-00      | DPX3NE-279M-34SP-00    |
| MIL-C-81659/39A2-0092 | MME3R106P106P67S-00      |                        |
| MIL-C-81659/41A2-0007 | MME4P26P26P26P26P-00     |                        |
| MIL-C-81659/41A2-0008 | MME4P26S26S26S26S-00     | DPX4NE-104M-33S-00     |
| MIL-C-81659/41A2-0015 | MME4P40P40P40P40P-00     |                        |
| MIL-C-81659/41A2-0016 | MME4P40S40S40S40S-00     | DPX4NE-160M-33S-00     |
| MIL-C-81659/41A2-0023 | MME4P45P45P45P45P-00     |                        |
| MIL-C-81659/41A2-0024 | MME4P45S45S45S45S-00     | DPX4NE-180M-33S-00     |
| MIL-C-81659/41A2-0031 | MME4P57P57P57P57P-00     |                        |
| MIL-C-81659/41A2-0032 | MME4P57S57S57S57S-00     | DPX4NE-228M-33S-00     |

MIL-C-81659/41A2 Continued on page 4-66



## Cross Reference (Continued)

| REF MIL<br>Designation | TE<br>Commercial Equivalent | ITT Cannon<br>Designation |
|------------------------|-----------------------------|---------------------------|
| MIL-C-81659/41A2-0039  | MME4P67P67P67P67P-00        |                           |
| MIL-C-81659/41A2-0040  | MME4P67S67S67S67S-00        | DPX4NE-268M-33S-00        |
| MIL-C-81659/41A2-0047  | MME4P106P106P106P106P-00    | DPX4NE-A424-33S-00        |
| MIL-C-81659/41A2-0048  | MME4P106S106S106S106S-00    |                           |
| MIL-C-81659/41A2-0061  | MME4P26P26P26P26S-00        |                           |
| MIL-C-81659/41A2-0062  | MME4P26S26S26S26P-00        |                           |
| MIL-C-81659/41A2-0101  | MME4P106S106S67P67P-00      |                           |
| MIL-C-81659/41A2-0102  | MME4P106P106P67S67S-00      | DPX4NE-346M-33PS-00       |
| MIL-C-81659/43A2-0007  | MME4R26P26P26P26P-00        | DPX4NE-104M-34P-00        |
| MIL-C-81659/43A2-0008  | MME4R26S26S26S26S-00        |                           |
| MIL-C-81659/43A2-0015  | MME4R40P40P40P40P-00        | DPX4NE-160M-34P-00        |
| MIL-C-81659/43A2-0016  | MME4R40S40S40S40S-00        |                           |
| MIL-C-81659/43A2-0023  | MME4R45P45P45P45P-00        | DPX4NE-180M-34P-00        |
| MIL-C-81659/43A2-0024  | MME4R45S45S45S45S-00        |                           |
| MIL-C-81659/43A2-0031  | MME4R57P57P57P57P-00        | DPX4NE-228M-34P-00        |
| MIL-C-81659/43A2-0032  | MME4R57S57S57S57S-00        |                           |
| MIL-C-81659/43A2-0039  | MME4R67P67P67P67P-00        | DPX4NE-268M-34P-00        |
| MIL-C-81659/43A2-0040  | MME4R67S67S67S67S-00        |                           |
| MIL-C-81659/43A2-0047  | MME4R106P106P106P106P-00    |                           |
| MIL-C-81659/43A2-0048  | MME4R106S106S106S106S-00    | DPX4NE-A42A-34P-00        |
| MIL-C-81659/43A2-0061  | MME4R26P26P26P26S-00        |                           |
| MIL-C-81659/43A2-0062  | MME4R26S26S26S26P-00        |                           |
| MIL-C-81659/43A2-0101  | MME4R106S106S67P67P-00      | DPX4NE-346M-34SP-00       |
| MIL-C-81659/43A2-0102  | MME4R106P106P67S67S-00      |                           |
| MIL-C-81659/61A2-0001  | MM1R26P-00                  | DPXBNE-26M-34P-29         |
| MIL-C-81659/61A2-0002  | MM1R26S-00                  |                           |
| MIL-C-81659/61A2-0009  | MM1R40P-00                  | DPXBNE-40M-34P-29         |
| MIL-C-81659/61A2-0010  | MM1R40S-00                  |                           |
| MIL-C-81659/61A2-0017  | MM1R45P-00                  | DPXBNE-45M-34P-29         |
| MIL-C-81659/61A2-0018  | MM1R45S-00                  |                           |
| MIL-C-81659/61A2-0025  | MM1R57P-00                  | DPXBNE-57M-34P-29         |
| MIL-C-81659/61A2-0026  | MM1R57S-00                  |                           |
| MIL-C-81659/61A2-0033  | MM1R67P-00                  | DPXBNE-67M-34P-29         |
| MIL-C-81659/61A2-0034  | MM1R67S-00                  |                           |
| MIL-C-81659/61A2-0041  | MM1R106P-00                 |                           |
| MIL-C-81659/61A2-0042  | MM1R106S-00                 | DPXBNE-A106-34S-29        |
| MIL-C-81659/61A2-0083  | MM1RD8P-00                  | DPXBNE-D8M-34P-29         |
| MIL-C-81659/61A2-0084  | MM1RD8S-00                  |                           |
| MIL-C-81659/62A2-0003  | MM2R26P26P-00               | DPX2NE-26MP26MP-34B-29    |
| MIL-C-81659/62A2-0004  | MM2R26S26S-00               |                           |
| MIL-C-81659/62A2-0011  | MM2R40P40P-00               | DPX2NE-40MP40MP-34B-29    |
| MIL-C-81659/62A2-0012  | MM2R40S40S-00               |                           |
| MIL-C-81659/62A2-0019  | MM2R45P45P-00               | DPX2NE-45MP45MP-34B-29    |
| MIL-C-81659/62A2-0020  | MM2R45S45S-00               |                           |
| MIL-C-81659/62A2-0027  | MM2R57P57P-00               | DPX2NE-57MP57MP-34B-29    |
| MIL-C-81659/62A2-0028  | MM2R57S57S-00               |                           |
| MIL-C-81659/62A2-0035  | MM2R67P67P-00               | DPX2NE-67MP67MP-34B-29    |
| MIL-C-81659/62A2-0036  | MM2R67S67S-00               |                           |
| MIL-C-81659/62A2-0043  | MM2R106P106P-00             |                           |
| MIL-C-81659/62A2-0044  | MM2R106S106S-00             | DPX2NE-A106SA106S-34B-29  |
| MIL-C-81659/62A2-0057  | MM2R106S26P-00              | DPX2NE-A106S26MP-34B-29   |
| MIL-C-81659/62A2-0058  | MM2R106P26S-00              |                           |
| MIL-C-81659/62A2-0059  | MM2R26P106S-00              | DPX2NE-26MPA106S-34B-29   |
| MIL-C-81659/62A2-0060  | MM2R26S106P-00              |                           |
| MIL-C-81659/62A2-0071  | MM2R67P106S-00              | DPX2NE-67MPA106S-34B-29   |
| MIL-C-81659/62A2-0072  | MM2R67S106P-00              |                           |
| MIL-C-81659/62A2-0089  | MM2R106S67P-00              | DPX2NE-A106S67MP-34B-29   |
| MIL-C-81659/62A2-0090  | MM2R106P67S-00              |                           |
| MIL-C-81659/62A2-0133  | MM2R57P106S-00              | DPX2NE-57MPA106S-34B-29   |
| MIL-C-81659/62A2-0134  | MM2R57S106P-00              |                           |

MIL-C-81659/62A2 Continued on page 4-67

## Cross Reference (Continued)

| REF MIL<br>Designation | TE<br>Commercial Equivalent | ITT Cannon<br>Designation |
|------------------------|-----------------------------|---------------------------|
| MIL-C-81659/62A2-0147  | MM2R57P26P-00               | DPX2NE-57MP26MP-34B-29    |
| MIL-C-81659/62A2-0148  | MM2R57S26S-00               |                           |
| MIL-C-81659/63A2-0005  | MM3R26P26P26P-00            | DPX3NE-78M-34P-29         |
| MIL-C-81659/63A2-0006  | MM3R26S26S26S-00            |                           |
| MIL-C-81659/63A2-0013  | MM3R40P40P40P-00            | DPX3NE-120M-34P-29        |
| MIL-C-81659/63A2-0014  | MM3R40S40S40S-00            |                           |
| MIL-C-81659/63A2-0021  | MM3R45P45P45P-00            | DPX3NE-135M-34P-29        |
| MIL-C-81659/63A2-0022  | MM3R45S45S45S-00            |                           |
| MIL-C-81659/63A2-0029  | MM3R57P57P57P-00            | DPX3NE-171M-34P-29        |
| MIL-C-81659/63A2-0030  | MM3R57S57S57S-00            |                           |
| MIL-C-81659/63A2-0037  | MM3R67P67P67P-00            | DPX3NE-201M-34P-29        |
| MIL-C-81659/63A2-0038  | MM3R67S67S67S-00            |                           |
| MIL-C-81659/63A2-0045  | MM3R106P106P106P-00         |                           |
| MIL-C-81659/63A2-0046  | MM3R106S106S106S-00         | DPX3NE-A318-34S-39        |
| MIL-C-81659/63A2-0075  | MM3R67P67P106S-00           | DPX3NE-240M-34SP-29       |
| MIL-C-81659/63A2-0076  | MM3R67S67S106P-00           |                           |
| MIL-C-81659/63A2-0079  | MM3R67P106S67P-00           | DPX3NE-A240M-34P-29       |
| MIL-C-81659/63A2-0080  | MM3R67S106P67S-00           |                           |
| MIL-C-81659/63A2-0091  | MM3R106S106S67P-00          | DPX3NE-279M-34P-29        |
| MIL-C-81659/63A2-0092  | MM3R106P106P67S-00          |                           |
| MIL-C-81659/64A2-0007  | MM4R26P26P26P26P-00         | DPX4NE-104M-34P-29        |
| MIL-C-81659/64A2-0008  | MM4R26S26S26S26S-00         |                           |
| MIL-C-81659/64A2-0015  | MM4R40P40P40P40P-00         | DPX4NE-160M-34P-29        |
| MIL-C-81659/64A2-0016  | MM4R40S40S40S40S-00         |                           |
| MIL-C-81659/64A2-0023  | MM4R45P45P45P45P-00         | DPX4NE-180M-34P-29        |
| MIL-C-81659/64A2-0024  | MM4R45S45S45S45S-00         |                           |
| MIL-C-81659/64A2-0031  | MM4R57P57P57P57P-00         | DPX4NE-228M-34P-29        |
| MIL-C-81659/64A2-0032  | MM4R57S57S57S57S-00         |                           |
| MIL-C-81659/64A2-0039  | MM4R67P67P67P67P-00         | DPX4NE-268M-34P-29        |
| MIL-C-81659/64A2-0040  | MM4R67S67S67S67S-00         |                           |
| MIL-C-81659/64A2-0047  | MM4R106P106P106P106P-00     |                           |
| MIL-C-81659/64A2-0048  | MM4R106S106S106S106S-00     | DPX4NE-A424-34S-39        |
| MIL-C-81659/64A2-0061  | MM4R26P26P26P26S-00         |                           |
| MIL-C-81659/64A2-0062  | MM4R26S26S26S26P-00         |                           |
| MIL-C-81659/64A2-0101  | MM4R106S106S67P67P-00       | DPX4NE-346M-34SP-29       |
| MIL-C-81659/64A2-0102  | MM4R106P106P67S67S-00       |                           |
| MIL-C-81659/65A2-0001  | M1P26P-00                   |                           |
| MIL-C-81659/65A2-0002  | M1P26S-00                   | DPXBNA-26M-33S-00         |
| MIL-C-81659/65A2-0009  | M1P40P-00                   |                           |
| MIL-C-81659/65A2-0010  | M1P40S-00                   | DPXBNA-49M-33S-00         |
| MIL-C-81659/65A2-0017  | M1P45P-00                   |                           |
| MIL-C-81659/65A2-0018  | M1P45S-00                   | DPXBNA-45M-33S-00         |
| MIL-C-81659/65A2-0025  | M1P57P-00                   |                           |
| MIL-C-81659/65A2-0026  | M1P57S-00                   | DPXBNA-57M-33S-00         |
| MIL-C-81659/65A2-0033  | M1P67P-00                   |                           |
| MIL-C-81659/65A2-0034  | M1P67S-00                   | DPXBNA-67M-33S-00         |
| MIL-C-81659/65A2-0041  | M1P106P-00                  | DPXBNA-A106-33P-00        |
| MIL-C-81659/65A2-0042  | M1P106S-00                  |                           |
| MIL-C-81659/65A2-0083  | M1PD8P-00                   |                           |
| MIL-C-81659/65A2-0084  | M1PD8S-00                   | DPXBNA-D8M-33S-00         |
| MIL-C-81659/66A2-0001  | M1R26P-00                   | DPXBNA-26M-34P-00         |
| MIL-C-81659/66A2-0002  | M1R26S-00                   |                           |
| MIL-C-81659/66A2-0009  | M1R40P-00                   | DPXBNA-40M-34P-00         |
| MIL-C-81659/66A2-0010  | M1R40S-00                   |                           |
| MIL-C-81659/66A2-0017  | M1R45P-00                   | DPXBNA-45M-34P-00         |
| MIL-C-81659/66A2-0018  | M1R45S-00                   |                           |
| MIL-C-81659/66A2-0025  | M1R57P-00                   | DPXBNA-57M-34P-00         |
| MIL-C-81659/66A2-0026  | M1R57S-00                   |                           |
| MIL-C-81659/66A2-0033  | M1R67P-00                   |                           |
| MIL-C-81659/66A2-0034  | M1R67S-00                   |                           |

MIL-C-81659/66A2 Continued on page 4-68

### Cross Reference (Continued)

| REF MIL Designation   | TE Commercial Equivalent | ITT Cannon Designation   |
|-----------------------|--------------------------|--------------------------|
| MIL-C-81659/66A2-0041 | M1R106P-00               |                          |
| MIL-C-81659/66A2-0042 | M1R106S-00               | DPXBNA-A106-34S-00       |
| MIL-C-81659/66A2-0083 | M1RD8P-00                | DPXBNA-D8M-34P-00        |
| MIL-C-81659/66A2-0084 | M1RD8S-00                |                          |
| MIL-C-81659/67A2-0001 | M1R26P-01                | DPXBNA-26M-34P-01        |
| MIL-C-81659/67A2-0002 | M1R26S-01                |                          |
| MIL-C-81659/67A2-0009 | M1R40P-01                | DPXBNA-40M-34P-01        |
| MIL-C-81659/67A2-0010 | M1R40S-01                |                          |
| MIL-C-81659/67A2-0017 | M1R45P-01                | DPXBNA-45M-34P-01        |
| MIL-C-81659/67A2-0018 | M1R45S-01                |                          |
| MIL-C-81659/67A2-0025 | M1R57P-01                | DPXBNA-57M-34P-01        |
| MIL-C-81659/67A2-0026 | M1R57S-01                |                          |
| MIL-C-81659/67A2-0033 | M1R67P-01                | DPXBNA-67M-34P-01        |
| MIL-C-81659/67A2-0034 | M1R67S-01                |                          |
| MIL-C-81659/67A2-0041 | M1R106P-01               |                          |
| MIL-C-81659/67A2-0042 | M1R106S-01               | DPXBNA-A106-34S-01       |
| MIL-C-81659/67A2-0083 | M1RD8P-01                | DPXBNA-D8M-34P-01        |
| MIL-C-81659/67A2-0084 | M1RD8S-01                |                          |
| MIL-C-81659/68A2-0001 | M1R26P-23                | DPXBNA-26M-34P-23        |
| MIL-C-81659/68A2-0002 | M1R26S-23                |                          |
| MIL-C-81659/68A2-0009 | M1R40P-23                | DPXBNA-40M-34P-23        |
| MIL-C-81659/68A2-0010 | M1R40S-23                |                          |
| MIL-C-81659/68A2-0017 | M1R45P-23                | DPXBNA-45M-34P-23        |
| MIL-C-81659/68A2-0018 | M1R45S-23                |                          |
| MIL-C-81659/68A2-0025 | M1R57P-23                | DPXBNA-57M-34P-23        |
| MIL-C-81659/68A2-0026 | M1R57S-23                |                          |
| MIL-C-81659/68A2-0033 | M1R67P-23                | DPXBNA-67M-34P-23        |
| MIL-C-81659/68A2-0034 | M1R67S-23                |                          |
| MIL-C-81659/68A2-0041 | M1R106P-23               |                          |
| MIL-C-81659/68A2-0042 | M1R106S-23               | DPXBNA-A106-34S-23       |
| MIL-C-81659/68A2-0083 | M1RD8P-23                | DPXBNA-D8M-34P-23        |
| MIL-C-81659/68A2-0084 | M1RD8S-23                |                          |
| MIL-C-81659/69A2-0003 | M2P26P26P-00             |                          |
| MIL-C-81659/69A2-0004 | M2P26S26S-00             | DPX2NA-26MS26MS-33B-00   |
| MIL-C-81659/69A2-0011 | M2P40P40P-00             |                          |
| MIL-C-81659/69A2-0012 | M2P40S40S-00             | DPX2NA-40MS40MS-33B-00   |
| MIL-C-81659/69A2-0019 | M2P45P45P-00             |                          |
| MIL-C-81659/69A2-0020 | M2P45S45S-00             | DPX2NA-45MS45MS-33B-00   |
| MIL-C-81659/69A2-0027 | M2P57P57P-00             |                          |
| MIL-C-81659/69A2-0028 | M2P57S57S-00             | DPX2NA-57MS57MS-33B-00   |
| MIL-C-81659/69A2-0035 | M2P67P67P-00             |                          |
| MIL-C-81659/69A2-0036 | M2P67S67S-00             | DPX2NA-67MS67MS-33B-00   |
| MIL-C-81659/69A2-0043 | M2P106P106P-00           | DPX2NA-A106PA106P-33B-00 |
| MIL-C-81659/69A2-0044 | M2P106S106S-00           |                          |
| MIL-C-81659/69A2-0057 | M2P106S26P-00            |                          |
| MIL-C-81659/69A2-0058 | M2P106P26S-00            | DPX2NA-A106P26MS-33B-00  |
| MIL-C-81659/69A2-0059 | M2P26P106S-00            |                          |
| MIL-C-81659/69A2-0060 | M2P26S106P-00            | DPX2NA-26MSA106P-33B-00  |
| MIL-C-81659/69A2-0071 | M2P67P106S-00            |                          |
| MIL-C-81659/69A2-0072 | M2P67S106P-00            | DPX2NA-67MSA106P-33B-00  |
| MIL-C-81659/69A2-0089 | M2P106S67P-00            |                          |
| MIL-C-81659/69A2-0090 | M2P106P67S-00            | DPX2NA-A106P67MS-33B-00  |
| MIL-C-81659/69A2-0133 | M2P57P106S-00            |                          |
| MIL-C-81659/69A2-0134 | M2P57S106P-00            | DPX2NA-57MSA106P-33B-00  |
| MIL-C-81659/69A2-0147 | M2P57P26P-00             |                          |
| MIL-C-81659/69A2-0148 | M2P57S26S-00             | DPX2NA-57MS26MS-33B-00   |
| MIL-C-81659/70A2-0003 | M2R26P26P-00             | DPX2NA-26MP26MP-34B-00   |
| MIL-C-81659/70A2-0004 | M2R26S26S-00             |                          |
| MIL-C-81659/70A2-0011 | M2R40P40P-00             | DPX2NA-40MP40MP-34B-00   |
| MIL-C-81659/70A2-0012 | M2R40S40S-00             |                          |

MIL-C-81659/70A2 Continued on page 4-69

## Cross Reference (Continued)

| REF MIL Designation   | TE Commercial Equivalent | ITT Cannon Designation   |
|-----------------------|--------------------------|--------------------------|
| MIL-C-81659/70A2-0019 | M2R45P45P-00             | DPX2NA-45MP45MP-34B-00   |
| MIL-C-81659/70A2-0020 | M2R45S45S-00             |                          |
| MIL-C-81659/70A2-0027 | M2R57P57P-00             | DPX2NA-57MP57MP-34B-00   |
| MIL-C-81659/70A2-0028 | M2R57S57S-00             |                          |
| MIL-C-81659/70A2-0035 | M2R67P67P-00             | DPX2NA-67MP67MP-34B-00   |
| MIL-C-81659/70A2-0036 | M2R67S67S-00             |                          |
| MIL-C-81659/70A2-0043 | M2R106P106P-00           |                          |
| MIL-C-81659/70A2-0044 | M2R106S106S-00           | DPX2NA-A106SA106S-34B-00 |
| MIL-C-81659/70A2-0057 | M2R106S26P-00            | DPX2NA-A106S26MP-34B-00  |
| MIL-C-81659/70A2-0058 | M2R106P26S-00            |                          |
| MIL-C-81659/70A2-0059 | M2R26P106S-00            | DPX2NA-26MPA106S-34B-00  |
| MIL-C-81659/70A2-0060 | M2R26S106P-00            |                          |
| MIL-C-81659/70A2-0071 | M2R67P106S-00            | DPX2NA-67MPA106S-34B-00  |
| MIL-C-81659/70A2-0072 | M2R67S106P-00            |                          |
| MIL-C-81659/70A2-0089 | M2R106S67P-00            | DPX2NA-A106S67MP-34B-00  |
| MIL-C-81659/70A2-0090 | M2R106P67S-00            |                          |
| MIL-C-81659/70A2-0133 | M2R57P106S-00            | DPX2NA-57MPA106A-34B-00  |
| MIL-C-81659/70A2-0134 | M2R57S106P-00            |                          |
| MIL-C-81659/70A2-0147 | M2R57P26P-00             | DPX2NA-57MP26MP-34B-00   |
| MIL-C-81659/70A2-0148 | M2R57S26S-00             |                          |
| MIL-C-81659/71A2-0003 | M2R26P26P-01             | DPX2NA-26MP26MP-34B-01   |
| MIL-C-81659/71A2-0004 | M2R26S26S-01             |                          |
| MIL-C-81659/71A2-0011 | M2R40P40P-01             | DPX2NA-40MP40MP-34B-01   |
| MIL-C-81659/71A2-0012 | M2R40S40S-01             |                          |
| MIL-C-81659/71A2-0019 | M2R45P45P-01             | DPX2NA-45MP45MP-34B-01   |
| MIL-C-81659/71A2-0020 | M2R45S45S-01             |                          |
| MIL-C-81659/71A2-0027 | M2R57P57P-01             | DPX2NA-57MP57MP-34B-01   |
| MIL-C-81659/71A2-0028 | M2R57S57S-01             |                          |
| MIL-C-81659/71A2-0035 | M2R67P67P-01             | DPX2NA-67MP67MP-34B-01   |
| MIL-C-81659/71A2-0036 | M2R67S67S-01             |                          |
| MIL-C-81659/71A2-0043 | M2R106P106P-01           |                          |
| MIL-C-81659/71A2-0044 | M2R106S106S-01           | DPX2NA-A106SA106A-34B-01 |
| MIL-C-81659/71A2-0057 | M2R106S26P-01            | DPX2NA-A106S26MP-34B-01  |
| MIL-C-81659/71A2-0058 | M2R106P26S-01            |                          |
| MIL-C-81659/71A2-0059 | M2R26P106S-01            | DPX2NA-26MPA106S-34B-01  |
| MIL-C-81659/71A2-0060 | M2R26S106P-01            |                          |
| MIL-C-81659/71A2-0071 | M2R67P106S-01            | DPX2NA-67MPA106S-34B-01  |
| MIL-C-81659/71A2-0072 | M2R67S106P-01            |                          |
| MIL-C-81659/71A2-0089 | M2R106S67P-01            | DPX2NA-A106S67MP-34B-01  |
| MIL-C-81659/71A2-0090 | M2R106P67S-01            |                          |
| MIL-C-81659/71A2-0133 | M2R57P106S-01            | DPX2NA-57MPA106A-34B-01  |
| MIL-C-81659/71A2-0134 | M2R57S106P-01            |                          |
| MIL-C-81659/71A2-0147 | M2R57P26P-01             | DPX2NA-57MP26MP-34B-01   |
| MIL-C-81659/71A2-0148 | M2R57S26S-01             |                          |
| MIL-C-81659/72A2-0003 | M2R26P26P-23             | DPX2NA-26MP26MP-34B-23   |
| MIL-C-81659/72A2-0004 | M2R26S26S-23             |                          |
| MIL-C-81659/72A2-0011 | M2R40P40P-23             | DPX2NA-40MP40MP-34B-23   |
| MIL-C-81659/72A2-0012 | M2R40S40S-23             |                          |
| MIL-C-81659/72A2-0019 | M2R45P45P-23             | DPX2NA-45MP45MP-34B-23   |
| MIL-C-81659/72A2-0020 | M2R45S45S-23             |                          |
| MIL-C-81659/72A2-0027 | M2R57P57P-23             | DPX2NA-57MP57MP-34B-23   |
| MIL-C-81659/72A2-0028 | M2R57S57S-23             |                          |
| MIL-C-81659/72A2-0035 | M2R67P67P-23             | DPX2NA-67MP67MP-34B-23   |
| MIL-C-81659/72A2-0036 | M2R67S67S-23             |                          |
| MIL-C-81659/72A2-0043 | M2R106P106P-23           |                          |
| MIL-C-81659/72A2-0044 | M2R106S106S-23           | DPX2NA-A106SA106S-34B-23 |
| MIL-C-81659/72A2-0057 | M2R106S26P-23            | DPX2NA-A106S26MP-34B-23  |
| MIL-C-81659/72A2-0058 | M2R106P26S-23            |                          |
| MIL-C-81659/72A2-0059 | M2R26P106S-23            | DPX2NA-26MPA106S-34B-23  |
| MIL-C-81659/72A2-0060 | M2R26S106P-23            |                          |

MIL-C-81659/72A2 Continued on page 4-70

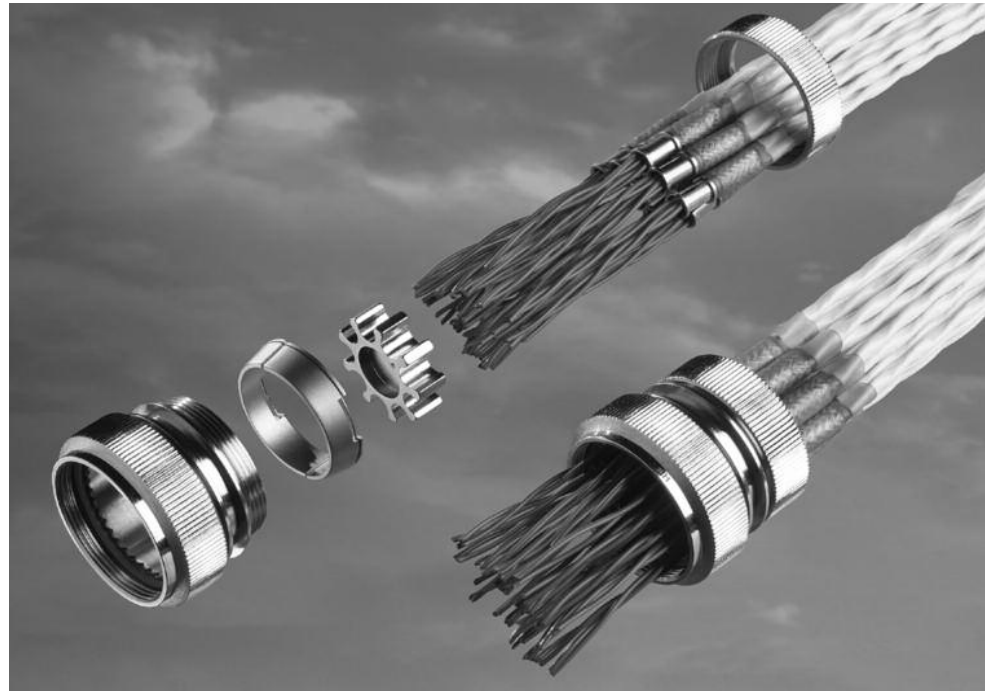
## Cross Reference (Continued)

| REF MIL<br>Designation | TE<br>Commercial Equivalent | ITT Cannon<br>Designation |
|------------------------|-----------------------------|---------------------------|
| MIL-C-81659/72A2-0071  | M2R67P106S-23               | DPX2NA-67MPA106S-34B-23   |
| MIL-C-81659/72A2-0072  | M2R67S106P-23               |                           |
| MIL-C-81659/72A2-0089  | M2R106S67P-23               | DPX2NA-A106S67MP-34B-23   |
| MIL-C-81659/72A2-0090  | M2R106P67S-23               |                           |
| MIL-C-81659/72A2-0133  | M2R57P106S-23               | DPX2NA-57MPA106A-34B-23   |
| MIL-C-81659/72A2-0134  | M2R57S106P-23               |                           |
| MIL-C-81659/72A2-0147  | M2R57P26P-23                | DPX2NA-57MP26MP-34B-23    |
| MIL-C-81659/72A2-0148  | M2R57S26S-23                |                           |

## Introduction

### Product Facts

- Superior EMC/EMI Shielding Performance
- Simple installation
- Easy reentry
- Simplified maintenance and repair
- Excellent mechanical and environmental resistance
- Efficient strain relief
- Flexibility
- Versatility



### Applications

TE Connectivity, a longtime leader in harnessing technology, has written a new chapter in EMC shielding with the introduction of the Raychem HexaShield EMC adapter.

Designed to provide EMC protection solutions for both commercial and military applications, HexaShield adapters represent a significant improvement over pig-tail termination methods. By providing 360-degree EMC shielding on the termination area of each individual cable, HexaShield adapters provide outstanding shielding effectiveness.

HexaShield adapters are simple to install, easy to

maintain, and dependably resistant to mechanical and environmental stresses.

### Principal points and features

- Easy reentry: To insert or remove ferrules from the HexaShield adapter, simply loosen the back nut.
- Superior protection: No degradation of shielding performance.
- Up to four shielded cables accommodated by each ferrule.
- Mechanical and environmental protection equal to backshells complying with MIL-C-85049 Category 3B.
- Strain relief on each individual cable.

- Weight reduction, by possibly eliminating the need for overall shielding.
- Compact size — not exceeding outer diameter of connector.
- Available in straight, 45° and 90° angles, as well as swept and long bodies.

### Simple assembly and installation

1. Solder cable or wire shield to a ferrule with a Raychem heat-shrinkable SolderShield terminator.
2. Clip ferrule into one of the grounding star cavities.
3. Secure the back nut of the HexaShield adapter so that the conic ring assembly automatically compresses the ferrules.

### Designed to corresponding connector specifications

### Installation Procedures

| Two Platings Available                                               |  | Raychem Product Specifications                                               |                                                                                    |
|----------------------------------------------------------------------|--|------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| Electroless nickel (MIL-DTL-26074)                                   |  | RB-110 and RB-114                                                            |                                                                                    |
| Olive drab cadmium<br>(QQ-P-416 Type II Class 3)                     |  | —                                                                            |                                                                                    |
| *Contact TE for additional platings.                                 |  |                                                                              |                                                                                    |
| Installation procedure for HET-A-02X<br>and HET-A-04X (RPIP-696-00)  |  | Installation procedure for HET-03X<br>(RPIP-696-03)                          | General procedure for cylindrical<br>connectors, right-angle body<br>(RPIP-696-07) |
| General procedure for ARINC 600 Size II<br>connectors (RPIP-696-01)  |  | General procedure for cylindrical<br>connectors, straight body (RPIP-696-04) | —                                                                                  |
| General procedure for ARINC 600 Size III<br>connectors (RPIP-696-02) |  | —                                                                            | —                                                                                  |



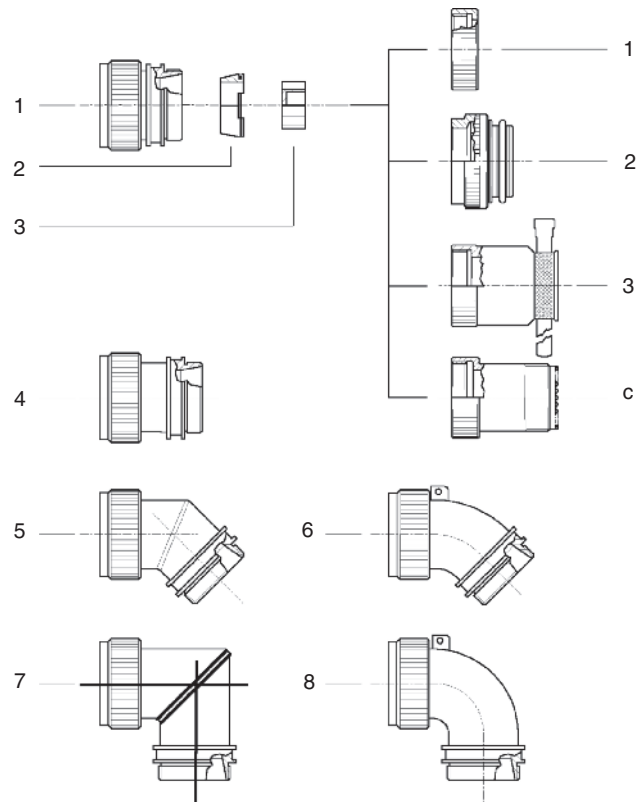
## Kit Descriptions

### Hexashield Adapters for Circular Connectors: Straight, 45° and 90° Assemblies

| Item | Description                                                                                |
|------|--------------------------------------------------------------------------------------------|
| 1    | Straight adapter assembly                                                                  |
| 2    | Conic ring assembly                                                                        |
| 3    | Star<br>Plain (Standard)<br>Drilled (Option)<br>Split (Option)                             |
| 4    | Straight adapter assembly - "L" version — nominally 0.5" [12.7] longer body                |
| 5    | 45° adapter assembly — welded                                                              |
| 6    | 45° adapter assembly — swept                                                               |
| 7    | 90° adapter assembly — welded                                                              |
| 8    | 90° adapter assembly — swept<br>Standard products shown.<br>Variants available on request. |

Split star assemblies are shown on relevant S.C.D's where applicable.

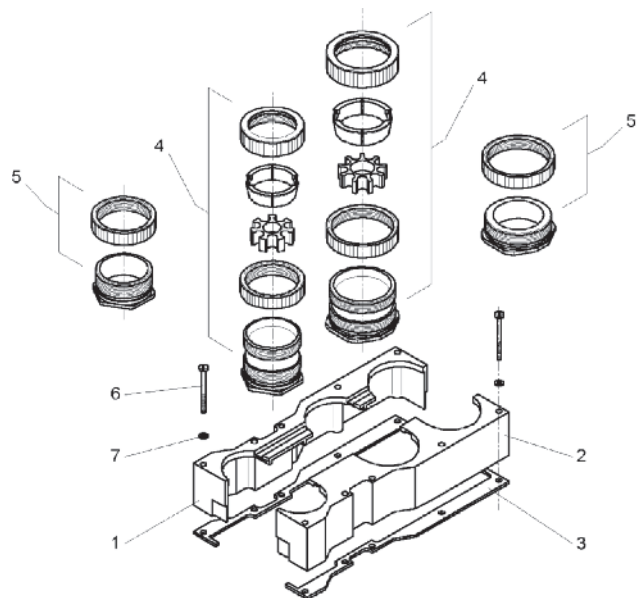
| Item | HexaShield Version                                         |
|------|------------------------------------------------------------|
| -1   | Back Nut                                                   |
| -2   | Tinel adapter assembly<br>Tinel-Lock ring for single braid |
| -3   | Bandstrap adapter assembly                                 |
| -C   | Conduit adapter                                            |



### HexaShield Adapters for ARINC 404/600 Connectors: Sizes 1, 2, 3 and 4 Assemblies

| Item | Description                                                                       |
|------|-----------------------------------------------------------------------------------|
| 1    | Left side support                                                                 |
| 2    | Right side support                                                                |
| 3    | Retention bars                                                                    |
| 4    | Body assemblies<br>Body<br>Holding nut<br>Conic ring assembly<br>Star<br>Back nut |
| 5    | Cavity plug assemblies<br>Plug<br>Holding nut                                     |
| 6    | Pan head screws — 4-40 UNC                                                        |
| 7    | Spring washers                                                                    |

ARINC 600 Size 2 shown  
Stars are available as plain, drilled or split.  
See relevant S.C.D's for further information



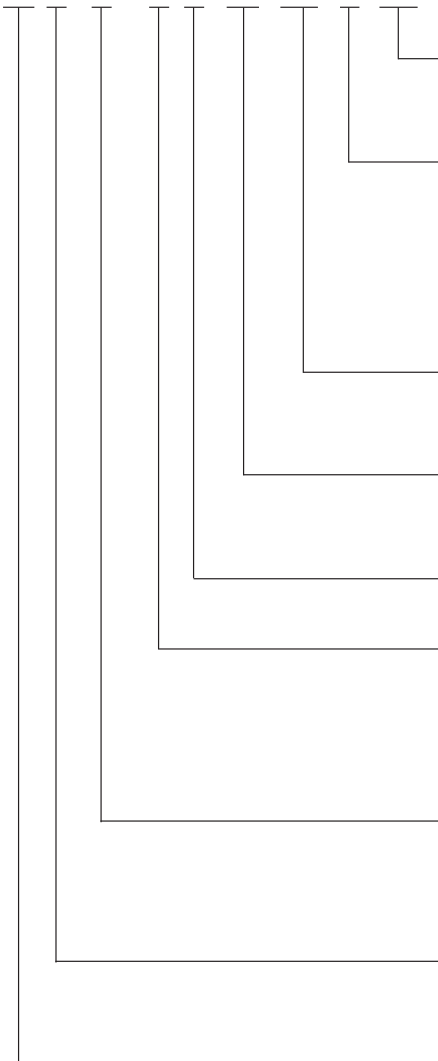


## Ordering Information

### Part Numbering for Standard Products

#### HexaShield Adapter for Circular Connectors

HEXYY L -AY -00 S -YY -AY -Y -DS



#### Drilled Star:

See applicable SCD for star options

#### Type of Back Nut:

1 = Standard back nut

2 = Clamping nut for tincl ring (for overbraid protection)

3 = Clamping nut with bandstrap

C = Clamping nut for conduit applicator

Max. number of ferrules that can be accommodated

See applicable SCD for options

#### HexaShield Size Code:

See applicable SCD for order number (shell size)

S = Swept version

#### Configuration:

00 = Straight body

45 = 45 degree angle body

90 = 90 degree angle body

#### Type of Plating:

B = Cadmium plated

C = Electroless nickel

L = Long body

See applicable SCD for availability

#### Connector Code Number:

21 = MIL-C-26482 Series 1

40 = MIL-DTL-38999 Series 3 and 4

41 = MIL-DTL-38999 Series 1 and 2

54 = MIL-DTL-38723 Series 1 and 3

MIL-C-25482 Series 2

## Ordering Information (Continued)

### HexaShield Adapter for Collins Connectors

**HEXDB-AC-00-A9-1**

00 = Straight body  
90 = Right-angle body

### HexaShield Adapter for ARINC 600 Connectors

**HEXA6-AY-00-YY-AY-Y**

**Clamping nut version:**

1 = Clamping nut alone  
2 = Clamping nut for tinell ring

**Number of ferrules:**

18 for ARINC 600 size II (A and B cavities)  
25 for ARINC 600 size II (A, B and C cavities)  
18 for ARINC 600 size III (A and B cavities)  
See applicable SCD for options

**ARINC Connector Size:**

02 = ARINC 600 size II  
03 = ARINC 600 size III

**Configuration:**

00 = Straight body  
90 = Right-angle body

**Plating:**

B = Cadmium plated  
C = Electroless nickel

Drilled Stars are standard on ARINC 600 adapters.

### Part Numbering of Ferrule Kits\*

**HET-A-02X** for small-size cable with SolderShield terminator

**HET-A-03X** for connection of unshielded cables  
ferrules with heat-shrinkable tubing (no shield)

**HET-A-04X** for large-size cables with SolderShield terminator

**Type of Plating:**

B = Cadmium plated  
C = Electroless nickel

**HEX07-AX** ferrule — solid blank for use when a HET-A is not needed

**Type of Plating:**

B = Cadmium plated  
C = Electroless nickel

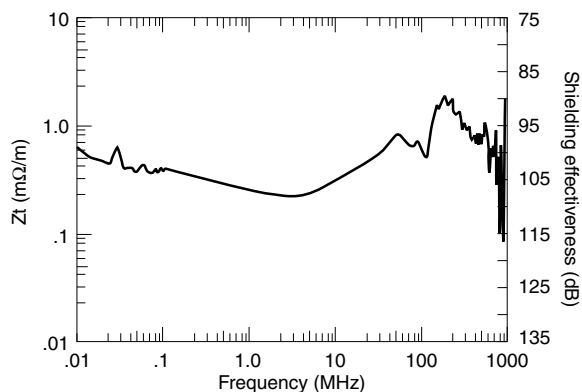
\*Not all part numbers are standard; your local TE Connectivity representative will assist you in selecting the appropriate standard product

## EMC Performance

### Product Facts

- Outperforms traditional pigtail termination, especially in HIRF performance
- Withstands 10-kA peak current lightning transients of SAE AE4L-87-3

### Transfer Impedance



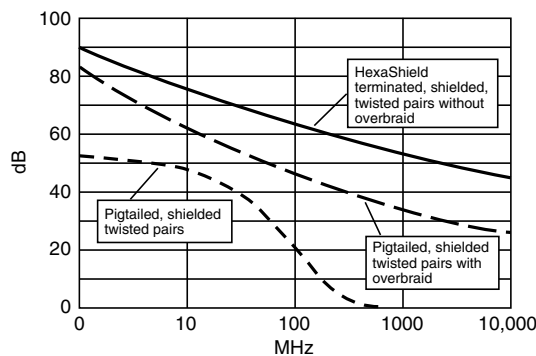
HexaShield size: 23

Cable: Raychem 5024H8424  
(one cable installed)

Test method: CEI 96-1

### Protection Level

Generalized system performance (Actual system performance in any one test method may differ.)



Frequency spectrum of threats

Lightning

EMP

Cross talk

HIRF

Frequency spectrum of test methods

Lightning

Surface transfer impedance

Bulk cable injection

Radiated susceptibility

Stirred mode

## EMC Performance (Continued)

### Typical HexaShield Applications

|                                        |
|----------------------------------------|
| Civilian and military aircraft         |
| Avionics                               |
| Fighter aircraft                       |
| Missiles and launch support systems    |
| Armored and military support vehicles  |
| Navy ships (total shipboard hardening) |
| Military communications                |
| Engines (FADEC harness hardening)      |

### HexaShield Product Range

|                                              |
|----------------------------------------------|
| Accommodates the following connector types*: |
| MIL-C-26482 Series 1                         |
| MIL-DTL-38999 Series 1, 2, 3, and 4          |
| MIL-C-26482 Series 2                         |
| MIL-DTL-83723 Series 1 and 3                 |
| DBAD                                         |
| ARINC 600                                    |
| ARINC 404                                    |

\*Please contact TE Connectivity for other connector types and special requests.

## Table of Contents

### Nanominiature Connectors

|                                                                   |     |
|-------------------------------------------------------------------|-----|
| Introduction . . . . .                                            | 5-4 |
| Nanominiature Connectors Technical and Performance Data . . . . . | 5-5 |

### DUALLOBE Rectangular Connectors

|                                                                               |              |
|-------------------------------------------------------------------------------|--------------|
| Introduction . . . . .                                                        | 5-6          |
| Wired Connectors                                                              |              |
| Single Row . . . . .                                                          | 5-7          |
| Two Row . . . . .                                                             | 5-8          |
| Part Numbering Guideline for Wired Connectors . . . . .                       | 5-9          |
| Jumper Assemblies                                                             |              |
| Single Row Connectors . . . . .                                               | 5-10, 5-11   |
| Two Row Connectors . . . . .                                                  | 5-12, 5-13   |
| Part Numbering Guideline for Jumper Assemblies . . . . .                      | 5-14         |
| Surface Mount Connectors                                                      |              |
| Horizontal                                                                    |              |
| Single Row . . . . .                                                          | 5-15         |
| Two Row . . . . .                                                             | 5-16         |
| Vertical                                                                      |              |
| Single Row . . . . .                                                          | 5-17 to 5-19 |
| Two Row . . . . .                                                             | 5-20, 5-21   |
| Thru-Hole Connectors                                                          |              |
| Horizontal                                                                    |              |
| 1 Row to 2 Row . . . . .                                                      | 5-22         |
| 2 Row to 4 Row . . . . .                                                      | 5-23         |
| Vertical                                                                      |              |
| 1 Row to 2 Row . . . . .                                                      | 5-24         |
| 2 Row to 4 Row . . . . .                                                      | 5-25         |
| Part Numbering Guideline for SMT and Thru-Hole Connectors . . . . .           | 5-26         |
| Flex Termination "Duckbill" Connectors                                        |              |
| Two Row . . . . .                                                             | 5-27, 5-28   |
| Part Numbering Guideline for Flex Termination "Duckbill" Connectors . . . . . | 5-28         |
| Solder Cup Connectors                                                         |              |
| Single Row . . . . .                                                          | 5-29         |
| Two Row . . . . .                                                             | 5-30         |
| Part Numbering Guideline for Solder Cup Termination . . . . .                 | 5-31         |
| Panel Mount Connectors                                                        |              |
| Single Row . . . . .                                                          | 5-32         |
| Two Row . . . . .                                                             | 5-33         |
| Part Numbering Guideline for Panel Mount Connectors . . . . .                 | 5-34         |
| Part Number Index Cross Reference . . . . .                                   | 5-35 to 5-43 |

## Table of Contents (Continued)

### Strip Connectors

|                                                                     |      |
|---------------------------------------------------------------------|------|
| Introduction . . . . .                                              | 5-44 |
| Wired Connectors . . . . .                                          | 5-45 |
| Part Numbering Guideline for Strip Wired Connectors . . . . .       | 5-46 |
| Surface Mount Connectors . . . . .                                  | 5-47 |
| Thru-Hole Connectors . . . . .                                      | 5-48 |
| Part Numbering Guideline for SMT and Thru-Hole Connectors . . . . . | 5-49 |
| Part Number Index Cross Reference . . . . .                         | 5-50 |

### Microminiature Connectors

|                        |      |
|------------------------|------|
| Introduction . . . . . | 5-51 |
|------------------------|------|

### Micro-D Connectors

|                                                                                  |              |
|----------------------------------------------------------------------------------|--------------|
| Introduction . . . . .                                                           | 5-52         |
| MCK/MCD/MCDM Series Metal and Plastic Shell Connectors . . . . .                 | 5-53         |
| How To Specify MCK and MCD Connectors . . . . .                                  | 5-54         |
| Contact Arrangements . . . . .                                                   | 5-55         |
| MCK Series Metal Shell Connectors . . . . .                                      | 5-56         |
| MCK Series Metal Shell Connectors Panel Mounting — Cutout Dimensions . . . . .   | 5-57         |
| MCD Series Plastic Shell Connectors . . . . .                                    | 5-58, 5-59   |
| MCD Series Plastic Shell Connectors Panel Mounting — Cutout Dimensions . . . . . | 5-60         |
| Mounting and Coupling Hardware . . . . .                                         | 5-61, 5-62   |
| MCK Transition Blocks                                                            |              |
| RT1 — Right Angle . . . . .                                                      | 5-63 to 5-65 |
| ST1 — Straight . . . . .                                                         | 5-66 to 5-68 |
| MCK ST2 Series Straight Mount PCB Connectors . . . . .                           | 5-69 to 5-71 |
| MCDM Series Metal Shell Connectors . . . . .                                     | 5-72, 5-73   |
| MCDM Series Metal Shell RF COMBOMATE Connectors . . . . .                        | 5-74 to 5-76 |
| MCDM Series Metal Shell Connectors Panel Mounting — Cutout Dimensions . . . . .  | 5-77         |
| MIL-DTL-83513 Cross Reference . . . . .                                          | 5-78 to 5-82 |

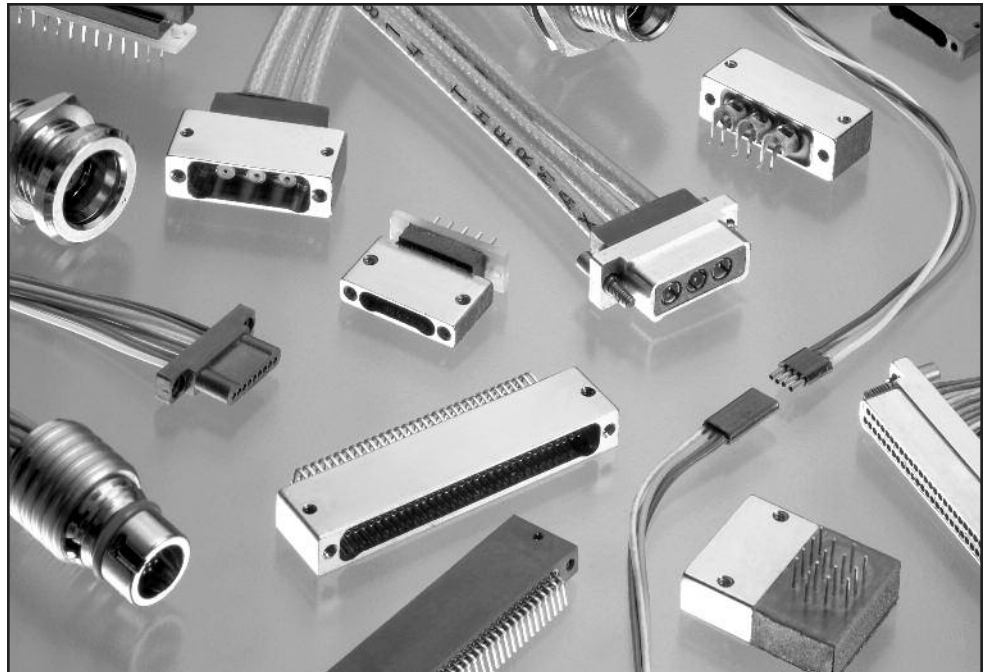
## Table of Contents (Continued)

### Rectangular Connectors

|                                                                |                   |
|----------------------------------------------------------------|-------------------|
| Introduction . . . . .                                         | .5-83             |
| TWIST Pin Contact Data . . . . .                               | .5-84             |
| MCE Plastic                                                    |                   |
| MCE Series Plastic Shell Edgeboard Connectors . . . . .        | .5-85 to 5-87     |
| Technical & Performance Data . . . . .                         | .5-85             |
| Mother Board & Daughter Board Connectors . . . . .             | .5-86             |
| How To Specify . . . . .                                       | .5-87             |
| MCEM Metal Shell                                               |                   |
| MCEM Series Metal Shell Edgeboard Connectors . . . . .         | .5-88 to 5-91     |
| Performance Data . . . . .                                     | .5-88             |
| 128 Layout Connector . . . . .                                 | .5-89, 5-90       |
| How To Specify . . . . .                                       | .5-90             |
| 184 Layout Connector . . . . .                                 | .5-91             |
| MCJ Plastic                                                    |                   |
| MCJ Series Plastic Shell Center Jackscrew Connectors . . . . . | .5-92, 5-93       |
| 10 & 14 Layout Connectors . . . . .                            | .5-92             |
| 26, 38 & 46 Layout Connectors . . . . .                        | .5-93             |
| How To Specify . . . . .                                       | .5-93             |
| Contact Arrangements . . . . .                                 | .5-93             |
| MCJM Metal Shell                                               |                   |
| MCJM Series Metal Shell Center Jackscrew Connectors . . . . .  | .5-92, 5-94, 5-95 |
| Technical & Performance Data . . . . .                         | .5-94             |
| Plug & Receptacle Connectors . . . . .                         | .5-94, 5-95       |
| How To Specify . . . . .                                       | .5-95             |
| MCS .050 [1.27] Centerline                                     |                   |
| MCS Series Strip Connectors . . . . .                          | .5-96             |
| Strip Connectors . . . . .                                     | .5-96             |
| How To Specify . . . . .                                       | .5-96             |
| High Density Standard Module (HDSM) Connectors . . . . .       | .5-97 to 5-100    |



## NANONICS Nanominiature Connectors Introduction



Nanominiature connectors constitute a family of inter-connect devices with center to center contact spacing of .025". In comparison to other connector families, they are often thought of as the smallest practical connector system for separable interfaces. Despite being smaller, these nanominiature connectors are tested with a few size-related modifications per the guidelines of MIL-DTL-83513 (written for .050" microminiature connectors). Nanominiature connectors combine their appealing size and weight with desired performance attributes such as high reliability, low contact resistance and wide operating temperature range, making

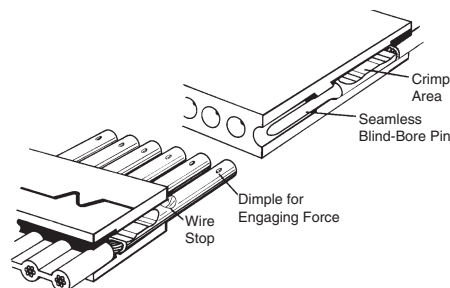
them among the smallest and toughest connectors available to designers.

### The Contact System

NANONICS connectors utilize the same contact system throughout the entire product family. This contact system uses a "spring socket" as opposed to most connector designs, which use a "spring pin". In this design, the socket member of the contact pair employs a dimple located inside the contact tube. When the pin is engaged with this socket, the dimple creates the desired spring action by forcing the pin to offset to the opposite side of the socket tube. The

result is a gold-on-gold mating area covering a minimum of 180° of the contact surface. This also creates a desirable mating force of no greater than 6 ounces per contact and a resistance of .003 ~ .008 ohms. This type of contact system begins with a pre-plated BeCu alloy material that is then formed to yield a rugged, seamless contact. Both the blind-bore seamless pin and the seamless one piece socket have a burnished gold finish on both the inside and outside surfaces. This gold finish provides contact integrity for superior reliability and environmental performance.

### Contact Configuration



## NANONICS Nanominiature Connectors

### Technical and Performance Data

#### Electrical

**Contact Resistance** — .003 - .008 ohms

**Current Rating** — 1 amp max. per contact

**Dielectric Withstanding Voltage** — Volts RMS 60 Hz at room ambient conditions. At sea level 500V. At 70,000 ft. 150V.

**Insulation Resistance** — 5000 megohms min. (@ 500 VDC) at room ambient conditions.

**Magnetic Permeability** — 2 mu max.

#### Mechanical

**Contact Engagement & Separation** — Engaging force is 6.0 oz. max. Separation force is 0.5 oz. min.

**Mating Force Maximum** — Calculated as 10 oz. multiplied by the number of contacts.

#### Environmental

**Temperature Range** — -200° C to +200° C

**Shock** — No discontinuity in excess of 1 μ sec. when tested in accordance with MIL-STD-1344, Method 2004.1, Test Condition E.

**Vibration** — No discontinuity in excess of 1 μ sec. when tested in accordance with MIL-STD-1344, Method 2005.1, Test Condition IV.

**Solderability** — Connectors shall meet the test requirements of MIL-STD-202, Method 208.

**Durability** — No mechanical or electrical defects detrimental to the function of the connectors after 500 cycles of mating and unmating, without the use of hardware.

**Humidity** — After exposure to humidity as specified by MIL-STD-1344, Method 1002.2, Type II, IR shall be 1 megohm min. (@ 100 VDC) within 2 hours of conditioning and 1000 megohms min. (@ 100 VDC) after 24 hours of conditioning.

**Salt Spray** — Connectors shall meet the performance requirements of contact resistance, mating and unmating forces, and contact retention after being subjected to the 48 hour 5 % solution salt spray test per MIL-STD-1344, Method 1001, Condition B.

**Fluid Immersion** — Unmated connectors after being fully immersed in one of the following fluids, for the prescribed time, will mate at a force of 10 oz. multiplied by the number of contacts or less: Perchloroethylene, 2 hours; Lubricating oil per MIL-L-23699, 20 hours.

**Crimp Tensile Strength** — (Unassembled contacts with crimped stranded wire terminations) Wires will not pull out of the contacts when the following axial load is applied: #30 AWG, 2 lbs.

**Thermal Vacuum Outgassing** — Connectors shall have a maximum total mass loss (TML) of 1.0 % of the original specimen mass and a maximum collected volatile condensable materials (CVCN) content of 0.1 % of the original specimen mass when tested in accordance with SP-R-0022A.

#### Material and Finish

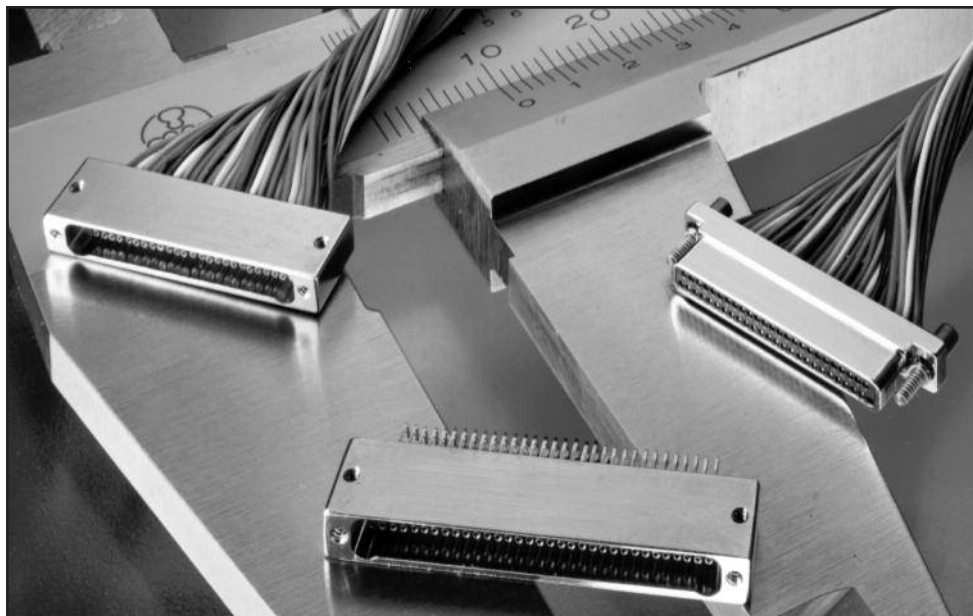
**Contacts** — BeCu alloy plated with gold per MIL-G-45204 Type II over nickel per QQ-N-290.

**Plastic Insulators and Shells** — 30% glassed filled Liquid Crystal Polymer (LCP).

**Metal Shells** — 6061-T6 Aluminum with electroless nickel plating per MIL-C-26074. Stainless steel and gold plated shells are also available.

5

Nanominiature and Microminiature Connectors

**NANONICS DUALOBE Rectangular Connectors Introduction**

NANONICS rectangular connectors have earned the distinction of being the most popular and widely utilized style of Nano connectors. These connectors incorporate the DUALOBE polarization scheme. This polarization scheme negates the need for mating guide pins and does not increase the package size. The DUALOBE series of connectors are available in both machined aluminum and molded plastic shells, both in one and two row connector housings. Single row configurations commonly have standard pin counts from 5 to 51, while the higher density two row configurations have pin counts from 9 to 65. These connectors can be terminated in many different ways. Standard configurations include wires, surface mount, thru-hole, solder

cup, “duckbill”, and panel mount. Wired harness assemblies and custom configurations can also be accommodated. Such custom configurations include filtered, hermetic, environmentally sealed, and blind mate connectors.

This family of connectors is designed to meet the requirements of MIL-DTL-83513, with a few size related modifications. Designed primarily for the military and aerospace industry, the DUALOBE series is especially well suited when high reliability, coupled with reduced size and weight, are serious design parameters. A clear example of this is the use of NANONICS connectors in such applications as smart munitions, missile defense, aircraft communications, and UAV's. In addition to

the above applications, with the wide temperature range of the DUALOBE connector (-200°C to +200°C), the space and petroleum industries have also found many uses for this connector. The performance and reliability at cryogenic temperatures, along with the low outgassing material properties, has led to an increased usage in space applications. Such applications include nitrogen-cooled optics, low and high earth orbiting satellites, telescopes, deep space probes, orbiters, and rovers. On the opposite end of the spectrum, the petroleum exploration industry utilizes these connectors for their performance and reliability in downhole environments at temperatures exceeding 175°C.

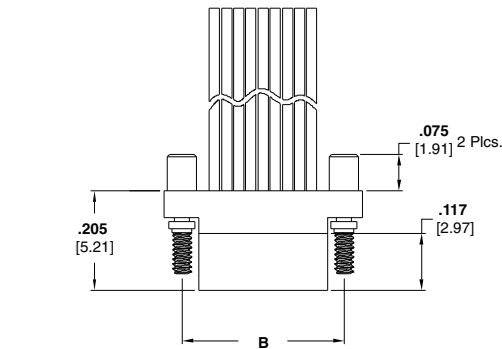
## NANONICS Wired Connectors — Single Row, Flying Leads



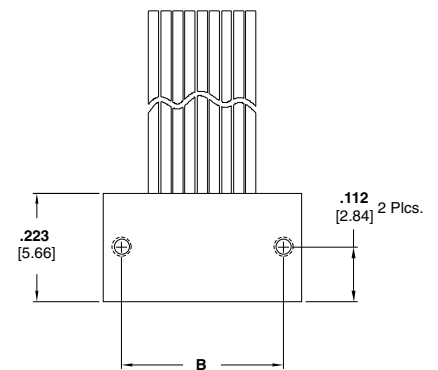
Plug



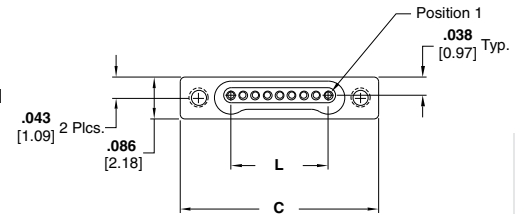
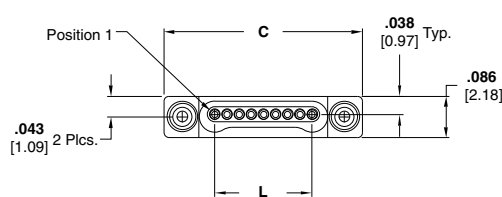
Receptacle



Plug with Flying Leads  
Drawing Number 1589455



Receptacle with Flying Leads  
Drawing Number 1589457



### Product Facts

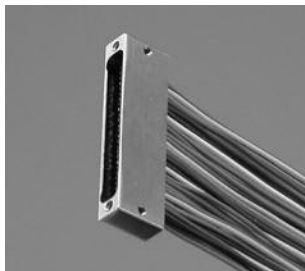
- Plastic or Metal Shell
- Standard Sizes: 5, 9, 15, 25, 37, and 51
- Factory wired to your specifications
- Contact TE Connectivity for custom configurations

| Size | Dimensions    |                |               |
|------|---------------|----------------|---------------|
|      | B             | C              | L             |
| 5    | 0.233 [5.92]  | 0.3085 [7.84]  | 0.100 [2.54]  |
| 9    | 0.333 [8.46]  | 0.4085 [10.38] | 0.200 [5.08]  |
| 15   | 0.483 [12.27] | 0.5585 [14.19] | 0.350 [8.89]  |
| 25   | 0.733 [18.62] | 0.8085 [20.54] | 0.600 [15.24] |
| 37   | 1.033 [26.24] | 1.1085 [28.16] | 0.900 [22.86] |
| 51   | 1.383 [35.13] | 1.4585 [37.05] | 1.250 [31.75] |

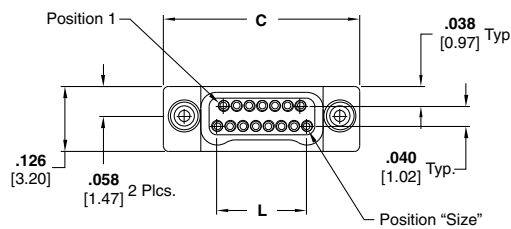
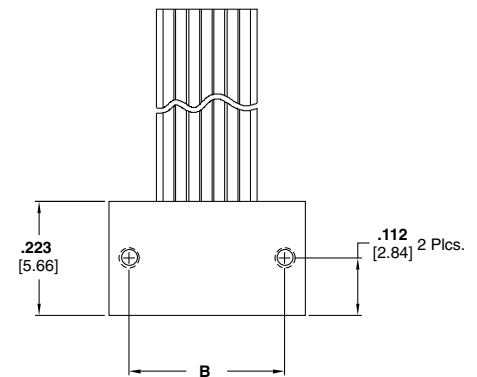
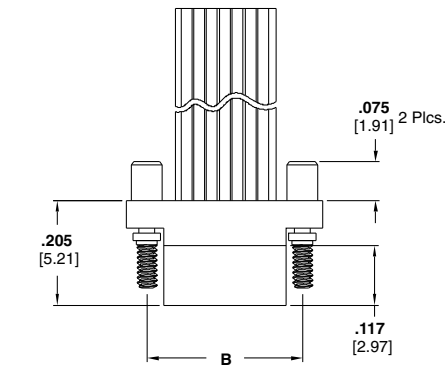
## NANONICS Wired Connectors — Two Row, Flying Leads



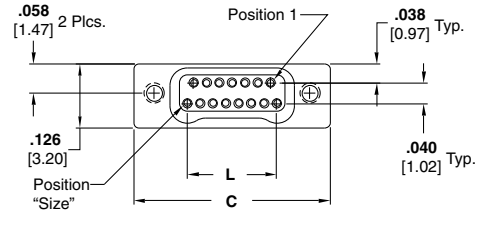
Plug



Receptacle



Plug with Flying Leads  
Drawing Number 1589472



Receptacle with Flying Leads  
Drawing Number 1589476

### Product Facts

- Plastic or Metal Shell
- Standard Sizes: 9, 15, 25, 37, 51 and 65
- Factory wired to your specifications
- Contact TE Connectivity for custom configurations

| Size | Dimensions    |                |               |
|------|---------------|----------------|---------------|
|      | B             | C              | L             |
| 9    | 0.229 [5.82]  | 0.3085 [7.84]  | 0.100 [2.54]  |
| 15   | 0.304 [7.72]  | 0.3835 [9.74]  | 0.175 [4.45]  |
| 25   | 0.429 [10.90] | 0.5085 [12.92] | 0.300 [7.62]  |
| 37   | 0.579 [14.71] | 0.6585 [16.73] | 0.450 [11.43] |
| 51   | 0.754 [19.15] | 0.8335 [21.17] | 0.625 [15.88] |
| 65   | 0.929 [23.60] | 1.0085 [25.62] | 0.800 [20.32] |

## Part Numbering Guideline for NANONICS Wired Connectors

### DUALOBE Connectors - Wire Terminations

| Class                            | S | X | X | XXX | XX | X | XX | XXX | X | Threads/Jackscrew                                                                                                                                                                                                                                                                                       |
|----------------------------------|---|---|---|-----|----|---|----|-----|---|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| S DUALOBE                        |   |   |   |     |    |   |    |     |   | <b>Threads (Receptacles Only)</b><br><b>N</b> Thread for 1.0 mm Jackscrews<br><b>Q</b> Thread for 1.2 mm Jackscrews                                                                                                                                                                                     |
| <b>Rows</b>                      |   |   |   |     |    |   |    |     |   | <b>Jackscrews (Plugs Only)</b><br><b>M</b> 1.0 mm Non Captive Jackscrew<br><b>N</b> 1.0 mm Captive Jackscrew<br><b>Q</b> 1.2 mm Captive Jackscrew                                                                                                                                                       |
| S 1 Row                          |   |   |   |     |    |   |    |     |   |                                                                                                                                                                                                                                                                                                         |
| T 2 Row                          |   |   |   |     |    |   |    |     |   |                                                                                                                                                                                                                                                                                                         |
| <b>Type</b>                      |   |   |   |     |    |   |    |     |   | <b>Conductor Length</b><br><b>XXX</b> Three numbers only, length is in inches ( i.e. 012 = twelve inches)<br><b>CXX</b> A "C" followed by two numbers, length is in centimeters ( i.e. C06 = six centimeters)<br><b>MX</b> An "M" followed by two numbers, length is in meters ( i.e. M02 = two meters) |
| L LCP (Plastic)                  |   |   |   |     |    |   |    |     |   |                                                                                                                                                                                                                                                                                                         |
| M Metal (Al, Ni Plate)           |   |   |   |     |    |   |    |     |   |                                                                                                                                                                                                                                                                                                         |
| <b>Positions</b>                 |   |   |   |     |    |   |    |     |   | <b>Conductor Type</b><br><b>DX</b> White PTFE<br><b>DC</b> Color Coded PTFE<br><b>DM</b> Color Coded PTFE per MIL-STD-681<br><b>DT</b> White ETFE M22759/33<br><b>GX</b> FEP Ribbon Cable                                                                                                               |
| 005 5 Position (single row only) |   |   |   |     |    |   |    |     |   |                                                                                                                                                                                                                                                                                                         |
| 009 9 Position                   |   |   |   |     |    |   |    |     |   |                                                                                                                                                                                                                                                                                                         |
| 015 15 Position                  |   |   |   |     |    |   |    |     |   |                                                                                                                                                                                                                                                                                                         |
| 025 25 Position                  |   |   |   |     |    |   |    |     |   |                                                                                                                                                                                                                                                                                                         |
| 037 37 Position                  |   |   |   |     |    |   |    |     |   |                                                                                                                                                                                                                                                                                                         |
| 051 51 Position                  |   |   |   |     |    |   |    |     |   |                                                                                                                                                                                                                                                                                                         |
| 065 65 Position (two row only)   |   |   |   |     |    |   |    |     |   |                                                                                                                                                                                                                                                                                                         |
| <b>Configurations</b>            |   |   |   |     |    |   |    |     |   | <b>Conductor Size/Strands</b><br><b>0</b> 28 AWG Solid<br><b>1</b> 30 AWG Solid<br><b>2</b> 30 AWG 7 Strand<br><b>3</b> 32 AWG 7 Strand<br><b>4</b> 34 AWG 7 Strand                                                                                                                                     |
| PC Plug                          |   |   |   |     |    |   |    |     |   |                                                                                                                                                                                                                                                                                                         |
| SC Receptacle                    |   |   |   |     |    |   |    |     |   |                                                                                                                                                                                                                                                                                                         |

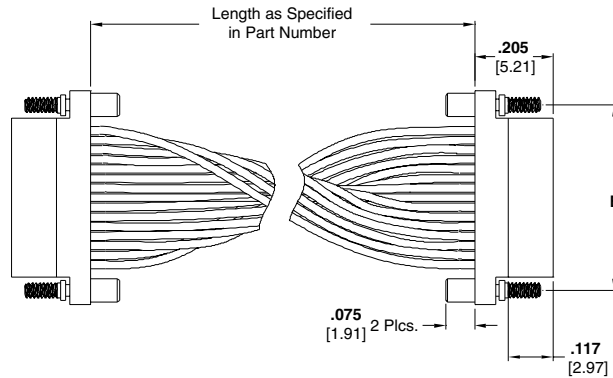
## NANONICS Jumper Assembly Connectors — Single Row



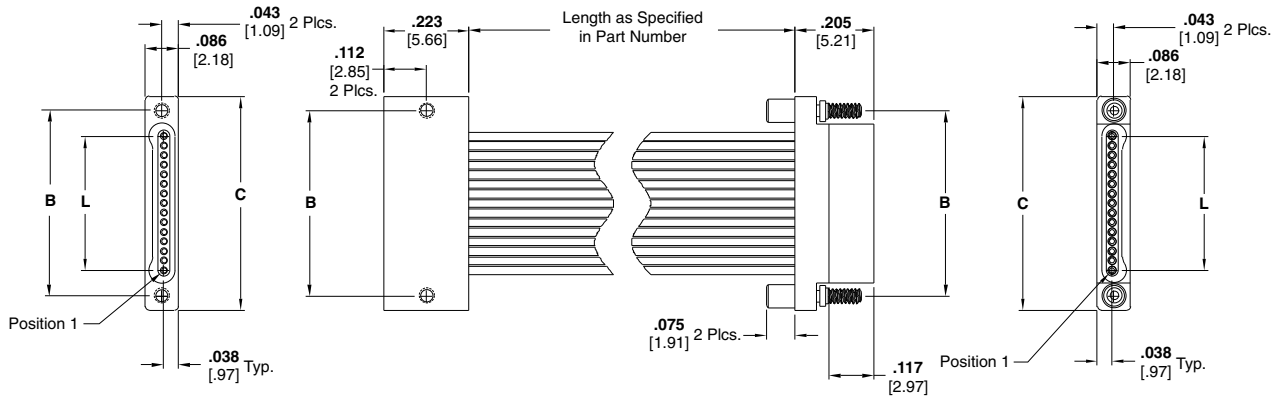
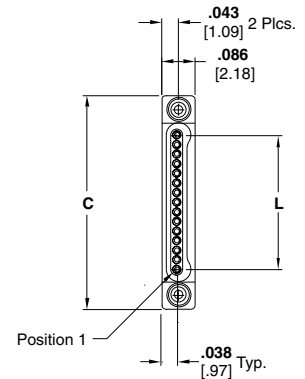
Plug to Receptacle

### Product Facts

- Plastic or Metal Shell
- Standard Sizes: 5, 9, 15, 25, 37, and 51
- Factory wired to your specifications
- Contact TE Connectivity for custom configurations



Plug to Plug  
Drawing Number 1589735

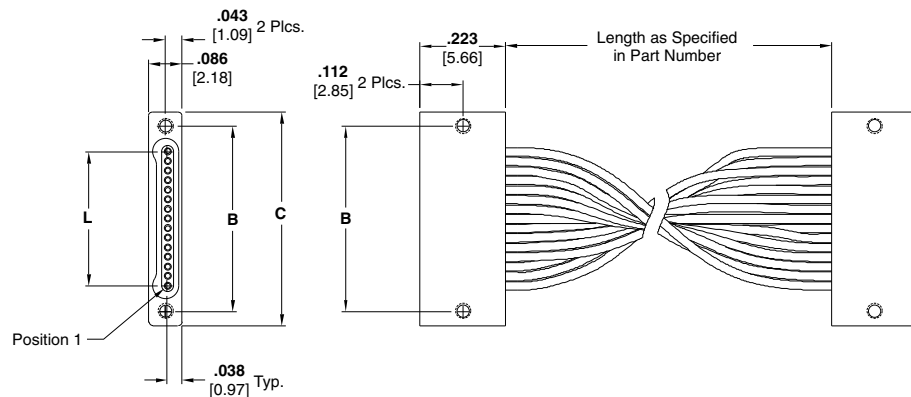


Plug to Receptacle  
Drawing Number 1589736

| Size | Dimensions    |                |               |
|------|---------------|----------------|---------------|
|      | B             | C              | L             |
| 5    | 0.233 [5.92]  | 0.3085 [7.84]  | 0.100 [2.54]  |
| 9    | 0.333 [8.46]  | 0.4085 [10.38] | 0.200 [5.08]  |
| 15   | 0.483 [12.27] | 0.5585 [14.19] | 0.350 [8.89]  |
| 25   | 0.733 [18.62] | 0.8085 [20.54] | 0.600 [15.24] |
| 37   | 1.033 [26.24] | 1.1085 [28.16] | 0.900 [22.86] |
| 51   | 1.383 [35.13] | 1.4585 [37.05] | 1.250 [31.75] |



**NANONICS Jumper Assembly Connectors — Single Row (Continued)**



Receptacle to Receptacle  
Drawing Number 1589803

| Size | Dimensions           |                       |                      |
|------|----------------------|-----------------------|----------------------|
|      | B                    | C                     | L                    |
| 5    | <b>0.233</b> [5.92]  | <b>0.3085</b> [7.84]  | <b>0.100</b> [2.54]  |
| 9    | <b>0.333</b> [8.46]  | <b>0.4085</b> [10.38] | <b>0.200</b> [5.08]  |
| 15   | <b>0.483</b> [12.27] | <b>0.5585</b> [14.19] | <b>0.350</b> [8.89]  |
| 25   | <b>0.733</b> [18.62] | <b>0.8085</b> [20.54] | <b>0.600</b> [15.24] |
| 37   | <b>1.033</b> [26.24] | <b>1.1085</b> [28.16] | <b>0.900</b> [22.86] |
| 51   | <b>1.383</b> [35.13] | <b>1.4585</b> [37.05] | <b>1.250</b> [31.75] |

5

Nanominature and Microminature Connectors

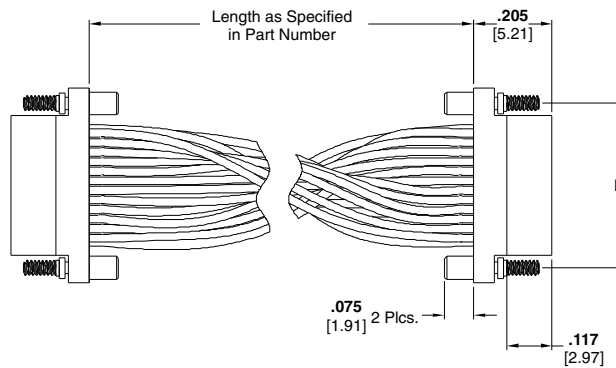
## NANONICS Jumper Assembly Connectors — Two Row



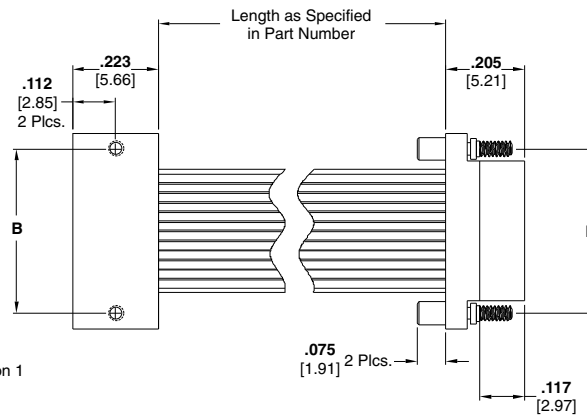
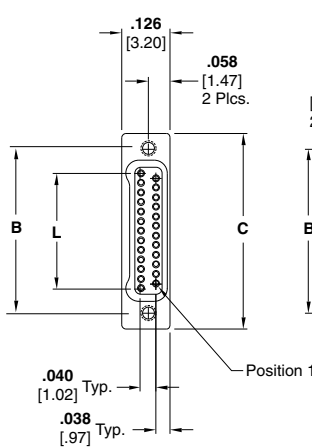
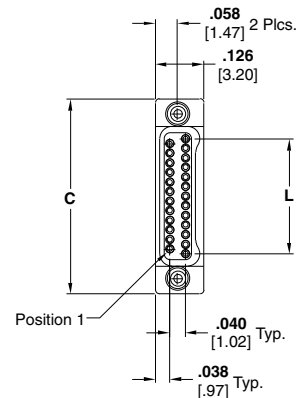
Plug to Receptacle

### Product Facts

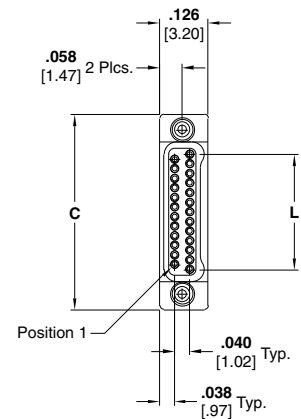
- Plastic or Metal Shell
- Standard Sizes: 9, 15, 25, 37, 51 and 65
- Factory wired to your specifications
- Contact TE Connectivity for custom configurations



Plug to Plug  
Drawing Number 1589737

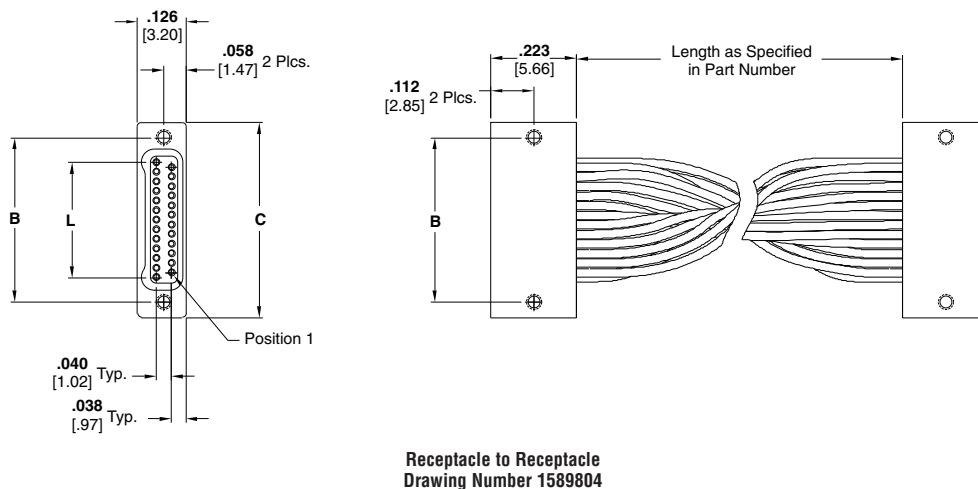


Plug to Receptacle  
Drawing Number 1589738



| Size | Dimensions    |                |               |
|------|---------------|----------------|---------------|
|      | B             | C              | L             |
| 9    | 0.229 [5.82]  | 0.3085 [7.84]  | 0.100 [2.54]  |
| 15   | 0.304 [7.72]  | 0.3835 [9.74]  | 0.175 [4.45]  |
| 25   | 0.429 [10.90] | 0.5085 [12.92] | 0.300 [7.62]  |
| 37   | 0.579 [14.71] | 0.6585 [16.73] | 0.450 [11.43] |
| 51   | 0.754 [19.15] | 0.8335 [21.17] | 0.625 [15.88] |
| 65   | 0.929 [23.60] | 1.0085 [25.62] | 0.800 [20.32] |

## NANONICS Jumper Assembly Connectors — Two Row (Continued)



| Size | Dimensions           |                       |                      |
|------|----------------------|-----------------------|----------------------|
|      | B                    | C                     | L                    |
| 9    | <b>0.229</b> [5.82]  | <b>0.3085</b> [7.84]  | <b>0.100</b> [2.54]  |
| 15   | <b>0.304</b> [7.72]  | <b>0.3835</b> [9.74]  | <b>0.175</b> [4.45]  |
| 25   | <b>0.429</b> [10.90] | <b>0.5085</b> [12.92] | <b>0.300</b> [7.62]  |
| 37   | <b>0.579</b> [14.71] | <b>0.6585</b> [16.73] | <b>0.450</b> [11.43] |
| 51   | <b>0.754</b> [19.15] | <b>0.8335</b> [21.17] | <b>0.625</b> [15.88] |
| 65   | <b>0.929</b> [23.60] | <b>1.0085</b> [25.62] | <b>0.800</b> [20.32] |

5

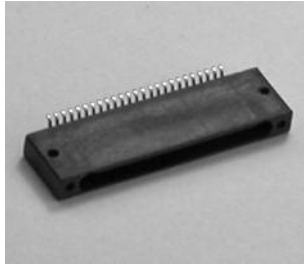
Nanominature and Microminature Connectors

## Part Numbering Guideline for NANONICS Jumper Assemblies

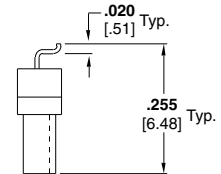
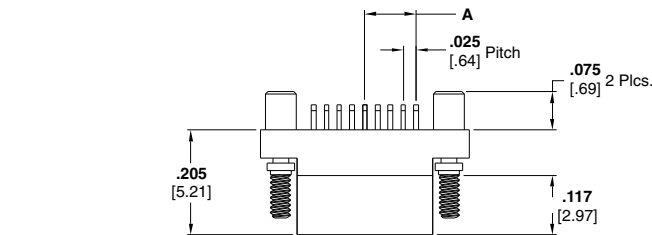
### DUALOBE Connectors - Jumper Terminations

| Class                                                                                   | J | X | X | XXX | XX | X | XX | XXX | X |
|-----------------------------------------------------------------------------------------|---|---|---|-----|----|---|----|-----|---|
| J Jumper                                                                                |   |   |   |     |    |   |    |     |   |
| Rows                                                                                    |   |   |   |     |    |   |    |     |   |
| S 1 Row                                                                                 |   |   |   |     |    |   |    |     |   |
| T 2 Row                                                                                 |   |   |   |     |    |   |    |     |   |
| Type                                                                                    |   |   |   |     |    |   |    |     |   |
| L LCP (Plastic)                                                                         |   |   |   |     |    |   |    |     |   |
| M Metal (Al, Ni Plate)                                                                  |   |   |   |     |    |   |    |     |   |
| Positions                                                                               |   |   |   |     |    |   |    |     |   |
| 005 5 Position (single row only)                                                        |   |   |   |     |    |   |    |     |   |
| 009 9 Position                                                                          |   |   |   |     |    |   |    |     |   |
| 015 15 Position                                                                         |   |   |   |     |    |   |    |     |   |
| 025 25 Position                                                                         |   |   |   |     |    |   |    |     |   |
| 037 37 Position                                                                         |   |   |   |     |    |   |    |     |   |
| 051 51 Position                                                                         |   |   |   |     |    |   |    |     |   |
| 065 65 Position (two row only)                                                          |   |   |   |     |    |   |    |     |   |
| Configuration                                                                           |   |   |   |     |    |   |    |     |   |
| PP Plug to Plug, 1 to 1                                                                 |   |   |   |     |    |   |    |     |   |
| PR Plug to Receptacle, 1 to 1                                                           |   |   |   |     |    |   |    |     |   |
| PD Plug to Plug, low to high in row                                                     |   |   |   |     |    |   |    |     |   |
| RR Receptacle to Receptacle, 1 to 1                                                     |   |   |   |     |    |   |    |     |   |
| Threads/Jackscrews                                                                      |   |   |   |     |    |   |    |     |   |
| Threads (Receptacles Only)                                                              |   |   |   |     |    |   |    |     |   |
| N Thread for 1.0 mm Jackscrews                                                          |   |   |   |     |    |   |    |     |   |
| Q Thread for 1.2 mm Jackscrews                                                          |   |   |   |     |    |   |    |     |   |
| Jackscrews (Plugs Only)                                                                 |   |   |   |     |    |   |    |     |   |
| M 1.0 mm Non Captive Jackscrews                                                         |   |   |   |     |    |   |    |     |   |
| N 1.0 mm Captive Jackscrews                                                             |   |   |   |     |    |   |    |     |   |
| Q 1.2 mm Captive Jackscrews                                                             |   |   |   |     |    |   |    |     |   |
| Conductor Length                                                                        |   |   |   |     |    |   |    |     |   |
| XXX Three numbers only, length is in inches ( i.e. 012 = twelve inches)                 |   |   |   |     |    |   |    |     |   |
| CXX A "C" followed by two numbers, length is in centimeters ( i.e. C06 = 6 centimeters) |   |   |   |     |    |   |    |     |   |
| MXM An "M" followed by two numbers, length is in meters ( i.e. M02 = 2 meters)          |   |   |   |     |    |   |    |     |   |
| Conductor Type                                                                          |   |   |   |     |    |   |    |     |   |
| DX White PTFE                                                                           |   |   |   |     |    |   |    |     |   |
| DC Color Coded PTFE                                                                     |   |   |   |     |    |   |    |     |   |
| DM Color Coded PTFE per MIL-STD-681                                                     |   |   |   |     |    |   |    |     |   |
| DT White ETFE M22759/33                                                                 |   |   |   |     |    |   |    |     |   |
| GX FEP Ribbon Cable                                                                     |   |   |   |     |    |   |    |     |   |
| Conductor Size/Strands                                                                  |   |   |   |     |    |   |    |     |   |
| 0 28 AWG Solid                                                                          |   |   |   |     |    |   |    |     |   |
| 1 30 AWG Solid                                                                          |   |   |   |     |    |   |    |     |   |
| 2 30 AWG 7 Strand                                                                       |   |   |   |     |    |   |    |     |   |
| 3 32 AWG 7 Strand                                                                       |   |   |   |     |    |   |    |     |   |
| 4 34 AWG 7 Strand                                                                       |   |   |   |     |    |   |    |     |   |

## NANONICS Surface Mount Connectors — Horizontal, Single Row



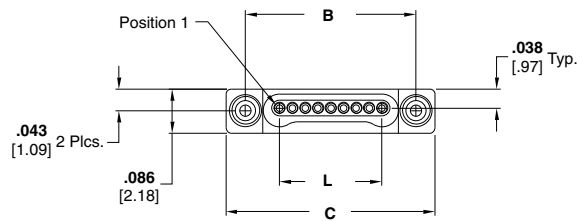
Receptacle



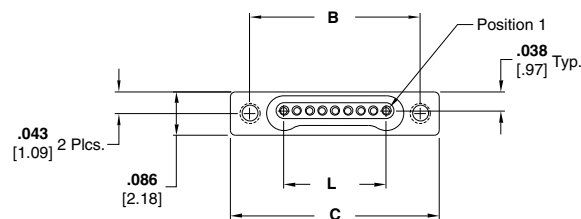
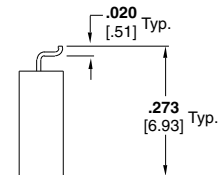
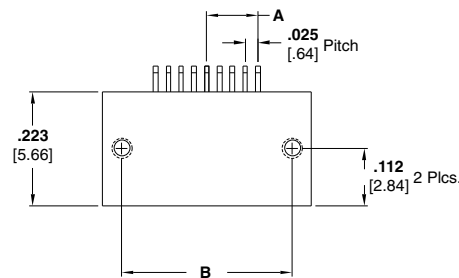
Jackscrews Omitted for Clarity

### Product Facts

- Plastic or Metal Shell
- Standard Sizes: 5, 9, 15, 25, 37, and 51
- Contact TE Connectivity for custom configurations
- Suggested pad layouts are available on the referenced drawings on the TE website



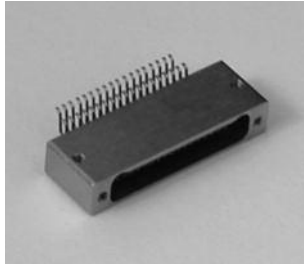
Plug Assembly  
Drawing Number 1589460



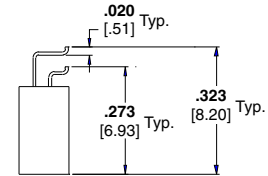
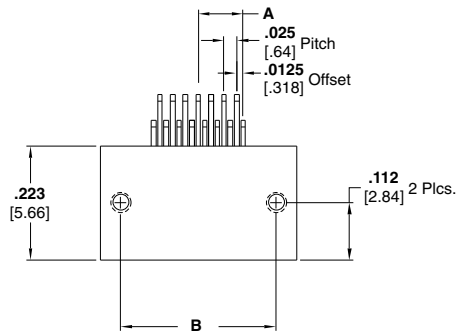
Receptacle Assembly  
Drawing Number 1589462

| Size | Dimensions    |               |                |               |
|------|---------------|---------------|----------------|---------------|
|      | A             | B             | C              | L             |
| 5    | 0.050 [1.27]  | 0.233 [5.92]  | 0.3085 [7.84]  | 0.100 [2.54]  |
| 9    | 0.100 [2.54]  | 0.333 [8.46]  | 0.4085 [10.38] | 0.200 [5.08]  |
| 15   | 0.175 [4.45]  | 0.483 [12.27] | 0.5585 [14.19] | 0.350 [8.89]  |
| 25   | 0.300 [7.62]  | 0.733 [18.62] | 0.8085 [20.54] | 0.600 [15.24] |
| 37   | 0.450 [11.43] | 1.085 [26.24] | 1.1085 [28.16] | 0.900 [22.86] |
| 51   | 0.625 [15.88] | 1.383 [35.13] | 1.4585 [37.05] | 1.250 [31.75] |

## NANONICS Surface Mount Connectors — Horizontal, Two Row

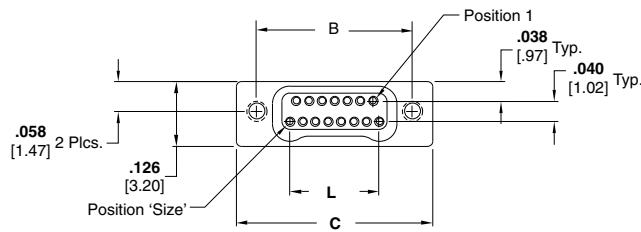


Receptacle

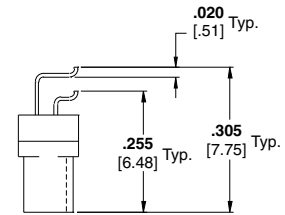
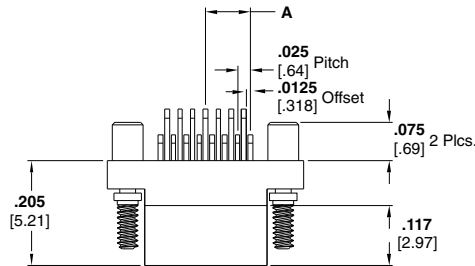


### Product Facts

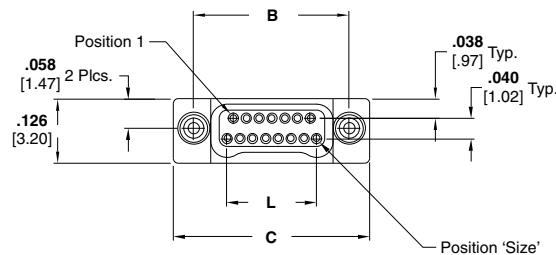
- Plastic or Metal Shell
- Standard Sizes: 9, 15, 25, 37, 51 and 65
- Contact TE Connectivity for custom configurations
- Suggested pad layouts are available on the referenced drawings on the TE website



Receptacle Assembly  
Drawing Number 1589483



Jackscrews Omitted for Clarity



Plug Assembly  
Drawing Number 1589490

| Size | Dimensions    |               |                |               |
|------|---------------|---------------|----------------|---------------|
|      | A             | B             | C              | L             |
| 9    | 0.050 [1.27]  | 0.229 [5.82]  | 0.3085 [7.84]  | 0.100 [2.54]  |
| 15   | 0.075 [2.23]  | 0.304 [7.72]  | 0.3835 [9.74]  | 0.175 [4.45]  |
| 25   | 0.150 [3.81]  | 0.429 [10.90] | 0.5085 [12.92] | 0.300 [7.62]  |
| 37   | 0.225 [5.72]  | 0.579 [14.71] | 0.6585 [16.73] | 0.450 [11.43] |
| 51   | 0.313 [7.95]  | 0.754 [19.15] | 0.8335 [21.17] | 0.625 [15.88] |
| 65   | 0.400 [10.16] | 0.929 [23.60] | 1.0085 [25.62] | 0.800 [20.32] |

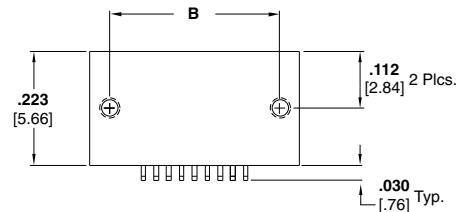
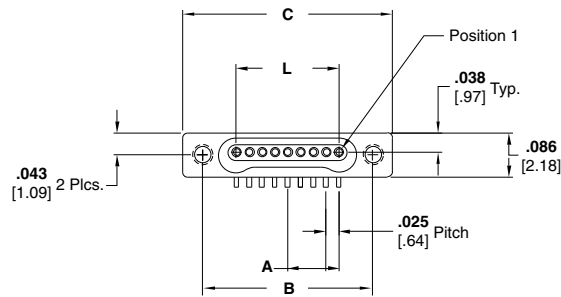
## NANONICS Surface Mount Connectors — Vertical, Single Row



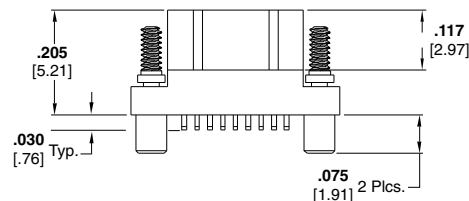
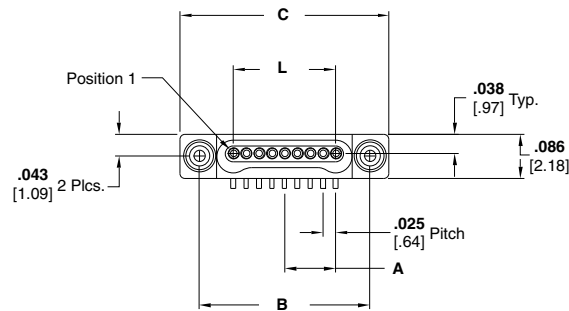
Receptacle

### Product Facts

- Plastic or Metal Shell
- Standard Sizes: 5, 9, 15, 25, 37, and 51
- Contact TE Connectivity for custom configurations
- Suggested pad layouts are available on the referenced drawings on the TE website



Receptacle Assembly  
Drawing Number 1589463



Plug Assembly  
Drawing Number 1589465

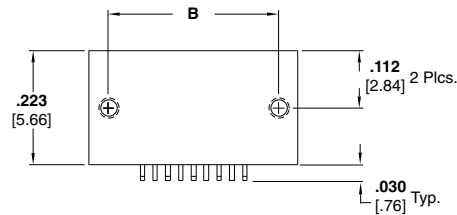
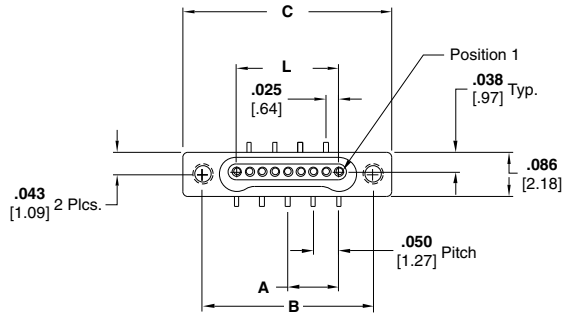
| Size | Dimensions    |               |                |               |
|------|---------------|---------------|----------------|---------------|
|      | A             | B             | C              | L             |
| 5    | 0.050 [1.27]  | 0.233 [5.92]  | 0.3085 [7.84]  | 0.100 [2.54]  |
| 9    | 0.100 [2.54]  | 0.333 [8.46]  | 0.4085 [10.38] | 0.200 [5.08]  |
| 15   | 0.175 [4.45]  | 0.483 [12.27] | 0.5585 [14.19] | 0.350 [8.89]  |
| 25   | 0.300 [7.62]  | 0.733 [18.62] | 0.8085 [20.54] | 0.600 [15.24] |
| 37   | 0.450 [11.43] | 1.085 [26.24] | 1.1085 [28.16] | 0.900 [22.86] |
| 51   | 0.625 [15.88] | 1.383 [35.13] | 1.4585 [37.05] | 1.250 [31.75] |



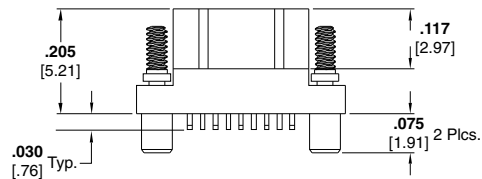
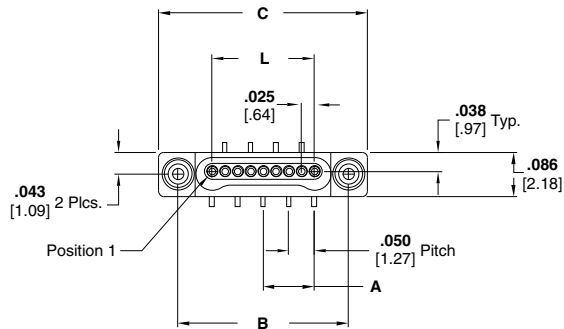
## NANONICS Surface Mount Connectors — Vertical, Single Row with Alternating Leads

### Product Facts

- Plastic or Metal Shell
- Standard Sizes: 5, 9, 15, 25, 37, and 51
- Contact TE Connectivity for custom configurations
- Suggested pad layouts are available on the referenced drawings on the TE website



Receptacle Assembly  
Drawing Number 1589464



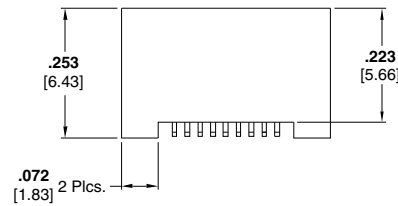
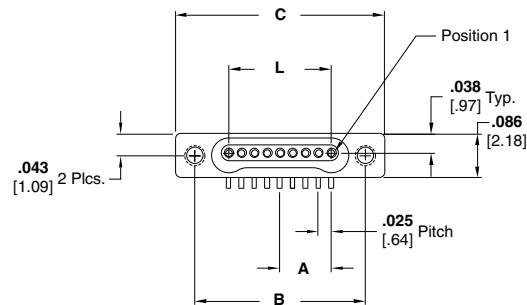
Plug Assembly  
Drawing Number 1589466

| Size | Dimensions    |               |                |               |
|------|---------------|---------------|----------------|---------------|
|      | A             | B             | C              | L             |
| 5    | 0.050 [1.27]  | 0.233 [5.92]  | 0.3085 [7.84]  | 0.100 [2.54]  |
| 9    | 0.100 [2.54]  | 0.333 [8.46]  | 0.4085 [10.38] | 0.200 [5.08]  |
| 15   | 0.175 [4.45]  | 0.483 [12.27] | 0.5585 [14.19] | 0.350 [8.89]  |
| 25   | 0.300 [7.62]  | 0.733 [18.62] | 0.8085 [20.54] | 0.600 [15.24] |
| 37   | 0.450 [11.43] | 1.085 [26.24] | 1.1085 [28.16] | 0.900 [22.86] |
| 51   | 0.625 [15.88] | 1.383 [35.13] | 1.4585 [37.05] | 1.250 [31.75] |

## NANONICS Surface Mount Connectors — Vertical, Single Row with Integrated Standoffs

### Product Facts

- Metal Shell
- Standard Sizes: 5, 9, 15, 25, 37, and 51
- Contact TE Connectivity for custom configurations
- Suggested pad layouts are available on the referenced drawings on the TE website



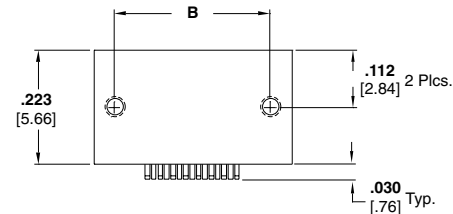
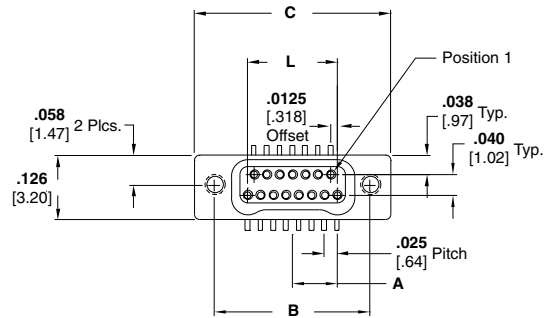
Receptacle Assembly  
Drawing Number 1589467

| Size | Dimensions    |               |                |               |
|------|---------------|---------------|----------------|---------------|
|      | A             | B             | C              | L             |
| 5    | 0.050 [1.27]  | 0.233 [5.92]  | 0.3085 [7.84]  | 0.100 [2.54]  |
| 9    | 0.100 [2.54]  | 0.333 [8.46]  | 0.4085 [10.38] | 0.200 [5.08]  |
| 15   | 0.175 [4.45]  | 0.483 [12.27] | 0.5585 [14.19] | 0.350 [8.89]  |
| 25   | 0.300 [7.62]  | 0.733 [18.62] | 0.8085 [20.54] | 0.600 [15.24] |
| 37   | 0.450 [11.43] | 1.085 [26.24] | 1.1085 [28.16] | 0.900 [22.86] |
| 51   | 0.625 [15.88] | 1.383 [35.13] | 1.4585 [37.05] | 1.250 [31.75] |

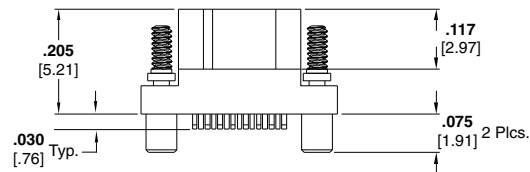
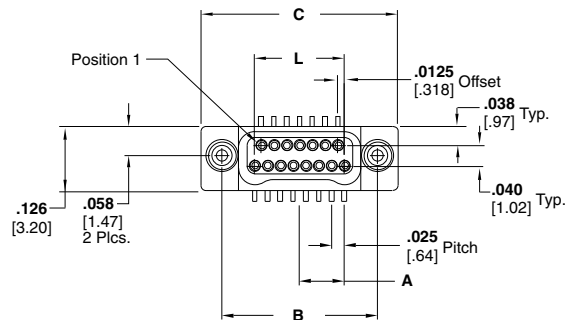
## NANONICS Surface Mount Connectors — Vertical, Two Row



Receptacle



Receptacle Assembly  
Drawing Number 1589484



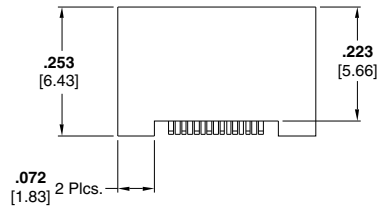
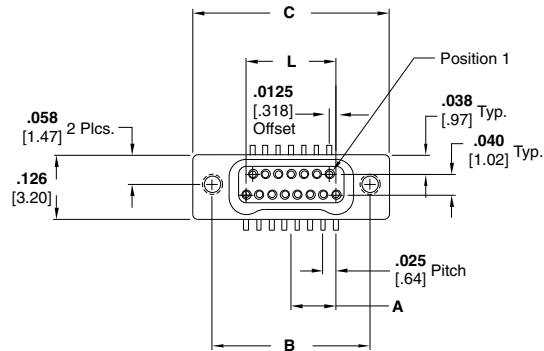
Plug Assembly  
Drawing Number 1589485

| Size | Dimensions    |               |                |               |
|------|---------------|---------------|----------------|---------------|
|      | A             | B             | C              | L             |
| 9    | 0.050 [1.27]  | 0.229 [5.82]  | 0.3085 [7.84]  | 0.100 [2.54]  |
| 15   | 0.075 [2.23]  | 0.304 [7.72]  | 0.3835 [9.74]  | 0.175 [4.45]  |
| 25   | 0.150 [3.81]  | 0.429 [10.90] | 0.5085 [12.92] | 0.300 [8.89]  |
| 37   | 0.225 [5.72]  | 0.579 [14.71] | 0.6585 [16.73] | 0.450 [11.43] |
| 51   | 0.313 [7.95]  | 0.754 [19.15] | 0.8335 [21.17] | 0.625 [15.88] |
| 65   | 0.400 [10.16] | 0.929 [23.60] | 1.0085 [25.62] | 0.800 [20.32] |

## NANONICS Surface Mount Connectors — Vertical, Two Row with Integrated Standoffs

### Product Facts

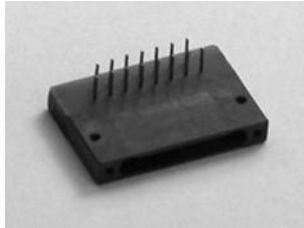
- Metal Shell
- Standard Sizes: 9, 15, 25, 37, 51 and 65
- Contact TE Connectivity for custom configurations
- Suggested pad layouts are available on the referenced drawings on the TE website



Receptacle Assembly  
Drawing Number 1589486

| Size | Dimensions    |               |                |              |
|------|---------------|---------------|----------------|--------------|
|      | A             | B             | C              | L            |
| 9    | 0.050 [1.27]  | 0.229 [5.82]  | 0.3085 [7.84]  | .100 [2.54]  |
| 15   | 0.075 [2.23]  | 0.304 [7.72]  | 0.3835 [9.74]  | .175 [4.45]  |
| 25   | 0.150 [3.81]  | 0.429 [10.90] | 0.5085 [12.92] | .300 [8.89]  |
| 37   | 0.225 [5.72]  | 0.579 [14.71] | 0.6585 [16.73] | .450 [11.43] |
| 51   | 0.313 [7.95]  | 0.754 [19.15] | 0.8335 [21.17] | .625 [15.88] |
| 65   | 0.400 [10.16] | 0.929 [23.60] | 1.0085 [25.62] | .800 [20.32] |

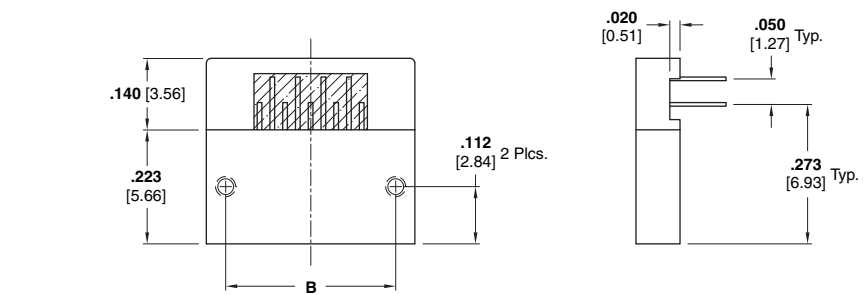
# NANONICS Thru-Hole Connectors — Horizontal, 1 Row to 2 Row, .050 Spacing



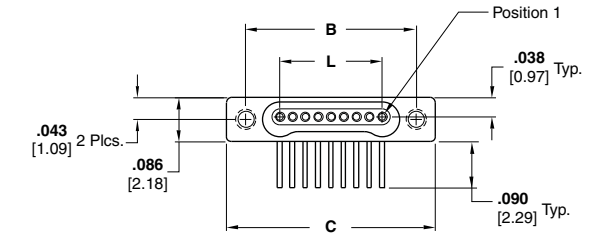
Receptacle

## Product Facts

- Plastic or Metal Shell
- Standard Sizes: 5, 9, 15, 25, 37, and 51
- Contact TE Connectivity for custom configurations
- Suggested thru-hole layouts are available on the referenced drawings on the TE website



Receptacle Assembly  
Drawing Number 1589469



Plug Assembly  
Drawing Number 1589471

| Size | Dimensions    |                |               |
|------|---------------|----------------|---------------|
|      | B             | C              | L             |
| 5    | 0.233 [5.92]  | 0.3085 [7.84]  | 0.100 [2.54]  |
| 9    | 0.333 [8.46]  | 0.4085 [10.38] | 0.200 [5.08]  |
| 15   | 0.483 [12.27] | 0.5585 [14.19] | 0.350 [8.89]  |
| 25   | 0.733 [18.62] | 0.8085 [20.54] | 0.600 [15.24] |
| 37   | 1.033 [26.24] | 1.1085 [28.16] | 0.900 [22.86] |
| 51   | 1.383 [35.13] | 1.4585 [37.05] | 1.250 [31.75] |

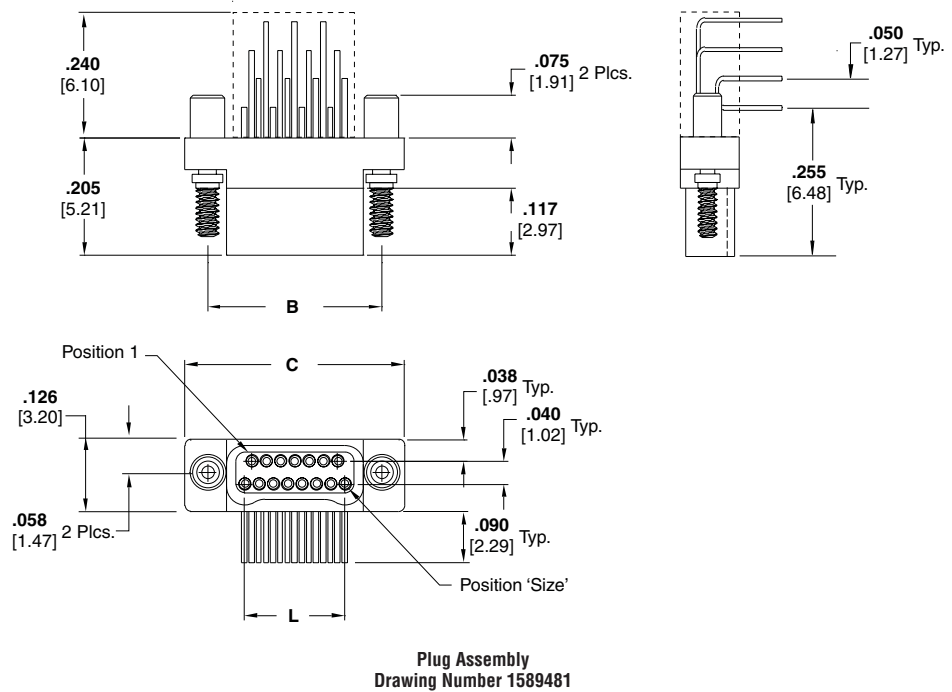
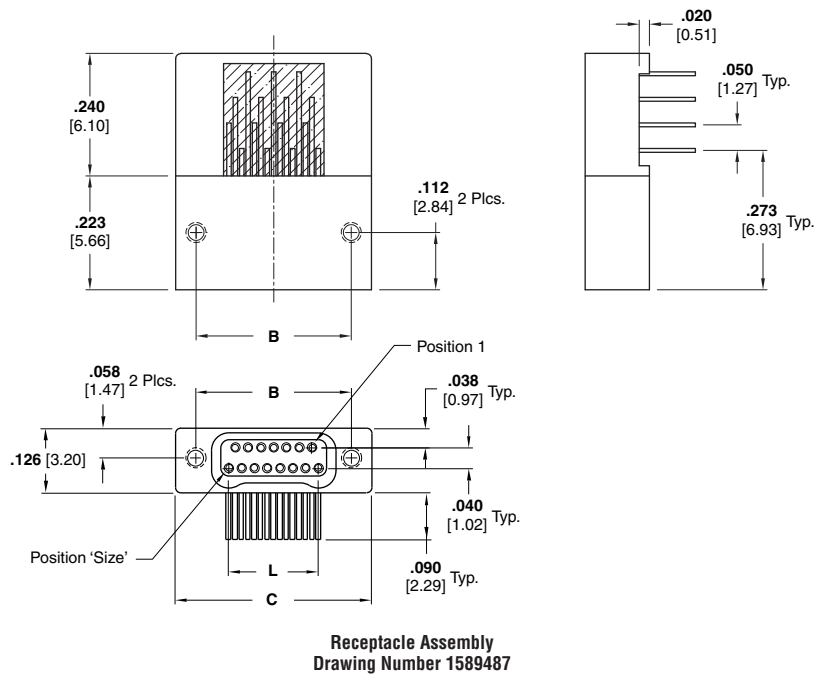
# NANONICS Thru-Hole Connectors — Horizontal, 2 Row to 4 Row, .050 Spacing



Receptacle

## Product Facts

- Plastic or Metal Shell
- Standard Sizes: 9, 15, 25, 37, 51 and 65
- Contact TE Connectivity for custom configurations
- Suggested thru-hole layouts are available on the referenced drawings on the TE website



| Size | Dimensions    |                |               |
|------|---------------|----------------|---------------|
|      | B             | C              | L             |
| 9    | 0.229 [5.82]  | 0.3085 [7.84]  | 0.100 [2.54]  |
| 15   | 0.304 [7.72]  | 0.3835 [9.74]  | 0.175 [4.45]  |
| 25   | 0.429 [10.90] | 0.5085 [12.92] | 0.300 [7.62]  |
| 37   | 0.579 [14.71] | 0.6585 [16.73] | 0.450 [11.43] |
| 51   | 0.754 [19.15] | 0.8335 [21.17] | 0.625 [15.88] |
| 65   | 0.929 [23.60] | 1.0085 [25.62] | 0.800 [20.32] |

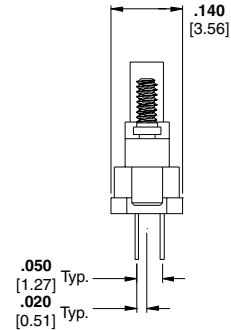
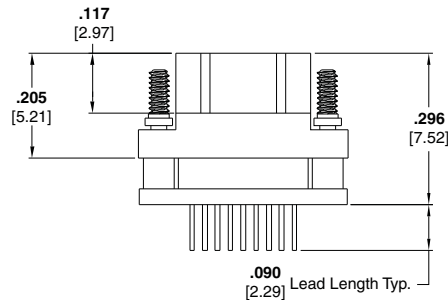
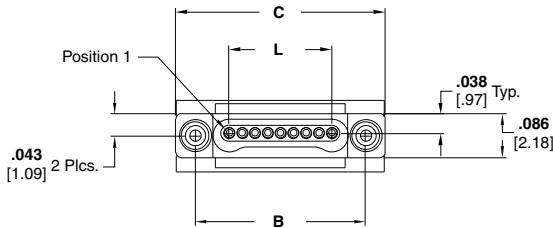
## NANONICS Thru-Hole Connectors — Vertical Mount, 1 Row to 2 Row Connectors, .050 Spacing



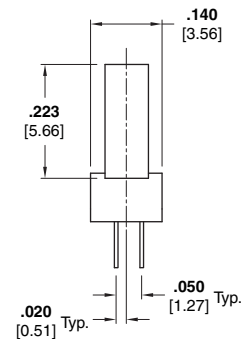
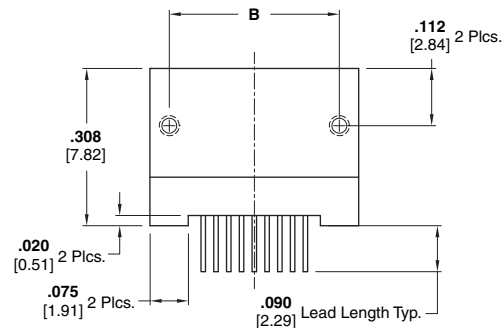
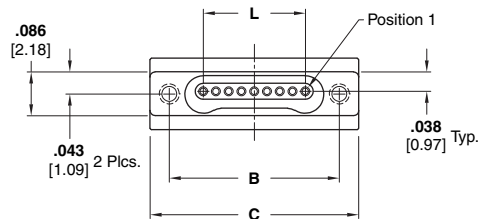
Receptacle

### Product Facts

- Plastic or Metal Shell
- Standard Sizes: 5, 9, 15, 25, 37 and 51
- Contact TE Connectivity for custom configurations
- Suggested thru-hole layouts are available on the referenced drawings on the TE website



Plug Assembly  
Drawing Number 1589461



Receptacle Assembly  
Drawing Number 1589470

| Size | Dimensions    |                |               |
|------|---------------|----------------|---------------|
|      | B             | C              | L             |
| 5    | 0.233 [5.92]  | 0.3085 [7.84]  | 0.100 [2.54]  |
| 9    | 0.333 [8.46]  | 0.4085 [10.38] | 0.200 [5.08]  |
| 15   | 0.483 [12.27] | 0.5585 [14.19] | 0.350 [8.89]  |
| 25   | 0.733 [18.62] | 0.8085 [20.54] | 0.600 [15.24] |
| 37   | 1.033 [26.24] | 1.1085 [28.16] | 0.900 [22.86] |
| 51   | 1.383 [35.13] | 1.4585 [37.05] | 1.250 [31.75] |



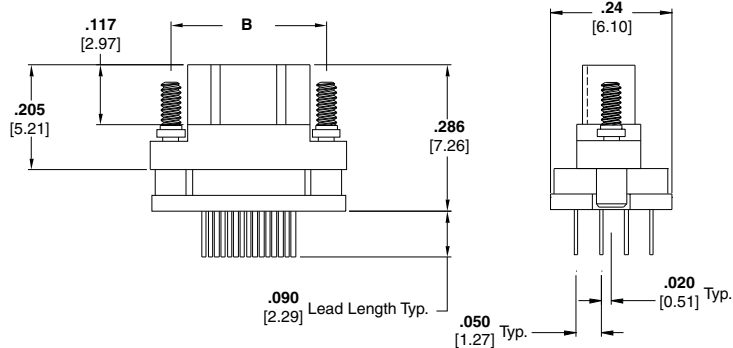
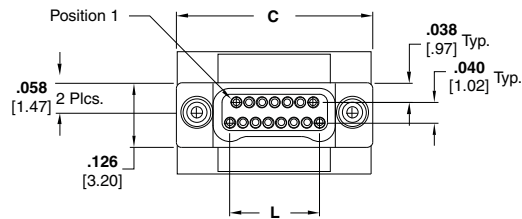
## NANONICS Thru-Hole Connectors — Vertical Mount, 2 Row to 4 Row Connectors, .050 Spacing



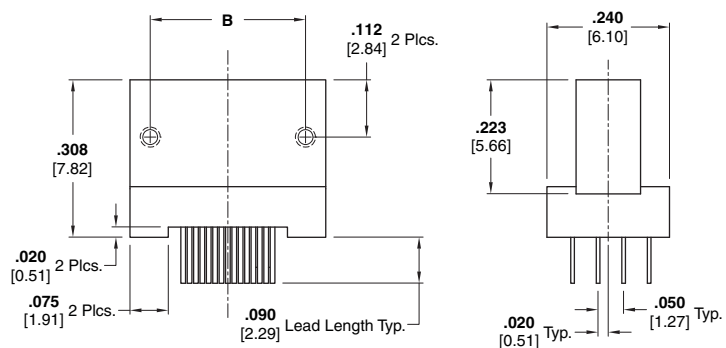
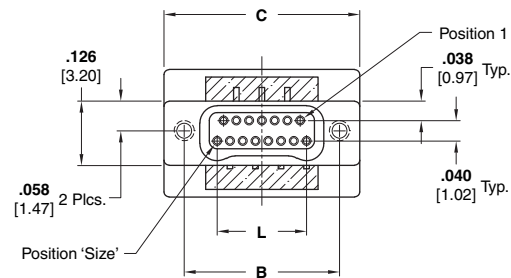
Receptacle

### Product Facts

- Plastic or Metal Shell
- Standard Sizes: 9, 15, 25, 37, 51 and 65
- Contact TE Connectivity for custom configurations
- Suggested thru-hole layouts are available on the referenced drawings on the TE website



Plug Assembly  
Drawing Number 1589482



Receptacle Assembly  
Drawing Number 1589488

| Size | Dimensions    |                |               |
|------|---------------|----------------|---------------|
|      | B             | C              | L             |
| 9    | 0.229 [5.82]  | 0.3085 [7.84]  | 0.100 [2.54]  |
| 15   | 0.304 [7.72]  | 0.3835 [9.74]  | 0.175 [4.45]  |
| 25   | 0.429 [10.90] | 0.5085 [12.92] | 0.300 [7.62]  |
| 37   | 0.579 [14.71] | 0.6585 [16.73] | 0.450 [11.43] |
| 51   | 0.754 [19.15] | 0.8335 [21.17] | 0.625 [15.88] |
| 65   | 0.929 [23.60] | 1.0085 [25.62] | 0.800 [20.32] |

## Part Numbering Guideline for NANONICS Surface Mount and Thru-Hole Connectors

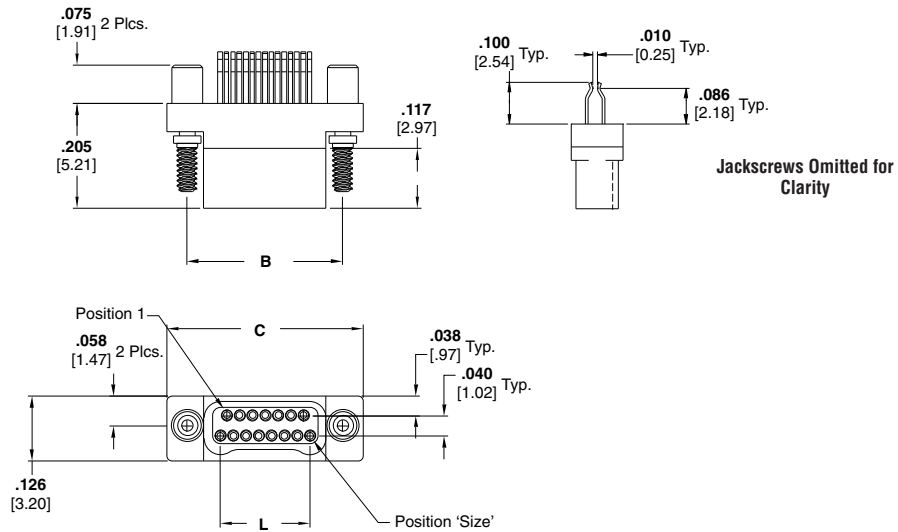
### DUALOBE Connectors - Surface Mount and Thru-Hole Terminations

| Class                            | S | X | X | XXX | XX(X) | X | X | Threads/Jackscrew                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|----------------------------------|---|---|---|-----|-------|---|---|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| S DUALOBE                        |   |   |   |     |       |   |   | <b>Threads (Receptacles Only)</b><br><b>N</b> Thread for 1.0 mm Jackscrews<br><b>Q</b> Thread for 1.2 mm Jackscrews                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Rows</b>                      |   |   |   |     |       |   |   | <b>Jackscrews (Plugs Only)</b><br><b>M</b> 1.0 mm Non Captive Jackscrews<br><b>N</b> 1.0 mm Captive Jackscrews<br><b>Q</b> 1.2 mm Captive Jackscrews                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| S 1 Row                          |   |   |   |     |       |   |   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| T 2 Row                          |   |   |   |     |       |   |   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Type</b>                      |   |   |   |     |       |   |   | <b>Mounting Hardware</b><br><b>A</b> 1.2 mm x .160"<br><b>C</b> 1.0 mm x .200" w/ 2 standoffs<br><b>D</b> 1.2 mm x .160" w/ 2 standoffs<br><b>H</b> 1.0 mm x .160"<br><b>I</b> 1.2 mm x .200"                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| L LCP (Plastic)                  |   |   |   |     |       |   |   | <b>K</b> 1.0 mm x .200" w/ 4 standoffs<br><b>L</b> 1.2 mm x .200" w/ 2 standoffs<br><b>P</b> 1.2 mm x .200" w/ 4 standoffs<br><b>S</b> 1.0 mm x .160" w/ 2 standoffs                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| M Metal (Al, Ni Plate)           |   |   |   |     |       |   |   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Positions</b>                 |   |   |   |     |       |   |   | <b>Configurations</b><br><b>B2</b> Plug, Horizontal SMT<br><b>B4</b> Plug, Vertical SMT<br><b>B42</b> Plug, Vertical SMT, .020" Extended Leads<br><b>B44</b> Plug, Vertical SMT, .040" Extended Leads<br><b>B43</b> Plug, Vertical SMT, .020" Extended Leads, 2 side exit (single row only)<br><b>B45</b> Plug, Vertical SMT, .040" Extended Leads, 2 side exit (single row only)<br><b>L2</b> Receptacle, Horizontal SMT<br><b>L4</b> Receptacle, Vertical SMT<br><b>L42</b> Receptacle, Vertical SMT, .020" Extended Leads<br><b>L44</b> Receptacle, Vertical SMT, .040" Extended Leads<br><b>L43</b> Receptacle, Vertical SMT, .020" Extended Leads, 2 side exit (single row only)<br><b>L45</b> Receptacle, Vertical SMT, .040" Extended Leads, 2 side exit (single row only)<br><b>L8</b> Receptacle, Vertical SMT, w/ integrated standoffs (metal shell only)<br><b>L82</b> Receptacle, Vertical SMT, w/ integrated standoffs, .020" Extended Leads (metal shell only)<br><b>L84</b> Receptacle, Vertical SMT, w/ integrated standoffs, .040" Extended Leads (metal shell only)<br><b>L83</b> Receptacle, Vertical SMT, w/ integrated standoffs, .020" Extended Leads (single row and metal shell only)<br><b>L85</b> Receptacle, Vertical SMT, w/ integrated standoffs, .040" Extended Leads (single row and metal shell only)<br><b>C5</b> Plug, Vertical Mount, Thru-Hole<br><b>C6</b> Plug, Horizontal Mount, Thru-Hole<br><b>M5</b> Receptacle, Vertical Mount, Thru-Hole<br><b>M6</b> Receptacle, Horizontal Mount, Thru-Hole |
| 005 5 Position (single row only) |   |   |   |     |       |   |   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 009 9 Position                   |   |   |   |     |       |   |   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 015 15 Position                  |   |   |   |     |       |   |   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 025 25 Position                  |   |   |   |     |       |   |   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 037 37 Position                  |   |   |   |     |       |   |   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 051 51 Position                  |   |   |   |     |       |   |   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 065 65 Position (two row only)   |   |   |   |     |       |   |   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

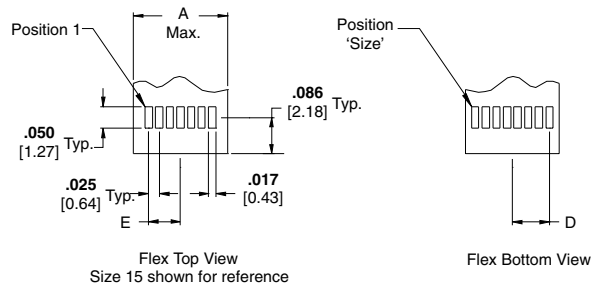
## NANONICS Flex Termination “Duckbill” Connectors — Two Row

### Product Facts

- Plastic or Metal Shell
- Standard Sizes: 9, 15, 25, 37, 51 and 65
- Contact TE Connectivity for custom configurations



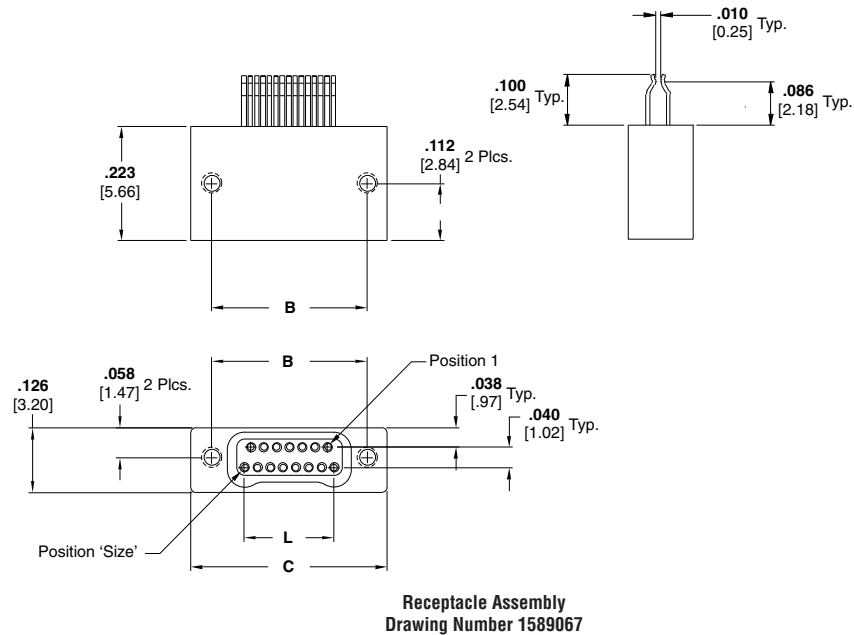
Plug Assembly  
Drawing Number 1589066



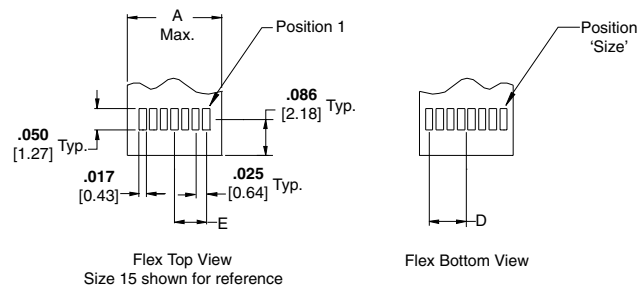
Typical Flex Pad Layout

| Size | Dimensions   |               |                |               |               |               |
|------|--------------|---------------|----------------|---------------|---------------|---------------|
|      | A            | B             | C              | D             | E             | L             |
| 9    | 0.150 [3.81] | 0.229 [5.82]  | 0.3085 [7.84]  | 0.0500 [1.27] | 0.0375 [0.95] | 0.100 [2.54]  |
| 15   | 0.225 [5.72] | 0.304 [7.72]  | 0.3835 [9.74]  | 0.0875 [2.22] | 0.0750 [1.90] | 0.175 [4.45]  |
| 25   | 0.350 [8.89] | 0.429 [10.90] | 0.5085 [12.92] | 0.1500 [3.81] | 0.1375 [3.49] | 0.300 [7.62]  |
| 37   | 0.500 [12.7] | 0.579 [14.71] | 0.6585 [16.73] | 0.2250 [5.72] | 0.2125 [5.40] | 0.450 [11.43] |
| 51   | 0.675 [17.1] | 0.754 [19.15] | 0.8335 [21.17] | 0.3125 [7.94] | 0.3000 [7.62] | 0.625 [15.88] |
| 65   | 0.850 [21.6] | 0.929 [23.60] | 1.0085 [25.62] | 0.4000 [10.2] | 0.3875 [9.84] | 0.800 [20.32] |

## NANONICS Flex Termination “Duckbill” Connectors — Two Row (Continued)



**Receptacle Assembly**  
**Drawing Number 1589067**



### Typical Flex Pad Layout

## Part Numbering Guideline for NANONICS Flex Termination “Duckbill” Connectors

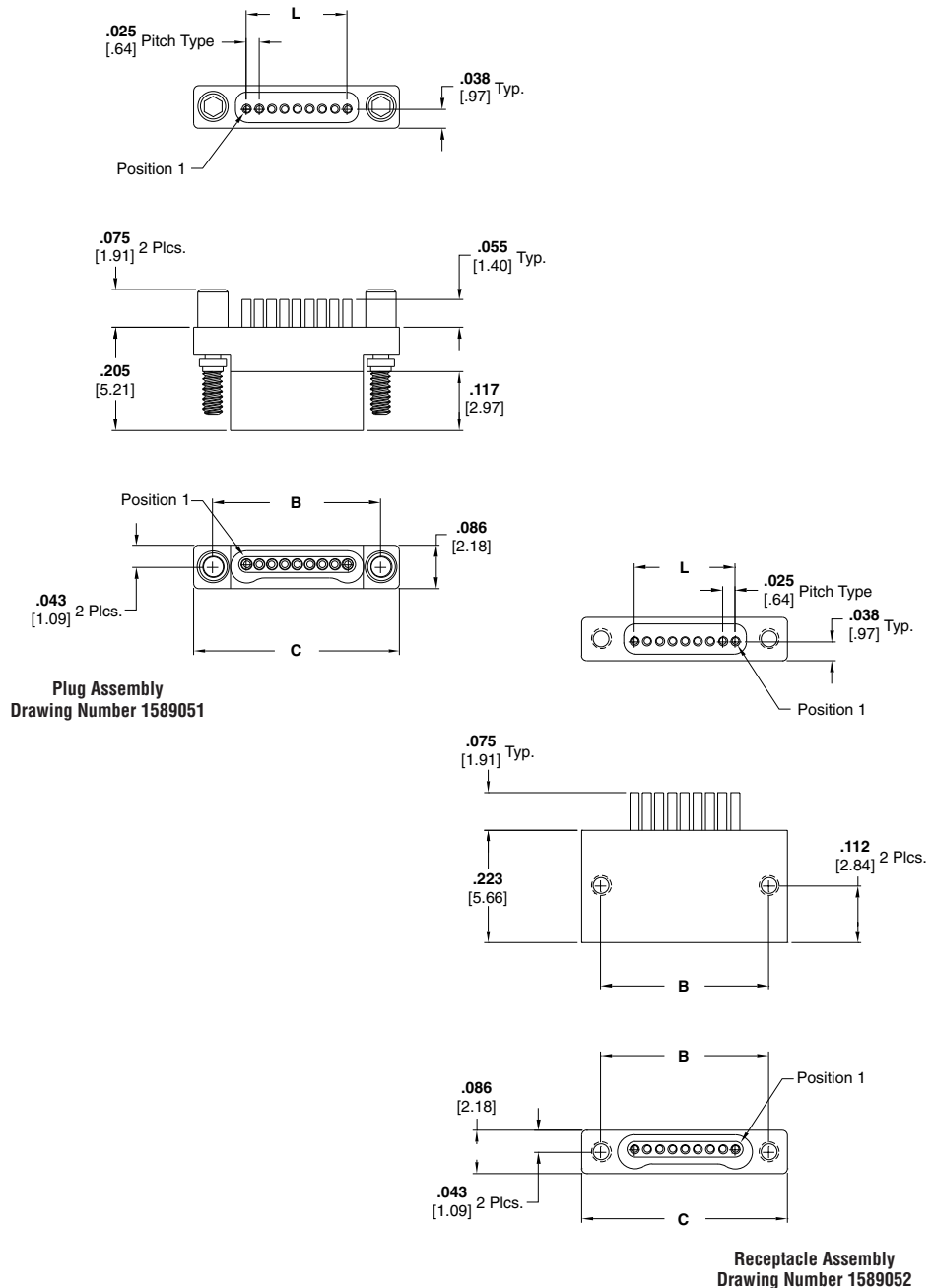
## DUALLOBE Connectors - “Duckbill” Termination

|                        |   |   |   |     |       |    |                                   |
|------------------------|---|---|---|-----|-------|----|-----------------------------------|
|                        | S | T | X | XXX | 11378 | XX | X                                 |
| <b>Class</b>           |   |   |   |     |       |    | <b>Threads/Jackscrew</b>          |
| S DUALLOBE             |   |   |   |     |       |    | <b>Threads (Receptacles Only)</b> |
|                        |   |   |   |     |       |    | N Thread for 1.0 mm Jackscrews    |
|                        |   |   |   |     |       |    | M 1.0 mm Non Captive Jackscrews   |
| <b>Rows</b>            |   |   |   |     |       |    | N Thread for 1.2 mm Jackscrews    |
| T 2 Row                |   |   |   |     |       |    | N 1.0 mm Captive Jackscrews       |
|                        |   |   |   |     |       |    | Q 1.2 mm Captive Jackscrews       |
| <b>Type</b>            |   |   |   |     |       |    | <b>Configuration</b>              |
| L LCP (Plastic)        |   |   |   |     |       |    | PC Plug                           |
| M Metal (Al, Ni Plate) |   |   |   |     |       |    | SC Receptacle                     |
| <b>Positions</b>       |   |   |   |     |       |    | <b>Termination Code</b>           |
| 009 9 Position         |   |   |   |     |       |    | 11378 "Duckbill" Termination      |
| 015 15 Position        |   |   |   |     |       |    |                                   |
| 025 25 Position        |   |   |   |     |       |    |                                   |
| 037 37 Position        |   |   |   |     |       |    |                                   |
| 051 51 Position        |   |   |   |     |       |    |                                   |
| 065 65 Position        |   |   |   |     |       |    |                                   |

## NANONICS Solder Cup Connectors — Single Row

### Product Facts

- Plastic or Metal Shell
- Standard Sizes: 5, 9, 15, 25, 37 and 51
- Contact TE Connectivity for custom configurations



| Size | Dimensions    |                |               |
|------|---------------|----------------|---------------|
|      | B             | C              | L             |
| 5    | 0.233 [5.92]  | 0.3085 [7.84]  | 0.100 [2.54]  |
| 9    | 0.333 [8.46]  | 0.4085 [10.38] | 0.200 [5.08]  |
| 15   | 0.483 [12.27] | 0.5585 [14.19] | 0.350 [8.89]  |
| 25   | 0.733 [18.62] | 0.8085 [20.54] | 0.600 [15.24] |
| 37   | 1.033 [26.24] | 1.1085 [28.16] | 0.900 [22.86] |
| 51   | 1.383 [35.13] | 1.4585 [37.05] | 1.250 [31.75] |

## NANONICS Solder Cup Connectors — Two Row



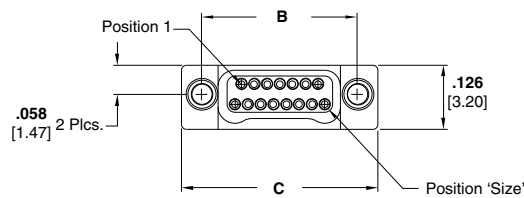
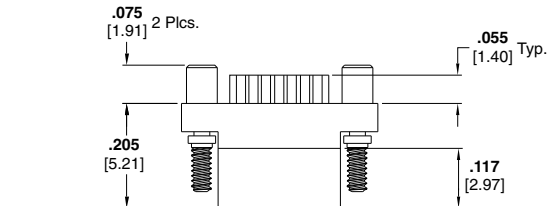
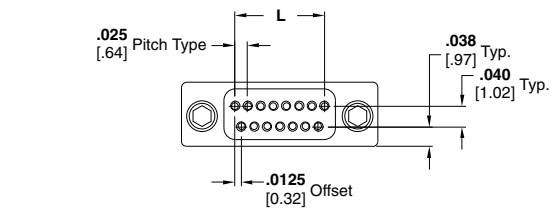
Plug



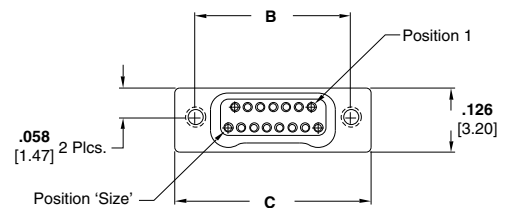
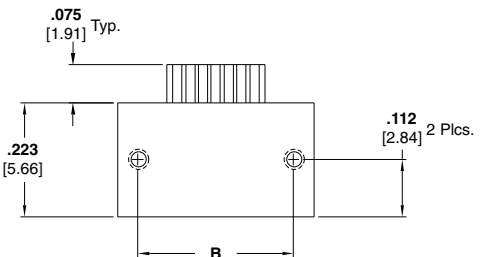
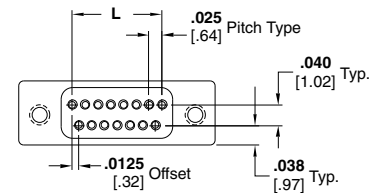
Receptacle

### Product Facts

- Plastic or Metal Shell
- Standard Sizes: 9, 15, 25, 37, 51 and 65
- Contact TE Connectivity for custom configurations



Plug Assembly  
Drawing Number 1589053



Receptacle Assembly  
Drawing Number 1589054

| Size | Dimensions    |                |               |
|------|---------------|----------------|---------------|
|      | B             | C              | L             |
| 9    | 0.229 [5.82]  | 0.3085 [7.84]  | 0.100 [2.54]  |
| 15   | 0.304 [7.72]  | 0.3835 [9.74]  | 0.175 [4.45]  |
| 25   | 0.429 [10.90] | 0.5085 [12.92] | 0.300 [7.62]  |
| 37   | 0.579 [14.71] | 0.6585 [16.73] | 0.450 [11.43] |
| 51   | 0.754 [19.15] | 0.8335 [21.17] | 0.625 [15.88] |
| 65   | 0.929 [23.60] | 1.0085 [25.62] | 0.800 [20.32] |

## Part Numbering Guideline for NANONICS Solder Cup Connectors

## DUALLOBE Connectors - Solder Cup Termination

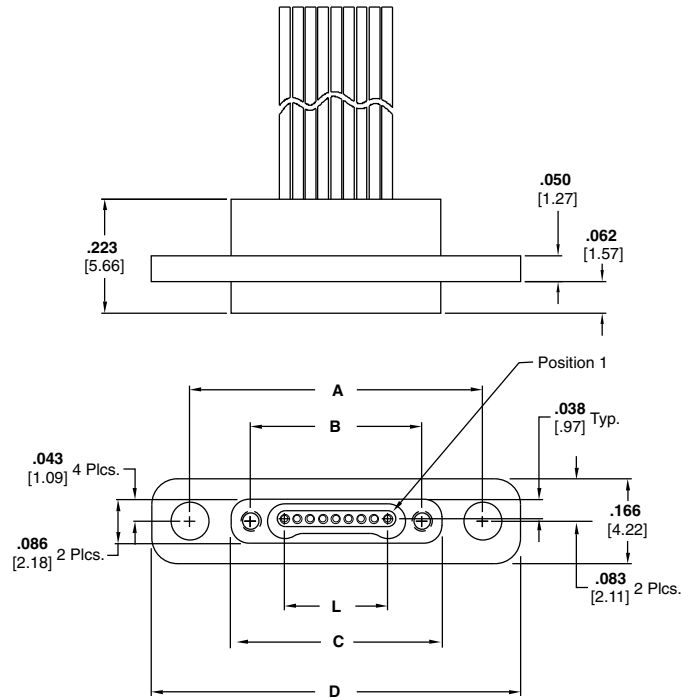
|                                         |          |          |          |            |              |                        |                                        |
|-----------------------------------------|----------|----------|----------|------------|--------------|------------------------|----------------------------------------|
| <b>Class</b>                            | <b>S</b> | <b>X</b> | <b>X</b> | <b>XXX</b> | <b>11500</b> | <b>XX</b>              | <b>X</b>                               |
| <b>S</b> DUALOBE                        |          |          |          |            |              |                        | <b>Threads/Jackscrew</b>               |
|                                         |          |          |          |            |              |                        | <b>Threads (Receptacles Only)</b>      |
|                                         |          |          |          |            |              |                        | <b>N</b> Thread for 1.0 mm Jackscrews  |
|                                         |          |          |          |            |              |                        | <b>Q</b> Thread for 1.2 mm Jackscrews  |
|                                         |          |          |          |            |              |                        | <b>Configuration</b>                   |
|                                         |          |          |          |            |              |                        | <b>PC</b> Plug                         |
|                                         |          |          |          |            |              |                        | <b>SC</b> Receptacle                   |
| <b>Rows</b>                             |          |          |          |            |              |                        | <b>Jackscrews (Plugs Only)</b>         |
| <b>S</b> 1 Row                          |          |          |          |            |              |                        | <b>M</b> 1.0 mm Non Captive Jackscrews |
| <b>T</b> 2 Row                          |          |          |          |            |              |                        | <b>N</b> 1.0 mm Captive Jackscrews     |
|                                         |          |          |          |            |              |                        | <b>Q</b> 1.2 mm Captive Jackscrews     |
| <b>Type</b>                             |          |          |          |            |              |                        |                                        |
| <b>L</b> LCP (Plastic)                  |          |          |          |            |              |                        |                                        |
| <b>M</b> Metal (Al, Ni Plate)           |          |          |          |            |              |                        |                                        |
| <b>Positions</b>                        |          |          |          |            |              |                        |                                        |
| <b>005</b> 5 Position (single row only) |          |          |          |            |              |                        |                                        |
| <b>009</b> 9 Position                   |          |          |          |            |              |                        |                                        |
| <b>015</b> 15 Position                  |          |          |          |            |              |                        |                                        |
| <b>025</b> 25 Position                  |          |          |          |            |              |                        |                                        |
| <b>037</b> 37 Position                  |          |          |          |            |              |                        |                                        |
| <b>051</b> 51 Position                  |          |          |          |            |              |                        |                                        |
| <b>065</b> 65 Position (two row only)   |          |          |          |            |              |                        |                                        |
|                                         |          |          |          |            |              |                        | <b>Termination Code</b>                |
|                                         |          |          |          |            | <b>11500</b> | Solder Cup Termination |                                        |



## NANONICS Panel Mount Connectors — Single Row, Flying Leads

### Product Facts

- Metal Shell
- Standard Sizes: 5, 9, 15, 25, 37 and 51
- Factory wired to your specifications
- Contact TE Connectivity for custom configurations



Receptacle Assembly  
Drawing Number 1589851

| Size | Dimensions    |               |               |               |               |
|------|---------------|---------------|---------------|---------------|---------------|
|      | A             | B             | C             | D             | L             |
| 5    | 0.470 [11.94] | 0.233 [5.92]  | 0.310 [7.87]  | 0.620 [15.75] | 0.100 [2.54]  |
| 9    | 0.570 [14.48] | 0.333 [8.46]  | 0.410 [10.41] | 0.720 [18.29] | 0.200 [5.08]  |
| 15   | 0.720 [18.29] | 0.483 [12.27] | 0.560 [14.22] | 0.870 [22.10] | 0.350 [8.89]  |
| 25   | 0.970 [24.64] | 0.733 [18.62] | 0.810 [20.57] | 1.120 [28.45] | 0.600 [15.24] |
| 37   | 1.270 [32.26] | 1.033 [26.24] | 1.110 [28.19] | 1.420 [36.07] | 0.900 [22.86] |
| 51   | 1.620 [41.15] | 1.383 [35.13] | 1.460 [37.08] | 1.770 [44.96] | 1.250 [31.75] |

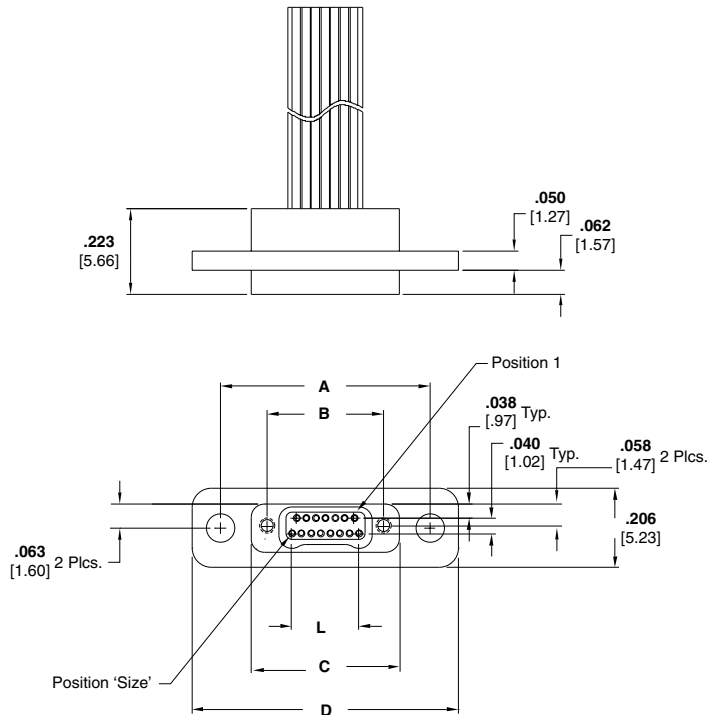
## NANONICS Panel Mount Connectors — Two Row, Flying Leads



Receptacle

### Product Facts

- Metal Shell
- Standard Sizes: 9, 15, 25, 37, 51 and 65
- Contact TE Connectivity for custom configurations



Receptacle Assembly  
Drawing Number 1589050

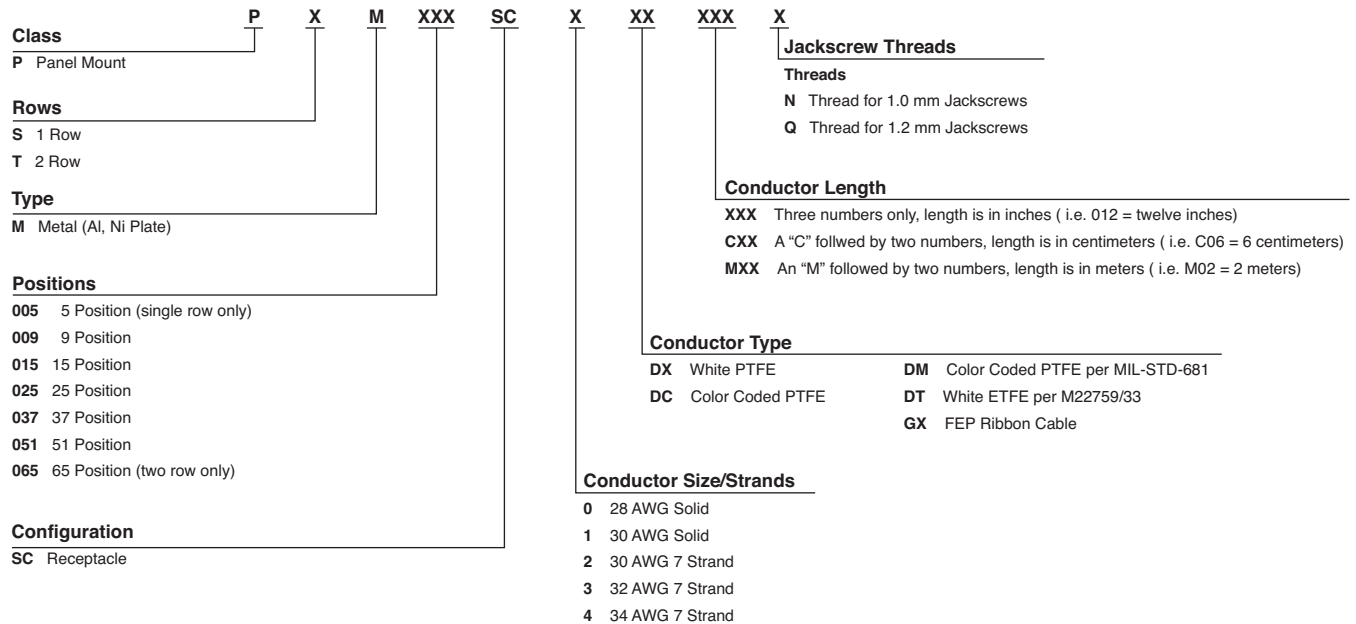
| Size | Dimensions    |               |               |               |               |
|------|---------------|---------------|---------------|---------------|---------------|
|      | A             | B             | C             | D             | L             |
| 9    | 0.470 [11.94] | 0.229 [5.82]  | 0.310 [7.87]  | 0.620 [15.75] | 0.100 [2.54]  |
| 15   | 0.545 [13.84] | 0.304 [7.72]  | 0.385 [9.78]  | 0.695 [17.65] | 0.175 [4.45]  |
| 25   | 0.670 [17.02] | 0.429 [10.90] | 0.510 [12.95] | 0.820 [20.83] | 0.300 [7.62]  |
| 37   | 0.820 [20.83] | 0.579 [14.71] | 0.660 [16.76] | 0.970 [24.64] | 0.450 [11.43] |
| 51   | 0.995 [25.27] | 0.754 [19.15] | 0.835 [21.21] | 1.145 [29.08] | 0.625 [15.88] |
| 65   | 1.170 [29.72] | 0.929 [23.60] | 1.010 [25.65] | 1.320 [33.53] | 0.800 [20.32] |

5

Nanominature and Microminature Connectors

## Part Numbering Guideline for NANONICS Panel Mount Connectors

### DUALOBE Connectors - Panel Mount



## Part Number Index Cross Reference

| NANONICS<br>Part Number | TE<br>Part Number | NANONICS<br>Part Number | TE<br>Part Number | NANONICS<br>Part Number | TE<br>Part Number | NANONICS<br>Part Number | TE<br>Part Number |
|-------------------------|-------------------|-------------------------|-------------------|-------------------------|-------------------|-------------------------|-------------------|
| <b>Wired Connectors</b> |                   | SSL015SC2DC005N         | 9-1589457-6       | SSM009PC0DC012N         | 0-1589827-7       | SSM015PC2DC003N         | 8-1589455-6       |
| SSL005PC0DC006N         | 0-1589455-2       | SSL015SC2DC006N         | 1-1589457-2       | SSM009PC0DC024N         | 5-1589455-3       | SSM015PC2DC006          | 8-1589455-7       |
| SSL005PC0DC012N         | 0-1589455-3       | SSL015SC2DC012N         | 1-1589457-3       | SSM009PC0DM024N         | 5-1589455-4       | SSM015PC2DC006N         | 8-1589455-8       |
| SSL005PC0DX012M         | 7-1589456-3       | SSL015SC2DC024N         | 1-1589457-4       | SSM009PC0DX012N         | 5-1589455-5       | SSM015PC2DC008N         | 8-1589455-9       |
| SSL005PC2DC002N         | 2-1589827-7       | SSL015SC2DC036N         | 8-1589457-9       | SSM009PC2DC003          | 5-1589455-6       | SSM015PC2DC012          | 9-1589455-0       |
| SSL005PC2DC004          | 0-1589455-4       | SSL025PC0DC012M         | 8-1589456-5       | SSM009PC2DC003N         | 5-1589455-7       | SSM015PC2DC012M         | 6-1589456-6       |
| SSL005PC2DC006          | 0-1589455-5       | SSL025PC2DC006          | 3-1589455-1       | SSM009PC2DC006          | 5-1589455-8       | SSM015PC2DC012N         | 9-1589455-1       |
| SSL005PC2DC006N         | 0-1589455-6       | SSL025PC2DC006N         | 3-1589455-2       | SSM009PC2DC006N         | 5-1589455-9       | SSM015PC2DC018          | 9-1589455-2       |
| SSL005PC2DC012N         | 6-1589456-4       | SSL025PC2DC012          | 3-1589455-3       | SSM009PC2DC010N         | 6-1589455-0       | SSM015PC2DC018N         | 9-1589455-3       |
| SSL005PC2DX006N         | 0-1589455-7       | SSL025PC2DC018N         | 9-1589456-6       | SSM009PC2DC012          | 6-1589455-1       | SSM015PC2DC024          | 2-1589827-8       |
| SSL005SC0DC006N         | 0-1589457-1       | SSL025PC2DC020N         | 3-1589455-4       | SSM009PC2DC012M         | 6-1589455-2       | SSM015PC2DC024N         | 9-1589455-4       |
| SSL005SC2DC006N         | 0-1589457-2       | SSL025PC2DC024M         | 0-1589827-1       | SSM009PC2DC012N         | 6-1589455-3       | SSM015PC2DC036N         | 9-1589455-5       |
| SSL005SC2DC012N         | 7-1589457-6       | SSL025PC2DC024N         | 7-1589456-8       | SSM009PC2DC018          | 6-1589455-4       | SSM015PC2DC048N         | 9-1589455-6       |
| SSL005SC3DM024N         | 0-1589457-3       | SSL025PC2DM018M         | 3-1589455-5       | SSM009PC2DC018N         | 6-1589455-5       | SSM015PC2DC060N         | 9-1589455-7       |
| SSL009PC0DC006N         | 0-1589455-8       | SSL025PC2DX012Q         | 3-1589455-6       | SSM009PC2DC024          | 6-1589455-6       | SSM015PC2DM012N         | 9-1589456-4       |
| SSL009PC0DMM03N         | 0-1589455-9       | SSL025PC2GX006N         | 3-1589455-7       | SSM009PC2DC024N         | 6-1589455-7       | SSM015PC2DM024N         | 9-1589455-8       |
| SSL009PC0DX012M         | 7-1589456-4       | SSL025SC0DC012N         | 8-1589457-5       | SSM009PC2DC036N         | 6-1589455-8       | SSM015PC2DMC20N         | 9-1589455-9       |
| SSL009PC2DC001N         | 1-1589455-0       | SSL025SC2DC006          | 1-1589457-5       | SSM009PC2DC060N         | 6-1589455-9       | SSM015PC2DMC30N         | 3-1589827-0       |
| SSL009PC2DC003          | 1-1589455-1       | SSL025SC2DC006N         | 1-1589457-6       | SSM009PC2DC084N         | 8-1589456-8       | SSM015PC2DMM02N         | 0-1589456-1       |
| SSL009PC2DC006N         | 1-1589455-2       | SSL025SC2DC012N         | 1-1589457-7       | SSM009PC2DCC10N         | 7-1589455-0       | SSM015PC2DT012N         | 0-1589456-2       |
| SSL009PC2DC009N         | 1-1589455-3       | SSL025SC2DC036N         | 8-1589457-8       | SSM009PC2DCM01N         | 7-1589455-1       | SSM015PC2DX006N         | 0-1589456-3       |
| SSL009PC2DC012          | 1-1589455-4       | SSL037PC2DC012N         | 3-1589455-8       | SSM009PC2DCM02N         | 8-1589456-7       | SSM015PC2DX006Q         | 0-1589456-4       |
| SSL009PC2DC012M         | 1-1589455-5       | SSL037PC2DC018N         | 8-1589456-0       | SSM009PC2DM010N         | 7-1589455-2       | SSM015PC2DX008          | 0-1589456-5       |
| SSL009PC2DC012N         | 1-1589455-6       | SSL037PC2DC024N         | 3-1589455-9       | SSM009PC2DM018N         | 7-1589455-3       | SSM015PC2DX012N         | 0-1589456-6       |
| SSL009PC2DC012Q         | 9-1589456-2       | SSL037PC2DC096N         | 4-1589455-0       | SSM009PC2DM024          | 7-1589455-4       | SSM015PC2DX024N         | 0-1589456-7       |
| SSL009PC2DC018N         | 1-1589455-7       | SSL037SC2DC012N         | 1-1589457-8       | SSM009PC2DM024N         | 6-1589456-5       | SSM015PC2DY003N         | 0-1589456-8       |
| SSL009PC2DC024N         | 7-1589456-9       | SSL051PC0DX012M         | 7-1589456-6       | SSM009PC2DT012N         | 1-1589827-7       | SSM015PC2DY006N         | 0-1589456-9       |
| SSL009PC2DCC03N         | 1-1589455-8       | SSL051PC2DC012N         | 4-1589455-1       | SSM009PC2DT024N         | 1-1589827-0       | SSM015PC2DY012N         | 1-1589456-0       |
| SSL009PC2DCC10N         | 1-1589455-9       | SSM005PC0DC024N         | 2-1589827-2       | SSM009PC2DX005N         | 7-1589455-5       | SSM015PC2GX018N         | 1-1589456-1       |
| SSL009PC2DM010N         | 2-1589455-0       | SSM005PC0DC036N         | 7-1589456-0       | SSM009PC2DX006N         | 7-1589455-6       | SSM015PC4DX030N         | 1-1589456-2       |
| SSL009PC2DM018M         | 2-1589455-1       | SSM005PC0DX024N         | 8-1589456-9       | SSM009PC2DX010N         | 7-1589455-7       | SSM015SC0DC012N         | 4-1589457-0       |
| SSL009PC2DMC60Q         | 2-1589455-2       | SSM005PC2DC006          | 4-1589455-2       | SSM009PC2DX012N         | 7-1589455-8       | SSM015SC0DC024N         | 0-1589901-7       |
| SSL009SC0DMM03N         | 0-1589457-4       | SSM005PC2DC006N         | 4-1589455-3       | SSM009PC2DX018N         | 7-1589455-9       | SSM015SC2DC003N         | 4-1589457-1       |
| SSL009SC2DC003          | 0-1589457-5       | SSM005PC2DC012M         | 7-1589456-1       | SSM009PC2DX024N         | 8-1589455-0       | SSM015SC2DC006N         | 4-1589457-2       |
| SSL009SC2DC006N         | 0-1589457-6       | SSM005PC2DC012N         | 4-1589455-4       | SSM009PC2DY006N         | 8-1589455-1       | SSM015SC2DC012N         | 4-1589457-3       |
| SSL009SC2DC012          | 0-1589457-7       | SSM005PC2DC012Q         | 6-1589456-3       | SSM009PC3DC018N         | 8-1589455-2       | SSM015SC2DC018          | 4-1589457-4       |
| SSL009SC2DC012Q         | 9-1589457-2       | SSM005PC2DC018N         | 4-1589455-5       | SSM009SC0DC024N         | 0-1589901-6       | SSM015SC2DC018N         | 9-1589457-4       |
| SSL009SC2DM006N         | 0-1589457-8       | SSM005PC2DC036N         | 4-1589455-6       | SSM009SC1DC002          | 2-1589457-5       | SSM015SC2DC024N         | 9-1589457-3       |
| SSL009SC2GX006          | 1-1589457-0       | SSM005PC2DC040N         | 4-1589455-7       | SSM009SC2DC006HN        | 2-1589457-6       | SSM015SC2DC036N         | 4-1589457-5       |
| SSL015PC0DC012N         | 0-1589827-6       | SSM005PC2DCC20N         | 9-1589456-7       | SSM009SC2DC006N         | 2-1589457-7       | SSM015SC2DC048N         | 7-1589457-5       |
| SSL015PC0DMM03N         | 2-1589455-3       | SSM005PC2DT012N         | 1-1589827-6       | SSM009SC2DC012N         | 2-1589457-9       | SSM015SC2DM024N         | 7-1589457-7       |
| SSL015PC0DX012M         | 7-1589456-5       | SSM005PC2DX012N         | 4-1589455-8       | SSM009SC2DC018N         | 3-1589457-0       | SSM015SC2DT012N         | 9-1589457-9       |
| SSL015PC2DC003N         | 0-1589827-3       | SSM005PC2DX018N         | 4-1589455-9       | SSM009SC2DC024N         | 3-1589457-1       | SSM015SC2DX006N         | 4-1589457-8       |
| SSL015PC2DC006N         | 2-1589455-4       | SSM005PC2DX024N         | 5-1589455-0       | SSM009SC2DC036N         | 3-1589457-2       | SSM015SC2DX012HN        | 4-1589457-9       |
| SSL015PC2DC008N         | 2-1589455-5       | SSM005PC4DX012N         | 5-1589455-1       | SSM009SC2DC060N         | 8-1589457-3       | SSM015SC2DX018N         | 5-1589457-0       |
| SSL015PC2DC012          | 2-1589455-6       | SSM005PC4DXM01          | 5-1589455-2       | SSM009SC2DC084N         | 8-1589457-7       | SSM015SC2DX024HN        | 5-1589457-2       |
| SSL015PC2DC012M         | 0-1589827-2       | SSM005SC0DC024N         | 0-1589901-5       | SSM009SC2DM006N         | 3-1589457-4       | SSM015SC2DY012N         | 5-1589457-3       |
| SSL015PC2DC012N         | 2-1589455-7       | SSM005SC0DC036N         | 8-1589457-0       | SSM009SC2DM012          | 3-1589457-5       | SSM015SC2DY018N         | 5-1589457-4       |
| SSL015PC2DC016N         | 0-1589827-8       | SSM005SC0DX024N         | 9-1589457-0       | SSM009SC2DT012N         | 9-1589457-8       | SSM015SC4DX005N         | 5-1589457-5       |
| SSL015PC2DC018          | 2-1589455-8       | SSM005SC2DC006N         | 1-1589457-9       | SSM009SC2DX012N         | 3-1589457-6       | SSM025PC0DC024N         | 2-1589827-4       |
| SSL015PC2DC018N         | 1-1589827-1       | SSM005SC2DC012N         | 2-1589457-0       | SSM009SC2DX018N         | 3-1589457-7       | SSM025PC0DC036N         | 6-1589456-9       |
| SSL015PC2DC024          | 2-1589455-9       | SSM005SC2DC012Q         | 7-1589457-4       | SSM009SC2DX024HN        | 3-1589457-8       | SSM025PC2DC003N         | 1-1589456-4       |
| SSL015PC2DC024M         | 7-1589456-2       | SSM005SC2DC018N         | 2-1589457-1       | SSM009SC2DX036HN        | 3-1589457-9       | SSM025PC2DC006Q         | 1-1589456-5       |
| SSL015PC2DC024N         | 0-1589827-9       | SSM005SC2DC040N         | 2-1589457-2       | SSM015PC0DC012N         | 8-1589455-3       | SSM025PC2DC010N         | 1-1589456-6       |
| SSL015PC2DC036N         | 0-1589827-5       | SSM005SC2DT012N         | 9-1589457-7       | SSM015PC0DC018N         | 8-1589455-4       | SSM025PC2DC012          | 1-1589456-7       |
| SSL015PC2DM018M         | 3-1589455-0       | SSM005SC2DX024HN        | 2-1589457-3       | SSM015PC0DC024N         | 2-1589827-3       | SSM025PC2DC012N         | 1-1589456-8       |
| SSL015SC0DMM03N         | 1-1589457-1       | SSM005SC4DX012N         | 2-1589457-4       | SSM015PC0DMM02N         | 8-1589455-5       | SSM025PC2DC012Q         | 8-1589456-1       |

## Part Number Index Cross Reference (Continued)

| NANONICS<br>Part Number | TE<br>Part Number | NANONICS<br>Part Number | TE<br>Part Number | NANONICS<br>Part Number | TE<br>Part Number | NANONICS<br>Part Number | TE<br>Part Number |
|-------------------------|-------------------|-------------------------|-------------------|-------------------------|-------------------|-------------------------|-------------------|
| SSM025PC2DC018          | 1-1589456-9       | SSM037SC2DC024N         | 1-1589901-1       | STL009PC3DX030N         | 2-1589472-1       | STL025PC2DC018Q         | 7-1589788-4       |
| SSM025PC2DC018N         | 2-1589456-0       | SSM037SC2DT012N         | 0-1589901-2       | STL009SC0DC006N         | 3-1589777-8       | STL025PC2DC020N         | 4-1589472-8       |
| SSM025PC2DC024N         | 9-1589456-1       | SSM037SC2DTC30N         | 9-1589457-5       | STL009SC0DC012N         | 8-1589477-3       | STL025PC2DC030N         | 4-1589472-9       |
| SSM025PC2DC025N         | 2-1589456-1       | SSM051PC0DC024N         | 2-1589827-6       | STL009SC0DC030N         | 3-1589777-9       | STL025PC2DM010N         | 5-1589472-0       |
| SSM025PC2DC030N         | 2-1589456-2       | SSM051PC2DC006          | 4-1589456-5       | STL009SC2DC012          | 0-1589476-6       | STL025PC2DT024N         | 6-1589475-2       |
| SSM025PC2DC036N         | 2-1589456-3       | SSM051PC2DC006N         | 4-1589456-6       | STL009SC2DC012N         | 0-1589476-7       | STL025PC2DY006N         | 9-1589475-5       |
| SSM025PC2DCC30N         | 2-1589456-4       | SSM051PC2DC012N         | 4-1589456-7       | STL009SC2DC018N         | 8-1589477-4       | STL025PC2GX036          | 4-1589788-7       |
| SSM025PC2DCC50N         | 1-1589827-5       | SSM051PC2DC018          | 4-1589456-8       | STL009SC2DC036N         | 0-1589476-8       | STL025PC3DX006N         | 5-1589472-1       |
| SSM025PC2DM018Q         | 9-1589456-9       | SSM051PC2DC024          | 4-1589456-9       | STL009SC2DM036N         | 2-1589777-7       | STL025PC3DX030N         | 9-1589475-2       |
| SSM025PC2DM024N         | 8-1589456-3       | SSM051PC2DC024N         | 5-1589456-0       | STL009SC3DX024N         | 0-1589476-9       | STL025PC4DX030N         | 5-1589472-2       |
| SSM025PC2DT012N         | 1-1589827-8       | SSM051PC2DC030N         | 5-1589456-1       | STL015PC0DC006N         | 2-1589472-2       | STL025SC2DC001N         | 1-1589476-9       |
| SSM025PC2DX006N         | 2-1589456-5       | SSM051PC2DCC06Q         | 5-1589456-2       | STL015PC0DC012Q         | 2-1589472-3       | STL025SC2DC006N         | 2-1589476-0       |
| SSM025SC0DC036N         | 2-1589456-6       | SSM051PC2DCC30N         | 9-1589456-3       | STL015PC0DMM03N         | 2-1589472-4       | STL025SC2DC012N         | 2-1589476-1       |
| SSM025PC2DX018N         | 2-1589456-7       | SSM051PC2DM012Q         | 5-1589456-3       | STL015PC1DNC50N         | 2-1589472-5       | STL025SC2DC030N         | 2-1589476-2       |
| SSM025PC2DX024N         | 2-1589456-8       | SSM051PC2DM018N         | 6-1589456-7       | STL015PC2DC006          | 2-1589472-6       | STL025SC2DC036N         | 2-1589476-3       |
| SSM025PC2GX006          | 2-1589456-9       | SSM051PC2DM024N         | 5-1589456-4       | STL015PC2DC008          | 2-1589472-7       | STL025SC3DC004N         | 9-1589477-4       |
| SSM025PC2GX018N         | 3-1589456-0       | SSM051PC2DMC10N         | 5-1589456-5       | STL015PC2DC010N         | 2-1589472-8       | STL025SC3DX030N         | 0-1589777-5       |
| SSM025PC3DY006N         | 3-1589456-1       | SSM051PC2DMC30N         | 5-1589456-6       | STL015PC2DC012          | 2-1589472-9       | STL037PC2DC010N         | 5-1589472-3       |
| SSM025PC4DX015N         | 7-1589456-7       | SSM051PC2DNC06Q         | 5-1589456-7       | STL015PC2DC012N         | 3-1589472-0       | STL037PC2DC012          | 5-1589472-4       |
| SSM025SC0DC024N         | 0-1589901-8       | SSM051PC2DNC15Q         | 5-1589456-8       | STL015PC2DC015N         | 3-1589472-1       | STL037PC2DC012M         | 5-1589472-5       |
| SSM025SC0DC036N         | 7-1589457-9       | SSM051PC2DT012N         | 2-1589827-0       | STL015PC2DC015Q         | 8-1589475-1       | STL037PC2DC012N         | 5-1589472-6       |
| SSM025SC2DC006N         | 8-1589457-6       | SSM051PC2DT018N         | 2-1589827-1       | STL015PC2DC018M         | 3-1589472-2       | STL037PC2DC012Q         | 8-1589788-2       |
| SSM025SC2DC012N         | 5-1589457-6       | SSM051PC2DX008          | 5-1589456-9       | STL015PC2DC018N         | 3-1589475-9       | STL037PC2DC017N         | 5-1589472-7       |
| SSM025SC2DC018          | 5-1589457-7       | SSM051PC2DX012Q         | 0-1589827-4       | STL015PC2DC030N         | 3-1589472-3       | STL037PC2DC018M         | 5-1589472-8       |
| SSM025SC2DC024N         | 5-1589457-9       | SSM051PC2DXM05Q         | 6-1589456-0       | STL015PC2DC036N         | 3-1589472-4       | STL037PC2DC018N         | 5-1589472-9       |
| SSM025SC2DT012N         | 0-1589901-1       | SSM051PC2DY012N         | 6-1589456-1       | STL015PC2DCC10N         | 3-1589472-5       | STL037PC2DC018Q         | 2-1589788-4       |
| SSM025SC2DX006N         | 6-1589457-0       | SSM051PC2GX012N         | 6-1589456-2       | STL015PC2DM010N         | 3-1589472-6       | STL037PC2DC020Q         | 6-1589472-0       |
| SSM025SC2DX018N         | 6-1589457-1       | SSM051SC0DC024N         | 1-1589901-0       | STL015PC2DM048N         | 3-1589475-1       | STL037PC2DC024N         | 3-1589788-0       |
| SSM025SC2DX024HN        | 6-1589457-3       | SSM051SC2DC018          | 6-1589457-7       | STL015PC2DNC50N         | 3-1589472-7       | STL037PC2DC036M         | 6-1589472-1       |
| SSM025SC2DX024N         | 8-1589457-1       | SSM051SC2DC018N         | 6-1589457-8       | STL015PC2DX006N         | 8-1589475-0       | STL037PC2DC036N         | 6-1589472-2       |
| SSM025SC3DY006N         | 6-1589457-4       | SSM051SC2DNC15Q         | 6-1589457-9       | STL015PC2DX010N         | 3-1589472-8       | STL037PC2DC040N         | 6-1589472-3       |
| SSM037PC0DC006M         | 1-1589827-2       | SSM051SC2DT012N         | 0-1589901-3       | STL015PC2DX036N         | 3-1589472-9       | STL037PC2DCC15N         | 6-1589472-4       |
| SSM037PC0DC009Q         | 2-1589827-9       | SSM051SC2DT018N         | 0-1589901-4       | STL015PC2DY006N         | 9-1589475-4       | STL037PC2DM010N         | 6-1589472-5       |
| SSM037PC0DC024N         | 2-1589827-5       | SSM051SC2DT021          | 7-1589457-1       | STL015PC2GX040N         | 4-1589472-0       | STL037PC2DM048N         | 3-1589475-2       |
| SSM037PC0DC036N         | 6-1589456-8       | SSM051SC2GX012N         | 7-1589457-3       | STL015SC0DMM03N         | 1-1589476-0       | STL037PC2DT024N         | 6-1589475-1       |
| SSM037PC2DC006          | 3-1589456-2       | STL009PC0DC006N         | 1-1589788-1       | STL015SC2DC005N         | 8-1589477-5       | STL037PC2DY006N         | 9-1589475-6       |
| SSM037PC2DC006N         | 3-1589456-3       | STL009PC0DC036          | 7-1589788-6       | STL015SC2DC008          | 1-1589476-1       | STL037PC2DY020N         | 7-1589475-4       |
| SSM037PC2DC012          | 3-1589456-4       | STL009PC0DC036N         | 7-1589788-5       | STL015SC2DC008N         | 1-1589476-2       | STL037PC2GX005N         | 6-1589472-6       |
| SSM037PC2DC012N         | 3-1589456-5       | STL009PC0DM024N         | 9-1589475-9       | STL015SC2DC012N         | 1-1589476-3       | STL037PC3DC001          | 5-1589788-1       |
| SSM037PC2DC012Q         | 9-1589456-5       | STL009PC1DM024N         | 2-1589788-9       | STL015SC2DC018N         | 1-1589476-4       | STL037SC2DC012N         | 2-1589476-4       |
| SSM037PC2DC015N         | 3-1589456-6       | STL009PC2DC012          | 1-1589472-1       | STL015SC2DC030N         | 1-1589476-5       | STL037SC2DC012Q         | 2-1589476-5       |
| SSM037PC2DC018          | 3-1589456-7       | STL009PC2DC012M         | 6-1589788-9       | STL015SC2DC036N         | 1-1589476-6       | STL037SC2DC030N         | 2-1589476-6       |
| SSM037PC2DC018M         | 1-1589827-3       | STL009PC2DC012N         | 1-1589472-2       | STL015SC2DX010N         | 1-1589476-7       | STL037SC2DC036N         | 2-1589476-7       |
| SSM037PC2DC018N         | 3-1589456-8       | STL009PC2DC018          | 1-1589472-3       | STL015SC3DX024N         | 1-1589476-8       | STL037SC2DCC15N         | 2-1589476-8       |
| SSM037PC2DC024N         | 3-1589456-9       | STL009PC2DC018M         | 1-1589472-4       | STL025PC0DC006N         | 6-1589475-4       | STL037SC2DC001N         | 2-1589777-8       |
| SSM037PC2DCM01N         | 4-1589456-0       | STL009PC2DC018N         | 1-1589472-5       | STL025PC0DC012N         | 3-1589788-3       | STL037SC3DX024N         | 2-1589476-9       |
| SSM037PC2DM024N         | 8-1589456-4       | STL009PC2DC024          | 3-1589788-7       | STL025PC2DC006          | 4-1589472-1       | STL051PC0DXC50N         | 6-1589472-7       |
| SSM037PC2DT012N         | 1-1589827-9       | STL009PC2DC036N         | 1-1589472-6       | STL025PC2DC006M         | 5-1589475-7       | STL051PC2DC003N         | 6-1589472-8       |
| SSM037PC2DTC30N         | 9-1589456-8       | STL009PC2DCM01N         | 5-1589475-3       | STL025PC2DC006N         | 4-1589472-2       | STL051PC2DC006N         | 6-1589472-9       |
| SSM037PC2DX012Q         | 4-1589456-2       | STL009PC2DCM02N         | 8-1589788-4       | STL025PC2DC010N         | 4-1589472-3       | STL051PC2DC012          | 7-1589472-0       |
| SSM037PC2DX018N         | 4-1589456-3       | STL009PC2DM010N         | 1-1589472-7       | STL025PC2DC012          | 4-1589472-4       | STL051PC2DC012N         | 7-1589472-1       |
| SSM037PC2GX030N         | 4-1589456-4       | STL009PC2DM024N         | 0-1589788-1       | STL025PC2DC012N         | 4-1589472-5       | STL051PC2DC018          | 7-1589472-2       |
| SSM037PC4DX018N         | 8-1589456-6       | STL009PC2DM030N         | 0-1589788-2       | STL025PC2DC015N         | 4-1589472-6       | STL051PC2DC018N         | 3-1589788-8       |
| SSM037SC0DC024N         | 0-1589901-9       | STL009PC2DM048N         | 3-1589475-0       | STL025PC2DC015Q         | 8-1589475-2       | STL051PC2DC018Q         | 2-1589788-5       |
| SSM037SC0DC036N         | 7-1589457-8       | STL009PC2DX024N         | 1-1589472-8       | STL025PC2DC018          | 8-1589475-6       | STL051PC2DC024N         | 7-1589472-3       |
| SSM037SC2DC018          | 6-1589457-5       | STL009PC2GX010N         | 1-1589472-9       | STL025PC2DC018M         | 7-1589788-3       | STL051PC2DC036N         | 7-1589472-4       |
| SSM037SC2DC018N         | 6-1589457-6       | STL009PC3DX024N         | 2-1589472-0       | STL025PC2DC018N         | 4-1589472-7       | STL051PC2DC040N         | 7-1589472-5       |

## Part Number Index Cross Reference (Continued)

| NANONICS<br>Part Number | TE<br>Part Number | NANONICS<br>Part Number | TE<br>Part Number | NANONICS<br>Part Number | TE<br>Part Number | NANONICS<br>Part Number | TE<br>Part Number |
|-------------------------|-------------------|-------------------------|-------------------|-------------------------|-------------------|-------------------------|-------------------|
| STL051PC2DCC35N         | 7-1589472-6       | STM009PC2DC036          | 1-1589473-0       | STM009SC2DM012Q         | 2-1589777-0       | STM015PC3DM024Q         | 6-1589475-8       |
| STL051PC2DM048N         | 3-1589475-3       | STM009PC2DC036M         | 1-1589473-1       | STM009SC2DM018HN        | 5-1589476-8       | STM015PC3DX024N         | 7-1589473-1       |
| STL051PC2DNC50          | 7-1589472-7       | STM009PC2DC036N         | 1-1589473-2       | STM009SC2DM036N         | 5-1589476-9       | STM015PC4DX012N         | 7-1589473-2       |
| STL051PC2DT024N         | 6-1589475-0       | STM009PC2DC060N         | 5-1589475-4       | STM009SC2DT012HN        | 6-1589476-0       | STM015PC4DX024N         | 8-1589475-7       |
| STL051SC2DC003N         | 3-1589476-0       | STM009PC2DC060Q         | 1-1589473-3       | STM009SC2DT012N         | 6-1589476-1       | STM015SC0DC012DQ        | 1-1589777-8       |
| STL051SC2DC012N         | 3-1589476-1       | STM009PC2DCC10Q         | 0-1589788-8       | STM009SC2DT030N         | 6-1589476-2       | STM015SC0DC036N         | 2-1589777-9       |
| STL051SC2DC018N         | 3-1589476-2       | STM009PC2DCC30N         | 7-1589475-1       | STM009SC2DX010N         | 6-1589476-3       | STM015SC0DM036N         | 2-1589777-1       |
| STL051SC2DC024N         | 3-1589476-3       | STM009PC2DCC40N         | 1-1589473-4       | STM009SC2DX012HN        | 6-1589476-4       | STM015SC0DXC10N         | 6-1589476-7       |
| STL051SC2DC036N         | 0-1589777-1       | STM009PC2DCC46N         | 8-1589788-6       | STM009SC2DX012N         | 6-1589476-5       | STM015SC0DXC10Q         | 6-1589476-8       |
| STL051SC2DC048          | 3-1589476-4       | STM009PC2DCC50N         | 4-1589475-8       | STM009SC2DXC15Q         | 6-1589476-6       | STM015SC2DC003N         | 7-1589476-1       |
| STL051SC2DX024          | 3-1589476-5       | STM009PC2DCC90Q         | 1-1589473-5       | STM009SC2DXM01Q         | 9-1589477-9       | STM015SC2DC004HN        | 7-1589476-2       |
| STL065PC0DC006N         | 6-1589475-5       | STM009PC2DCM01N         | 1-1589473-6       | STM015PC0DC036N         | 5-1589788-4       | STM015SC2DC006N         | 7-1589476-3       |
| STL065PC2DC012N         | 3-1589788-4       | STM009PC2DCM02N         | 8-1589788-3       | STM015PC0DCM02Q         | 2-1589473-9       | STM015SC2DC008HN        | 7-1589476-4       |
| STL065PC0DC036N         | 7-1589472-8       | STM009PC2DM012N         | 1-1589473-7       | STM015PC0DM012N         | 3-1589473-0       | STM015SC2DC008Q         | 3-1589777-4       |
| STL065PC0DC036Q         | 1-1589788-7       | STM009PC2DM012Q         | 1-1589473-8       | STM015PC0DM024N         | 1-1589788-3       | STM015SC2DC012HN        | 7-1589476-5       |
| STL065PC2DC006          | 7-1589472-9       | STM009PC2DM018N         | 1-1589473-9       | STM015PC2DC003N         | 3-1589473-6       | STM015SC2DC012N         | 7-1589476-6       |
| STL065PC2DC006M         | 5-1589475-8       | STM009PC2DM036N         | 2-1589473-0       | STM015PC2DC005N         | 3-1589473-7       | STM015SC2DC015Q         | 1-1589777-7       |
| STL065PC2DC006N         | 8-1589472-0       | STM009PC2DN036M         | 2-1589473-1       | STM015PC2DC006N         | 3-1589473-8       | STM015SC2DC016N         | 7-1589476-7       |
| STL065PC2DC012N         | 8-1589472-1       | STM009PC2DT006Q         | 7-1589475-6       | STM015PC2DC012N         | 3-1589473-9       | STM015SC2DC018N         | 7-1589476-8       |
| STL065PC2DC018          | 8-1589472-2       | STM009PC2DT012N         | 7-1589788-1       | STM015PC2DC012Q         | 4-1589473-0       | STM015SC2DC024N         | 7-1589476-9       |
| STL065PC2DC018N         | 8-1589472-3       | STM009PC2DT018N         | 2-1589473-2       | STM015PC2DC016N         | 4-1589473-1       | STM015SC2DC036N         | 8-1589476-0       |
| STL065PC2DC018Q         | 2-1589788-6       | STM009PC2DT030N         | 2-1589473-3       | STM015PC2DC018N         | 4-1589473-2       | STM015SC2DC036Q         | 0-1589777-6       |
| STL065PC2DC024N         | 8-1589472-4       | STM009PC2DT036N         | 9-1589475-0       | STM015PC2DC020Q         | 4-1589473-3       | STM015SC2DC060Q         | 8-1589476-1       |
| STL065PC2DC036N         | 8-1589472-5       | STM009PC2DTC45N         | 2-1589475-9       | STM015PC2DC024N         | 4-1589473-4       | STM015SC2DCC30N         | 8-1589476-2       |
| STL065PC2DC040N         | 8-1589472-6       | STM009PC2DX006Q         | 3-1589475-8       | STM015PC2DC030N         | 4-1589473-5       | STM015SC2DCC50N         | 1-1589777-9       |
| STL065PC2DC072N         | 8-1589472-7       | STM009PC2DX010N         | 2-1589473-4       | STM015PC2DC036          | 4-1589473-6       | STM015SC2DCM01HN        | 8-1589476-3       |
| STL065PC2DCC10N         | 8-1589472-8       | STM009PC2DX012N         | 4-1589788-1       | STM015PC2DC036M         | 4-1589473-7       | STM015SC2DM006N         | 8-1589476-4       |
| STL065PC2DM018N         | 8-1589472-9       | STM009PC2DX024N         | 2-1589473-5       | STM015PC2DC036N         | 4-1589473-8       | STM015SC2DM010N         | 1-1589777-4       |
| STL065PC2DM036N         | 9-1589472-0       | STM009PC2DXC15Q         | 2-1589473-6       | STM015PC2DC048N         | 4-1589473-9       | STM015SC2DM012HN        | 1-1589777-2       |
| STL065PC2DT024N         | 6-1589475-3       | STM009PC2DXM01Q         | 8-1589475-4       | STM015PC2DC060Q         | 5-1589473-0       | STM015SC2DM024N         | 4-1589777-0       |
| STL065PC2DTC10N         | 8-1589788-9       | STM009PC2DY030N         | 2-1589788-8       | STM015PC2DC120N         | 5-1589473-1       | STM015SC2DM036N         | 1-1589777-0       |
| STL065PC2GX036Q         | 9-1589472-1       | STM009PC2GX006          | 5-1589788-3       | STM015PC2DCC10Q         | 0-1589788-9       | STM015SC2DMM01N         | 8-1589476-5       |
| STL065PC3DM072N         | 9-1589472-2       | STM009PC2GX006N         | 6-1589788-3       | STM015PC2DCC30N         | 5-1589473-2       | STM015SC2DT006Q         | 8-1589476-6       |
| STL065SC2DC006N         | 3-1589476-6       | STM009PC2GX012N         | 3-1589788-2       | STM015PC2DCC90Q         | 5-1589473-3       | STM015SC2DT012HN        | 8-1589476-7       |
| STL065SC2DC012N         | 3-1589476-7       | STM009PC3DM024Q         | 6-1589475-7       | STM015PC2DCM01N         | 5-1589473-4       | STM015SC2DT012N         | 4-1589777-4       |
| STL065SC2DC048N         | 3-1589476-8       | STM009SC0DX012N         | 4-1589476-1       | STM015PC2DM018N         | 5-1589473-5       | STM015SC2DT030N         | 8-1589476-8       |
| STL065SC2DM036N         | 3-1589476-9       | STM009SC2DC003N         | 8-1589477-2       | STM015PC2DM020N         | 4-1589788-2       | STM015SC2DT0C90Q        | 8-1589477-1       |
| STL065SC3DM072N         | 4-1589476-0       | STM009SC2DC006          | 4-1589476-2       | STM015PC2DM024N         | 5-1589473-6       | STM015SC2DX005HN        | 8-1589476-9       |
| STM009PC0DC020N         | 9-1589472-3       | STM009SC2DC006HN        | 4-1589476-3       | STM015PC2DM036N         | 5-1589473-7       | STM015SC2DX006HN        | 9-1589476-0       |
| STM009PC0DM024N         | 1-1589788-2       | STM009SC2DC006N         | 4-1589476-4       | STM015PC2DMM01N         | 5-1589473-8       | STM015SC2DX010N         | 9-1589476-1       |
| STM009PC0DXC10N         | 9-1589472-4       | STM009SC2DC012HN        | 4-1589476-5       | STM015PC2DT006Q         | 5-1589473-9       | STM015SC2DX012N         | 9-1589476-2       |
| STM009PC2DC003N         | 9-1589472-5       | STM009SC2DC012N         | 4-1589476-6       | STM015PC2DT012N         | 6-1589473-0       | STM015SC2DX018HN        | 9-1589476-3       |
| STM009PC2DC004N         | 9-1589472-6       | STM009SC2DC012Q         | 4-1589476-7       | STM015PC2DT030N         | 6-1589473-1       | STM015SC2DXC15Q         | 9-1589476-4       |
| STM009PC2DC006          | 9-1589472-7       | STM009SC2DC018HM        | 4-1589476-8       | STM015PC2DT036N         | 6-1589473-2       | STM015SC4DX012Q         | 9-1589476-5       |
| STM009PC2DC006N         | 9-1589472-8       | STM009SC2DC018HN        | 4-1589476-9       | STM015PC2DTC15N         | 4-1589475-1       | STM015SC4DX030N         | 9-1589476-6       |
| STM009PC2DC012          | 9-1589472-9       | STM009SC2DC018N         | 5-1589476-0       | STM015PC2DTC22Q         | 3-1589788-9       | STM015SC4DXC20N         | 9-1589476-7       |
| STM009PC2DC012M         | 7-1589788-9       | STM009SC2DC024N         | 5-1589476-1       | STM015PC2DTC45N         | 6-1589473-3       | STM025PC0DC012N         | 7-1589473-3       |
| STM009PC2DC012N         | 0-1589473-1       | STM009SC2DC024Q         | 2-1589777-5       | STM015PC2DTC95Q         | 2-1589475-8       | STM025PC0DC036N         | 5-1589788-5       |
| STM009PC2DC016N         | 0-1589473-2       | STM009SC2DC036HN        | 5-1589476-2       | STM015PC2DX005Q         | 5-1589788-9       | STM025PC0DC060N         | 4-1589475-4       |
| STM009PC2DC018N         | 0-1589473-3       | STM009SC2DC036N         | 5-1589476-3       | STM015PC2DX010N         | 6-1589473-4       | STM025PC0DM012N         | 7-1589473-4       |
| STM009PC2DC019          | 0-1589473-4       | STM009SC2DC048N         | 5-1589476-4       | STM015PC2DX012N         | 6-1589473-5       | STM025PC0DM024N         | 1-1589788-4       |
| STM009PC2DC020Q         | 0-1589473-5       | STM009SC2DC060Q         | 5-1589476-5       | STM015PC2DX024N         | 6-1589473-6       | STM025PC0DM036N         | 4-1589788-5       |
| STM009PC2DC024          | 0-1589473-6       | STM009SC2DCC46N         | 4-1589777-7       | STM015PC2DX030N         | 6-1589473-7       | STM025PC2DC003          | 7-1589473-5       |
| STM009PC2DC024N         | 0-1589473-7       | STM009SC2DCM01HN        | 5-1589476-6       | STM015PC2DX048N         | 6-1589473-8       | STM025PC2DC003N         | 7-1589473-6       |
| STM009PC2DC024Q         | 8-1589475-3       | STM009SC2DCM01N         | 9-1589477-1       | STM015PC2DX072N         | 6-1589788-5       | STM025PC2DC004          | 7-1589473-7       |
| STM009PC2DC028N         | 0-1589473-8       | STM009SC2DCM02N         | 5-1589476-7       | STM015PC2DXC15Q         | 6-1589473-9       | STM025PC2DC006          | 7-1589473-8       |
| STM009PC2DC030N         | 0-1589473-9       | STM009SC2DM012HN        | 8-1589477-0       | STM015PC2GX004N         | 7-1589473-0       | STM025PC2DC006N         | 7-1589473-9       |

## Part Number Index Cross Reference (Continued)

| NANONICS<br>Part Number | TE<br>Part Number | NANONICS<br>Part Number | TE<br>Part Number | NANONICS<br>Part Number | TE<br>Part Number | NANONICS<br>Part Number | TE<br>Part Number |
|-------------------------|-------------------|-------------------------|-------------------|-------------------------|-------------------|-------------------------|-------------------|
| STM025PC2DC006Q         | 7-1589788-8       | STM025PC4DX012M         | 2-1589474-4       | STM037PC2DC012Q         | 3-1589474-5       | STM037SC2DC036N         | 3-1589477-7       |
| STM025PC2DC008N         | 8-1589473-0       | STM025PC4DX012N         | 2-1589474-5       | STM037PC2DC015N         | 3-1589474-6       | STM037SC2DC060Q         | 3-1589477-8       |
| STM025PC2DC010N         | 8-1589473-1       | STM025SC0DC036N         | 3-1589777-0       | STM037PC2DC015Q         | 3-1589474-7       | STM037SC2DM010N         | 1-1589777-6       |
| STM025PC2DC010Q         | 6-1589788-0       | STM025SC0DM036N         | 2-1589777-6       | STM037PC2DC018          | 4-1589475-0       | STM037SC2DM024N         | 3-1589477-9       |
| STM025PC2DC012          | 8-1589473-2       | STM025SC2DC003          | 9-1589476-8       | STM037PC2DC018N         | 3-1589474-9       | STM037SC2DM036Q         | 8-1589477-6       |
| STM025PC2DC012N         | 8-1589473-3       | STM025SC2DC004          | 9-1589476-9       | STM037PC2DC020N         | 4-1589475-2       | STM037SC2DT008N         | 9-1589477-5       |
| STM025PC2DC015N         | 8-1589473-4       | STM025SC2DC006N         | 0-1589477-1       | STM037PC2DC020Q         | 4-1589474-0       | STM037SC2DT012N         | 8-1589477-8       |
| STM025PC2DC016N         | 8-1589473-5       | STM025SC2DC008N         | 0-1589477-2       | STM037PC2DC024          | 4-1589474-1       | STM037SC2DT020Q         | 2-1589777-3       |
| STM025PC2DC018N         | 8-1589473-6       | STM025SC2DC012HN        | 0-1589477-3       | STM037PC2DC024N         | 4-1589474-2       | STM037SC2DT030N         | 4-1589477-0       |
| STM025PC2DC020N         | 8-1589473-7       | STM025SC2DC012N         | 0-1589477-4       | STM037PC2DC024Q         | 5-1589475-2       | STM037SC2DTC20Q         | 2-1589777-4       |
| STM025PC2DC020Q         | 8-1589473-8       | STM025SC2DC016N         | 0-1589477-5       | STM037PC2DC030N         | 4-1589474-3       | STM037SC2DX006N         | 4-1589477-1       |
| STM025PC2DC024N         | 8-1589473-9       | STM025SC2DC018N         | 0-1589477-6       | STM037PC2DC036          | 4-1589474-4       | STM037SC2DX010N         | 4-1589477-2       |
| STM025PC2DC024Q         | 9-1589473-0       | STM025SC2DC020N         | 0-1589477-7       | STM037PC2DC036N         | 4-1589474-5       | STM037SC2DX012N         | 4-1589477-3       |
| STM025PC2DC030N         | 9-1589473-1       | STM025SC2DC024N         | 0-1589477-8       | STM037PC2DC036Q         | 4-1589474-6       | STM037SC2GX006N         | 4-1589477-4       |
| STM025PC2DC036M         | 9-1589473-2       | STM025SC2DC036N         | 0-1589477-9       | STM037PC2DC048N         | 4-1589474-7       | STM051PC0DC012N         | 6-1589474-5       |
| STM025PC2DC036N         | 9-1589473-3       | STM025SC2DC040N         | 1-1589477-0       | STM037PC2DC060Q         | 4-1589474-8       | STM051PC0DC036N         | 5-1589788-7       |
| STM025PC2DC048N         | 9-1589473-4       | STM025SC2DC048HN        | 1-1589477-1       | STM037PC2DC072N         | 4-1589474-9       | STM051PC0DC048N         | 6-1589474-6       |
| STM025PC2DC060N         | 9-1589473-5       | STM025SC2DC048N         | 1-1589477-2       | STM037PC2DCC20Q         | 5-1589474-0       | STM051PC0DM036N         | 1-1589788-9       |
| STM025PC2DC060Q         | 9-1589473-6       | STM025SC2DC060HN        | 1-1589477-3       | STM037PC2DCC50N         | 5-1589474-1       | STM051PC0DM060N         | 2-1589788-2       |
| STM025PC2DC072N         | 9-1589473-7       | STM025SC2DC060Q         | 1-1589477-4       | STM037PC2DCC50Q         | 8-1589788-8       | STM051PC0DXC10N         | 6-1589474-7       |
| STM025PC2DC084N         | 7-1589475-9       | STM025SC2DC084N         | 9-1589477-8       | STM037PC2DCM01Q         | 5-1589474-2       | STM051PC1DXC20          | 6-1589474-8       |
| STM025PC2DC120N         | 9-1589473-8       | STM025SC2DC180N         | 1-1589477-5       | STM037PC2DM012N         | 5-1589475-1       | STM051PC2DC003N         | 6-1589474-9       |
| STM025PC2DC180N         | 9-1589473-9       | STM025SC2DCC46Q         | 4-1589777-8       | STM037PC2DM018N         | 5-1589474-3       | STM051PC2DC006          | 7-1589474-0       |
| STM025PC2DCC10Q         | 1-1589788-0       | STM025SC2DCC60N         | 1-1589477-6       | STM037PC2DM020N         | 4-1589788-4       | STM051PC2DC006N         | 7-1589474-1       |
| STM025PC2DCC40N         | 0-1589474-1       | STM025SC2DM010N         | 1-1589777-5       | STM037PC2DM024M         | 5-1589474-4       | STM051PC2DC012N         | 7-1589474-2       |
| STM025PC2DCC46N         | 8-1589788-7       | STM025SC2DM012HN        | 1-1589777-3       | STM037PC2DM024N         | 5-1589474-5       | STM051PC2DC012Q         | 7-1589474-3       |
| STM025PC2DCC50N         | 0-1589474-2       | STM025SC2DM024N         | 4-1589777-1       | STM037PC2DM036          | 7-1589788-7       | STM051PC2DC015N         | 7-1589474-4       |
| STM025PC2DCC60N         | 0-1589474-3       | STM025SC2DM036N         | 1-1589777-1       | STM037PC2DM036Q         | 4-1589475-5       | STM051PC2DC015Q         | 2-1589788-0       |
| STM025PC2DM006Q         | 0-1589474-4       | STM025SC2DT012HN        | 1-1589477-7       | STM037PC2DT006N         | 3-1589475-5       | STM051PC2DC016N         | 7-1589474-5       |
| STM025PC2DM012N         | 0-1589788-7       | STM025SC2DT012N         | 8-1589477-7       | STM037PC2DT012M         | 4-1589475-7       | STM051PC2DC018          | 7-1589474-6       |
| STM025PC2DM012Q         | 0-1589474-5       | STM025SC2DT030N         | 1-1589477-8       | STM037PC2DT012N         | 5-1589474-7       | STM051PC2DC018N         | 7-1589474-7       |
| STM025PC2DM018N         | 0-1589474-6       | STM025SC2DX005HN        | 1-1589477-9       | STM037PC2DT030N         | 5-1589474-8       | STM051PC2DC018Q         | 7-1589474-8       |
| STM025PC2DM020N         | 4-1589788-3       | STM025SC2DX006N         | 2-1589477-0       | STM037PC2DT036N         | 6-1589788-8       | STM051PC2DC024          | 6-1589475-6       |
| STM025PC2DM024N         | 0-1589474-7       | STM025SC2DX010N         | 2-1589477-1       | STM037PC2DT036Q         | 8-1589788-0       | STM051PC2DC024N         | 7-1589474-9       |
| STM025PC2DM036N         | 0-1589474-8       | STM025SC2DX012N         | 2-1589477-2       | STM037PC2DTC20Q         | 5-1589788-0       | STM051PC2DC030N         | 8-1589474-0       |
| STM025PC2DM072Q         | 1-1589788-6       | STM025SC2DX018N         | 2-1589477-3       | STM037PC2DX006N         | 5-1589474-9       | STM051PC2DC036N         | 8-1589474-1       |
| STM025PC2DTC006N        | 3-1589475-4       | STM025SC2DY018N         | 2-1589477-4       | STM037PC2DX010N         | 6-1589474-0       | STM051PC2DC036Q         | 8-1589474-2       |
| STM025PC2DT012M         | 4-1589475-6       | STM025SC3DC012N         | 2-1589477-5       | STM037PC2DX012N         | 6-1589474-1       | STM051PC2DC060N         | 8-1589474-3       |
| STM025PC2DT012N         | 0-1589474-9       | STM025SC3DMC20DQ        | 2-1589477-6       | STM037PC2DX024N         | 6-1589474-2       | STM051PC2DC060Q         | 8-1589474-4       |
| STM025PC2DT024N         | 4-1589788-9       | STM025SC3DX030N         | 0-1589777-4       | STM037PC2GX006N         | 6-1589474-3       | STM051PC2DCC20N         | 8-1589474-5       |
| STM025PC2DT030N         | 1-1589474-0       | STM025SC4DX030N         | 2-1589477-7       | STM037PC3DC012N         | 6-1589474-4       | STM051PC2DCC30N         | 9-1589475-7       |
| STM025PC2DT036Q         | 1-1589474-1       | STM037PC0DC009N         | 2-1589474-6       | STM037PC3DM024Q         | 7-1589475-0       | STM051PC2DCC50N         | 3-1589788-5       |
| STM025PC2DT048Q         | 1-1589474-2       | STM037PC0DC009Q         | 8-1589788-5       | STM037SC0DC036N         | 3-1589777-1       | STM051PC2DCC50Q         | 3-1589788-6       |
| STM025PC2DT084N         | 6-1589788-4       | STM037PC0DC036N         | 5-1589788-6       | STM037SC0DM036N         | 3-1589777-7       | STM051PC2DM018N         | 8-1589474-6       |
| STM025PC2DY005          | 1-1589474-3       | STM037PC0DM024N         | 1-1589788-5       | STM037SC0DM060N         | 2-1589777-2       | STM051PC2DM024N         | 7-1589788-0       |
| STM025PC2DX006N         | 1-1589474-4       | STM037PC0DM036N         | 1-1589788-8       | STM037SC0DXC10N         | 2-1589477-8       | STM051PC2DMM01N         | 8-1589474-7       |
| STM025PC2DX006Q         | 1-1589474-5       | STM037PC0DM060N         | 2-1589788-1       | STM037SC2DC006N         | 2-1589477-9       | STM051PC2DT012N         | 8-1589474-9       |
| STM025PC2DX010N         | 1-1589474-6       | STM037PC0DXC10N         | 2-1589474-7       | STM037SC2DC006Q         | 3-1589477-0       | STM051PC2DT018N         | 7-1589788-2       |
| STM025PC2DX012N         | 1-1589474-7       | STM037PC2DC001N         | 6-1589788-7       | STM037SC2DC012HN        | 0-1589777-9       | STM051PC2DT030N         | 9-1589474-0       |
| STM025PC2DX018N         | 1-1589474-8       | STM037PC2DC003N         | 2-1589474-8       | STM037SC2DC012N         | 3-1589477-1       | STM051PC2DT036N         | 9-1589474-1       |
| STM025PC2DX048N         | 1-1589474-9       | STM037PC2DC005N         | 2-1589474-9       | STM037SC2DC012Q         | 9-1589477-0       | STM051PC2DT036Q         | 8-1589788-1       |
| STM025PC2DX072N         | 6-1589788-6       | STM037PC2DC006M         | 3-1589474-0       | STM037SC2DC015N         | 3-1589477-2       | STM051PC2DT072N         | 9-1589474-2       |
| STM025PC2DYO04          | 2-1589474-0       | STM037PC2DC006N         | 3-1589474-1       | STM037SC2DC015Q         | 8-1589477-9       | STM051PC2DX012N         | 9-1589474-3       |
| STM025PC2DYO06          | 2-1589474-1       | STM037PC2DC010Q         | 6-1589788-1       | STM037SC2DC018HN        | 3-1589477-3       | STM051PC2DX012Q         | 9-1589474-4       |
| STM025PC2DYO06N         | 2-1589474-2       | STM037PC2DC012          | 3-1589474-2       | STM037SC2DC018N         | 3-1589477-4       | STM051PC2DX015N         | 9-1589474-5       |
| STM025PC3DM024Q         | 6-1589475-9       | STM037PC2DC012M         | 3-1589474-3       | STM037SC2DC020Q         | 3-1589477-5       | STM051PC2DX018          | 9-1589474-6       |
| STM025PC3DX030N         | 9-1589475-1       | STM037PC2DC012N         | 3-1589474-4       | STM037SC2DC024N         | 3-1589477-6       | STM051PC2DX018N         | 9-1589474-7       |



## Part Number Index Cross Reference (Continued)

| NANONICS<br>Part Number | TE<br>Part Number | NANONICS<br>Part Number | TE<br>Part Number | NANONICS<br>Part Number  | TE<br>Part Number | NANONICS<br>Part Number | TE<br>Part Number |
|-------------------------|-------------------|-------------------------|-------------------|--------------------------|-------------------|-------------------------|-------------------|
| STM051PC2DY015N         | 9-1589474-8       | STM065PC2DM024N         | 5-1589475-0       | <b>Jumper Assemblies</b> |                   | JSM025PP2DC006N         | 1-1589735-4       |
| STM051PC2GX006N         | 3-1589475-6       | STM065PC2DM036N         | 6-1589788-2       | JSL005PP2DC002N          | 1-1589735-5       | JSM025PP2DX004N         | 2-1589672-0       |
| STM051PC2GX012N         | 3-1589788-1       | STM065PC2DMC46N         | 4-1589788-0       | JSL009PP2DC006N          | 0-1589735-8       | JSM025PP2DX008N         | 2-1589672-1       |
| STM051PC2GXM01N         | 9-1589474-9       | STM065PC2DT012N         | 8-1589475-5       | JSL009PP2DX003N          | 7-1589671-1       | JSM025PP2DXC17N         | 2-1589672-2       |
| STM051SC0DC036N         | 3-1589777-2       | STM065PC2DT018N         | 1-1589475-8       | JSL009PP2DX006N          | 0-1589735-7       | JSM025PP2DXC003N        | 2-1589672-3       |
| STM051SC0DXC10N         | 4-1589477-5       | STM065PC2DT030N         | 1-1589475-9       | JSL009PR2DC012N          | 7-1589671-2       | JSM025PP2GX024N         | 2-1589672-4       |
| STM051SC1DXC20          | 4-1589477-6       | STM065PC2DTC10N         | 9-1589788-0       | JSL009RR2DX0.5N          | 7-1589671-3       | JSM025PP4DXC20N         | 2-1589672-5       |
| STM051SC2DC003N         | 4-1589477-7       | STM065PC2DX006N         | 2-1589475-0       | JSL015PD2DX002N          | 4-1589699-8       | JSM025PR2DC006N         | 2-1589672-6       |
| STM051SC2DC006          | 4-1589477-8       | STM065PC2DX018N         | 2-1589475-1       | JSL015PP2DX001N          | 0-1589735-2       | JSM025PR2DC1.5N         | 5-1589699-5       |
| STM051SC2DC006N         | 4-1589477-9       | STM065PC2DX036N         | 2-1589475-2       | JSL015PP2DX006N          | 7-1589671-4       | JSM025PR2GX002N         | 2-1589672-7       |
| STM051SC2DC008Q         | 3-1589777-5       | STM065PC2DY012N         | 2-1589475-3       | JSL025PP2DC012N          | 0-1589735-1       | JSM025RR2DC006N         | 0-1589803-1       |
| STM051SC2DC012N         | 5-1589477-0       | STM065PC2DY012Q         | 2-1589788-7       | JSL037PD2GXC02N          | 7-1589671-5       | JSM037PD2GXC02N         | 0-1589797-2       |
| STM051SC2DC015HN        | 5-1589477-1       | STM065PC2DY024N         | 2-1589475-4       | JSL037PR2DX002N          | 7-1589671-6       | JSM037PD2GXC05N         | 0-1589797-1       |
| STM051SC2DC015N         | 5-1589477-2       | STM065PC2GXM01N         | 2-1589475-5       | JSL037PR2DX003N          | 0-1589736-2       | JSM037PD2GXC10N         | 3-1589672-3       |
| STM051SC2DC016N         | 5-1589477-3       | STM065PC3DM006N         | 2-1589475-6       | JSL051PD2GXC10N          | 7-1589671-7       | JSM037PP2DCC06Q         | 3-1589672-4       |
| STM051SC2DC018HN        | 5-1589477-4       | STM065PC3DX024N         | 2-1589475-7       | JSL051PD2GXC17N          | 7-1589671-8       | JSM037PP2DCC08Q         | 3-1589672-5       |
| STM051SC2DC018N         | 5-1589477-5       | STM065SC0DC036N         | 3-1589777-3       | JSL051PD2GXC22N          | 7-1589671-9       | JSM037PP2DX018N         | 3-1589672-6       |
| STM051SC2DC018Q         | 5-1589477-6       | STM065SC2DC003N         | 6-1589477-6       | JSL051PD2GXC30N          | 8-1589671-0       | JSM037PP2GX072N         | 3-1589672-7       |
| STM051SC2DC036N         | 5-1589477-7       | STM065SC2DC006          | 6-1589477-7       | JSL051PD2GXC75N          | 8-1589671-1       | JSM037PR2DTC03N         | 0-1589736-3       |
| STM051SC2DC036Q         | 0-1589777-7       | STM065SC2DC006N         | 6-1589477-8       | JSL051PD2GXC80N          | 8-1589671-2       | JSM051PD2GXC10N         | 4-1589672-7       |
| STM051SC2DC060N         | 5-1589477-8       | STM065SC2DC008Q         | 3-1589777-6       | JSL051PP2DC004N          | 8-1589671-3       | JSM051PD2GXC12          | 4-1589672-8       |
| STM051SC2DC060Q         | 5-1589477-9       | STM065SC2DC012N         | 6-1589477-9       | JSL051PP2GXC10N          | 8-1589671-4       | JSM051PD2GXC12N         | 4-1589672-9       |
| STM051SC2DM012N         | 6-1589477-0       | STM065SC2DC012Q         | 7-1589477-0       | JSL051PP2GXC15N          | 8-1589671-5       | JSM051PD2GXC15N         | 5-1589672-0       |
| STM051SC2DM024N         | 4-1589777-2       | STM065SC2DC015N         | 7-1589477-1       | JSL051PP2GXC17N          | 8-1589671-6       | JSM051PD2GXC17N         | 5-1589672-1       |
| STM051SC2DMM01N         | 6-1589477-1       | STM065SC2DC018          | 7-1589477-2       | JSL051PP2GXC22N          | 8-1589671-7       | JSM051PD2GXC50N         | 5-1589672-2       |
| STM051SC2DT012N         | 0-1589777-3       | STM065SC2DC018N         | 7-1589477-3       | JSL051PP2GXC75N          | 8-1589671-8       | JSM051PP2DCC12Q         | 5-1589672-3       |
| STM051SC2DT018N         | 4-1589777-5       | STM065SC2DC018Q         | 7-1589477-4       | JSL051PP2GXC80N          | 8-1589671-9       | JSM051PP2GXC12          | 5-1589672-4       |
| STM051SC2DT030N         | 6-1589477-3       | STM065SC2DC024N         | 7-1589477-5       | JSL051PR2GX002           | 0-1589736-4       | JSM051PP2GXC12N         | 5-1589672-5       |
| STM051SC2DX012N         | 6-1589477-4       | STM065SC2DC024Q         | 7-1589477-6       | JSM005PP2DC002N          | 9-1589671-0       | JSM051PP2GXC17N         | 5-1589672-6       |
| STM051SC2DX015N         | 6-1589477-5       | STM065SC2DC036          | 9-1589477-3       | JSM005PP2DC003N          | 1-1589735-0       | JSM051PP2GXC22N         | 5-1589672-7       |
| STM065PC0DC036N         | 5-1589788-8       | STM065SC2DC036HN        | 7-1589477-7       | JSM005PP2DC005N          | 0-1589735-9       | JSM051PP2GXC50N         | 5-1589672-8       |
| STM065PC0DM036N         | 4-1589788-6       | STM065SC2DC036N         | 7-1589477-8       | JSM005PP2DC008           | 0-1589735-3       | JSM051PP2GXC75N         | 5-1589672-9       |
| STM065PC0DM060N         | 2-1589788-3       | STM065SC2DC036Q         | 0-1589777-8       | JSM005PP2DC02.5N         | 0-1589735-5       | JSM051PP2GXC80N         | 6-1589672-0       |
| STM065PC0DMC30Q         | 9-1589475-8       | STM065SC2DM024N         | 4-1589777-3       | JSM005PP2DC072           | 0-1589735-4       | JSM051PR2DC1.5N         | 5-1589699-6       |
| STM065PC0DMM01Q         | 4-1589788-8       | STM065SC2DT012N         | 0-1589777-2       | JSM005PP2DT150N          | 9-1589671-1       | JSM051PR2GX002N         | 6-1589672-1       |
| STM065PC2DC003N         | 0-1589475-1       | STM065SC2DT018N         | 4-1589777-6       | JSM009PP2DC002N          | 9-1589671-5       | JTL009PD2GX006N         | 3-1589729-8       |
| STM065PC2DC006          | 0-1589475-2       | STM065SC2DT030N         | 7-1589477-9       | JSM009PP2DC003N          | 9-1589671-6       | JTL009PD2GX012N         | 7-1589699-3       |
| STM065PC2DC006N         | 0-1589475-3       |                         |                   | JSM009PP2DC006N          | 1-1589735-2       | JTL009PD2GX018N         | 3-1589729-9       |
| STM065PC2DC008Q         | 0-1589475-4       |                         |                   | JSM009PP2DC024N          | 9-1589671-7       | JTL009PP2DC012N         | 0-1589737-3       |
| STM065PC2DC012N         | 0-1589475-5       |                         |                   | JSM009PP2DM005Q          | 0-1589735-6       | JTL009PP2DX006N         | 1-1589737-7       |
| STM065PC2DC012Q         | 0-1589475-6       |                         |                   | JSM009PR2DC002N          | 9-1589671-8       | JTL009PR2DC018N         | 5-1589699-8       |
| STM065PC2DC016M         | 0-1589475-7       |                         |                   | JSM009PR2DC006N          | 9-1589671-9       | JTL015PP2DX002N         | 0-1589737-1       |
| STM065PC2DC016N         | 0-1589475-8       |                         |                   | JSM015PD2DCC02N          | 0-1589672-6       | JTL015PP2DX006N         | 1-1589737-6       |
| STM065PC2DC018M         | 0-1589475-9       |                         |                   | JSM015PD2GXC05N          | 0-1589797-3       | JTL015PP2DX008M         | 9-1589672-5       |
| STM065PC2DC018N         | 1-1589475-0       |                         |                   | JSM015PP2DC004N          | 1-1589735-1       | JTL015PP2DX014N         | 5-1589699-0       |
| STM065PC2DC018Q         | 1-1589475-1       |                         |                   | JSM015PP2DC006N          | 1-1589735-3       | JTL015PR0DC011N         | 1-1589738-3       |
| STM065PC2DC020N         | 4-1589475-3       |                         |                   | JSM015PP2GX001N          | 0-1589799-3       | JTL015PR2DX008          | 9-1589672-6       |
| STM065PC2DC024N         | 1-1589475-2       |                         |                   | JSM015PP2GX002N          | 0-1589799-2       | JTL025PD2DC010N         | 5-1589699-9       |
| STM065PC2DC024Q         | 1-1589475-3       |                         |                   | JSM015PP2GX006N          | 0-1589799-1       | JTL025PD2DC1.25N        | 5-1589699-7       |
| STM065PC2DC030N         | 1-1589475-4       |                         |                   | JSM015PP2GX014N          | 0-1589672-7       | JTL025PP2DC001M         | 4-1589737-3       |
| STM065PC2DC036          | 5-1589475-6       |                         |                   | JSM015PP2GX018N          | 0-1589672-8       | JTL025PP2DC001N         | 4-1589737-2       |
| STM065PC2DC036N         | 1-1589475-5       |                         |                   | JSM015PR2DC001N          | 0-1589672-9       | JTL025PP2DC036N         | 9-1589672-8       |
| STM065PC2DC072N         | 1-1589475-6       |                         |                   | JSM015PR2DC002N          | 1-1589672-0       | JTL025PP2DCC05N         | 0-1589737-5       |
| STM065PC2DCC50N         | 4-1589475-9       |                         |                   | JSM015PR2DC003N          | 1-1589672-1       | JTL025PP2DCC07N         | 9-1589672-9       |
| STM065PC2DCM01N         | 7-1589475-7       |                         |                   | JSM015PR2DC004N          | 4-1589699-9       | JTL025PP2DX002N         | 0-1589673-1       |
| STM065PC2DCM01Q         | 8-1589475-9       |                         |                   | JSM015PR2DC006N          | 1-1589672-2       | JTL025PP2DX003N         | 0-1589673-2       |
| STM065PC2DM018N         | 1-1589475-7       |                         |                   | JSM015PR2DX003N          | 0-1589736-1       | JTL025PP2DX010N         | 0-1589673-3       |

## Part Number Index Cross Reference (Continued)

| NANONICS<br>Part Number | TE<br>Part Number | NANONICS<br>Part Number | TE<br>Part Number | NANONICS<br>Part Number | TE<br>Part Number | NANONICS<br>Part Number | TE<br>Part Number |
|-------------------------|-------------------|-------------------------|-------------------|-------------------------|-------------------|-------------------------|-------------------|
| JTL025PR0DC007N         | 1-1589738-4       | JTM015PP2DY011N         | 2-1589737-0       | JTM037PP2DX006Q         | 9-1589674-7       | JTM065PR2GX001N         | 0-1589676-9       |
| JTL025PR2DCM31N         | 0-1589673-4       | JTM015PP2DY022N         | 2-1589737-1       | JTM037PP2DX009Q         | 9-1589674-8       | JTM065RR2DC003          | 1-1589676-0       |
| JTL037PP2DC012N         | 4-1589737-0       | JTM015PR2DC002N         | 7-1589673-8       | JTM037PP2DX010Q         | 2-1589737-9       | <b>Surface Mount</b>    |                   |
| JTL037PP2DC024N         | 4-1589737-1       | JTM015PR2DC003Q         | 2-1589738-0       | JTM037PP2DX016          | 9-1589674-9       | SSL005L2AN              | 0-1589462-5       |
| JTL037PP2DC07.5N        | 0-1589673-5       | JTM015PR2DC012M         | 7-1589673-9       | JTM037PP2DX024N         | 0-1589675-1       | SSL005L2HN              | 0-1589462-6       |
| JTL037PP2DC08.5N        | 0-1589673-6       | JTM015PR2DT001N         | 8-1589673-0       | JTM037PP2DX3.5N         | 2-1589737-6       | SSL009B2H               | 0-1589700-2       |
| JTL037PP2DC09.5N        | 0-1589673-7       | JTM015PR2DT002M         | 0-1589738-2       | JTM037PR0DC036M         | 0-1589675-3       | SSL009L2AN              | 0-1589462-7       |
| JTL037PP2DM006N         | 0-1589737-7       | JTM015PR2DX001N         | 2-1589738-6       | JTM037PR2DC003Q         | 2-1589738-2       | SSL009L2AQ              | 0-1589462-8       |
| JTL037PP2DX002N         | 0-1589673-8       | JTM015PR2DX003N         | 0-1589738-6       | JTM037PR2DC005N         | 1-1589738-2       | SSL009L2HN              | 0-1589462-9       |
| JTL037PP2DX003N         | 0-1589673-9       | JTM015RR2DC012N         | 0-1589804-1       | JTM037PR2DCC16Q         | 1-1589738-0       | SSL009L42HN             | 0-1589463-1       |
| JTL037PP2DX006N         | 1-1589737-5       | JTM025PD2GX002N         | 0-1589798-3       | JTM037PR2DT001N         | 0-1589675-4       | SSL009L43KN             | 0-1589464-1       |
| JTL037PP2DX012          | 1-1589673-0       | JTM025PP2DC001N         | 4-1589737-7       | JTM037PR2DT002M         | 0-1589738-1       | SSL009L4CN              | 0-1589463-2       |
| JTL037PP2DX012N         | 2-1589737-7       | JTM025PP2DC012N         | 4-1589737-6       | JTM037PR2DX001          | 1-1589738-1       | SSL009L4KN              | 0-1589463-3       |
| JTL037PR2DC012N         | 3-1589738-0       | JTM025PP2DC018N         | 3-1589737-3       | JTM037PR2DX001N         | 0-1589675-5       | SSL015L2AN              | 1-1589462-0       |
| JTL037PR2DC024N         | 3-1589738-1       | JTM025PP2DC024N         | 3-1589737-5       | JTM037PR2DX001Q         | 1-1589738-6       | SSL015L2AQ              | 1-1589462-1       |
| JTL037PR2DT024N         | 1-1589673-1       | JTM025PP2DC030N         | 3-1589737-7       | JTM037PR2DX006Q         | 1-1589738-7       | SSL015L2CN              | 1-1589462-2       |
| JTL037PR2DX001          | 0-1589738-9       | JTM025PP2DC035N         | 5-1589737-0       | JTM037PR2GX002          | 0-1589675-6       | SSL015L2H               | 1-1589462-3       |
| JTL051PP2DC009N         | 0-1589737-4       | JTM025PP2DC2.75N        | 1-1589737-8       | JTM037PR2GX003N         | 0-1589675-7       | SSL015L2HN              | 1-1589462-4       |
| JTL051PP2DX002N         | 1-1589673-4       | JTM025PP2DM024M         | 3-1589737-2       | JTM051PD2DC002N         | 0-1589798-4       | SSL015L4N               | 0-1589463-4       |
| JTL051PP2DX006N         | 1-1589673-5       | JTM025PP2DX001N         | 2-1589674-8       | JTM051PD2DT004N         | 6-1589675-1       | SSL015L4PQ              | 2-1589463-6       |
| JTL051PP2DX010N         | 1-1589673-6       | JTM025PP2DX012N         | 2-1589674-9       | JTM051PD2DXC10N         | 6-1589675-2       | SSL025B2                | 0-1589460-1       |
| JTL051PP2DX024N         | 1-1589673-7       | JTM025PP2DX018N         | 3-1589674-0       | JTM051PP2DC001N         | 4-1589737-5       | SSL025L23N              | 1-1589462-5       |
| JTL051PR2DC012N         | 1-1589738-5       | JTM025PP2DX022N         | 3-1589674-1       | JTM051PP2DC004N         | 6-1589675-3       | SSL025L2AN              | 1-1589462-6       |
| JTL051PR2DC048          | 1-1589673-8       | JTM025PP2DX03.8M        | 3-1589674-2       | JTM051PP2DC2.5N         | 7-1589699-4       | SSL025L2HN              | 1-1589462-7       |
| JTL065PP2DC005N         | 2-1589737-2       | JTM025PP2DX03.8N        | 3-1589674-3       | JTM051PP2DT005          | 0-1589737-2       | SSL025L42               | 0-1589463-5       |
| JTL065PP2DC006N         | 2-1589737-5       | JTM025PP2DX040N         | 2-1589737-4       | JTM051PP2DX001N         | 6-1589675-4       | SSL037B2H               | 0-1589700-3       |
| JTL065PP2DC012N         | 2-1589673-3       | JTM025PP2DY006          | 0-1589737-6       | JTM051PP2DX004N         | 6-1589675-5       | SSL037B2N               | 0-1589460-4       |
| JTL065PP2DC05N          | 2-1589673-4       | JTM025PP2DY006N         | 3-1589674-4       | JTM051PP2DX009Q         | 5-1589737-2       | SSL037L2HN              | 1-1589462-8       |
| JTL065PP2DX012N         | 0-1589737-8       | JTM025PP2DY020N         | 3-1589674-5       | JTM051PP2DX012N         | 6-1589675-6       | SSL037L43KN             | 0-1589464-2       |
| JTL065PR2DX002N         | 0-1589738-8       | JTM025PP2DY024N         | 2-1589737-3       | JTM051PP2DX036N         | 1-1589737-3       | SSL051B2                | 0-1589460-5       |
| JTM009PD2DX003N         | 3-1589673-1       | JTM025PR0DXC20N         | 3-1589674-6       | JTM051PP2DX040N         | 1-1589737-4       | SSL051L2CN              | 1-1589462-9       |
| JTM009PD2DX006N         | 3-1589673-2       | JTM025PR0DXC30N         | 3-1589674-7       | JTM051PP2DX2.5N         | 6-1589675-7       | SSL051L2HN              | 2-1589462-0       |
| JTM009PP2DC006N         | 4-1589737-9       | JTM025PR2DC003Q         | 2-1589738-1       | JTM051PP2DX4.5N         | 6-1589675-8       | SSM005L2HN              | 2-1589462-1       |
| JTM009PP2DC012N         | 4-1589737-8       | JTM025PR2DT001N         | 3-1589674-8       | JTM051PR0DC036N         | 2-1589738-9       | SSM005L2N               | 4-1589462-8       |
| JTM009PP2DC02.5N        | 3-1589673-3       | JTM025PR2DT002M         | 0-1589738-1       | JTM051PR2DC002N         | 6-1589675-9       | SSM005L82HN             | 0-1589467-4       |
| JTM009PP2DM004N         | 1-1589737-0       | JTM025PR2DT240N         | 3-1589674-9       | JTM051PR2DC003Q         | 2-1589738-3       | SSM005L85HN             | 0-1589468-1       |
| JTM009PP2DT002N         | 3-1589673-4       | JTM025PR2DX0.5N         | 4-1589674-0       | JTM051PR2DC005          | 7-1589675-0       | SSM009B2H               | 0-1589700-4       |
| JTM009PP2DT004N         | 3-1589673-5       | JTM025PR2DX001N         | 2-1589738-7       | JTM051PR2DC006Q         | 2-1589738-4       | SSM009B2N               | 0-1589460-7       |
| JTM009PP2DX006N         | 3-1589673-6       | JTM025PR2DX003N         | 0-1589738-5       | JTM051PR2DC018N         | 0-1589738-7       | SSM009L2                | 2-1589462-2       |
| JTM009PR2DC003Q         | 1-1589738-9       | JTM025PR2DX006Q         | 4-1589674-1       | JTM051PR2DT001N         | 7-1589675-1       | SSM009L2AN              | 2-1589462-3       |
| JTM009PR2DCC50N         | 3-1589673-7       | JTM025PR2DX012N         | 4-1589674-2       | JTM051PR2DX002N         | 7-1589675-2       | SSM009L2AQ              | 2-1589462-4       |
| JTM009PR2DT002M         | 0-1589738-3       | JTM025PR2DX020          | 4-1589674-3       | JTM051PR2GX002          | 7-1589675-3       | SSM009L2HN              | 2-1589462-5       |
| JTM009PR2DX001N         | 2-1589738-5       | JTM037PD2DC002N         | 8-1589674-8       | JTM051PR2GX006Q         | 7-1589675-4       | SSM009L2N               | 2-1589462-6       |
| JTM015PD2DX006N         | 0-1589798-1       | JTM037PD2DC004N         | 8-1589674-9       | JTM051RR2DC003          | 7-1589675-5       | SSM009L2SN              | 2-1589462-7       |
| JTM015PP2DX006N         | 0-1589798-2       | JTM037PD2GX012N         | 9-1589674-0       | JTM065PD2GX022N         | 7-1589699-1       | SSM009L42KN             | 0-1589463-6       |
| JTM015PD2GX012N         | 6-1589673-4       | JTM037PD2GX024N         | 9-1589674-1       | JTM065PP2DC004N         | 1-1589737-2       | SSM009L44KN             | 0-1589463-7       |
| JTM015PP2DC006M         | 6-1589673-5       | JTM037PP0DM006          | 9-1589674-2       | JTM065PP2DX002N         | 0-1589676-1       | SSM009L44N              | 0-1589463-8       |
| JTM015PP2DC012M         | 6-1589673-6       | JTM037PP0DM006N         | 3-1589737-9       | JTM065PP2DX004N         | 0-1589676-2       | SSM009L4AQ              | 2-1589463-7       |
| JTM015PP2DC02.5N        | 6-1589673-7       | JTM037PP2DC018N         | 3-1589737-4       | JTM065PP2DX006N         | 0-1589676-3       | SSM009L4KN              | 0-1589463-9       |
| JTM015PP2DC05.5N        | 4-1589737-4       | JTM037PP2DC024N         | 3-1589737-6       | JTM065PP2DX007N         | 0-1589676-4       | SSM009L85HN             | 0-1589468-2       |
| JTM015PP2DT004N         | 6-1589673-8       | JTM037PP2DC036N         | 3-1589737-8       | JTM065PR2DC001N         | 0-1589676-5       | SSM015B2N               | 1-1589460-3       |
| JTM015PP2DX001N         | 6-1589673-9       | JTM037PP2DC041N         | 5-1589737-1       | JTM065PR2DC003N         | 0-1589676-6       | SSM015B45H              | 0-1589466-1       |
| JTM015PP2DX005Q         | 2-1589737-8       | JTM037PP2DX001.75N      | 9-1589674-3       | JTM065PR2DX001N         | 2-1589738-8       | SSM015H5                | 0-1589819-1       |
| JTM015PP2DX006N         | 7-1589673-0       | JTM037PP2DX001N         | 9-1589674-4       | JTM065PR2DX004N         | 0-1589676-8       | SSM015L2AN              | 2-1589462-8       |
| JTM015PP2DX009N         | 7-1589673-1       | JTM037PP2DX002N         | 0-1589737-9       | JTM065PR2DX004Q         | 1-1589738-8       | SSM015L2AQ              | 2-1589462-9       |
| JTM015PP2DX024N         | 7-1589673-2       | JTM037PP2DX002Q         | 3-1589737-0       |                         |                   |                         |                   |
| JTM015PP2DY003N         | 1-1589737-9       | JTM037PP2DX004N         | 9-1589674-6       |                         |                   |                         |                   |

## Part Number Index Cross Reference (Continued)

| NANONICS<br>Part Number | TE<br>Part Number | NANONICS<br>Part Number | TE<br>Part Number | NANONICS<br>Part Number | TE<br>Part Number | NANONICS<br>Part Number | TE<br>Part Number |
|-------------------------|-------------------|-------------------------|-------------------|-------------------------|-------------------|-------------------------|-------------------|
| SSM015L2CN              | 3-1589462-0       | STL009L44KN             | 9-1589484-3       | STL065L42KN             | 2-1589484-0       | STM015L8HN              | 3-1589486-7       |
| SSM015L2HN              | 3-1589462-1       | STL009L4KN              | 0-1589484-3       | STL065L44N              | 2-1589484-1       | STM025B2N               | 0-1589490-4       |
| SSM015L2N               | 4-1589462-7       | STL009L4N               | 9-1589484-2       | STL065L4CQ              | 2-1589484-2       | STM025B42N              | 0-1589485-5       |
| SSM015L2SN              | 3-1589462-2       | STL015B2N               | 0-1589490-1       | STL065L4KN              | 2-1589484-3       | STM025B44               | 0-1589485-6       |
| SSM015L44KN             | 1-1589463-0       | STL015B44N              | 0-1589485-1       | STL065T5                | 0-1589814-1       | STM025B44N              | 1-1589485-9       |
| SSM015L4KN              | 1-1589463-1       | STL015L23N              | 1-1589483-0       | STM009B2N               | 1-1589490-2       | STM025B44Q              | 1-1589485-7       |
| SSM015L4PQ              | 1-1589463-2       | STL015L2AN              | 1-1589483-1       | STM009B42N              | 0-1589485-3       | STM025H2N               | 0-1589902-2       |
| SSM015L82HN             | 0-1589467-2       | STL015L2AQ              | 1-1589483-2       | STM009B44Q              | 1-1589485-5       | STM025H44N              | 0-1589817-1       |
| SSM015L84HN             | 0-1589467-5       | STL015L2CN              | 1-1589483-3       | STM009H2N               | 0-1589902-4       | STM025H5N               | 0-1589813-2       |
| SSM015L85HN             | 0-1589468-3       | STL015L2HN              | 1-1589483-4       | STM009L23N              | 2-1589483-9       | STM025H5Q               | 0-1589813-3       |
| SSM025B2H               | 0-1589700-5       | STL015L2HQ              | 8-1589483-7       | STM009L2AN              | 9-1589483-9       | STM025L2AN              | 4-1589483-2       |
| SSM025B44N              | 0-1589465-1       | STL015L2N               | 8-1589483-6       | STM009L2AQ              | 8-1589483-2       | STM025L2AQ              | 4-1589483-3       |
| SSM025B45K              | 0-1589466-2       | STL015L423N             | 0-1589484-4       | STM009L2CN              | 7-1589483-8       | STM025L2CN              | 4-1589483-4       |
| SSM025L23N              | 3-1589462-3       | STL015L42KN             | 0-1589484-5       | STM009L2HN              | 3-1589483-0       | STM025L2HN              | 4-1589483-5       |
| SSM025L2AN              | 3-1589462-4       | STL015L44KN             | 0-1589484-6       | STM009L2N               | 3-1589483-1       | STM025L2HQ              | 4-1589483-6       |
| SSM025L2AQ              | 3-1589462-5       | STL015L44N              | 0-1589484-7       | STM009L2SN              | 3-1589483-2       | STM025L2IQ              | 4-1589483-7       |
| SSM025L2GQ              | 4-1589462-9       | STL015L4CQ              | 0-1589484-8       | STM009L42CN             | 8-1589484-1       | STM025L2JN              | 4-1589483-8       |
| SSM025L2HN              | 3-1589462-6       | STL015L4HN              | 0-1589484-9       | STM009L42HN             | 2-1589484-4       | STM025L2N               | 4-1589483-9       |
| SSM025L2N               | 5-1589462-2       | STL015L4KN              | 1-1589484-0       | STM009L42KN             | 2-1589484-5       | STM025L42CN             | 7-1589484-9       |
| SSM025L2SN              | 3-1589462-8       | STL025B2                | 0-1589490-2       | STM009L44HN             | 2-1589484-6       | STM025L42KN             | 4-1589484-0       |
| SSM025L42HN             | 2-1589463-4       | STL025B2N               | 1-1589490-1       | STM009L44PQ             | 2-1589484-7       | STM025L44HM             | 4-1589484-1       |
| SSM025L44HN             | 1-1589463-3       | STL025B44M              | 2-1589485-3       | STM009L44Q              | 2-1589484-8       | STM025L44HN             | 4-1589484-2       |
| SSM025L44KN             | 1-1589463-4       | STL025L2AN              | 1-1589483-5       | STM009L4AQ              | 2-1589484-9       | STM025L44KN             | 4-1589484-3       |
| SSM025L44SN             | 2-1589463-8       | STL025L2AQ              | 1-1589483-6       | STM009L4KN              | 3-1589484-0       | STM025L44N              | 4-1589484-4       |
| SSM025L45KN             | 0-1589464-3       | STL025L2CN              | 8-1589483-9       | STM009L4PQ              | 3-1589484-1       | STM025L44PQ             | 4-1589484-5       |
| SSM025L4HN              | 1-1589463-5       | STL025L2HN              | 1-1589483-7       | STM009L84HN             | 2-1589486-4       | STM025L44Q              | 4-1589484-6       |
| SSM025L4KN              | 1-1589463-6       | STL025L2HQ              | 8-1589483-8       | STM009L8HN              | 1-1589486-7       | STM025L4CN              | 7-1589484-6       |
| SSM025L4PQ              | 1-1589463-7       | STL025L2JN              | 1-1589483-8       | STM015B2N               | 0-1589490-3       | STM025L4KN              | 4-1589484-7       |
| SSM025L4SN              | 1-1589463-8       | STL025L42KN             | 1-1589484-1       | STM015B42N              | 0-1589485-4       | STM025L4LQ              | 4-1589484-8       |
| SSM037B2                | 0-1589460-9       | STL025L44KN             | 9-1589484-4       | STM015H2N               | 0-1589902-3       | STM025L4PN              | 4-1589484-9       |
| SSM037B2H               | 0-1589700-6       | STL025L44N              | 1-1589484-2       | STM015H5Q               | 0-1589813-1       | STM025L4PQ              | 5-1589484-0       |
| SSM037B2N               | 1-1589460-2       | STL025L4HN              | 1-1589484-3       | STM015L23N              | 3-1589483-4       | STM025L4SN              | 5-1589484-1       |
| SSM037L2AQ              | 3-1589462-9       | STL025L4KN              | 1-1589484-4       | STM015L2AQ              | 3-1589483-5       | STM025L82CN             | 2-1589486-9       |
| SSM037L2HN              | 4-1589462-1       | STL025L4PQ              | 8-1589484-6       | STM015L2CN              | 7-1589483-7       | STM025L82HN             | 0-1589486-3       |
| SSM037L2IQ              | 5-1589462-1       | STL037B2M               | 1-1589490-3       | STM015L2HN              | 3-1589483-6       | STM025L84CN             | 3-1589486-3       |
| SSM037L42IQ             | 2-1589463-5       | STL037B42               | 0-1589485-2       | STM015L2HQ              | 3-1589483-7       | STM025L84KN             | 0-1589486-4       |
| SSM037L42KN             | 1-1589463-9       | STL037L23N              | 1-1589483-9       | STM015L2LQ              | 3-1589483-8       | STM025L8HN              | 0-1589486-9       |
| SSM037L4KN              | 2-1589463-0       | STL037L2AN              | 2-1589483-0       | STM015L2N               | 3-1589483-9       | STM037B2H               | 0-1589480-1       |
| SSM037L82AQ             | 0-1589467-6       | STL037L2AQ              | 2-1589483-1       | STM015L2SN              | 4-1589483-0       | STM037B2M               | 1-1589490-4       |
| SSM037L84KN             | 0-1589467-1       | STL037L2HN              | 2-1589483-2       | STM015L42KN             | 3-1589484-2       | STM037B2N               | 0-1589490-5       |
| SSM037L85PQ             | 0-1589468-4       | STL037L2JN              | 2-1589483-3       | STM015L44AQ             | 3-1589484-3       | STM037B4                | 2-1589485-0       |
| SSM051B2H               | 0-1589700-1       | STL037L2KN              | 9-1589483-7       | STM015L44HN             | 3-1589484-4       | STM037B42N              | 0-1589485-8       |
| SSM051L2AQ              | 4-1589462-3       | STL037L2N               | 8-1589483-5       | STM015L44KN             | 3-1589484-5       | STM037B42Q              | 1-1589485-8       |
| SSM051L2GQ              | 5-1589462-0       | STL037L42KN             | 8-1589484-2       | STM015L44Q              | 3-1589484-6       | STM037B4N               | 0-1589485-9       |
| SSM051L2HN              | 4-1589462-4       | STL037L44KN             | 1-1589484-5       | STM015L4HN              | 3-1589484-7       | STM037H2N               | 0-1589902-1       |
| SSM051L2IQ              | 4-1589462-5       | STL037L4HN              | 1-1589484-6       | STM015L4KN              | 3-1589484-8       | STM037L23N              | 5-1589483-2       |
| SSM051L42KN             | 2-1589463-1       | STL051L2AN              | 9-1589483-4       | STM015L4PQ              | 3-1589484-9       | STM037L2AN              | 5-1589483-3       |
| SSM051L44KN             | 2-1589463-2       | STL051L2AQ              | 2-1589483-4       | STM015L4SN              | 8-1589484-8       | STM037L2AQ              | 5-1589483-4       |
| SSM051L4KN              | 2-1589463-3       | STL051L2CN              | 2-1589483-5       | STM015L82CN             | 3-1589486-0       | STM037L2CN              | 8-1589483-1       |
| STL009L23N              | 8-1589483-3       | STL051L2HN              | 2-1589483-6       | STM015L82HN             | 0-1589486-1       | STM037L2HN              | 5-1589483-5       |
| STL009L2AQ              | 9-1589483-2       | STL051L42KN             | 1-1589484-7       | STM015L82IQ             | 1-1589486-3       | STM037L2IQ              | 9-1589483-1       |
| STL009L2H               | 0-1589483-8       | STL051L4HN              | 1-1589484-8       | STM015L82LQ             | 2-1589486-1       | STM037L2KN              | 9-1589483-8       |
| STL009L2HN              | 0-1589483-9       | STL051L4KN              | 1-1589484-9       | STM015L84AQ             | 3-1589486-5       | STM037L2N               | 8-1589483-4       |
| STL009L423N             | 0-1589484-1       | STL051L4PQ              | 8-1589484-7       | STM015L84CN             | 3-1589486-2       | STM037L2SN              | 5-1589483-7       |
| STL009L42CN             | 9-1589484-0       | STL065L2AQ              | 9-1589483-0       | STM015L84HN             | 2-1589486-5       | STM037L2TQ              | 9-1589483-5       |
| STL009L42HN             | 8-1589484-4       | STL065L2HN              | 2-1589483-7       | STM015L84IQ             | 3-1589486-4       | STM037L42AQ             | 9-1589484-7       |
| STL009L42KN             | 0-1589484-2       | STL065L2N               | 2-1589483-8       | STM015L84KN             | 0-1589486-2       | STM037L42HN             | 5-1589484-2       |

## Part Number Index Cross Reference (Continued)

| NANONICS<br>Part Number | TE<br>Part Number | NANONICS<br>Part Number | TE<br>Part Number | NANONICS<br>Part Number | TE<br>Part Number | NANONICS<br>Part Number | TE<br>Part Number |
|-------------------------|-------------------|-------------------------|-------------------|-------------------------|-------------------|-------------------------|-------------------|
| STM037L42K              | 5-1589484-3       | STM065B2H               | 0-1589480-3       | SSM009M5LQ              | 0-1589470-7       | STL037M5Q               | 1-1589488-4       |
| STM037L42KN             | 5-1589484-4       | STM065B2N               | 1-1589490-0       | SSM009M6AQ              | 1-1589469-8       | STL037M6HN              | 6-1589487-6       |
| STM037L42PQ             | 8-1589484-3       | STM065B2Q               | 0-1589490-9       | SSM009M6CN              | 1-1589469-9       | STL037M6SN              | 1-1589487-5       |
| STM037L44DQ             | 8-1589484-0       | STM065B42N              | 1-1589485-1       | SSM009M6DQ              | 2-1589469-0       | STL051M5CN              | 1-1589488-5       |
| STM037L44KN             | 5-1589484-5       | STM065B42Q              | 2-1589485-1       | SSM009M6HN              | 2-1589469-2       | STL051M5KN              | 5-1589488-4       |
| STM037L44N              | 8-1589484-9       | STM065B44               | 1-1589485-2       | SSM009M6SN              | 2-1589469-4       | STL051M6A               | 1-1589487-6       |
| STM037L44PQ             | 5-1589484-6       | STM065B44N              | 1-1589485-6       | SSM015C5N               | 0-1589461-2       | STL051M6AN              | 8-1589487-0       |
| STM037L44Q              | 5-1589484-7       | STM065B44Q              | 1-1589485-3       | SSM015C6N               | 0-1589471-4       | STL051M6HN              | 6-1589487-7       |
| STM037L44SN             | 5-1589484-8       | STM065B4Q               | 1-1589485-4       | SSM015M5CN              | 0-1589470-8       | STL051M6IN              | 8-1589487-1       |
| STM037L4CN              | 7-1589484-7       | STM065L23N              | 7-1589483-0       | SSM015M5LQ              | 0-1589470-9       | STL051M6SN              | 1-1589487-7       |
| STM037L4HN              | 5-1589484-9       | STM065L2AQ              | 7-1589483-1       | SSM015M6HN              | 2-1589469-5       | STL065M5KN              | 5-1589488-3       |
| STM037L4KN              | 6-1589484-0       | STM065L2CN              | 7-1589483-2       | SSM015M6SN              | 2-1589469-6       | STL065M6HN              | 8-1589487-2       |
| STM037L4PQ              | 6-1589484-1       | STM065L2HN              | 7-1589483-3       | SSM025C6Q               | 0-1589471-2       | STL065M6SN              | 1-1589487-8       |
| STM037L4SN              | 9-1589484-6       | STM065L2IQ              | 8-1589483-0       | SSM025M5CN              | 1-1589470-0       | STM009C5N               | 1-1589482-3       |
| STM037L82AQ             | 0-1589486-5       | STM065L2JN              | 7-1589483-4       | SSM025M5HN              | 1-1589470-1       | STM009C5Q               | 1-1589482-5       |
| STM037L82HN             | 1-1589486-2       | STM065L2KN              | 7-1589483-5       | SSM025M5LQ              | 1-1589470-2       | STM009C6N               | 0-1589481-2       |
| STM037L82PQ             | 1-1589486-1       | STM065L42HN             | 7-1589484-2       | SSM025M5N               | 1-1589470-4       | STM009M5AQ              | 5-1589488-8       |
| STM037L84AQ             | 1-1589486-6       | STM065L42KN             | 7-1589484-3       | SSM025M6AQ              | 4-1589469-6       | STM009M5CN              | 1-1589488-6       |
| STM037L84HN             | 2-1589486-7       | STM065L42N              | 7-1589484-4       | SSM025M6DQ              | 2-1589469-7       | STM009M5DQ              | 1-1589488-7       |
| STM037L84N              | 1-1589486-9       | STM065L4KN              | 7-1589484-5       | SSM025M6HN              | 2-1589469-8       | STM009M5HN              | 1-1589488-8       |
| STM037L84PQ             | 3-1589486-6       | STM065L82AQ             | 0-1589486-6       | SSM025M6SN              | 3-1589469-0       | STM009M5LQ              | 1-1589488-9       |
| STM037L84SN             | 3-1589486-8       | STM065L82HN             | 0-1589486-7       | SSM037C5Q               | 0-1589461-4       | STM009M5PQ              | 5-1589488-9       |
| STM037L8HN              | 4-1589486-0       | STM065L82IQ             | 1-1589486-4       | SSM037C6N               | 0-1589471-3       | STM009M5Q               | 2-1589488-0       |
| STM051B2H               | 0-1589480-2       | STM065L82LQ             | 2-1589486-3       | SSM037M6HN              | 3-1589469-2       | STM009M6AN              | 1-1589487-9       |
| STM051B2N               | 0-1589490-6       | STM065L84HN             | 2-1589486-6       | SSM037M6HQ              | 4-1589469-2       | STM009M6AQ              | 5-1589487-6       |
| STM051B2Q               | 0-1589490-8       | STM065L84IQ             | 0-1589486-8       | SSM037M6SN              | 3-1589469-3       | STM009M6CN              | 6-1589487-9       |
| STM051B42N              | 1-1589485-0       | STM065L84N              | 3-1589486-1       | SSM051C5N               | 0-1589461-3       | STM009M6DQ              | 2-1589487-0       |
| STM051B4N               | 2-1589485-2       | STM065L8HN              | 1-1589486-8       | SSM051M5CN              | 1-1589470-3       | STM009M6HN              | 2-1589487-1       |
| STM051H5                | 0-1589813-4       |                         |                   | SSM051M6N               | 4-1589469-4       | STM009M6IQ              | 5-1589487-7       |
| STM051L23N              | 5-1589483-9       | <b>Thru-Hole</b>        |                   | SSM051M6SN              | 3-1589469-4       | STM009M6SN              | 2-1589487-2       |
| STM051L2AQ              | 6-1589483-0       | SSL005M6SN              | 0-1589469-6       | STL009M5CN              | 4-1589488-8       | STM015C5N               | 0-1589482-7       |
| STM051L2CN              | 6-1589483-2       | SSL009M5CN              | 1-1589470-5       | STL009M5KN              | 6-1589488-5       | STM015C6N               | 0-1589481-3       |
| STM051L2HN              | 6-1589483-3       | SSL009M6A               | 3-1589469-5       | STL009M5L               | 0-1589488-7       | STM015M5AN              | 2-1589488-1       |
| STM051L2HQ              | 6-1589483-4       | SSL009M6CN              | 3-1589469-9       | STL009M6CN              | 6-1589487-1       | STM015M5AQ              | 7-1589488-1       |
| STM051L2IQ              | 7-1589483-9       | SSL009M6D               | 0-1589469-7       | STL009M6HN              | 7-1589487-8       | STM015M5CN              | 2-1589488-2       |
| STM051L2JN              | 6-1589483-5       | SSL009M6H               | 0-1589469-8       | STL015C5N               | 0-1589482-6       | STM015M5HN              | 2-1589488-3       |
| STM051L2Q               | 6-1589483-6       | SSL009M6SN              | 0-1589469-9       | STL015M5CN              | 0-1589488-8       | STM015M5KN              | 2-1589488-4       |
| STM051L2SN              | 6-1589483-8       | SSL015M5KN              | 0-1589470-2       | STL015M5KN              | 6-1589488-6       | STM015M5LN              | 2-1589488-5       |
| STM051L2TQ              | 9-1589483-6       | SSL015M6A               | 3-1589469-6       | STL015M5SN              | 5-1589488-1       | STM015M5LQ              | 2-1589488-6       |
| STM051L42HN             | 6-1589484-3       | SSL015M6CN              | 3-1589469-8       | STL015M6CN              | 0-1589487-6       | STM015M5PQ              | 2-1589488-7       |
| STM051L42KN             | 6-1589484-4       | SSL015M6D               | 1-1589469-0       | STL015M6HN              | 6-1589487-4       | STM015M5SN              | 6-1589488-7       |
| STM051L42N              | 6-1589484-5       | SSL015M6N               | 1-1589469-1       | STL015M6KN              | 7-1589487-5       | STM015M6AN              | 2-1589487-3       |
| STM051L44HN             | 6-1589484-6       | SSL015M6SN              | 4-1589469-5       | STL015M6SN              | 0-1589487-7       | STM015M6CN              | 6-1589487-8       |
| STM051L44KN             | 6-1589484-7       | SSL025M5CN              | 0-1589470-3       | STL025C5N               | 0-1589482-1       | STM015M6DQ              | 2-1589487-4       |
| STM051L44PQ             | 6-1589484-8       | SSL025M6A               | 3-1589469-7       | STL025C6N               | 0-1589481-1       | STM015M6HN              | 2-1589487-5       |
| STM051L44Q              | 6-1589484-9       | SSL025M6CN              | 4-1589469-0       | STL025M5                | 1-1589488-0       | STM015M6IQ              | 5-1589487-8       |
| STM051L4CN              | 7-1589484-8       | SSL025M6D               | 1-1589469-2       | STL025M5CN              | 1-1589488-1       | STM015M6N               | 2-1589487-6       |
| STM051L4HN              | 9-1589484-1       | SSL025M6DQ              | 1-1589469-3       | STL025M5KN              | 5-1589488-2       | STM015M6S               | 2-1589487-7       |
| STM051L4KN              | 7-1589484-0       | SSL025M6H               | 1-1589469-4       | STL025M6                | 0-1589487-9       | STM015M6SN              | 2-1589487-8       |
| STM051L4PQ              | 7-1589484-1       | SSL025M6HN              | 1-1589469-5       | STL025M6D               | 6-1589487-3       | STM015M9AN              | 0-1589489-1       |
| STM051L4SN              | 9-1589484-5       | SSL025M6SQ              | 1-1589469-6       | STL025M6DQ              | 1-1589487-0       | STM015M9HN              | 0-1589489-3       |
| STM051L82AQ             | 3-1589486-9       | SSL037M5N               | 0-1589470-4       | STL025M6HN              | 6-1589487-5       | STM025C5N               | 0-1589482-2       |
| STM051L82HN             | 2-1589486-0       | SSL037M6SN              | 4-1589469-1       | STL025M6KN              | 7-1589487-6       | STM025C5Q               | 1-1589482-1       |
| STM051L82IQ             | 1-1589486-5       | SSM005M6SN              | 1-1589469-7       | STL025M6N               | 1-1589487-1       | STM025C6N               | 0-1589481-4       |
| STM051L82LQ             | 2-1589486-2       | SSM009C5Q               | 0-1589461-1       | STL025M6SN              | 1-1589487-2       | STM025M5AQ              | 6-1589488-4       |
| STM051L84HN             | 2-1589486-8       | SSM009C6Q               | 0-1589471-1       | STL037M5CN              | 4-1589488-9       | STM025M5CN              | 2-1589488-8       |
| STM051L8HN              | 1-1589486-0       | SSM009M5CN              | 0-1589470-5       | STL037M5LQ              | 1-1589488-3       | STM025M5HN              | 2-1589488-9       |
|                         |                   | SSM009M5HN              | 0-1589470-6       |                         |                   | STM025M5LQ              | 3-1589488-0       |

## Part Number Index Cross Reference (Continued)

| NANONICS<br>Part Number | TE<br>Part Number |
|-------------------------|-------------------|
| STM025M5PQ              | 3-1589488-1       |
| STM025M5SN              | 3-1589488-2       |
| STM025M6AN              | 2-1589487-9       |
| STM025M6CN              | 3-1589487-0       |
| STM025M6DQ              | 3-1589487-1       |
| STM025M6HN              | 3-1589487-2       |
| STM025M6IQ              | 5-1589487-9       |
| STM025M6N               | 3-1589487-3       |
| STM025M6Q               | 3-1589487-4       |
| STM025M6SN              | 3-1589487-5       |
| STM025M9AN              | 0-1589489-2       |
| STM025M9HN              | 0-1589489-4       |
| STM037C5                | 0-1589482-9       |
| STM037C5N               | 1-1589482-6       |
| STM037C5Q               | 1-1589482-2       |
| STM037C6N               | 0-1589481-5       |
| STM037C6Q               | 0-1589481-9       |
| STM037M5AN              | 3-1589488-3       |
| STM037M5AQ              | 5-1589488-7       |
| STM037M5CN              | 3-1589488-4       |
| STM037M5HN              | 3-1589488-5       |
| STM037M5N               | 3-1589488-6       |
| STM037M5PQ              | 3-1589488-7       |
| STM037M5SN              | 3-1589488-8       |
| STM037M6AN              | 3-1589487-6       |
| STM037M6AQ              | 3-1589487-7       |
| STM037M6CN              | 7-1589487-9       |
| STM037M6DN              | 3-1589487-8       |
| STM037M6DQ              | 3-1589487-9       |
| STM037M6HN              | 4-1589487-0       |
| STM037M6IQ              | 6-1589487-0       |
| STM037M6SN              | 4-1589487-1       |
| STM037M6SQ              | 4-1589487-2       |
| STM051C5                | 1-1589482-0       |
| STM051C5N               | 0-1589482-3       |
| STM051C5Q               | 0-1589482-4       |
| STM051C6N               | 0-1589481-6       |
| STM051M5AQ              | 3-1589488-9       |
| STM051M5CN              | 4-1589488-0       |
| STM051M5DQ              | 4-1589488-1       |
| STM051M5LQ              | 4-1589488-2       |
| STM051M5PQ              | 4-1589488-3       |
| STM051M5SN              | 6-1589488-8       |
| STM051M6CN              | 4-1589487-3       |
| STM051M6DQ              | 4-1589487-4       |
| STM051M6HN              | 4-1589487-5       |
| STM051M6N               | 7-1589487-2       |
| STM051M6PQ              | 4-1589487-6       |
| STM051M6SN              | 4-1589487-7       |
| STM051M6SQ              | 4-1589487-8       |
| STM065C5M               | 0-1589482-8       |
| STM065C5N               | 1-1589482-4       |
| STM065C5Q               | 0-1589482-5       |
| STM065C6                | 0-1589481-7       |
| STM065C6N               | 0-1589481-8       |
| STM065M5AQ              | 7-1589488-0       |
| STM065M5CN              | 4-1589488-4       |

| NANONICS<br>Part Number | TE<br>Part Number |
|-------------------------|-------------------|
| STM065M5FN              | 5-1589488-5       |
| STM065M5HN              | 5-1589488-0       |
| STM065M5IQ              | 7-1589488-2       |
| STM065M5LQ              | 4-1589488-6       |
| STM065M5N               | 4-1589488-7       |
| STM065M5SN              | 6-1589488-9       |
| STM065M6                | 5-1589487-0       |
| STM065M6AQ              | 7-1589487-3       |
| STM065M6CN              | 5-1589487-1       |
| STM065M6HN              | 5-1589487-3       |
| STM065M6KN              | 6-1589487-2       |
| STM065M6SN              | 5-1589487-4       |

### Flex Termination "Duckbill"

|                 |             |
|-----------------|-------------|
| STL00911378PC   | 0-1589066-3 |
| STL00911378PCN  | 0-1589066-4 |
| STL00911378SCN  | 0-1589067-1 |
| STL01511378PCN  | 0-1589066-5 |
| STL02511378PCN  | 0-1589066-6 |
| STL02511378SCN  | 0-1589067-2 |
| STL03711378PC   | 2-1589066-4 |
| STL03711378PCN  | 0-1589066-7 |
| STL05111378PCN  | 0-1589066-8 |
| STL05111378SCHN | 0-1589067-3 |
| STL06511378PC   | 0-1589066-9 |
| STL06511378PCN  | 1-1589066-0 |
| STL06511378SCN  | 0-1589067-4 |
| STM00911378PCN  | 1-1589066-1 |
| STM00911378SCN  | 0-1589067-6 |
| STM01511378PCN  | 2-1589066-3 |
| STM01511378SCN  | 0-1589067-7 |
| STM02511378PC   | 1-1589066-2 |
| STM02511378PCN  | 1-1589066-3 |
| STM02511378SCN  | 0-1589067-8 |
| STM03711378PCN  | 1-1589066-4 |
| STM03711378PCQ  | 1-1589066-5 |
| STM03711378SCN  | 1-1589067-2 |
| STM05111378PC   | 1-1589066-6 |
| STM05111378PCM  | 1-1589066-7 |
| STM05111378PCN  | 1-1589066-8 |
| STM05111378PCQ  | 1-1589066-9 |
| STM05111378SCN  | 0-1589067-9 |
| STM06511378PC   | 2-1589066-2 |
| STM06511378PCN  | 2-1589066-0 |
| STM06511378PCQ  | 2-1589066-1 |
| STM06511378SCN  | 1-1589067-0 |

| NANONICS<br>Part Number       | TE<br>Part Number |
|-------------------------------|-------------------|
| <b>Solder Cup Termination</b> |                   |
| SSL00511500PCN                | 0-1589051-1       |
| SSL00511500SCN                | 0-1589052-1       |
| SSL00911500PC                 | 0-1589051-2       |
| SSL00911500PCN                | 0-1589051-3       |
| SSL00911500SCN                | 0-1589052-2       |
| SSL01511500PCM                | 0-1589051-4       |
| SSL01511500PCN                | 0-1589051-5       |
| SSL01511500SCN                | 0-1589052-3       |
| SSM00511500PC                 | 1-1589051-4       |
| SSM00511500PCH                | 0-1589051-6       |
| SSM00511500PCN                | 0-1589051-7       |
| SSM00511500SCN                | 0-1589052-4       |
| SSM00911500PC                 | 0-1589051-8       |
| SSM00911500PCN                | 0-1589051-9       |
| SSM00911500SCN                | 1-1589052-1       |
| SSM01511500PCN                | 1-1589051-0       |
| SSM01511500SC                 | 0-1589052-5       |
| SSM01511500SCN                | 1-1589052-0       |
| SSM02511500SCQ                | 0-1589052-7       |
| SSM03711500PC                 | 1-1589051-1       |
| SSM03711500PCN                | 1-1589051-2       |
| SSM05111500PCN                | 1-1589051-3       |
| SSM05111500SCN                | 0-1589052-8       |
| STL00911500PC                 | 2-1589053-2       |
| STL00911500PCN                | 0-1589053-1       |
| STL00911500SCN                | 0-1589054-1       |
| STL01511500PC                 | 2-1589053-1       |
| STL01511500PCN                | 0-1589053-2       |
| STL01511500SCN                | 0-1589054-2       |
| STL02511500PC                 | 0-1589053-3       |
| STL02511500PCN                | 0-1589053-4       |
| STL02511500SC                 | 0-1589054-3       |
| STL03711500PCN                | 0-1589053-5       |
| STL03711500SCN                | 0-1589054-4       |
| STL05111500PCN                | 0-1589053-6       |
| STL06511500PCN                | 1-1589053-8       |
| STM00911500PCN                | 0-1589053-7       |
| STM00911500SCN                | 0-1589054-5       |
| STM01511500PCN                | 0-1589053-8       |
| STM01511500PCQ                | 0-1589053-9       |
| STM01511500SCHN               | 0-1589054-6       |
| STM01511500SCN                | 0-1589054-7       |
| STM01511500SCQ                | 1-1589054-4       |
| STM02511500PC                 | 1-1589053-0       |
| STM02511500PCN                | 1-1589053-1       |
| STM02511500PCQ                | 2-1589053-3       |
| STM02511500SC                 | 0-1589054-8       |
| STM02511500SCN                | 0-1589054-9       |
| STM03711500PCN                | 1-1589053-2       |
| STM03711500PCQ                | 1-1589053-3       |
| STM03711500SCN                | 1-1589054-0       |
| STM05111500PCN                | 1-1589053-4       |
| STM05111500PCQ                | 1-1589053-5       |
| STM05111500SCN                | 1-1589054-1       |
| STM05111500SCQ                | 1-1589054-5       |
| STM06511500PC                 | 1-1589053-6       |

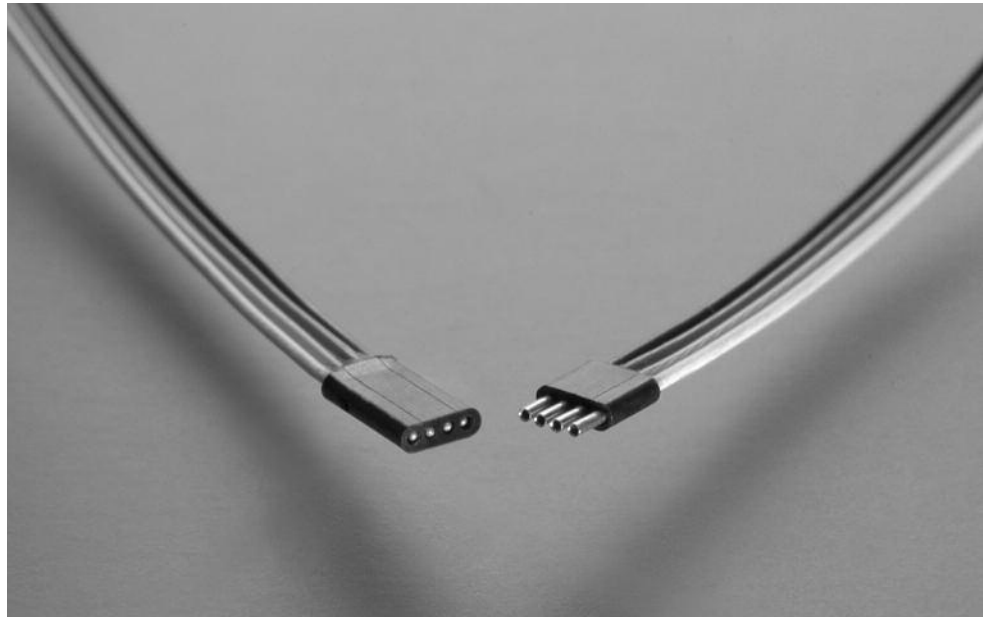
| NANONICS<br>Part Number | TE<br>Part Number |
|-------------------------|-------------------|
| STM06511500PCN          | 1-1589053-7       |
| STM06511500SCN          | 1-1589054-2       |
| STM06511500SCQ          | 1-1589054-6       |

### Panel Mount

| NANONICS<br>Part Number | TE<br>Part Number |
|-------------------------|-------------------|
| PSM005SC2DC024N         | 0-1589851-2       |
| PSM009SC2DC060N         | 0-1589851-1       |
| PTM009SC2DC060N         | 0-1589050-7       |
| PTM015SC2DC024N         | 0-1589050-4       |
| PTM015SC2DC060N         | 0-1589050-5       |
| PTM025SC2DC060N         | 0-1589050-6       |
| PTM037SC2DC018N         | 0-1589050-3       |
| PTM065SC2DC018N         | 0-1589050-2       |



## NANONICS Strip Connectors Introduction



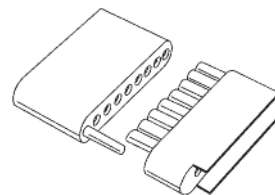
The NANONICS strip connectors are the smallest connectors in the NANONICS product line. They are molded from LCP and are ideal for applications where the height and weight of the connector is a serious design parameter. Just .040" in height, these

connectors are well suited for low-profile applications. Standard sizes are 4, 9, and 15, while 25, 37, and 51 are also available upon request. Standard configurations include wired, surface mount, or thru-hole terminations.

Guide pins are available for polarization. Harness assemblies and custom configurations can also be accommodated.

### Polarization

Polarization of the strips is accomplished with the use of optional polarizing guide posts.

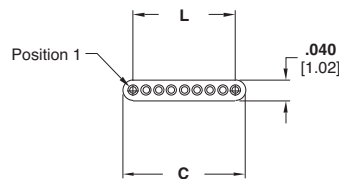
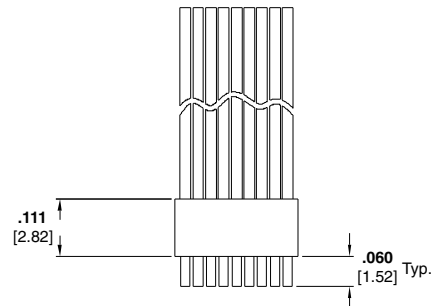
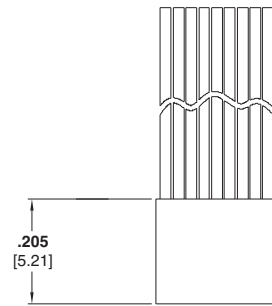


Polarization Position  
"T" Shown

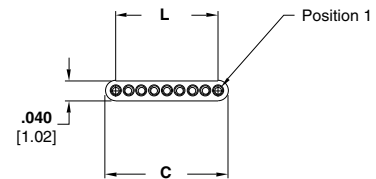
## NANONICS Wired Connectors — Unshrouded, Flying Leads

### Product Facts

- Plastic Shell
- Standard Sizes: 4, 9, 15, 25, 37 and 51
- Polarization positions are optional
- Factory wired to your specifications
- Contact TE Connectivity for custom configurations



**Plug Assembly**  
Drawing Number 1589448



**Receptacle Assembly**  
Drawing Number 1589449

| Size | Dimensions    |               |
|------|---------------|---------------|
|      | C             | L             |
| 4    | 0.115 [2.92]  | 0.075 [1.91]  |
| 9    | 0.240 [6.10]  | 0.200 [5.08]  |
| 15   | 0.390 [9.91]  | 0.350 [8.89]  |
| 25   | 0.640 [16.26] | 0.600 [15.24] |
| 37   | 0.940 [23.88] | 0.900 [22.86] |
| 51   | 1.290 [32.77] | 1.250 [31.75] |



## Part Numbering Guideline for NANONICS Strip Wired Connectors

### Strip Connectors - Wire Terminations

| Class/Row/Type                                                                                                                   | USS | XXX | XX | X | XX | XXX | X                                                                                                                                                                                                                                                                               |
|----------------------------------------------------------------------------------------------------------------------------------|-----|-----|----|---|----|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| USS Unshrouded, 1 row, strip                                                                                                     |     |     |    |   |    |     | <b>Polarization (optional)</b><br>Plug contains guide post<br>Receptacle accepts guide post                                                                                                                                                                                     |
| <b>Positions</b>                                                                                                                 |     |     |    |   |    |     | <b>Conductor Length</b><br>XXX Three numbers only, length is in inches ( i.e. 012 = twelve inches)<br>CXX A "C" followed by two numbers, length is in centimeters ( i.e. C06 = 6 centimeters)<br>MXX An "M" followed by two numbers, length is in meters ( i.e. M02 = 2 meters) |
| 004 4 Position<br>009 9 Position<br>015 15 Position<br>025 25 Position                                                           |     |     |    |   |    |     | <b>Conductor Type</b><br>DX White PTFE<br>DC Color Coded PTFE<br>DM Color Coded PTFE per MIL-STD-681<br>DT White Tefzel per M22759/33                                                                                                                                           |
| <b>Configuration</b><br>PC Plug<br>SC Receptacle                                                                                 |     |     |    |   |    |     |                                                                                                                                                                                                                                                                                 |
| <b>Conductor Size/Strands</b><br>0 28 AWG Solid<br>1 30 AWG Solid<br>2 30 AWG 7 Strand<br>3 32 AWG 7 Strand<br>4 34 AWG 7 Strand |     |     |    |   |    |     |                                                                                                                                                                                                                                                                                 |

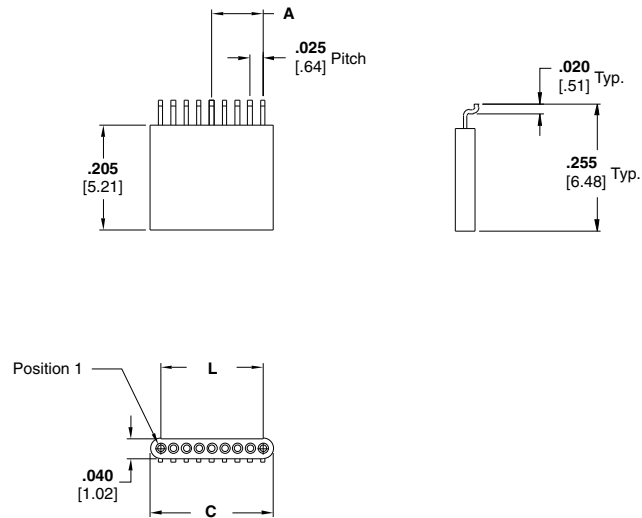
### Polarization (Strip Type Only)

|             |                                                                                     |
|-------------|-------------------------------------------------------------------------------------|
| T = One Pin |  |
| U = One Pin |  |
| V = One Pin |  |
| W = Two Pin |  |
| Y = Two Pin |  |
| Z = Two Pin |  |

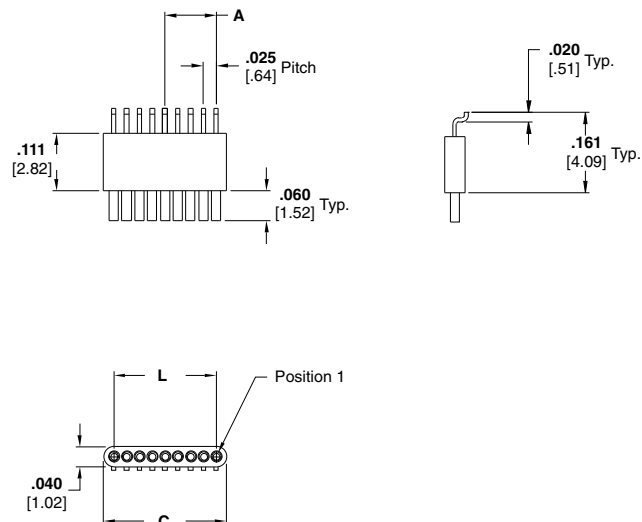
## NANONICS Surface Mount Connectors — Unshrouded

### Product Facts

- Plastic Shell
- Standard Sizes: 4, 9, 15, 25, 37 and 51
- Polarization positions are optional
- Contact TE Connectivity for custom configurations
- Suggested Pad Layouts are available on the referenced drawings on the TE website



Plug Assembly  
Drawing Number 1589451



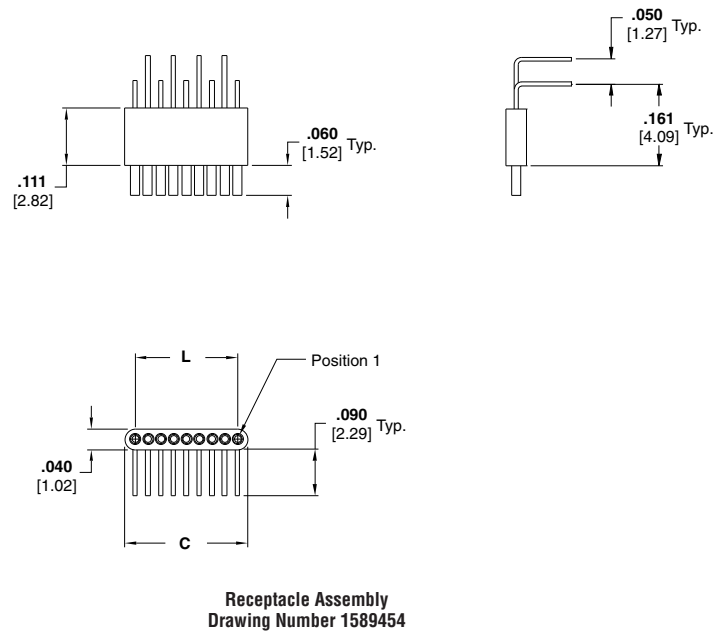
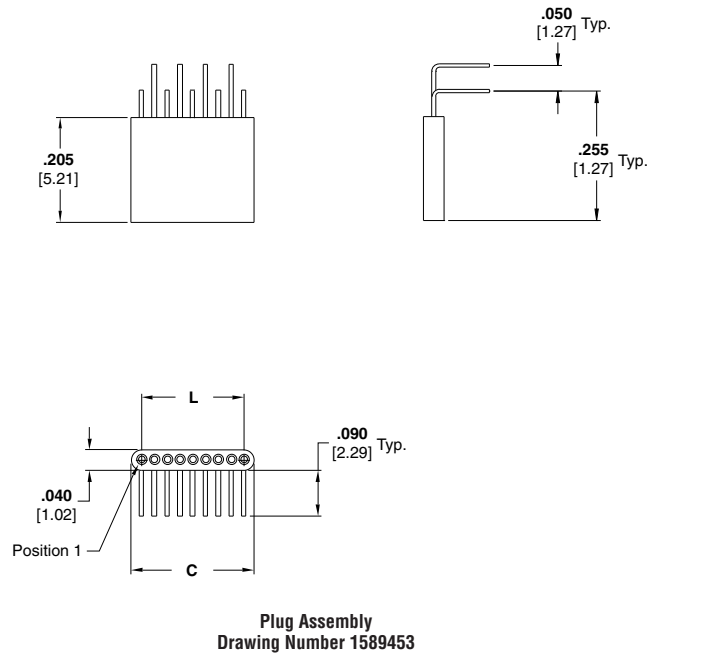
Receptacle Assembly  
Drawing Number 1589452

| Size | Dimensions     |               |               |
|------|----------------|---------------|---------------|
|      | A              | C             | L             |
| 4    | 0.0375 [ .95]  | 0.115 [2.92]  | 0.075 [1.91]  |
| 9    | 0.1000 [2.54]  | 0.240 [6.10]  | 0.200 [5.08]  |
| 15   | 0.1750 [4.45]  | 0.390 [9.91]  | 0.350 [8.89]  |
| 25   | 0.3000 [7.62]  | 0.640 [16.26] | 0.600 [15.24] |
| 37   | 0.4500 [11.43] | 0.940 [23.88] | 0.900 [22.86] |
| 51   | 0.6250 [15.88] | 1.290 [32.77] | 1.250 [31.75] |

## NANONICS Thru-Hole Connectors — Unshrouded, Horizontal, 1 Row to 2 Row, .050 Spacing

### Product Facts

- Plastic Shell
- Standard Sizes: 4, 9, 15, 25, 37 and 51
- Polarization positions are optional
- Contact TE Connectivity for custom configurations
- Suggested Thru-Hole Layouts are available on the referenced drawings on the TE website



| Size | Dimensions    |               |
|------|---------------|---------------|
|      | C             | L             |
| 4    | 0.115 [2.92]  | 0.075 [1.91]  |
| 9    | 0.240 [6.10]  | 0.200 [5.08]  |
| 15   | 0.390 [9.91]  | 0.350 [8.89]  |
| 25   | 0.640 [16.26] | 0.600 [15.24] |
| 37   | 0.940 [23.88] | 0.900 [22.86] |
| 51   | 1.290 [32.77] | 1.250 [31.75] |

## Part Numbering Guideline for NANONICS Surface Mount and Thru-Hole Termination

### Strip Connectors - Surface Mount and Thru-Hole Terminations

| Class/Row/Type               | USS | XXX | XX | X                                                                                           |
|------------------------------|-----|-----|----|---------------------------------------------------------------------------------------------|
| USS Unshrouded, 1 row, strip |     |     |    | <b>Polarization (optional)</b><br>Plug contains guide post<br>Receptacle accepts guide post |
| <b>Positions</b>             |     |     |    | <b>Configuration</b>                                                                        |
| 004 4 Position               |     |     |    | B2 Plug, Horizontal SMT                                                                     |
| 009 9 Position               |     |     |    | L2 Receptacle, Horizontal SMT                                                               |
| 015 15 Position              |     |     |    | C6 Plug, Horizontal Mount, Thru-Hole                                                        |
| 025 25 Position              |     |     |    | M6 Receptacle, Horizontal Mount, Thru-Hole                                                  |

#### Polarization (Strip Type Only)

|             |                                                                                     |
|-------------|-------------------------------------------------------------------------------------|
| T = One Pin |    |
| U = One Pin |    |
| V = One Pin |    |
| W = Two Pin |   |
| Y = Two Pin |  |
| Z = Two Pin |  |

## Part Number Index Cross Reference

| NANONICS<br>Part Number  | TE<br>Part Number | NANONICS<br>Part Number | TE<br>Part Number | NANONICS<br>Part Number | TE<br>Part Number | NANONICS<br>Part Number | TE<br>Part Number |
|--------------------------|-------------------|-------------------------|-------------------|-------------------------|-------------------|-------------------------|-------------------|
| <b>Wire Terminations</b> |                   | USS004SC3DC018          | 1-1589449-8       | USS009SC3DC036          | 7-1589449-6       | <b>Surface Mount</b>    |                   |
| USS004PC2DC003           | 0-1589448-1       | USS004SC3DX004T         | 1-1589449-9       | USS009SC3DX004T         | 4-1589449-4       | USS004B2                | 0-1589451-1       |
| USS004PC2DC006           | 0-1589448-2       | USS004SC4DXC30          | 8-1589449-2       | USS015PC1DC036T         | 7-1589448-3       | USS004B2T               | 0-1589451-2       |
| USS004PC2DC006T          | 5-1589448-5       | USS009PC0DC006T         | 1-1589448-6       | USS015PC1DC036W         | 7-1589448-4       | USS004B4                | 0-1589775-1       |
| USS004PC2DC008           | 6-1589448-8       | USS009PC2DC006          | 1-1589448-7       | USS015PC2DC006          | 3-1589448-5       | USS004B45T              | 0-1589450-1       |
| USS004PC2DC012           | 0-1589448-3       | USS009PC2DC006W         | 1-1589448-8       | USS015PC2DC012          | 3-1589448-6       | USS004B4T               | 3-1589683-2       |
| USS004PC2DC012T          | 0-1589448-4       | USS009PC2DC008U         | 5-1589448-2       | USS015PC2DC012T         | 3-1589448-7       | USS004L2                | 0-1589452-1       |
| USS004PC2DC012U          | 0-1589448-5       | USS009PC2DC012          | 1-1589448-9       | USS015PC2DC012V         | 3-1589448-8       | USS004L2T               | 0-1589452-2       |
| USS004PC2DC024           | 0-1589448-6       | USS009PC2DC012T         | 2-1589448-0       | USS015PC2DC018          | 3-1589448-9       | USS009B2                | 0-1589451-3       |
| USS004PC2DC036           | 0-1589448-7       | USS009PC2DC012V         | 2-1589448-1       | USS015PC2DC018V         | 5-1589448-6       | USS009B2T               | 0-1589451-5       |
| USS004PC2DC036T          | 0-1589448-8       | USS009PC2DC018V         | 2-1589448-2       | USS015PC2DMC60T         | 4-1589448-0       | USS009B2TE              | 1-1589451-5       |
| USS004PC2DCC20T          | 5-1589448-9       | USS009PC2DC024          | 2-1589448-3       | USS015PC2DX004T         | 4-1589448-1       | USS009B2Z               | 0-1589451-6       |
| USS004PC2DCC30           | 0-1589448-9       | USS009PC2DC036          | 2-1589448-4       | USS015PC2DX012          | 4-1589448-2       | USS009B43T              | 5-1589683-6       |
| USS004PC2DCM01           | 5-1589448-7       | USS009PC2DC036T         | 2-1589448-5       | USS015PC2DX024T         | 4-1589448-3       | USS009B4T               | 5-1589683-7       |
| USS004PC2DM012T          | 7-1589448-2       | USS009PC2DC036U         | 2-1589448-6       | USS015PC3DC036          | 6-1589448-6       | USS009L2                | 0-1589452-3       |
| USS004PC2DM024T          | 7-1589448-6       | USS009PC2DC036V         | 2-1589448-7       | USS015SC1DC036T         | 8-1589449-6       | USS009L2T               | 0-1589452-4       |
| USS004PC2DMC30           | 6-1589448-9       | USS009PC2DCC05T         | 2-1589448-8       | USS015SC1DC036W         | 8-1589449-7       | USS009L2U               | 0-1589452-5       |
| USS004PC2DMC40           | 7-1589448-1       | USS009PC2DCM01          | 5-1589448-8       | USS015SC2DC006          | 4-1589449-6       | USS009L2V               | 0-1589452-6       |
| USS004PC2DMC50           | 6-1589448-7       | USS009PC2DM012T         | 7-1589448-5       | USS015SC2DC012          | 4-1589449-7       | USS015B2                | 0-1589451-8       |
| USS004PC2DMM01           | 6-1589448-0       | USS009PC2DM024T         | 7-1589448-7       | USS015SC2DC012T         | 4-1589449-8       | USS015B2T               | 0-1589451-9       |
| USS004PC2DMM02           | 6-1589448-1       | USS009PC2DX001          | 2-1589448-9       | USS015SC2DC018V         | 6-1589449-4       | USS015B4T               | 7-1589683-6       |
| USS004PC2DNC40           | 1-1589448-0       | USS009PC2DX004T         | 3-1589448-0       | USS015SC2DC024T         | 6-1589449-1       | USS015L2                | 0-1589452-7       |
| USS004PC2DX006           | 1-1589448-1       | USS009PC2DX006T         | 3-1589448-1       | USS015SC2DC036          | 7-1589449-8       | USS015L2T               | 0-1589452-8       |
| USS004PC2DX012           | 1-1589448-2       | USS009PC2DX012          | 3-1589448-2       | USS015SC2DC036T         | 4-1589449-9       | USS015L2V               | 0-1589452-9       |
| USS004PC2GX006           | 1-1589448-3       | USS009PC2GX006          | 3-1589448-3       | USS015SC2DMC60T         | 5-1589449-0       | USS025B2                | 1-1589451-0       |
| USS004PC2GX024           | 1-1589448-4       | USS009PC2GX012          | 3-1589448-4       | USS015SC2DX004T         | 5-1589449-1       | USS025B4T               | 8-1589683-6       |
| USS004PC3DC018           | 1-1589448-5       | USS009PC3DC036          | 6-1589448-5       | USS015SC2DX006T         | 6-1589449-5       | USS025L2                | 1-1589452-0       |
| USS004PC4DXC10           | 7-1589448-0       | USS009SC0DC006T         | 7-1589449-0       | USS015SC2DX018T         | 5-1589449-2       | USS025L4T               | 8-1589683-7       |
| USS004SC2DC002           | 0-1589449-1       | USS009SC2DC004          | 2-1589449-0       | USS015SC3DC036          | 7-1589449-7       | USS037B2                | 1-1589451-1       |
| USS004SC2DC003           | 0-1589449-2       | USS009SC2DC006          | 2-1589449-1       | USS015SC3DX004T         | 5-1589449-3       | USS037B2T               | 1-1589451-4       |
| USS004SC2DC003T          | 0-1589449-3       | USS009SC2DC006W         | 2-1589449-2       | USS025PC2DC006          | 4-1589448-4       | USS037L2                | 1-1589452-1       |
| USS004SC2DC004           | 0-1589449-4       | USS009SC2DC006Z         | 2-1589449-3       | USS025PC2DC012          | 6-1589448-2       | USS037L2T               | 1-1589452-2       |
| USS004SC2DC006           | 0-1589449-5       | USS009SC2DC008          | 2-1589449-4       | USS025PC2DT006T         | 5-1589448-3       | USS051B2                | 1-1589451-3       |
| USS004SC2DC006T          | 6-1589449-2       | USS009SC2DC012          | 2-1589449-5       | USS025PC2DX018T         | 4-1589448-5       | USS051L2                | 1-1589452-3       |
| USS004SC2DC008           | 8-1589449-0       | USS009SC2DC012T         | 2-1589449-6       | USS025SC2DC006          | 5-1589449-4       | <b>Thru-Hole</b>        |                   |
| USS004SC2DC012           | 0-1589449-6       | USS009SC2DC012Z         | 2-1589449-7       | USS025SC2DC012          | 7-1589449-4       | USS004C6                | 0-1589453-1       |
| USS004SC2DC012T          | 0-1589449-7       | USS009SC2DC018          | 2-1589449-8       | USS025SC2DT006T         | 5-1589449-9       | USS004C6T               | 0-1589453-6       |
| USS004SC2DC012U          | 0-1589449-8       | USS009SC2DC018T         | 2-1589449-9       | USS037PC1DXC20          | 4-1589448-6       | USS004M6                | 0-1589454-1       |
| USS004SC2DC024           | 0-1589449-9       | USS009SC2DC018V         | 6-1589449-3       | USS037PC2DC006          | 4-1589448-7       | USS009C6                | 0-1589453-2       |
| USS004SC2DC036           | 1-1589449-0       | USS009SC2DC024          | 3-1589449-0       | USS037PC2DC012          | 6-1589448-4       | USS009C6T               | 0-1589453-3       |
| USS004SC2DC048           | 1-1589449-1       | USS009SC2DC025T         | 3-1589449-1       | USS037PC2DC020T         | 4-1589448-8       | USS009C6V               | 0-1589453-4       |
| USS004SC2DCC20T          | 7-1589449-1       | USS009SC2DC036T         | 3-1589449-2       | USS037PC2DNC50          | 4-1589448-9       | USS009M6                | 0-1589454-2       |
| USS004SC2DCC30           | 1-1589449-2       | USS009SC2DC036U         | 3-1589449-3       | USS037PC2DT006T         | 5-1589448-4       | USS015C6                | 0-1589453-5       |
| USS004SC2DCM01           | 6-1589449-7       | USS009SC2DC036V         | 3-1589449-4       | USS037SC1DXC20          | 5-1589449-5       |                         |                   |
| USS004SC2DM012T          | 8-1589449-4       | USS009SC2DC036W         | 3-1589449-5       | USS037SC1DY006          | 6-1589449-6       |                         |                   |
| USS004SC2DM024T          | 8-1589449-9       | USS009SC2DC060T         | 3-1589449-6       | USS037SC2DC006          | 5-1589449-6       |                         |                   |
| USS004SC2DMC30           | 8-1589449-1       | USS009SC2DCC05T         | 3-1589449-7       | USS037SC2DC012          | 7-1589449-5       |                         |                   |
| USS004SC2DMC40           | 8-1589449-3       | USS009SC2DCM01          | 6-1589449-8       | USS037SC2DC036T         | 6-1589449-9       |                         |                   |
| USS004SC2DMC50           | 7-1589449-9       | USS009SC2DCM01T         | 3-1589449-8       | USS037SC2DT006T         | 6-1589449-0       |                         |                   |
| USS004SC2DMM01           | 7-1589449-2       | USS009SC2DM012T         | 8-1589449-8       | USS037SC2DX006T         | 5-1589449-7       |                         |                   |
| USS004SC2DMM02           | 7-1589449-3       | USS009SC2DM024T         | 9-1589449-0       | USS051PC2DC012          | 5-1589448-0       |                         |                   |
| USS004SC2DNC40           | 1-1589449-3       | USS009SC2DT012T         | 9-1589449-1       | USS051PC2DX012          | 5-1589448-1       |                         |                   |
| USS004SC2DTC20T          | 8-1589449-5       | USS009SC2DX004T         | 3-1589449-9       | USS051SC2DC012          | 5-1589449-8       |                         |                   |
| USS004SC2DX006           | 1-1589449-4       | USS009SC2DX006T         | 4-1589449-0       |                         |                   |                         |                   |
| USS004SC2DX012T          | 1-1589449-5       | USS009SC2DX012          | 4-1589449-1       |                         |                   |                         |                   |
| USS004SC2GX006           | 1-1589449-6       | USS009SC2GX006          | 4-1589449-2       |                         |                   |                         |                   |
| USS004SC2GX024           | 1-1589449-7       | USS009SC2GX012          | 4-1589449-3       |                         |                   |                         |                   |

---

**MICRODOT Microminiature Connectors Introduction**

---

MICRODOT Connector products have a sixty-year heritage of leadership in precision design and manufacturing of innovative interconnects. These products offer interconnect solutions for a broad range of applications in the Military, Aerospace, Marine, and Space Industries.

The MICRODOT reputation for hands-on experience and outstanding technical support is now enhanced as part of TE Connectivity Corporation.

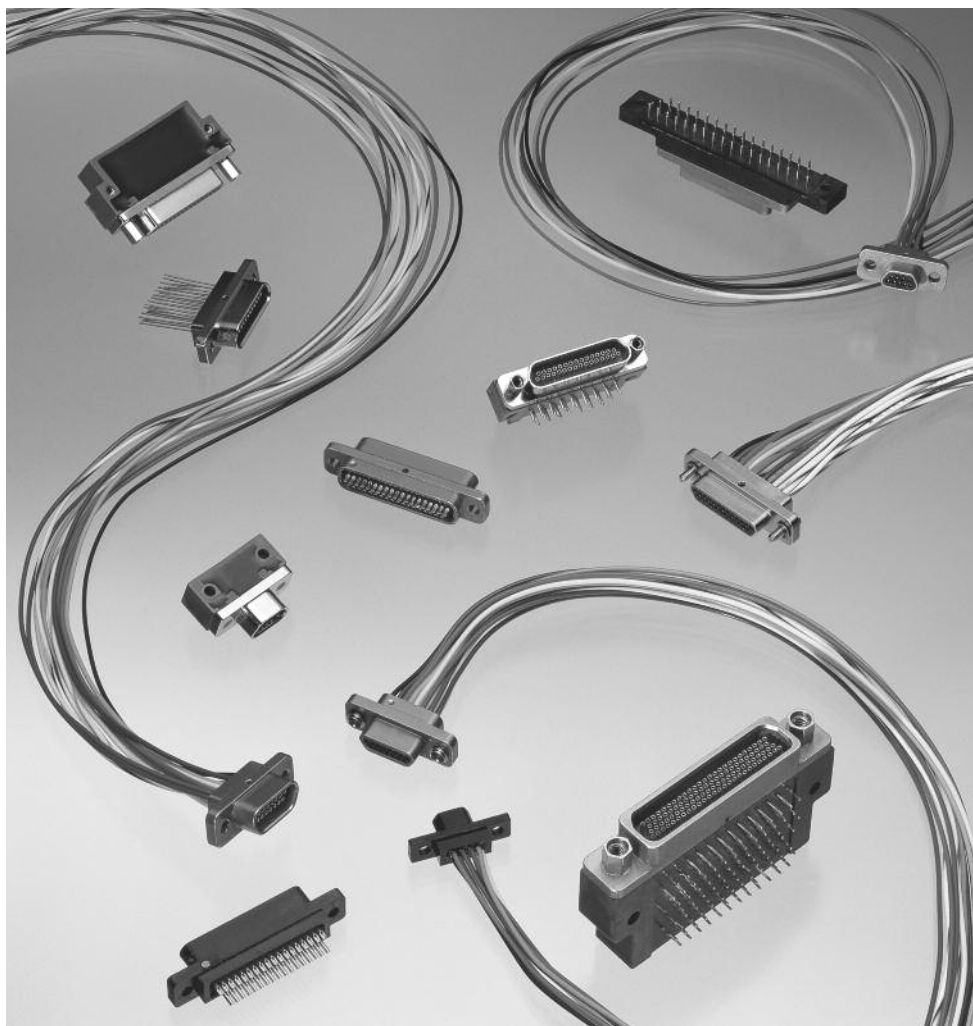
From standard Mil-Spec configurations to custom designs, we have the Micro-D, subminiature and ultra-miniature coaxial, and cylindrical connectors

to meet your need, whether it is build-to-print assemblies, or total turn-key assembly program management. MICRODOT connectors have met the rigorous demands imposed in manned space flight, military and commercial satellites, and geo-physical exploration.

## MICRODOT Microminiature D Connectors Introduction

### Product Facts

- Designed for both military and commercial applications
- Low engaging force is achieved by the manner in which Twist Pin Contacts are designed
- The metal shell and plastic shell are available with solder cup and solid or stranded wire terminations
- Mating force maximum is 10 oz. [2.78N] times the number of contacts
- Durability — No known mechanical or electrical issues detrimental to the function of the connectors after 500 cycles of mating and unmating
- Current Rating — 3 amps max per contact



MICRODOT Connectors MCK and MCD High Density Microminiature "D" Connectors described in this catalog comprise a complete connector system, which is adaptable to a numerous variety of form factors. Low engaging force is achieved by the manner in which the twist pin contacts are designed. By constructing the male contact as a breathing helical spring, electrical contact is achieved at many points around the periphery of the pin bundle rather than at a few discrete

points, as in conventional pin designs. Normal twist pin engagement force is 6 oz. [1.67N] typically and 8 oz. [2.22N] maximum. The low force twist pins exhibit an engaging force of 4 oz. [1.11N] typically and 5 oz. [1.39N] maximum.

The MCK and MCD Series of connectors featured in this catalog are designed to meet the applicable requirements of MIL-DTL-83513, for intermateability, interchangeability, and performance. Designed for both military and commercial applications, the MCK's

and MCD's are especially well suited for use in miniaturized airborne and space electronics, computers, and test equipment. The metal shell MCK's and plastic shell MCD's are available with solder cup, and solid or stranded wire terminations. MCK transition blocks are standard for printed circuit board mounting. Custom termination configurations for both MCK and MCD can be accommodated. Micro D's are also supplied in wired harness assemblies.



## MICRODOT MCK/MCD/MCDM Series Metal and Plastic Shell Connectors

### Technical and Performance Data

(Applicable to MCK, MCD and MCDM unless otherwise noted)

#### Electrical

**Contacts** — Pin 24 AWG twist pin, Socket 24 AWG precision machined barrel or Stamped and Formed 24 AWG Pin and Socket. Wire Range 24 AWG to 30 AWG solid and stranded.

**Contact Resistance** — (voltage drop) 25 millivolts max. at 3 amps, 77°± 7.4°F [25°± 3° C].

**Current Rating** — 3 amps max. per contact.

**Dielectric Withstanding Voltage** — Volts RMS 60 Hz at room ambient. At sea level 600V  
At 70,000 ft. [21,336 m] 150V

**Insulation Resistance** — 5,000 megohms min. (@ 500 VDC) at ambient room temperature.

**Magnetic Permeability** — 2 mu max.

#### Mechanical

**Contact Spacing** — .050 [1.27mm] centers.

**Contact Engagement & Separation** — Standard contact engaging force is 6.0 oz. [1.67N] (8.0 oz. [2.22N] max.). Separation force is 0.5 [1.4N] oz. min.

**Mating Force Maximum** — Calculated as 10 oz. times the number of contacts.

#### Environmental

**Temperature Range** — -67°F to 257°F [-55° C to +125°C] for MCK/MCD, -67°F to 302°F [-55°C to +150°C] for MCDM.

**Vibration** — No discontinuity in excess of 1 µ second when tested in accordance with EIA-364-28, test condition IV.

**Solderability** — Connectors shall pass the test requirements of MIL-STD-202, Method 208

**Shock** — No discontinuity in excess of 1 µ second when tested in accordance with EIA-364-27, test condition E.

**Durability** — No mechanical or electrical defects detrimental to the function of the connectors after 500 cycles of mating and unmating.

**Humidity** — After exposure to humidity as specified EIA-364-31, Method II, IR shall be 1 megohm minimum following step 7a of EIA-364-31 section 4.3.6.1 and 1000 megohms minimum after 24 hours of conditioning per EIA-364-31.

**Salt Spray** — Connectors shall meet the performance requirements of contact resistance, mating and unmating forces, and contact retention after being subjected to the 48 hour 5% solution salt spray test per EIA-364-26, Condition B.

**Fluid Immersion** — Unmated connectors after being fully immersed in one of the following fluids, for the prescribed time, will mate at a force of 10 oz. [2.78N] times the number of contacts or less: Perchloroethylene, 2 hours;

Lubricating oil per MIL-L-23699, 20 hours.

**Insert Retention** — Inserts will withstand a 50 lb. [34N/cm²] per square inch load in either direction.

**Crimp Termination Tensile Strength** — (Unassembled contacts with crimped stranded wire terminations) Wires will not pull out of contacts when the following axial loads are applied: 24 AWG, 5 lbs. [22.24N]; 26 AWG, 4 lbs. [17.79N]; 28 AWG, 3 lbs. [13.34N]

**Outgassing** — When tested in accordance with SP-R-0022, Total Mass Loss (TML) shall be less than 1.0% and Volatile Condensable Material (VCM) shall be less than 0.1% of the original specimen.

#### Materials and Finishes

**Contacts** — Copper alloy plated with .000050 [.00127] gold over copper flash per MIL-G-45204 Type II.

**Hardware** — see pages 5-61 and 5-62.

#### MCK-Metal Shell —

Insulator — Liquid crystal polymer (LCP) per ASTM D5138, or Polyphenylene sulfide per ASTM D4067 or MIL-M-24519

Interfacial Seal — Fluorosilicone Rubber per MIL-R-25988 (socket side only)

Body Shell — Aluminum alloy-high grade plated

Cadmium per QQ-P-416

Nickel, electroless per AMS 2404

#### Transition Block Shell —

Liquid crystal polymer (LCP) per ASTM D5138, or Polyphenylene sulfide per ASTM D4067 or MIL-M-24519

Potting Material — Epoxy, Black

#### MCD-Plastic Shell —

Insulator/Body — Polyester, glass filled per MIL-M-24519, Liquid crystal polymer (LCP) per ASTM D5138, or Polyphenylene sulfide per ASTM D4067 or MIL-M-24519

#### Wire Terminations —

Solid copper per QQ-W-343 gold plated per MIL-DTL-45204

Stranded PTFE insulated per MIL-W-16878

Stranded PTFE insulated per MIL-W-22759/11, /33

Solid copper per QQ-W-343, solder dipped (Transition block)

#### MCDM-Metal Shell —

Insulator — Diallyl Phthalate per MIL-M-14, Type SDG-F

Body Shell — Aluminum alloy—high grade, nickel plated

### Twist Pin, Pin and Socket Contacts

The contact spring member normally found in socket contacts has been eliminated by creating a breathing helical spring principle on the pin contact — smaller, more durable contacts can be manufactured economically.



Wire range 24-36 AWG solid & stranded.

MIL-DTL-83513 — Only the descriptive legend in bold italic is applicable to current MIL-DTL-83513 configurations; MIL-DTL-83513/1 through /4 — MCKS metal shell; MIL-DTL-83513/6 through /9 — MCD plastic shell.

In addition, MIL-DTL-83513 solid copper wire termination is specified 25 AWG, 0.5; and 1.0 [25.4] lengths only and stranded insulated wire termination is specified 26 AWG, 18.0 [457.2] and 36.0 [914.4] lead lengths only. Hardware for MIL-DTL-83513 configurations is specified separately by the M83513/5-XX designation. M83513/1 through /4 and /6 through /9 specify no hardware (B). Mounting/mating hardware is shown on page 5-61 with the applicable military nomenclature. The MICRODOT catalog part number for a MIL-DTL-83513 configuration may be constructed to include the desired hardware.

See pages 5-78 through 5-82 for M83513/ cross reference.

## MICRODOT How To Specify MCK and MCD Connectors

### Metal Shell

Connector Series **MCK** — **N1** — **B** — **37** — **P**

MCK — Twist Pin & Drawn Socket  
MCKS — Stamp & Formed Pin & Socket

Shell Finish  
C1 — Cadmium, Clear  
C2 — Cadmium, Yellow Chromate  
N1 — Nickel, Electroless

Hardware (See Pages 5-79 and 5-80)  
B — No Hardware  
F — Float Bushing  
KM — Jackscrew, Slotted Head, High Profile (9-51)  
HM — Jackscrew, Slotted Head, High Profile (100)  
LM — Jackscrew, Slotted Head, Low Profile (9-51)  
JM — Jackscrew, Slotted Head, Low Profile (100)  
QM — Jackscrew, Allen Head, High Profile (9-51)  
TM — Jackscrew, Allen Head, High Profile (100)  
RM — Jackscrew, Allen Head, Low Profile (9-51)  
NM — Jackscrew, Allen Head, Low Profile (100)  
P — Jackpost Assembly (9-51)  
S — Jackpost Assembly (100)  
X — Lockscrew, Slotted Head  
Y — Lockscrew, Allen Head  
Z — Clip and Key (Clip Mount Only)

Layout  
9, 15, 21, 25, 31, 37, 51, 100  
See contact arrangement

Contact Type  
P — Pin (Plug)  
S — Socket (Receptacle)

S — Solder pots 26 AWG max.  
X — Special, not described by legend.

Lead Length in Inches (Min.) **1** — **18.0**

Insulation Color or Finish  
1 — All white wire  
2 — All yellow wire  
3 — All gray wire  
4 — Gold plated  
5 — Tin dipped gold plated  
6 — Bare (unfinished)  
7 — Color coded per MIL-STD-681, System 1  
8 — Special color code  
9 — 10 Solid color repeating per MIL-DTL-83513

Wire Type  
Per MIL-W-16878  
A — Type E, 7 strand  
B — Type ET, 7 strand  
C — Type E, 19 strand  
D — Type ET, 19 strand  
F — 7 strand per MIL-W-22759/11 (28 AWG only)  
G — 19 strand per MIL-C-22759/11 (26 AWG only), 24 AWG  
L — Copper, Solid (25 AWG only)  
Q — Stranded per MIL-W-22759/33 (26 AWG only)

Wire Size  
4 — 24 AWG 5 — 25 AWG 6 — 26 AWG 8 — 28 AWG 0 — 30 AWG

### Plastic Shell

Connector Series **MCD** — **R3** — **B** — **37** — **P**

Insulator Type/Material  
G2 — Clip Mount, polyester, natural  
G3 — Screw Mount, polyester, natural, .093 Flg.  
R2 — Clip Mount, Ryton  
R3 — Screw Mount, Liquid Crystal Polymer or Polyphenylene Sulfide

Hardware (See Pages 5-79 and 5-80)  
B — No Hardware  
F — Float Bushing  
KM — Jackscrew, Slotted Head, High Profile  
LM — Jackscrew, Slotted Head, Low Profile  
QM — Jackscrew, Allen Head, High Profile  
RM — Jackscrew, Allen Head, Low Profile  
P — Jackpost Assembly  
X — Lockscrew, Slotted Head  
Y — Lockscrew, Allen Head  
Z — Clip and Key (Clip Mount Only)

Layout  
9, 15, 21, 25, 31, 37, 51  
See contact arrangement

Contact Type  
P — Pin (Plug)  
S — Socket (Receptacle)

S — Solder pots 26 AWG max.  
X — Special — Does not fit description below.

Lead Length in Inches (Min.) **1** — **18.0**

Insulation Color or Finish  
1 — All white wire  
2 — All yellow wire  
3 — All gray wire  
4 — Gold plated  
5 — Tin dipped gold plated  
6 — Bare (unfinished)  
7 — Color coded per MIL-STD-681, System 1  
8 — Special color code  
9 — 10 Solid color repeating per MIL-DTL-83513

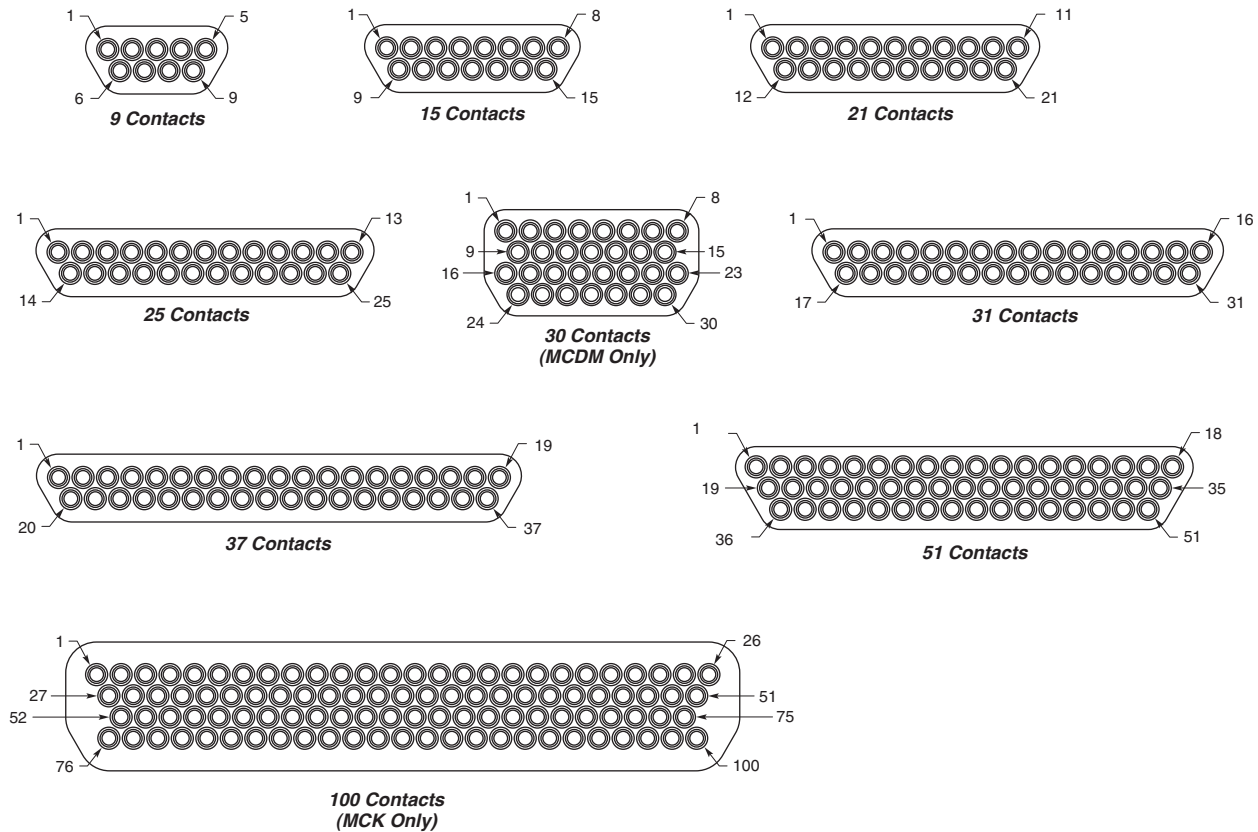
Wire Type  
Per MIL-W-16878  
A — Type E, 7 strand  
B — Type ET, 7 strand  
C — Type E, 19 strand  
D — Type ET, 19 strand  
F — 7 strand per MIL-W-22759/11 (28 AWG only)  
G — 19 strand per MIL-C-22759/11 (26 AWG only), 24 AWG  
L — Copper, Solid (25 AWG only)  
Q — Stranded per MIL-W-22759/33 (26 AWG only)

Wire Size  
4 — 24 AWG 5 — 25 AWG 6 — 26 AWG 8 — 28 AWG 0 — 30 AWG

Note: Items in bold italic are qualified to MIL-DTL-83513.

## MICRODOT Contact Arrangements

### Face View of Pin Insert (Socket Side is Mirror Image)



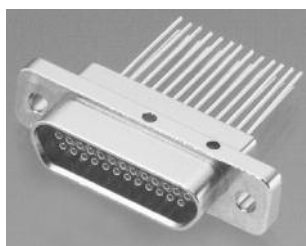
**Note:** MCK metal shells are not designed to intermate or interchange with MCD plastic shells. If metal/plastic intermating is desired, use MCDM Series Metal Shell on pages 5-72 and 5-73 with MCD Series Plastic Shell on page 5-58.

## MICRODOT MCK Series Metal Shell Connectors

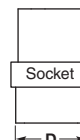
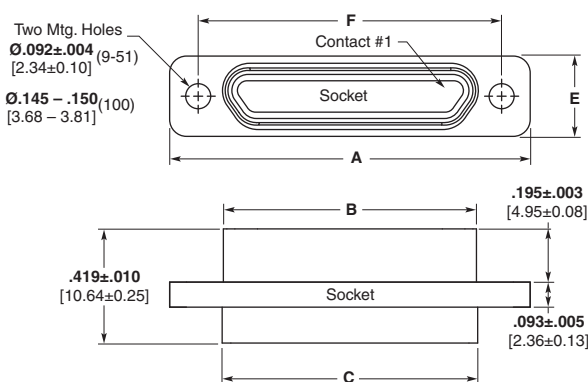
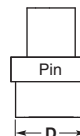
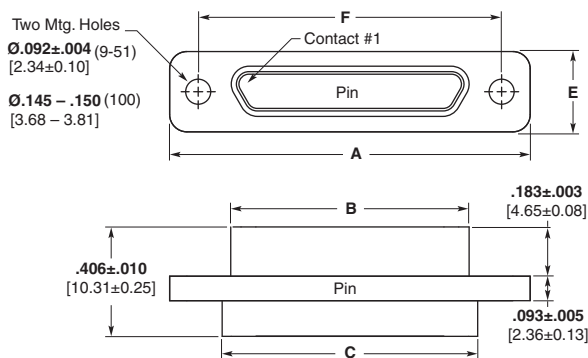
### Dimensions per MIL-DTL-83513



**Plug  
(Pin side)**



**Receptacle  
(Socket side)**

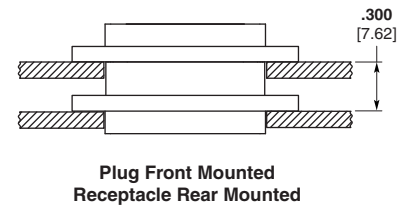
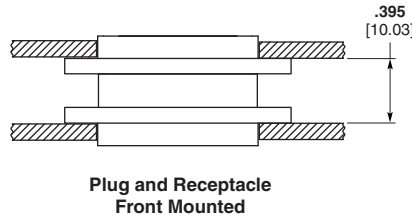
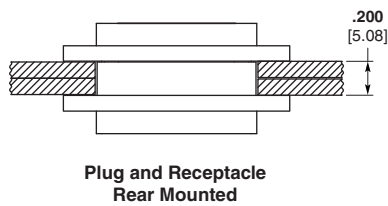


| Part Number    | A<br>± .010 [.254] | B Max.          | C<br>+.010 [.254]<br>-.018 [.457] | D Max        | E<br>±.010 [.254] | F<br>± .005 [.127] |
|----------------|--------------------|-----------------|-----------------------------------|--------------|-------------------|--------------------|
| MCK**- 9P***   | .775<br>19.68      | .3338<br>8.48   | .390<br>9.91                      | .270<br>6.86 | .298<br>7.57      | .565<br>14.35      |
| MCK**- 9S***   | .775<br>19.68      | .4018<br>10.21  | .390<br>9.91                      | .270<br>6.86 | .298<br>7.57      | .565<br>14.35      |
| MCK**- 15P***  | .925<br>23.50      | .4838<br>12.29  | .540<br>13.72                     | .270<br>6.86 | .298<br>7.57      | .715<br>18.16      |
| MCK**- 15S***  | .925<br>23.50      | .5518<br>14.02  | .540<br>13.72                     | .270<br>6.86 | .298<br>7.57      | .715<br>18.16      |
| MCK**- 21P***  | 1.075<br>27.30     | .6338<br>16.10  | .690<br>17.53                     | .270<br>6.86 | .298<br>7.57      | .865<br>21.97      |
| MCK**- 21S***  | 1.075<br>27.30     | .7018<br>18.05  | .690<br>17.53                     | .270<br>6.86 | .298<br>7.57      | .865<br>21.97      |
| MCK**- 25P***  | 1.175<br>29.84     | .7338<br>18.64  | .790<br>20.07                     | .270<br>6.86 | .298<br>7.57      | .965<br>24.51      |
| MCK**- 25S***  | 1.175<br>29.84     | .8018<br>20.37  | .790<br>20.07                     | .270<br>6.86 | .298<br>7.57      | .965<br>24.51      |
| MCK**- 31P***  | 1.325<br>33.66     | .8838<br>22.45  | .940<br>23.88                     | .270<br>6.86 | .298<br>7.57      | 1.115<br>28.32     |
| MCK**- 31S***  | 1.325<br>33.66     | .9518<br>24.18  | .940<br>23.88                     | .270<br>6.86 | .298<br>7.57      | 1.115<br>28.32     |
| MCK**- 37P***  | 1.475<br>37.46     | 1.0338<br>26.26 | 1.090<br>27.69                    | .270<br>6.86 | .298<br>7.57      | 1.265<br>32.13     |
| MCK**- 37S***  | 1.475<br>37.46     | 1.1018<br>27.99 | 1.090<br>27.69                    | .270<br>6.86 | .298<br>7.57      | 1.265<br>32.13     |
| MCK**- 51P***  | 1.425<br>36.20     | .9838<br>24.99  | 1.040<br>26.42                    | .310<br>7.87 | .341<br>8.66      | 1.215<br>30.86     |
| MCK**- 51S***  | 1.425<br>36.20     | 1.0518<br>26.72 | 1.040<br>26.42                    | .310<br>7.87 | .341<br>8.66      | 1.215<br>30.86     |
| MCK**- 100P*** | 2.160<br>54.86     | 1.3838<br>35.15 | 1.432<br>36.37                    | .360<br>9.15 | .384<br>9.75      | 1.800<br>45.71     |
| MCK**- 100S*** | 2.160<br>54.86     | 1.508<br>38.30  | 1.432<br>36.37                    | .360<br>9.15 | .384<br>9.75      | 1.800<br>45.71     |

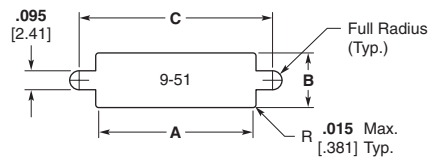
P = Pin. S = Socket

# MICRODOT MCK Series Metal Shell Connectors Panel Mounting — Cutout Dimensions

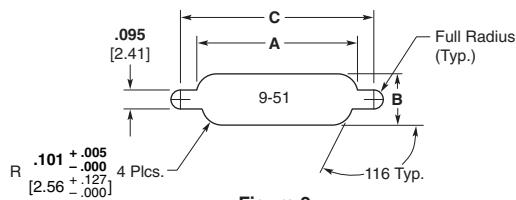
## Panel Mounting Dimensions — MCK



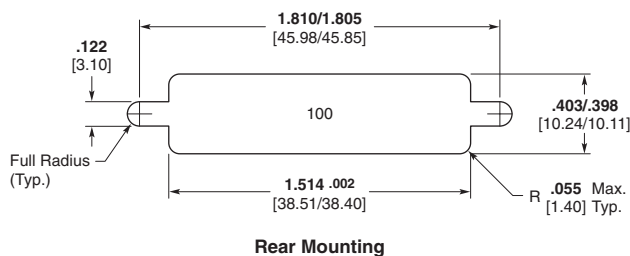
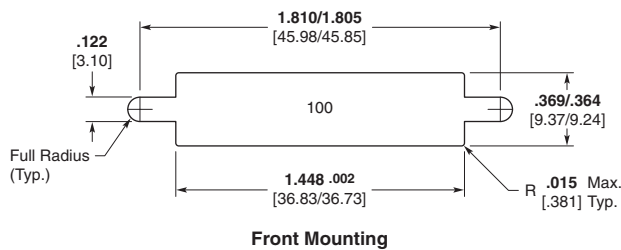
## Panel Cutout Dimensions — MCK



**Figure 1**  
Front Mounting



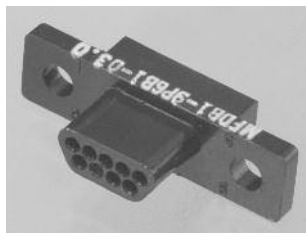
**Figure 2**  
Rear Mounting



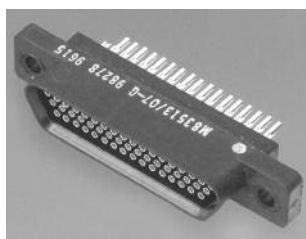
| Number of Contacts | Fig. | A<br>+ .004 [.102]<br>- .000 [.000] | B<br>+ .004 [.102]<br>- .000 [.000] | C<br>+ .005 [.127]<br>- .000 [.000] |
|--------------------|------|-------------------------------------|-------------------------------------|-------------------------------------|
| 9                  | 1    | .404<br>10.26                       | .274<br>6.96                        | .570<br>14.48                       |
|                    | 2    | .406<br>10.31                       | .257<br>6.53                        | .570<br>14.48                       |
| 15                 | 1    | .554<br>14.07                       | .274<br>6.96                        | .720<br>18.29                       |
|                    | 2    | .556<br>14.12                       | .257<br>6.53                        | .720<br>18.29                       |
| 21                 | 1    | .704<br>17.88                       | .274<br>6.96                        | .870<br>22.10                       |
|                    | 2    | .706<br>17.93                       | .257<br>6.53                        | .870<br>22.10                       |
| 25                 | 1    | .804<br>20.42                       | .274<br>6.96                        | .970<br>24.64                       |
|                    | 2    | .806<br>20.47                       | .257<br>6.53                        | .970<br>24.64                       |
| 31                 | 1    | .954<br>24.23                       | .274<br>6.96                        | 1.120<br>28.45                      |
|                    | 2    | .956<br>24.28                       | .257<br>6.53                        | 1.120<br>28.45                      |
| 37                 | 1    | 1.104<br>28.04                      | .274<br>6.96                        | 1.270<br>32.26                      |
|                    | 2    | 1.106<br>28.09                      | .257<br>6.53                        | 1.270<br>32.26                      |
| 51                 | 1    | 1.054<br>26.77                      | .314<br>7.98                        | 1.220<br>30.99                      |
|                    | 2    | 1.056<br>26.82                      | .300<br>7.62                        | 1.220<br>30.99                      |

## MICRODOT MCD Series Plastic Shell Connectors

### Screw Mount Dimensions Per MIL-DTL-83513

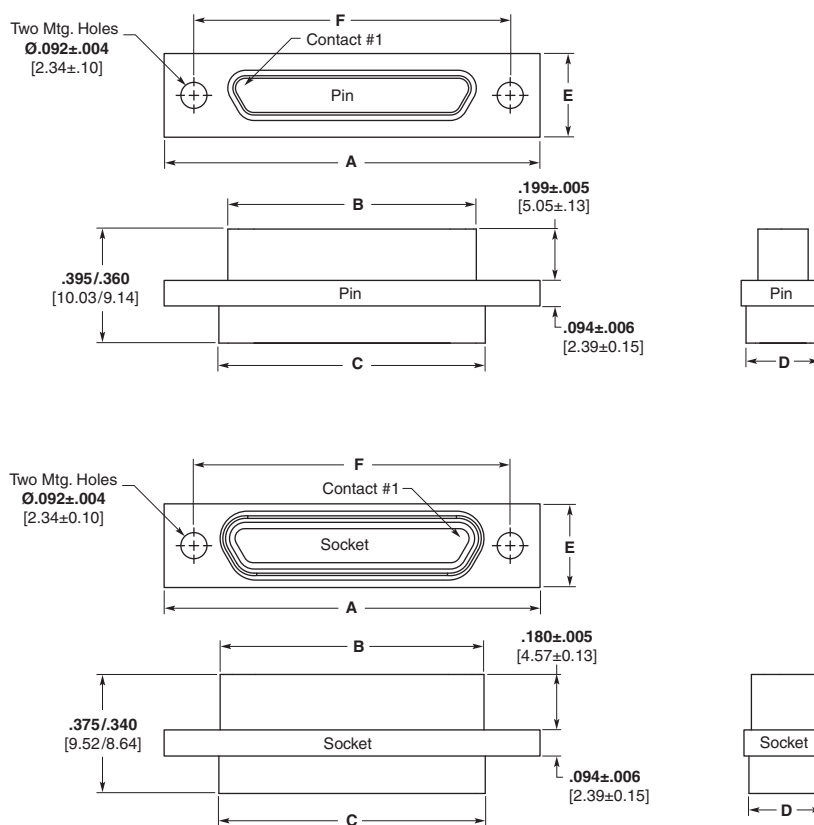


**Plug  
(Pin side)**



**Receptacle  
(Socket side)**

Liquid Crystal Polymer or Polyphenylene Sulfide — MCDR3\* per MIL-DTL-83513



**Note:** MCD Plastic Screw Mount Series is intermateable with MCDM Metal Series Connectors (Pages 5-72 and 5-73).

| Part Number   | A<br>± .010 [.254] | B Max.           | C<br>+.010 [.254]<br>-.018 [.457] | D Max        | E<br>±.010 [.254] | F<br>± .005 [.127] | Avg. Weight<br>lbs. ± 5%<br>[grams] |
|---------------|--------------------|------------------|-----------------------------------|--------------|-------------------|--------------------|-------------------------------------|
| MCD**- 9P***  | .778<br>19.76      | .2918<br>7.412   | .398<br>10.11                     | .173<br>4.39 | .208<br>5.28      | .565<br>14.35      | .0017<br>0.77                       |
| MCD**- 9S***  | .778<br>19.76      | .3798<br>9.647   | .398<br>10.11                     | .173<br>4.39 | .208<br>5.28      | .565<br>14.35      | .0016<br>0.72                       |
| MCD**- 15P*** | .928<br>23.57      | .4418<br>11.222  | .548<br>13.92                     | .173<br>4.39 | .208<br>5.28      | .715<br>18.16      | .0024<br>1.08                       |
| MCD**- 15S*** | .928<br>23.57      | .5298<br>13.457  | .548<br>13.92                     | .173<br>4.39 | .208<br>5.28      | .715<br>18.16      | .0023<br>1.04                       |
| MCD**- 21P*** | 1.078<br>27.38     | .5918<br>15.032  | .698<br>17.73                     | .173<br>4.39 | .208<br>5.28      | .865<br>21.97      | .0035<br>1.59                       |
| MCD**- 21S*** | 1.078<br>27.38     | .6798<br>17.267  | .698<br>17.73                     | .173<br>4.39 | .208<br>5.28      | .865<br>21.97      | .0034<br>1.54                       |
| MCD**- 25P*** | 1.178<br>29.92     | .6918<br>17.572  | .798<br>20.27                     | .173<br>4.39 | .208<br>5.28      | .965<br>24.51      | .0042<br>1.90                       |
| MCD**- 25S*** | 1.178<br>29.92     | .7798<br>19.807  | .798<br>20.27                     | .173<br>4.39 | .208<br>5.28      | .965<br>24.51      | .0037<br>1.67                       |
| MCD**- 31P*** | 1.328<br>33.73     | .8418<br>21.382  | .948<br>24.08                     | .173<br>4.39 | .208<br>5.28      | 1.115<br>28.32     | .0053<br>2.40                       |
| MCD**- 31S*** | 1.328<br>33.73     | .9298<br>23.617  | .948<br>24.08                     | .173<br>4.39 | .208<br>5.28      | 1.115<br>28.32     | .0048<br>2.17                       |
| MCD**- 37P*** | 1.478<br>37.54     | .9918<br>25.192  | 1.098<br>27.89                    | .173<br>4.39 | .208<br>5.28      | 1.265<br>32.13     | .0057<br>2.58                       |
| MCD**- 37S*** | 1.478<br>37.54     | 1.0798<br>27.427 | 1.098<br>27.89                    | .173<br>4.39 | .208<br>5.28      | 1.265<br>32.13     | .0051<br>2.31                       |
| MCD**- 51P*** | 1.428<br>36.27     | .9418<br>23.922  | 1.048<br>26.62                    | .220<br>5.59 | .250<br>6.35      | 1.215<br>30.86     | .0072<br>3.26                       |
| MCD**- 51S*** | 1.428<br>36.27     | 1.0298<br>26.157 | 1.048<br>26.62                    | .220<br>5.59 | .250<br>6.35      | 1.215<br>30.86     | .0063<br>2.85                       |

P = Pin, S = Socket

**Note:** Weight given is with .500 [12.7] uninsulated, solid, 24 AWG gold plated copper pigtails.

\*See "How to Specify" for description, on page 5-54.

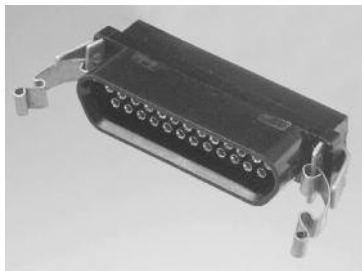


## MICRODOT MCD Series Plastic Shell Connectors (Continued)

## Clip Mount — MCD

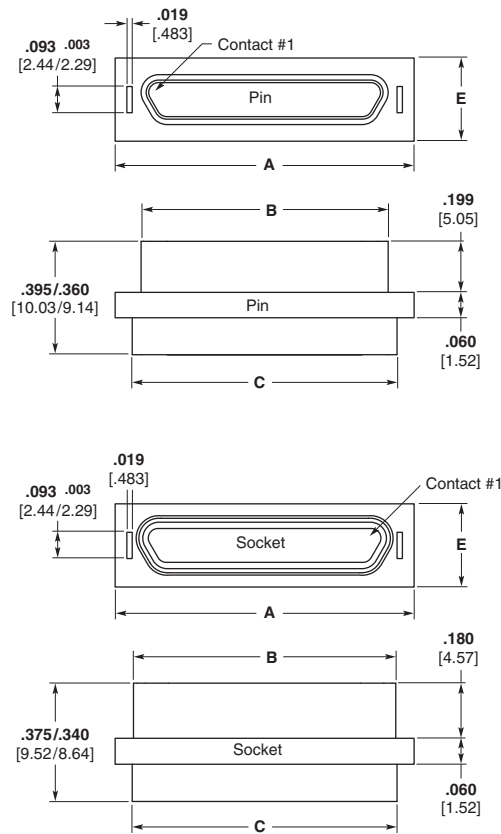


Plug  
(Pin side)



Receptacle  
(Socket side)

**Note:** Clip Mount not covered by current issue of MIL-DTL-83513.



| Part Number   | A<br>±.005 [ .127 ] | B Max.           | C<br>±.010 [ .254 ] | D<br>±.010 [ .254 ] | E<br>±.005 [ .127 ] | Avg. Weight<br>lbs. ± 5%<br>[grams] |
|---------------|---------------------|------------------|---------------------|---------------------|---------------------|-------------------------------------|
| MCD**- 9P***  | .506<br>12.85       | .2918<br>74.12   | .398<br>10.11       | .165<br>4.19        | .208<br>5.28        | .0017<br>0.77                       |
| MCD**- 9S***  | .506<br>12.85       | .3798<br>96.47   | .398<br>10.11       | .165<br>4.19        | .208<br>5.28        | .0016<br>0.72                       |
| MCD**- 15P*** | .656<br>16.66       | .4418<br>112.22  | .548<br>13.92       | .165<br>4.19        | .208<br>5.28        | .0024<br>1.08                       |
| MCD**- 15S*** | .656<br>16.66       | .5298<br>134.57  | .548<br>13.92       | .165<br>4.19        | .208<br>5.28        | .0023<br>1.04                       |
| MCD**- 21P*** | .806<br>20.47       | .5918<br>150.32  | .698<br>17.73       | .165<br>4.19        | .208<br>5.28        | .0035<br>1.59                       |
| MCD**- 21S*** | .806<br>20.47       | .6798<br>172.67  | .698<br>17.73       | .165<br>4.19        | .208<br>5.28        | .0034<br>1.54                       |
| MCD**- 25P*** | .906<br>23.01       | .6918<br>175.72  | .798<br>20.27       | .165<br>4.19        | .208<br>5.28        | .0042<br>1.90                       |
| MCD**- 25S*** | .906<br>23.01       | .7798<br>198.07  | .798<br>20.27       | .165<br>4.19        | .208<br>5.28        | .0037<br>1.67                       |
| MCD**- 31P*** | 1.056<br>26.82      | .8418<br>213.82  | .948<br>24.08       | .165<br>4.19        | .208<br>5.28        | .0053<br>2.40                       |
| MCD**- 31S*** | 1.056<br>26.82      | .9298<br>236.17  | .948<br>24.08       | .165<br>4.19        | .208<br>5.28        | .0048<br>2.17                       |
| MCD**- 37P*** | 1.206<br>30.63      | .9918<br>251.92  | 1.098<br>27.89      | .165<br>4.19        | .208<br>5.28        | .0057<br>2.58                       |
| MCD**- 37S*** | 1.206<br>30.63      | 1.0798<br>274.27 | 1.098<br>27.89      | .165<br>4.19        | .208<br>5.28        | .0051<br>2.31                       |
| MCD**- 51P*** | 1.156<br>29.36      | .9418<br>239.22  | 1.048<br>26.62      | .208<br>5.28        | .250<br>6.35        | .0072<br>3.26                       |
| MCD**- 51S*** | 1.156<br>29.36      | 1.0298<br>261.57 | 1.048<br>26.62      | .208<br>5.28        | .250<br>6.35        | .0063<br>2.85                       |

P = Pin, S = Socket

**Note:** Weight given is with .500 [12.7] uninsulated, solid, 24 AWG gold plated copper pigtailed.

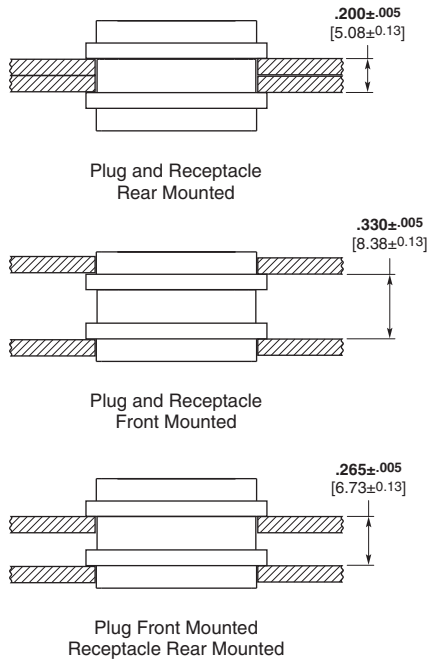
\*See "How to Specify" for description, on page 5-54.



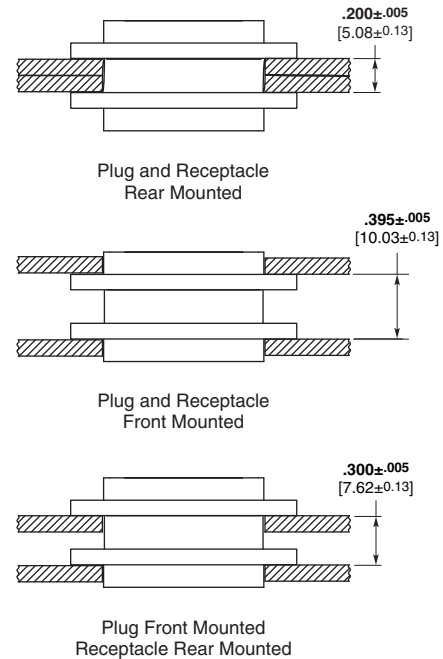
# MICRODOT MCD Series Plastic Shell Connectors Panel Mounting — Cutout Dimensions

## Panel Mounting Dimensions — MCD

### Clip Mount



### Screw Mount



## Panel Cutout Dimensions — MCD

### Clip Mounting

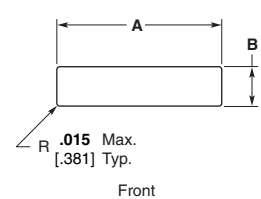


Figure 1

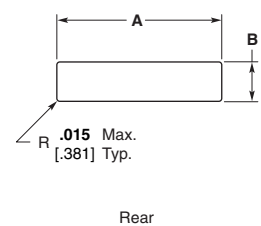


Figure 3

### Screw Mounting

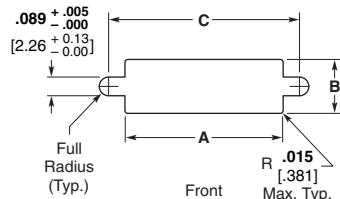


Figure 2

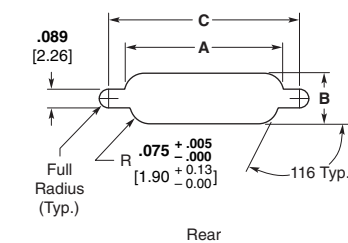


Figure 4

Notes: Front mounting preferred.

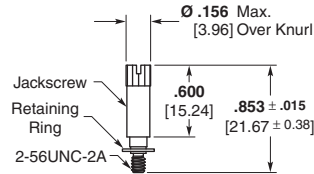
| Number of Contacts | Fig. | A             |              | B            |              | C             |              |
|--------------------|------|---------------|--------------|--------------|--------------|---------------|--------------|
|                    |      | +.004 [.102]  | -.000 [.000] | +.004 [.102] | -.000 [.000] | +.005 [.127]  | -.000 [.000] |
| 9                  | 1    | .438 [11.13]  |              | .177 [4.50]  |              | —             |              |
|                    | 2    | .412 [10.46]  |              | .177 [4.50]  |              | .570 [14.48]  |              |
|                    | 3    | .438 [11.13]  |              | .222 [5.64]  |              | —             |              |
|                    | 4    | .384 [9.75]   |              | .222 [5.64]  |              | .570 [14.48]  |              |
| 15                 | 1    | .588 [14.93]  |              | .177 [4.50]  |              | —             |              |
|                    | 2    | .562 [14.27]  |              | .177 [4.50]  |              | .720 [18.29]  |              |
|                    | 3    | .588 [14.93]  |              | .222 [5.64]  |              | —             |              |
|                    | 4    | .534 [13.56]  |              | .222 [5.64]  |              | .720 [18.29]  |              |
| 21                 | 1    | .738 [18.75]  |              | .177 [4.50]  |              | —             |              |
|                    | 2    | .712 [18.08]  |              | .177 [4.50]  |              | .870 [22.10]  |              |
|                    | 3    | .738 [18.75]  |              | .222 [5.64]  |              | —             |              |
|                    | 4    | .684 [17.37]  |              | .222 [5.64]  |              | .870 [22.10]  |              |
| 25                 | 1    | .838 [21.29]  |              | .177 [4.50]  |              | —             |              |
|                    | 2    | .812 [20.62]  |              | .177 [4.50]  |              | .970 [24.64]  |              |
|                    | 3    | .838 [21.29]  |              | .222 [5.64]  |              | —             |              |
|                    | 4    | .784 [19.91]  |              | .222 [5.64]  |              | .970 [24.64]  |              |
| 31                 | 1    | .988 [25.10]  |              | .177 [4.50]  |              | —             |              |
|                    | 2    | .962 [24.43]  |              | .177 [4.50]  |              | 1.120 [28.45] |              |
|                    | 3    | .988 [25.10]  |              | .222 [5.64]  |              | —             |              |
|                    | 4    | .934 [23.72]  |              | .222 [5.64]  |              | 1.120 [28.45] |              |
| 37                 | 1    | 1.138 [28.91] |              | .177 [4.50]  |              | —             |              |
|                    | 2    | 1.112 [28.24] |              | .177 [4.50]  |              | 1.270 [32.26] |              |
|                    | 3    | 1.138 [28.91] |              | .222 [5.64]  |              | —             |              |
|                    | 4    | 1.084 [27.53] |              | .222 [5.64]  |              | 1.270 [32.26] |              |
| 51                 | 1    | 1.088 [27.64] |              | .224 [5.69]  |              | —             |              |
|                    | 2    | 1.062 [26.97] |              | .224 [5.69]  |              | 1.220 [30.99] |              |
|                    | 3    | 1.088 [27.64] |              | .264 [6.71]  |              | —             |              |
|                    | 4    | 1.034 [26.26] |              | .264 [6.71]  |              | 1.220 [30.99] |              |

## MICRODOT Mounting and Coupling Hardware

### For Screw Mount MCK, MCKS, MCD and MCDM

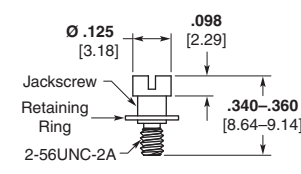
#### 9-51 Contacts Slot Head

(KM)



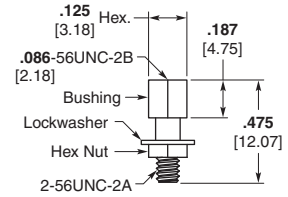
Part Number 5-1532137-8  
Jackscrew Assembly  
High Profile  
M83513/5-06  
(KM) S96-0002-0084

(LM)



Part Number 5-1532137-7  
Jackscrew Assembly  
Low Profile  
M83513/5-05  
(LM) S96-0002-0085

(P)

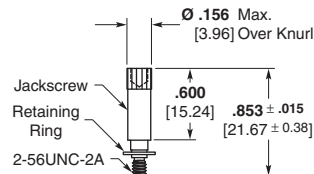


Part Number 5-1532137-9  
Jackpost Assembly  
(P) S96-0002-0009  
M83513/5-07

P mates with KM, LM, QM and RM Jackscrew Assemblies.

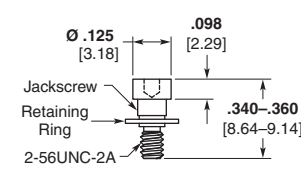
#### 9-51 Contacts 1/16" Allen Head

(QM)



Part Number 5-1532137-6  
Jackscrew Assembly  
High Profile  
M83513/5-03  
(QM) S96-0002-0086

(RM)



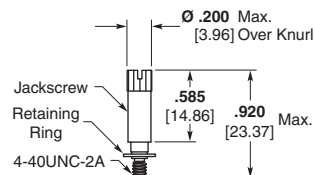
Part Number 5-1532137-5  
Jackscrew Assembly  
Low Profile  
M83513/5-02  
(RM) S96-0002-0087

#### Notes:

1. Jackpost Assemblies will accommodate .094 [2.39] max. thickness panel.
2. Letter(s) in parentheses is to assist in ordering hardware with the connector (See "How To Specify" page 5-54).
3. Items in **bold italic** are qualified to MIL-DTL-83513.
4. Mounting torque values and mating torque values are per MIL-DTL-83513/5.

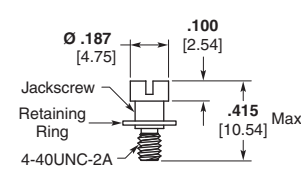
#### 100 Contacts Slot Head

(HM)



Part Number 6-1532137-3  
Jackscrew Assembly  
High Profile  
M83513/5-16  
(HM) S96-0002-0088

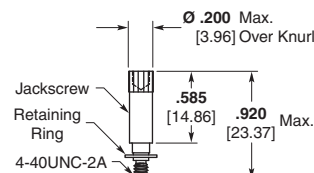
(JM)



Part Number 6-1532137-2  
Jackscrew Assembly  
Low Profile  
M83513/5-15  
(JM) S96-0002-0089

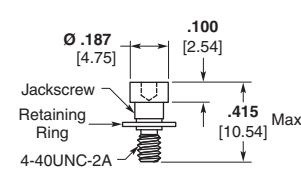
#### 100 Contacts 1/16" Allen Head

(TM)



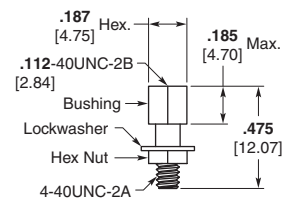
Part Number 6-1532137-1  
Jackscrew Assembly  
High Profile  
M83513/5-13  
(TM) S96-0002-0090

(NM)



Part Number 6-1532137-0  
Jackscrew Assembly  
Low Profile  
M83513/5-12  
(NM) S96-0002-0091

(S)



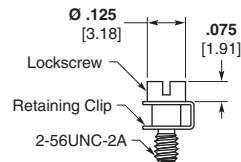
Part Number 6-1532137-4  
Jackpost Assembly  
(S) S96-0002-0060  
M83513/5-17

S mates with HM, JM, TM and NM Jackscrew Assemblies.

## MICRODOT Mounting and Coupling Hardware (Continued)

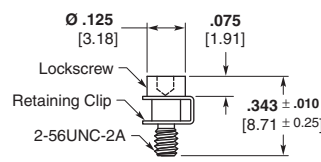
### For Screw Mount MCK, MCD and MCDM (Continued)

#### Slot Head (X)



**Part Number 4-1532137-3**  
**Lockscrew Assembly**  
**096-0002-0008**

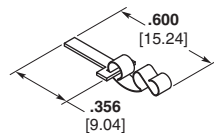
#### 1/16" Allen Head (Y)



**Part Number 1495164-1**  
**Lockscrew Assembly**  
**096-0002-0013**

### For Clip Mount — MCD

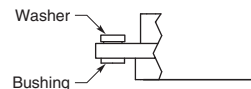
#### (Z)



**Part Number 1466018-1**  
**Mounting Key and Clip**  
**P/N 096-0001-0000**  
**(2 Required)**

### For Float Mount — MCK, MCD and MCDM

#### (F)



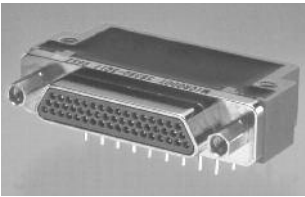
**Float Mount Bushing**  
**(Factory Installed)**

#### Notes:

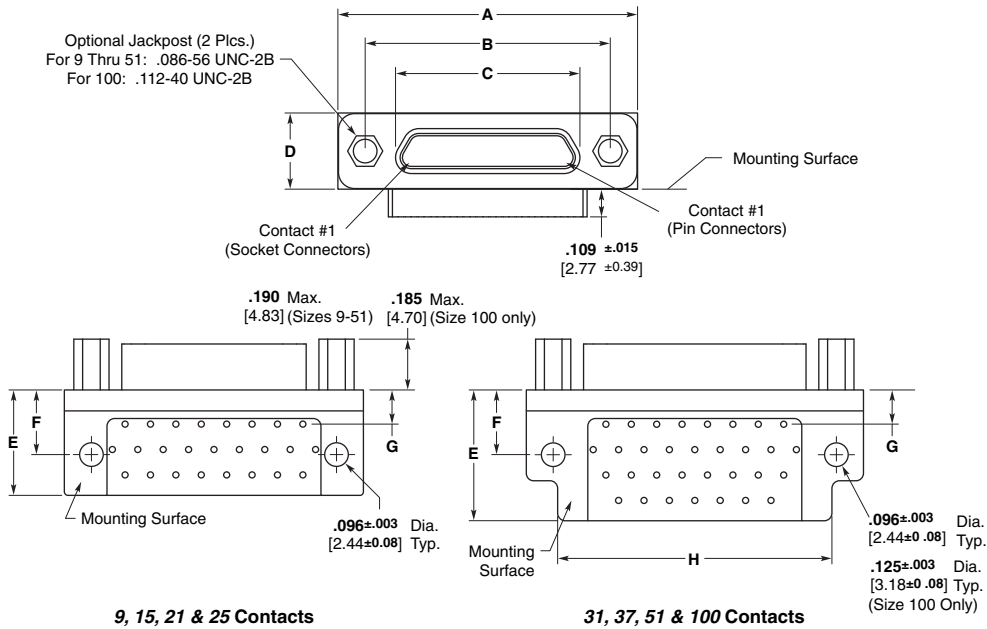
1. Jackpost Assemblies will accommodate .094 [2.39] max. thickness panel.
2. Letter(s) in parentheses is to assist in ordering hardware with the connector (See "How To Specify" page 5-54).
3. Hardware ordered separately should be ordered in pairs; i.e. 2 pcs. P/N 096-0002-0013 per connector half.

MICRODOT MCK Transition Blocks

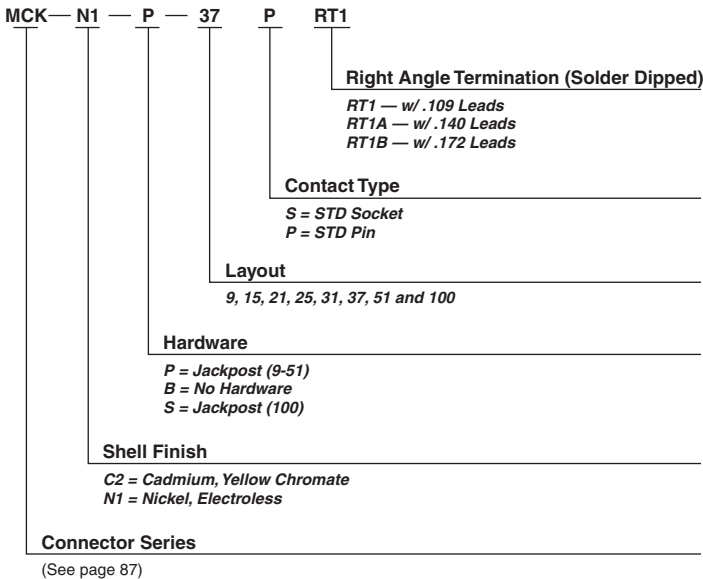
RT1 — Right-Angle Termination Configuration



MIL-DTL-83513/10 through /15 configurations. 90° — Narrow Profile termination configurations. See pages 5-78 to 5-82 for M83513 cross references.



How To Specify



- Notes:**
1. For terminal identification see page 5-65.
  2. Grid pattern for all configurations is .100 x .100 [2.54 x 2.54].
  3. Lead lengths shown are for RT1.
  4. **Items in bold italic are qualified to MIL-DTL-83513.**

**MICRODOT MCK Transition Blocks** (Continued)

**RT1 — Right-Angle Termination Configuration**

(Continued)

| Part Number              | A<br>Max.             | B<br>± .005 [.127]    | C<br>Max.              | D<br>Max.            | E<br>Max.             | F<br>+.010 [.254]    | G<br>+.010 [.254]   | H<br>Max.             |
|--------------------------|-----------------------|-----------------------|------------------------|----------------------|-----------------------|----------------------|---------------------|-----------------------|
| <b>MCK-**-*- 9PRT1</b>   | <b>.787</b><br>19.99  | <b>.565</b><br>14.35  | <b>.3338</b><br>8.48   | <b>.308</b><br>7.83  | <b>.425</b><br>10.80  | <b>.250</b><br>6.35  | <b>.230</b><br>5.84 | —                     |
| <b>MCK-**-*- 9SRT1</b>   | <b>.787</b><br>19.99  | <b>.565</b><br>14.35  | <b>.4018</b><br>10.21  | <b>.308</b><br>7.83  | <b>.425</b><br>10.80  | <b>.250</b><br>6.35  | <b>.230</b><br>5.84 | —                     |
| <b>MCK-**-*- 15PRT1</b>  | <b>.937</b><br>23.80  | <b>.715</b><br>18.16  | <b>.4838</b><br>12.29  | <b>.308</b><br>7.83  | <b>.425</b><br>10.80  | <b>.250</b><br>6.35  | <b>.130</b><br>3.30 | —                     |
| <b>MCK-**-*- 15SRT1</b>  | <b>.937</b><br>23.80  | <b>.715</b><br>18.16  | <b>.5518</b><br>14.02  | <b>.308</b><br>7.83  | <b>.425</b><br>10.80  | <b>.250</b><br>6.35  | <b>.130</b><br>3.30 | —                     |
| <b>MCK-**-*- 21PRT1</b>  | <b>1.087</b><br>27.61 | <b>.865</b><br>21.97  | <b>.6338</b><br>16.10  | <b>.308</b><br>7.83  | <b>.425</b><br>10.80  | <b>.250</b><br>6.35  | <b>.130</b><br>3.30 | —                     |
| <b>MCK-**-*- 21SRT1</b>  | <b>1.087</b><br>27.61 | <b>.865</b><br>21.97  | <b>.7018</b><br>17.83  | <b>.308</b><br>7.83  | <b>.425</b><br>10.80  | <b>.250</b><br>6.35  | <b>.130</b><br>3.30 | —                     |
| <b>MCK-**-*- 25PRT1</b>  | <b>1.187</b><br>30.15 | <b>.965</b><br>24.51  | <b>.7338</b><br>18.64  | <b>.308</b><br>7.83  | <b>.425</b><br>10.80  | <b>.250</b><br>6.35  | <b>.130</b><br>3.30 | —                     |
| <b>MCK-**-*- 25SRT1</b>  | <b>1.187</b><br>30.15 | <b>.965</b><br>24.51  | <b>.8018</b><br>20.37  | <b>.308</b><br>7.83  | <b>.425</b><br>10.80  | <b>.250</b><br>6.35  | <b>.130</b><br>3.30 | —                     |
| <b>MCK-**-*- 31PRT1</b>  | <b>1.337</b><br>33.96 | <b>1.115</b><br>28.32 | <b>.8838</b><br>22.45  | <b>.308</b><br>7.83  | <b>.525</b><br>13.34  | <b>.250</b><br>6.35  | <b>.130</b><br>3.30 | <b>1.090</b><br>27.69 |
| <b>MCK-**-*- 31SRT1</b>  | <b>1.337</b><br>33.96 | <b>1.115</b><br>28.32 | <b>.9518</b><br>24.18  | <b>.308</b><br>7.83  | <b>.525</b><br>13.34  | <b>.250</b><br>6.35  | <b>.130</b><br>3.30 | <b>1.090</b><br>27.69 |
| <b>MCK-**-*- 37PRT1</b>  | <b>1.487</b><br>37.77 | <b>1.265</b><br>32.13 | <b>1.0338</b><br>26.26 | <b>.308</b><br>7.83  | <b>.525</b><br>13.34  | <b>.250</b><br>6.35  | <b>.130</b><br>3.30 | <b>1.190</b><br>30.23 |
| <b>MCK-**-*- 37SRT1</b>  | <b>1.487</b><br>37.77 | <b>1.265</b><br>32.13 | <b>1.1018</b><br>27.99 | <b>.308</b><br>7.83  | <b>.525</b><br>13.34  | <b>.250</b><br>6.35  | <b>.130</b><br>3.30 | <b>1.190</b><br>30.23 |
| <b>MCK-**-*- 51PRT1</b>  | <b>1.435</b><br>36.45 | <b>1.215</b><br>30.86 | <b>.9838</b><br>24.99  | <b>.351</b><br>8.92  | <b>.660</b><br>16.76  | <b>.300</b><br>7.62  | <b>.150</b><br>3.81 | <b>1.230</b><br>31.24 |
| <b>MCK-**-*- 51SRT1</b>  | <b>1.435</b><br>36.45 | <b>1.215</b><br>30.86 | <b>1.0518</b><br>26.72 | <b>.351</b><br>8.92  | <b>.660</b><br>16.76  | <b>.300</b><br>7.62  | <b>.150</b><br>3.81 | <b>1.230</b><br>31.24 |
| <b>MCK-**-*- 100PRT1</b> | <b>2.175</b><br>55.25 | <b>1.800</b><br>45.72 | <b>1.3838</b><br>35.15 | <b>.394</b><br>10.01 | <b>1.010</b><br>25.65 | <b>.400</b><br>10.16 | <b>.200</b><br>5.08 | <b>1.825</b><br>46.36 |
| <b>MCK-**-*- 100SRT1</b> | <b>2.175</b><br>55.25 | <b>1.800</b><br>45.72 | <b>1.508</b><br>38.30  | <b>.394</b><br>10.01 | <b>1.010</b><br>25.65 | <b>.400</b><br>10.16 | <b>.200</b><br>5.08 | <b>1.825</b><br>46.36 |

P = Pin, S = Socket

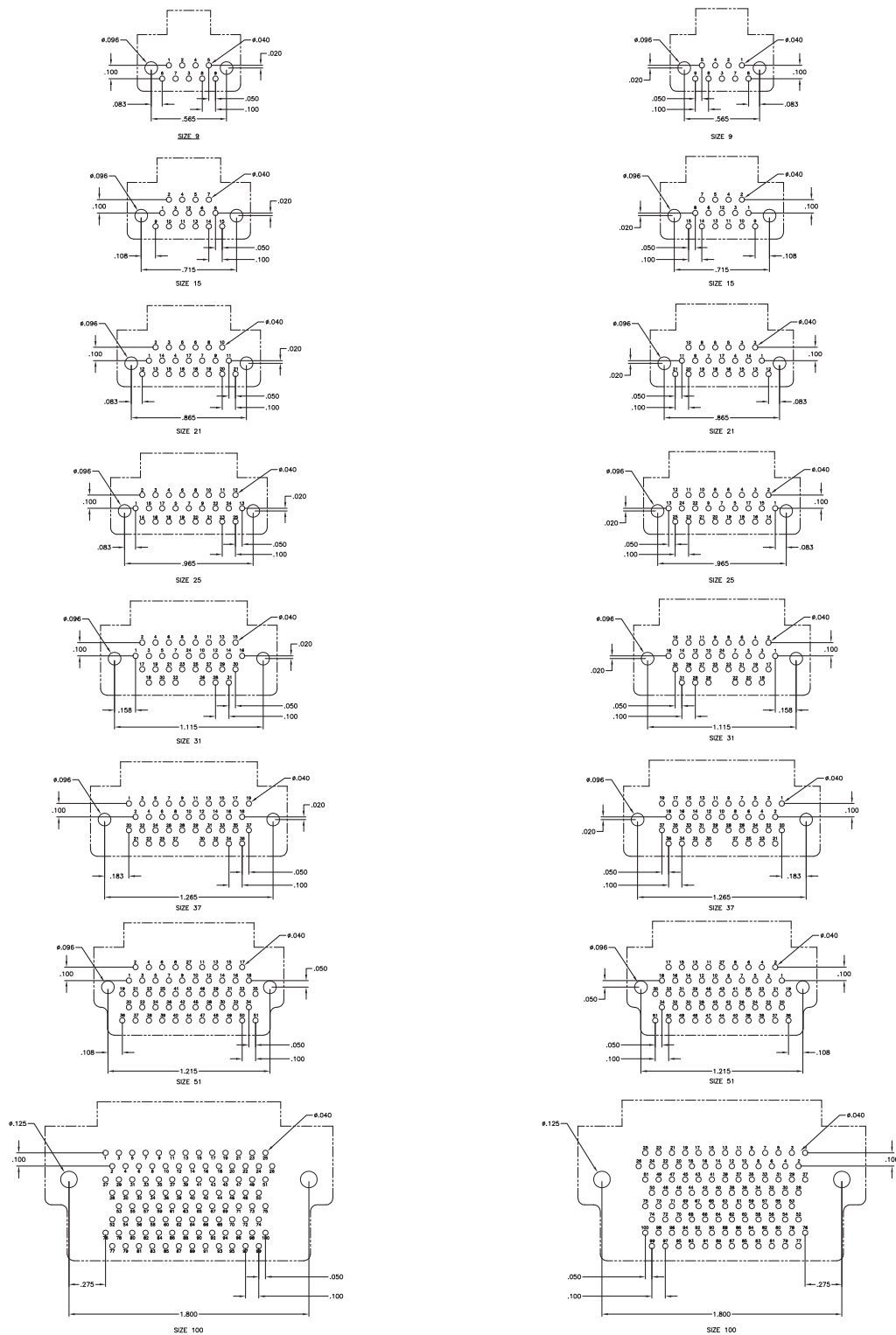
**Note: Items in bold italic are qualified to MIL-DTL-83513.**

**MICRODOT MCK Transition Blocks (Continued)**

**RT1 — Right-Angle Termination Configuration**

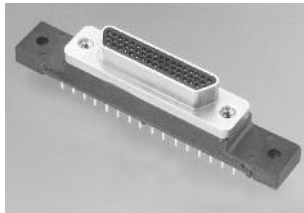
(Continued)

View is of termination side of plug connector. For receptacle, use mirror image. (Except 100 contacts)

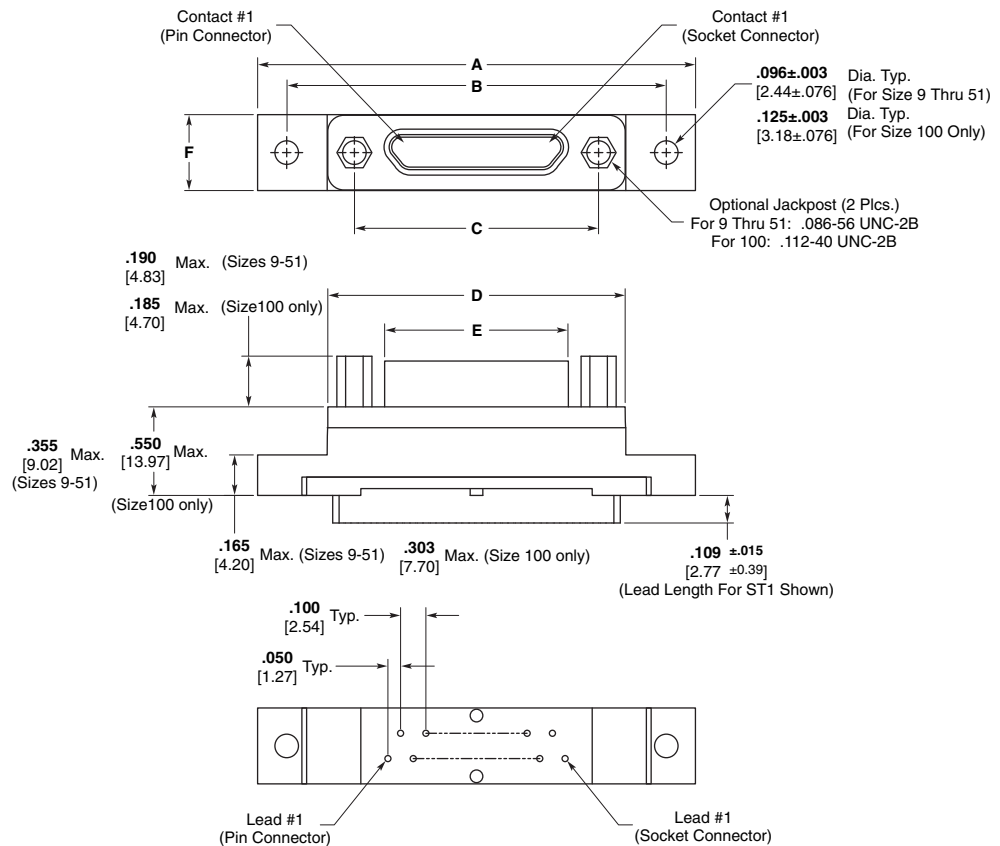


**MICRODOT MCK Transition Blocks** (Continued)

**ST1 — Straight Termination Configuration**



MIL-DTL-83513/22 through /27 configurations. 180° — Narrow Profile termination configurations. See pages 5-78 to 5-82 for M83513 cross references.



**How To Specify**

MCK — N1 — P — 37 — P — ST1

**Straight Termination (Solder Dipped)**

ST1 — w/ .109 Leads  
ST1A — w/ .140 Leads  
ST1B — w/ .172 Leads

**Contact Type**

S = STD Socket  
P = STD Pin

**Layout**

9, 15, 21, 25, 31, 37, 51 and 100

**Hardware**

P = Jackpost (9-51)  
B = No Hardware  
S = Jackpost (100)

**Shell Finish**

C2 = Cadmium, Yellow Chromate  
N1 = Nickel, Electroless

**Connector Series**

(See page 87)

**Notes:**

1. For terminal identification see page 5-81.
2. Grid pattern for all configurations is .100 x .100 [2.54 x 2.54].
3. Lead lengths shown are for ST1.
4. Items in bold italic are qualified to MIL-DTL-83513.



**MICRODOT MCK Transition Blocks** (Continued)

**ST1 — Straight Termination Configuration** (Continued)

| Part Number              | A<br>Max.             | B<br>± .007 [.178]    | C<br>± .005 [.127]    | D<br>Max.             | E<br>Max.              | F<br>Max.            |
|--------------------------|-----------------------|-----------------------|-----------------------|-----------------------|------------------------|----------------------|
| <i>MCK-**-*- 9PST1</i>   | <b>1.390</b><br>35.31 | <b>1.150</b><br>29.21 | <b>.565</b><br>14.35  | <b>.885</b><br>22.48  | <b>.3338</b><br>8.48   | <b>.308</b><br>7.83  |
| <i>MCK-**-*- 9SST1</i>   | <b>1.390</b><br>35.31 | <b>1.150</b><br>29.21 | <b>.565</b><br>14.35  | <b>.885</b><br>22.48  | <b>.4018</b><br>10.21  | <b>.308</b><br>7.83  |
| <i>MCK-**-*- 15PST1</i>  | <b>1.390</b><br>35.31 | <b>1.150</b><br>29.21 | <b>.715</b><br>18.16  | <b>.945</b><br>24.00  | <b>.4838</b><br>12.29  | <b>.308</b><br>7.83  |
| <i>MCK-**-*- 15SST1</i>  | <b>1.390</b><br>35.31 | <b>1.150</b><br>29.21 | <b>.715</b><br>18.16  | <b>.945</b><br>24.00  | <b>.5518</b><br>14.02  | <b>.308</b><br>7.83  |
| <i>MCK-**-*- 21PST1</i>  | <b>1.690</b><br>42.93 | <b>1.450</b><br>36.83 | <b>.865</b><br>21.97  | <b>1.185</b><br>30.10 | <b>.6338</b><br>16.10  | <b>.308</b><br>7.83  |
| <i>MCK-**-*- 21SST1</i>  | <b>1.690</b><br>42.93 | <b>1.450</b><br>36.83 | <b>.865</b><br>21.97  | <b>1.185</b><br>30.10 | <b>.7018</b><br>17.83  | <b>.308</b><br>7.83  |
| <i>MCK-**-*- 25PST1</i>  | <b>1.740</b><br>44.20 | <b>1.500</b><br>38.10 | <b>.965</b><br>24.51  | <b>1.275</b><br>32.39 | <b>.7338</b><br>18.64  | <b>.308</b><br>7.83  |
| <i>MCK-**-*- 25SST1</i>  | <b>1.740</b><br>44.20 | <b>1.500</b><br>38.10 | <b>.965</b><br>24.51  | <b>1.275</b><br>32.39 | <b>.8018</b><br>20.37  | <b>.308</b><br>7.83  |
| <i>MCK-**-*- 31PST1</i>  | <b>2.040</b><br>51.82 | <b>1.800</b><br>45.72 | <b>1.115</b><br>28.32 | <b>1.575</b><br>40.01 | <b>.8838</b><br>22.45  | <b>.308</b><br>7.83  |
| <i>MCK-**-*- 31SST1</i>  | <b>2.040</b><br>51.82 | <b>1.800</b><br>45.72 | <b>1.115</b><br>28.32 | <b>1.575</b><br>40.01 | <b>.9518</b><br>24.18  | <b>.308</b><br>7.83  |
| <i>MCK-**-*- 37PST1</i>  | <b>2.340</b><br>59.44 | <b>2.100</b><br>53.34 | <b>1.265</b><br>32.13 | <b>1.875</b><br>47.63 | <b>1.0338</b><br>26.26 | <b>.308</b><br>7.83  |
| <i>MCK-**-*- 37SST1</i>  | <b>2.340</b><br>59.44 | <b>2.100</b><br>53.34 | <b>1.265</b><br>32.13 | <b>1.875</b><br>47.63 | <b>1.1018</b><br>27.99 | <b>.308</b><br>7.83  |
| <i>MCK-**-*- 51PST1</i>  | <b>2.270</b><br>57.66 | <b>2.000</b><br>50.80 | <b>1.215</b><br>30.86 | <b>1.775</b><br>45.09 | <b>.9838</b><br>24.99  | <b>.351</b><br>8.92  |
| <i>MCK-**-*- 51SST1</i>  | <b>2.280</b><br>57.91 | <b>2.000</b><br>50.80 | <b>1.215</b><br>30.86 | <b>1.775</b><br>45.09 | <b>1.0518</b><br>26.72 | <b>.351</b><br>8.92  |
| <i>MCK-**-*- 100PST1</i> | <b>3.250</b><br>82.55 | <b>2.800</b><br>71.12 | <b>1.800</b><br>45.72 | <b>2.585</b><br>65.66 | <b>1.3838</b><br>35.15 | <b>.460</b><br>11.68 |
| <i>MCK-**-*- 100SST1</i> | <b>3.250</b><br>82.55 | <b>2.800</b><br>71.12 | <b>1.800</b><br>45.72 | <b>2.585</b><br>65.66 | <b>1.508</b><br>38.30  | <b>.460</b><br>11.68 |

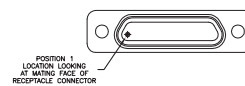
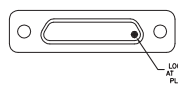
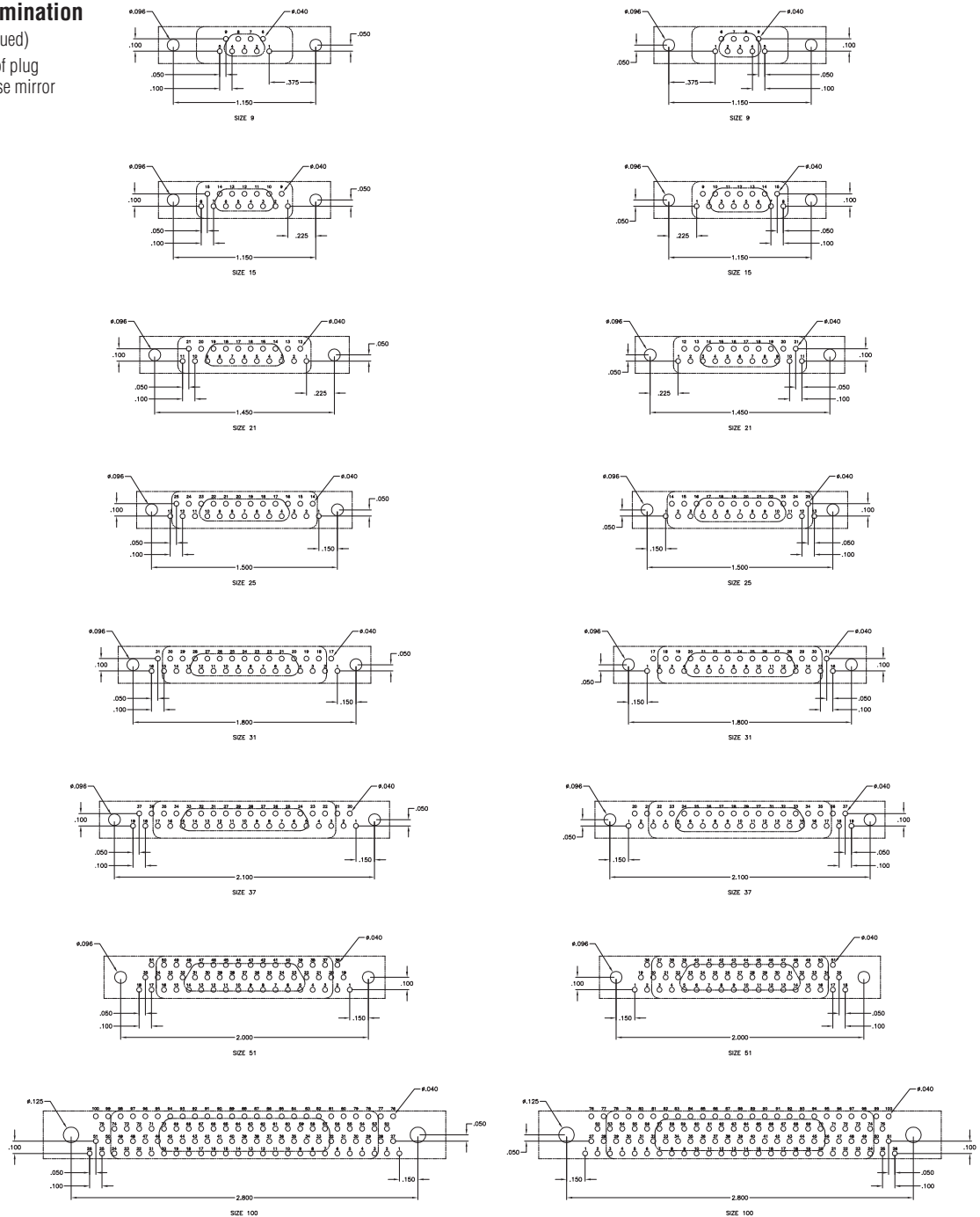
P = Pin, S = Socket

**Note:** Items in bold italic are qualified to MIL-DTL-83513.

### MICRODOT MCK Transition Blocks (Continued)

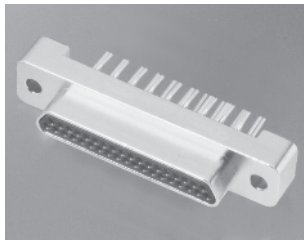
### ST1 — Straight Termination Configuration (Continued)

View is of termination side of plug connector. For receptacle, use mirror image.

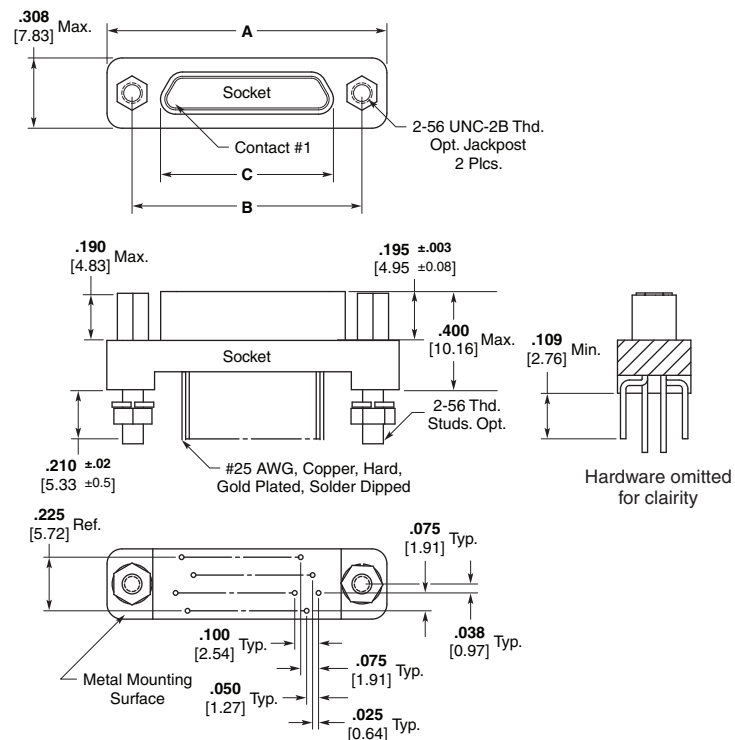
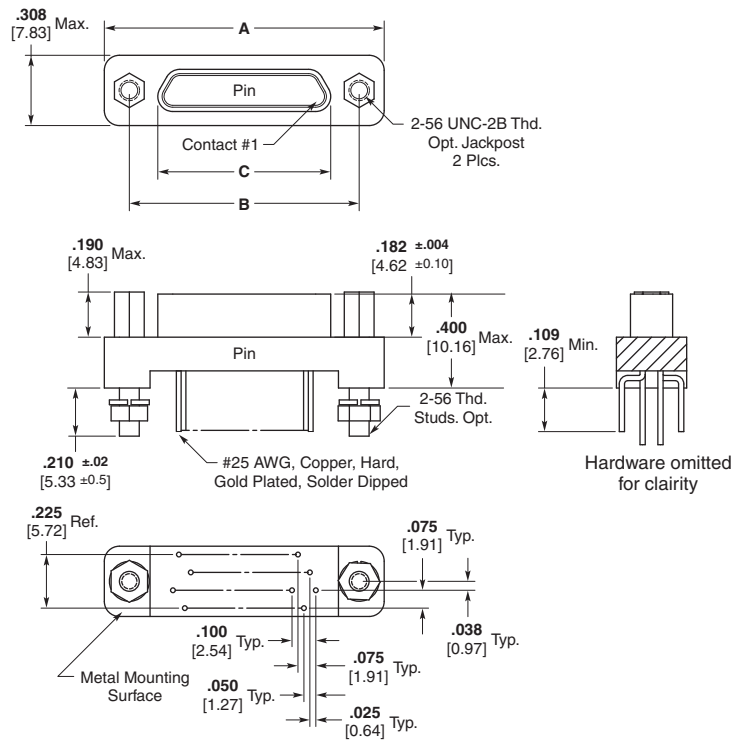


## MICRODOT MCK ST2 Series Straight Mount PCB Connectors

### MCK with Cactus Bend Termination



- Meets MIL-DTL-83513 Performance requirements
- Single metal shell with no Transition Block
- Low profile and light weight
- .100 [2.54] x .075 [1.91] grid pattern
- Design allows lower cost construction



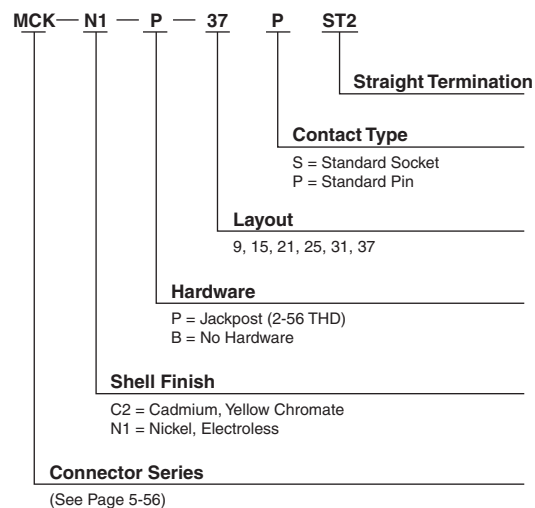
5

Nanominature and Microminiature Connectors

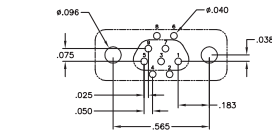
## MICRODOT MCK ST2 Series Straight Mount PCB Connectors (Continued)

| Part Number       | A<br>Max.      | B ± .005       | C<br>Max.      |
|-------------------|----------------|----------------|----------------|
| MCK-**-*- 9 PST2  | .785<br>19.94  | .565<br>14.35  | .333<br>8.46   |
| MCK-**-*- 9 SST2  | .785<br>19.94  | .565<br>14.35  | .402<br>10.21  |
| MCK-**-*- 15 PST2 | .935<br>23.75  | .715<br>18.16  | .483<br>12.27  |
| MCK-**-*- 15 SST2 | .935<br>23.75  | .715<br>18.16  | .552<br>14.02  |
| MCK-**-*- 21 PST2 | 1.085<br>27.56 | .865<br>21.97  | .633<br>16.08  |
| MCK-**-*- 21 SST2 | 1.085<br>27.56 | .865<br>21.97  | .702<br>17.83  |
| MCK-**-*- 25 PST2 | 1.185<br>30.10 | .965<br>24.51  | .733<br>18.62  |
| MCK-**-*- 25 SST2 | 1.185<br>30.10 | .965<br>24.51  | .802<br>20.37  |
| MCK-**-*- 31 PST2 | 1.335<br>33.91 | 1.115<br>28.32 | .883<br>22.43  |
| MCK-**-*- 31 SST2 | 1.335<br>33.91 | 1.115<br>28.32 | .952<br>24.18  |
| MCK-**-*- 37 PST2 | 1.485<br>37.72 | 1.265<br>32.13 | 1.033<br>26.24 |
| MCK-**-*- 37 SST2 | 1.485<br>37.72 | 1.265<br>32.13 | 1.102<br>27.99 |

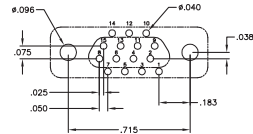
### How To Specify



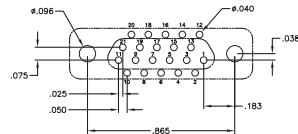
**MICRODOT MCK ST2 Series Straight Mount PCB Connectors (Continued)**



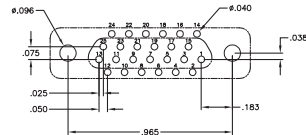
SIZE 9



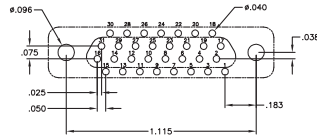
SIZE 15



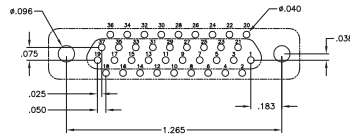
SIZE 21



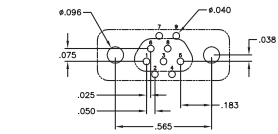
SIZE 25



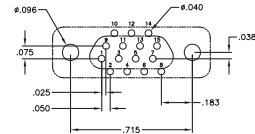
SIZE 31



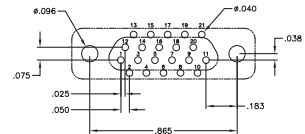
SIZE 37



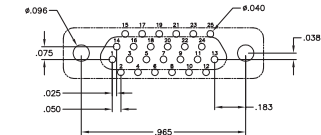
SIZE 9



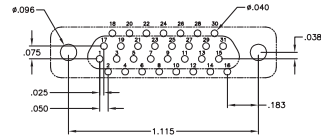
SIZE 15



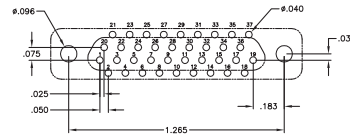
SIZE 21



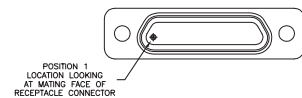
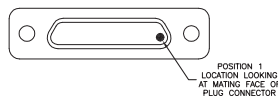
SIZE 25



SIZE 31



SIZE 37



5

Nanominature and Microminiature Connectors

## MICRODOT MCDM Series Metal Shell Connectors

### Technical & Performance Data

#### Performance

**Contact Resistance** — The average mated contact resistance is 4 milliohms, with a maximum value of 8 milliohms, using standard #24 solid copper leads when measured directly behind the crimp joints of the mated pin and socket contacts. The average resistance value at 100 microvolts is 4.8 milliohms.

#### Dielectric Withstanding Voltage (60 Hz rms room temperature) —

Solder Pots — 600 VAC at sea level; 150 VAC at 70,000 feet [21,336 m].  
Wire Terminations — 750 VAC at sea level; 200 VAC at 70,000 feet [21,336m]

#### Vibration (Per MIL-STD-202C, Method 204-A, Condition D) —

No discontinuity in excess of 1 microsecond during twelve 20 minute sweeps from 10 to 2,000 CPS at .06 double amplitude or 20 G forces, whichever is less.

**Corrosion Resistance (Per MIL-STD-202C, Method 101B, Condition B) —** Both mated and unmated samples do not exceed the

maximum allowable contact resistance (8 milliohms) when subjected to the 48 hour salt spray test.

**Durability** — The contact resistance after 500 mating cycles is less than the maximum allowable, 8 milliohms.

#### Insulation Resistance —

Greater than 5,000 megohms at room temperature for the materials listed under "Materials".

#### Maximum Current Carrying Capacity —

No. 24 contact, 3 amperes. It must be recognized, however, that all the wires to a connector will not carry their maximum current under all environmental conditions due to wire temperature.

#### Contact Engaging and Separation Forces —

6 oz. [1.67N] maximum (eng.); 0.5 oz. [1.4N] minimum (sep.).

#### Temperature Range (Operating) —

Diallyl phthalate -67°F to 257°F [-55°C to +125°C].

#### Materials

**Insulator** — Diallyl phthalate per MIL-M-14, Type SDG-F, Liquid Crystal Polymer (LCP) per ASTM D5138, or RYTON per ASTM D4067.

#### Contacts —

Pin Contact — Copper alloy and beryllium copper alloy make up the complete construction.

Socket Contact — Copper alloy.

**Body Shell** — High grade aluminum alloy.

#### Finishes

**Contacts** — Standard finish is 0.000050 [0.00127] gold over copper flash per MIL-G-45204, Type II.

**Body Shell** — Electroless nickel per AMS 2404.

#### Note:

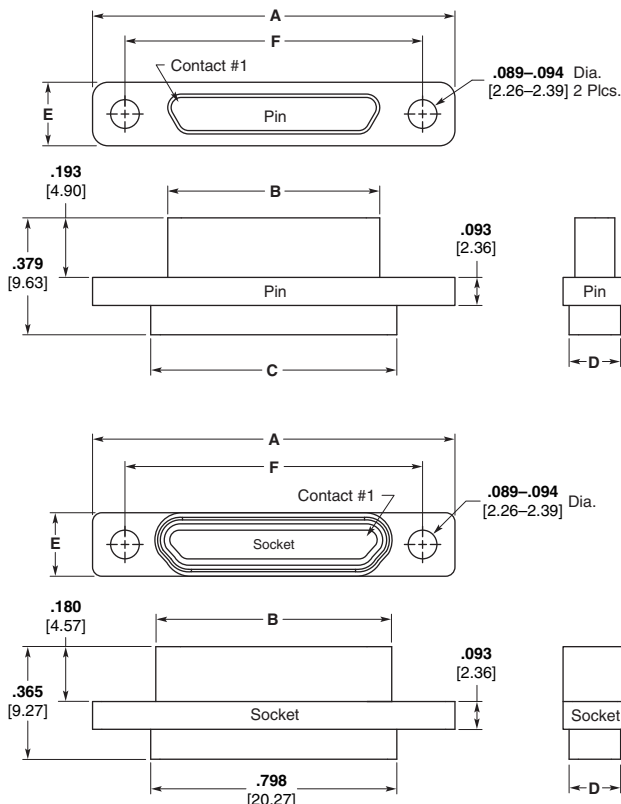
Insulators are molded into their metal shells — No bonded joint is used.

### Screw Mount



The only metal shell connector that mates with all existing plastic types. This line is ideal for external use and other applications requiring frequent disconnect and remating. When durability and reliability are paramount the metal shell connector is unsurpassed — it eliminates the need for retrofitting where new metal shell varieties must mate with older plastic types.

Originally designed for military applications, they are currently used for commercial requirements, including computers.

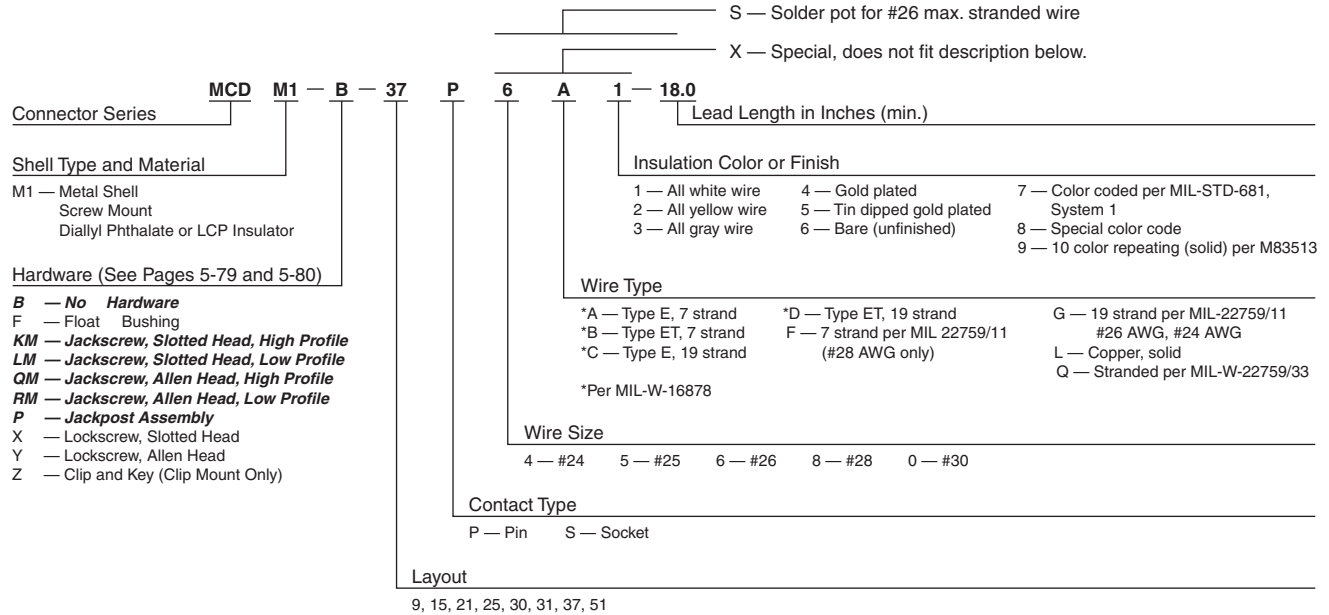


RYTON is a trademark of Chevron Chemical Company LLC.

## MICRODOT MCDM Series Metal Shell Connectors (Continued)

### Screw Mount (Continued)

### How To Specify



| Part Number  | A<br>± .005<br>[±.127] | B<br>± .005<br>[±.127] | C<br>± .010<br>[±.254] | D<br>± .010<br>[±.254] | E<br>± .005<br>[±.127] | F<br>± .005<br>[±.127] | Avg. Weight<br>lbs. ± 5%<br>[grams] |
|--------------|------------------------|------------------------|------------------------|------------------------|------------------------|------------------------|-------------------------------------|
| MCDM1-9P***  | .780<br>19.81          | .290<br>7.36           | .398<br>10.11          | .165<br>4.19           | .208<br>5.28           | .565<br>14.35          | .003<br>1.36                        |
| MCDM1-9S***  | .780<br>19.81          | .365<br>9.27           | .398<br>10.11          | .165<br>4.19           | .208<br>5.28           | .565<br>14.35          | .003<br>1.36                        |
| MCDM1-15P*** | .930<br>23.62          | .440<br>11.18          | .548<br>13.92          | .165<br>4.19           | .208<br>5.28           | .715<br>18.16          | .004<br>1.81                        |
| MCDM1-15S*** | .930<br>23.62          | .515<br>13.08          | .548<br>13.92          | .165<br>4.19           | .208<br>5.28           | .715<br>18.16          | .004<br>1.81                        |
| MCDM1-21P*** | 1.080<br>27.43         | .590<br>14.99          | .698<br>17.73          | .165<br>4.19           | .208<br>5.28           | .865<br>21.97          | .005<br>2.26                        |
| MCDM1-21S*** | 1.080<br>27.43         | .665<br>16.89          | .698<br>17.73          | .165<br>4.19           | .208<br>5.28           | .865<br>21.97          | .005<br>2.26                        |
| MCDM1-25P*** | 1.180<br>29.97         | .690<br>17.53          | .798<br>20.27          | .165<br>4.19           | .208<br>5.28           | .965<br>24.51          | .006<br>2.72                        |
| MCDM1-25S*** | 1.180<br>29.97         | .765<br>19.43          | .798<br>20.27          | .165<br>4.19           | .208<br>5.28           | .965<br>24.51          | .005<br>2.26                        |
| MCDM1-30P*** | .930<br>23.62          | .435<br>11.05          | .548<br>13.92          | .252<br>6.40           | .295<br>7.49           | .715<br>18.16          | .007<br>3.17                        |
| MCDM1-30S*** | .930<br>23.62          | .515<br>13.08          | .548<br>13.92          | .252<br>6.40           | .295<br>7.49           | .715<br>18.16          | .007<br>3.17                        |
| MCDM1-31P*** | 1.330<br>33.78         | .840<br>21.34          | .948<br>16.46          | .165<br>4.19           | .208<br>5.28           | 1.115<br>28.32         | .007<br>3.17                        |
| MCDM1-31S*** | 1.330<br>33.78         | .915<br>23.24          | .948<br>16.46          | .165<br>4.19           | .208<br>5.28           | 1.115<br>28.32         | .006<br>2.72                        |
| MCDM1-37P*** | 1.480<br>37.59         | .990<br>25.15          | 1.098<br>27.89         | .165<br>4.19           | .208<br>5.28           | 1.270<br>32.26         | .007<br>3.17                        |
| MCDM1-37S*** | 1.480<br>37.59         | 1.065<br>27.05         | 1.098<br>27.89         | .165<br>4.19           | .208<br>5.28           | 1.270<br>32.26         | .007<br>3.17                        |
| MCDM1-51P*** | 1.430<br>36.32         | .940<br>23.88          | 1.048<br>26.62         | .208<br>5.28           | .250<br>6.35           | 1.215<br>30.86         | .009<br>4.08                        |
| MCDM1-51S*** | 1.430<br>36.32         | 1.015<br>25.78         | 1.048<br>26.62         | .208<br>5.28           | .250<br>6.35           | 1.215<br>30.86         | .008<br>3.62                        |

Note: Weight given is with .500 [12.7] uninsulated, solid, 24 AWG gold plated copper pigtails.



## MICRODOT MCDM Series Metal Shell RF COMBOMATE Connectors

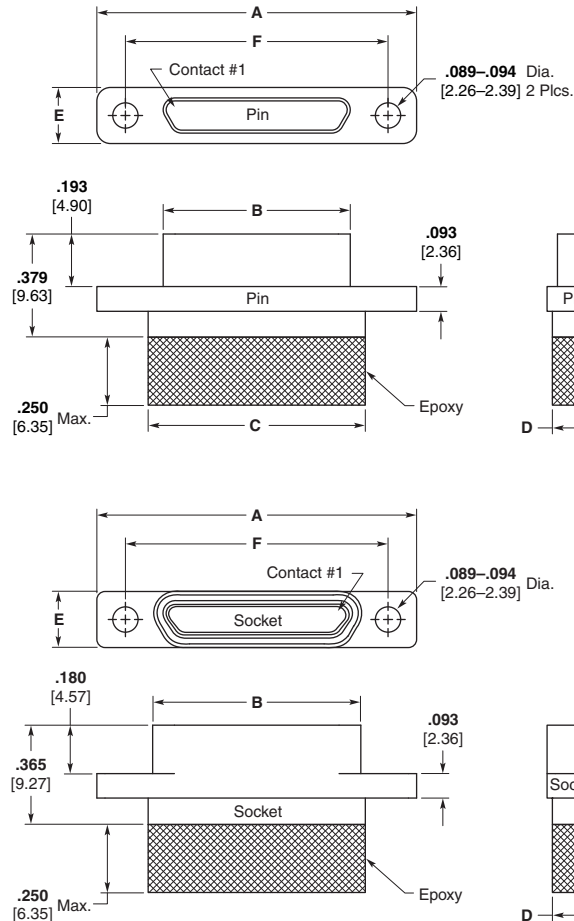
### Screw Mount Coaxial Terminations

Available *now* — RF Performance in standard subminiature rectangular connectors, with VSWR values of 1.01 to 1.10 in frequencies ranging in DC to 2.3 GHz. This is the COMBOMATE Connector.

This series of connectors incorporates the same metal shells and twist pin contacts used in the widely accepted, MCDM Series.

The RF COMBOMATE Connector Series will accommodate RG 196 A/U or RG 178 B/U coaxial cable terminated in a unique, already tooled insert layouts. This feature results in savings in cost, time and space.

The RF COMBOMATE Connector Series will accommodate a maximum of 17 RG 196 A/U or RG 178 B/U cables in an area of less than .225 sq. inches [14.51 mm<sup>2</sup>]. Mixed layouts with coaxial terminations and standard AWG 24, 26 and 28 are also immediately available in 7 different shell sizes. The overall envelope and mounting dimensions of equivalent size of COMBOMATE Connectors are exactly the same as the standard MCDM Series.



### Performance Data — Coaxial Terminations

**Impedance** — 49.0 to 51.0 Ohms.

**Voltage Standing Wave Ratio (VSWR)** — 1.01:1 to 1.10:1 at frequency ranging in DC to 2.3 GHz.

**Dielectric Withstanding Voltage (60 Hz rms room temperature)** — 750 VAC at sea level; 200 VAC at 70,000 feet [21,336 m].

|          | (Actual Test Data) | Crosstalk (Between Adjacent Lines) |         |         |  |
|----------|--------------------|------------------------------------|---------|---------|--|
|          | 1 to 2             | 2 to 3                             | 3 to 4  | 4 to 5  |  |
| 30 MHz   | 60.0 db            | 59.8 db                            | 60.7 db | 60.0 db |  |
| 100 MHz  | 49.1 db            | 48.3 db                            | 51.7 db | 50.6 db |  |
| 175 MHz  | 42.6 db            | 41.4 db                            | 47.2 db | 47.0 db |  |
| 500 MHz  | 38.0 db            | 38.8 db                            | 39.5 db | 40.0 db |  |
| 1000 MHz | 31.6 db            | 32.0 db                            | 30.0 db | 32.5 db |  |
| 2000 MHz | 22.4 db            | 22.5 db                            | 22.3 db | 20.8 db |  |
| 3000 MHz | 21.5 db            | 23.9 db                            | 21.4 db | 24.2 db |  |

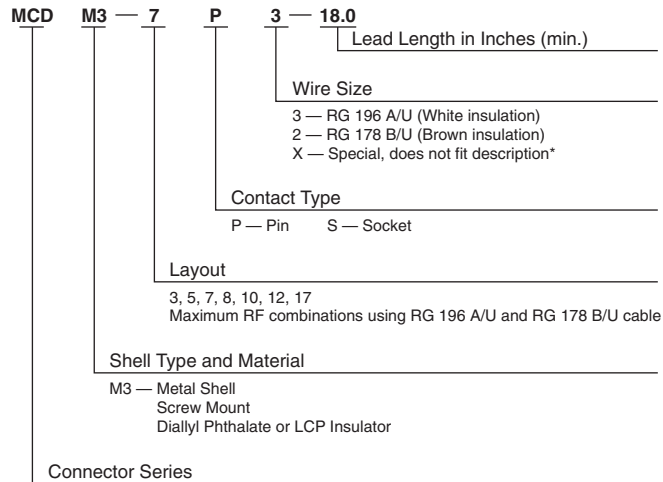
| Insertion Loss |         |         |         |         |         |
|----------------|---------|---------|---------|---------|---------|
| Sample         | #1      | #2      | #3      | #4      | #5      |
| 30 MHz         | .08 db  | .08 db  | .08 db  | .08 db  | .08 db  |
| 100 MHz        | .24 db  | .24 db  | .25 db  | .25 db  | .25 db  |
| 175 MHz        | .35 db  | .36 db  | .36 db  | .34 db  | .32 db  |
| 500 MHz        | .58 db  | .50 db  | .60 db  | .58 db  | .48 db  |
| 1000 MHz       | 1.25 db | 1.33 db | 1.36 db | 1.35 db | 1.24 db |
| 2000 MHz       | 1.48 db | 1.71 db | 1.42 db | 1.40 db | 1.45 db |
| 3000 MHz       | 2.66 db | 2.45 db | 2.74 db | 2.86 db | 2.84 db |

**Note:** Verification of all test data is on file at TE Connectivity and is available upon request.  
All test runs using RG 196 A/U.

## MICRODOT MCDM Series Metal Shell RF COMBOMATE Connectors (Continued)

### Screw Mount Coaxial Terminations (Continued)

#### How To Specify

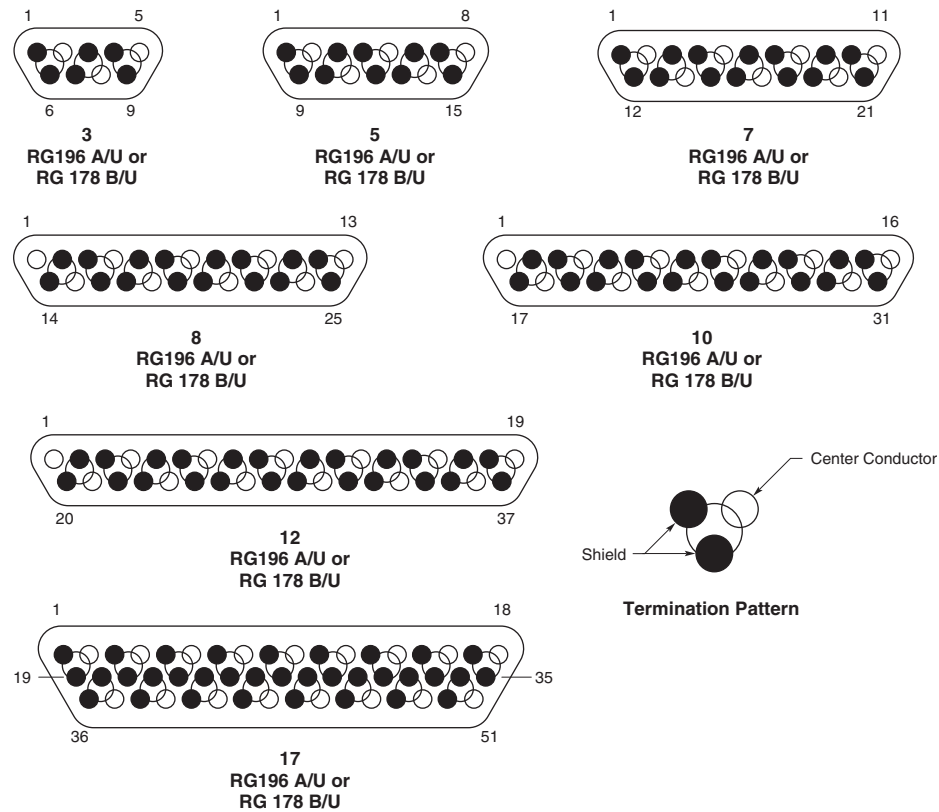


**\*Ordering Criteria:** A wide variety of contact combinations, coaxial and power mixed, are available. Contact TE Connectivity for additional arrangement numbers.

| Part Number | A<br>± .005<br>[± .127] | B<br>± .005<br>[± .127] | C<br>Max.      | D<br>Max.    | E<br>± .005<br>[± .127] | F<br>± .005<br>[± .127] |
|-------------|-------------------------|-------------------------|----------------|--------------|-------------------------|-------------------------|
| MCDM3-3P**  | .780<br>19.81           | .290<br>7.36            | .408<br>10.36  | .200<br>5.08 | .208<br>5.28            | .565<br>14.35           |
| MCDM3-3S**  | .780<br>19.81           | .365<br>9.27            | .408<br>10.36  | .200<br>5.08 | .208<br>5.28            | .565<br>14.35           |
| MCDM3-5P**  | .930<br>23.62           | .440<br>11.18           | .558<br>14.17  | .200<br>5.08 | .208<br>5.28            | .715<br>18.16           |
| MCDM3-5S**  | .930<br>23.62           | .515<br>13.08           | .558<br>14.17  | .200<br>5.08 | .208<br>5.28            | .715<br>18.16           |
| MCDM3-7P**  | 1.080<br>27.43          | .590<br>14.99           | .708<br>17.98  | .200<br>5.08 | .208<br>5.28            | .865<br>21.97           |
| MCDM3-7S**  | 1.080<br>27.43          | .665<br>16.89           | .708<br>17.98  | .200<br>5.08 | .208<br>5.28            | .865<br>21.97           |
| MCDM3-8P**  | 1.180<br>29.97          | .690<br>17.53           | .808<br>20.52  | .200<br>5.08 | .208<br>5.28            | .965<br>24.51           |
| MCDM3-8S**  | 1.180<br>29.97          | .765<br>19.43           | .808<br>20.52  | .200<br>5.08 | .208<br>5.28            | .965<br>24.51           |
| MCDM3-10P** | 1.330<br>33.78          | .840<br>21.34           | .958<br>24.33  | .200<br>5.08 | .208<br>5.28            | 1.115<br>28.32          |
| MCDM3-10S** | 1.330<br>33.78          | .915<br>23.24           | .958<br>24.33  | .200<br>5.08 | .208<br>5.28            | 1.115<br>28.32          |
| MCDM3-12P** | 1.480<br>37.59          | .990<br>25.15           | 1.108<br>27.89 | .200<br>5.08 | .208<br>5.28            | 1.270<br>32.26          |
| MCDM3-12S** | 1.480<br>37.59          | 1.065<br>27.05          | 1.108<br>27.89 | .200<br>5.08 | .208<br>5.28            | 1.270<br>32.26          |
| MCDM3-17P** | 1.430<br>36.32          | .940<br>23.88           | 1.058<br>26.87 | .245<br>6.22 | .250<br>6.35            | 1.215<br>30.86          |
| MCDM3-17S** | 1.430<br>36.32          | 1.015<br>25.78          | 1.058<br>26.87 | .245<br>6.22 | .250<br>6.35            | 1.215<br>30.86          |

**MICRODOT MCDM Series Metal Shell RF COMBOMATE Connectors** (Continued)

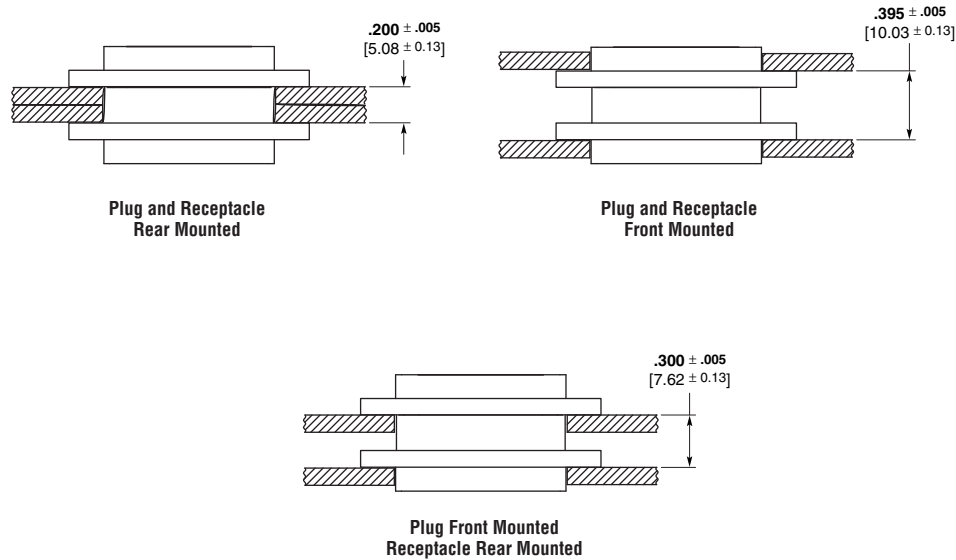
**Contact Arrangement as Viewed from the Engaging Face of the Pin Side**



**Note:** The above contact arrangements are the maximum densities that can be obtained in each shell size when using RG 196 A/U or RG 178 B/U cable.

## MICRODOT MCDM Series Metal Shell Connectors Panel Mounting — Cutout Dimensions

### Panel Mounting Dimensions — MCDM



### Panel Cutout Dimensions

#### Screw Mounting

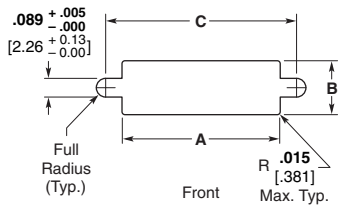


Figure 1

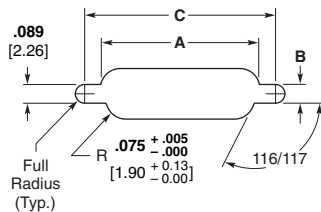


Figure 2

**Note:** Front mounting preferred.

| Number of Contacts | Fig. | A              |                | B              |                | C              |                |
|--------------------|------|----------------|----------------|----------------|----------------|----------------|----------------|
|                    |      | +.004 [+ .102] | -.000 [- .000] | +.004 [+ .102] | -.000 [- .000] | +.005 [+ .127] | -.000 [- .000] |
| 9                  | 1    | .412 [10.46]   |                | .177 [4.50]    |                | .570 [14.48]   |                |
|                    | 2    | .384 [9.75]    |                | .222 [5.64]    |                | .570 [14.48]   |                |
| 15                 | 1    | .562 [14.27]   |                | .177 [4.50]    |                | .720 [18.29]   |                |
|                    | 2    | .534 [13.56]   |                | .222 [5.64]    |                | .720 [18.29]   |                |
| 21                 | 1    | .712 [18.08]   |                | .177 [4.50]    |                | .870 [22.10]   |                |
|                    | 2    | .684 [17.37]   |                | .222 [5.64]    |                | .870 [22.10]   |                |
| 25                 | 1    | .812 [20.62]   |                | .177 [4.50]    |                | .970 [24.64]   |                |
|                    | 2    | .784 [19.91]   |                | .222 [5.64]    |                | .970 [24.64]   |                |
| 31                 | 1    | .962 [24.43]   |                | .177 [4.50]    |                | 1.120 [28.45]  |                |
|                    | 2    | .934 [23.72]   |                | .222 [5.64]    |                | 1.120 [28.45]  |                |
| 37                 | 1    | 1.112 [28.24]  |                | .177 [4.50]    |                | 1.270 [32.26]  |                |
|                    | 2    | 1.084 [27.53]  |                | .222 [5.64]    |                | 1.270 [32.26]  |                |
| 51                 | 1    | 1.062 [26.97]  |                | .224 [5.69]    |                | 1.220 [30.99]  |                |
|                    | 2    | 1.034 [26.26]  |                | .264 [6.71]    |                | 1.220 [30.99]  |                |

## MIL-DTL-83513 Cross Reference

### MCKS (Metal Shell)

| Military Part No. | MICRODOT Part No.     |
|-------------------|-----------------------|
| M83513/01-A*      | MCKS**-B- 9PS         |
| M83513/01-B*      | MCKS**-B- 15PS        |
| M83513/01-C*      | MCKS**-B- 21PS        |
| M83513/01-D*      | MCKS**-B- 25PS        |
| M83513/01-E*      | MCKS**-B- 31PS        |
| M83513/01-F*      | MCKS**-B- 37PS        |
| M83513/01-G*      | MCKS**-B- 51PS        |
| M83513/01-H*      | MCKS**-B-100PS        |
| M83513/02-A*      | MCKS**-B- 9SS         |
| M83513/02-B*      | MCKS**-B- 15SS        |
| M83513/02-C*      | MCKS**-B- 21SS        |
| M83513/02-D*      | MCKS**-B- 25SS        |
| M83513/02-E*      | MCKS**-B- 31SS        |
| M83513/02-F*      | MCKS**-B- 37SS        |
| M83513/02-G*      | MCKS**-B- 51SS        |
| M83513/02-H*      | MCKS**-B-100SS        |
| M83513/03-A01*    | MCKS**-B- 9P6G1-18.0  |
| M83513/03-B01*    | MCKS**-B- 15P6G1-18.0 |
| M83513/03-C01*    | MCKS**-B- 21P6G1-18.0 |
| M83513/03-D01*    | MCKS**-B- 25P6G1-18.0 |
| M83513/03-E01*    | MCKS**-B- 31P6G1-18.0 |
| M83513/03-F01*    | MCKS**-B- 37P6G1-18.0 |
| M83513/03-G01*    | MCKS**-B- 51P6G1-18.0 |
| M83513/03-H01*    | MCKS**-B-100P6G1-18.0 |
| M83513/03-A02*    | MCKS**-B- 9P6G1-36.0  |
| M83513/03-B02*    | MCKS**-B- 15P6G1-36.0 |
| M83513/03-C02*    | MCKS**-B- 21P6G1-36.0 |
| M83513/03-D02*    | MCKS**-B- 25P6G1-36.0 |
| M83513/03-E02*    | MCKS**-B- 31P6G1-36.0 |
| M83513/03-F02*    | MCKS**-B- 37P6G1-36.0 |
| M83513/03-G02*    | MCKS**-B- 51P6G1-36.0 |
| M83513/03-H02*    | MCKS**-B-100P6G1-36.0 |
| M83513/03-A03*    | MCKS**-B- 9P6G9-18.0  |
| M83513/03-B03*    | MCKS**-B- 15P6G9-18.0 |
| M83513/03-C03*    | MCKS**-B- 21P6G9-18.0 |
| M83513/03-D03*    | MCKS**-B- 25P6G9-18.0 |
| M83513/03-E03*    | MCKS**-B- 31P6G9-18.0 |
| M83513/03-F03*    | MCKS**-B- 37P6G9-18.0 |
| M83513/03-G03*    | MCKS**-B- 51P6G9-18.0 |
| M83513/03-H03*    | MCKS**-B-100P6G9-18.0 |
| M83513/03-A04*    | MCKS**-B- 9P6G9-36.0  |
| M83513/03-B04*    | MCKS**-B- 15P6G9-36.0 |
| M83513/03-C04*    | MCKS**-B- 21P6G9-36.0 |
| M83513/03-D04*    | MCKS**-B- 25P6G9-36.0 |
| M83513/03-E04*    | MCKS**-B- 31P6G9-36.0 |
| M83513/03-F04*    | MCKS**-B- 37P6G9-36.0 |
| M83513/03-G04*    | MCKS**-B- 51P6G9-36.0 |
| M83513/03-H04*    | MCKS**-B-100P6G9-36.0 |
| M83513/03-A05*    | MCKS**-B- 9P5L4-0.5   |
| M83513/03-B05*    | MCKS**-B- 15P5L4-0.5  |
| M83513/03-C05*    | MCKS**-B- 21P5L4-0.5  |
| M83513/03-D05*    | MCKS**-B- 25P5L4-0.5  |
| M83513/03-E05*    | MCKS**-B- 31P5L4-0.5  |
| M83513/03-F05*    | MCKS**-B- 37P5L4-0.5  |
| M83513/03-G05*    | MCKS**-B- 51P5L4-0.5  |
| M83513/03-H05*    | MCKS**-B-100P5L4-0.5  |
| M83513/03-A06*    | MCKS**-B- 9P5L4-1.0   |
| M83513/03-B06*    | MCKS**-B- 15P5L4-1.0  |
| M83513/03-C06*    | MCKS**-B- 21P5L4-1.0  |
| M83513/03-D06*    | MCKS**-B- 25P5L4-1.0  |

| Military Part No. | MICRODOT Part No.     |
|-------------------|-----------------------|
| M83513/03-E06*    | MCKS**-B- 31P5L4-1.0  |
| M83513/03-F06*    | MCKS**-B- 37P5L4-1.0  |
| M83513/03-G06*    | MCKS**-B- 51P5L4-1.0  |
| M83513/03-H06*    | MCKS**-B-100P5L4-1.0  |
| M83513/03-A07*    | MCKS**-B- 9P5L5-0.5   |
| M83513/03-B07*    | MCKS**-B- 15P5L5-0.5  |
| M83513/03-C07*    | MCKS**-B- 21P5L5-0.5  |
| M83513/03-D07*    | MCKS**-B- 25P5L5-0.5  |
| M83513/03-E07*    | MCKS**-B- 31P5L5-0.5  |
| M83513/03-F07*    | MCKS**-B- 37P5L5-0.5  |
| M83513/03-G07*    | MCKS**-B- 51P5L5-0.5  |
| M83513/03-H07*    | MCKS**-B-100P5L5-0.5  |
| M83513/03-A08*    | MCKS**-B- 9P5L5-1.0   |
| M83513/03-B08*    | MCKS**-B- 15P5L5-1.0  |
| M83513/03-C08*    | MCKS**-B- 21P5L5-1.0  |
| M83513/03-D08*    | MCKS**-B- 25P5L5-1.0  |
| M83513/03-E08*    | MCKS**-B- 31P5L5-1.0  |
| M83513/03-F08*    | MCKS**-B- 37P5L5-1.0  |
| M83513/03-G08*    | MCKS**-B- 51P5L5-1.0  |
| M83513/03-H08*    | MCKS**-B-100P5L5-1.0  |
| M83513/03-A09*    | MCKS**-B- 9P6Q1-18.0  |
| M83513/03-B09*    | MCKS**-B- 15P6Q1-18.0 |
| M83513/03-C09*    | MCKS**-B- 21P6Q1-18.0 |
| M83513/03-D09*    | MCKS**-B- 25P6Q1-18.0 |
| M83513/03-E09*    | MCKS**-B- 31P6Q1-18.0 |
| M83513/03-F09*    | MCKS**-B- 37P6Q1-18.0 |
| M83513/03-G09*    | MCKS**-B- 51P6Q1-18.0 |
| M83513/03-H09*    | MCKS**-B-100P6Q1-18.0 |
| M83513/03-A10*    | MCKS**-B- 9P6Q1-36.0  |
| M83513/03-B10*    | MCKS**-B- 15P6Q1-36.0 |
| M83513/03-C10*    | MCKS**-B- 21P6Q1-36.0 |
| M83513/03-D10*    | MCKS**-B- 25P6Q1-36.0 |
| M83513/03-E10*    | MCKS**-B- 31P6Q1-36.0 |
| M83513/03-F10*    | MCKS**-B- 37P6Q1-36.0 |
| M83513/03-G10*    | MCKS**-B- 51P6Q1-36.0 |
| M83513/03-H10*    | MCKS**-B-100P6Q1-36.0 |
| M83513/03-A11*    | MCKS**-B- 9P6Q9-18.0  |
| M83513/03-B11*    | MCKS**-B- 15P6Q9-18.0 |
| M83513/03-C11*    | MCKS**-B- 21P6Q9-18.0 |
| M83513/03-D11*    | MCKS**-B- 25P6Q9-18.0 |
| M83513/03-E11*    | MCKS**-B- 31P6Q9-18.0 |
| M83513/03-F11*    | MCKS**-B- 37P6Q9-18.0 |
| M83513/03-G11*    | MCKS**-B- 51P6Q9-18.0 |
| M83513/03-H11*    | MCKS**-B-100P6Q9-18.0 |
| M83513/03-A12*    | MCKS**-B- 9P6Q9-36.0  |
| M83513/03-B12*    | MCKS**-B- 15P6Q9-36.0 |
| M83513/03-C12*    | MCKS**-B- 21P6Q9-36.0 |
| M83513/03-D12*    | MCKS**-B- 25P6Q9-36.0 |
| M83513/03-E12*    | MCKS**-B- 31P6Q9-36.0 |
| M83513/03-F12*    | MCKS**-B- 37P6Q9-36.0 |
| M83513/03-G12*    | MCKS**-B- 51P6Q9-36.0 |
| M83513/03-H12*    | MCKS**-B-100P6Q9-36.0 |
| M83513/03-A13*    | MCKS**-B- 9P6G1-72.0  |
| M83513/03-B13*    | MCKS**-B- 15P6G1-72.0 |
| M83513/03-C13*    | MCKS**-B- 21P6G1-72.0 |
| M83513/03-D13*    | MCKS**-B- 25P6G1-72.0 |
| M83513/03-E13*    | MCKS**-B- 31P6G1-72.0 |
| M83513/03-F13*    | MCKS**-B- 37P6G1-72.0 |
| M83513/03-G13*    | MCKS**-B- 51P6G1-72.0 |
| M83513/03-H13*    | MCKS**-B-100P6G1-72.0 |

| Military Part No. | MICRODOT Part No.     |
|-------------------|-----------------------|
| M83513/03-A14*    | MCKS**-B- 9P6G9-72.0  |
| M83513/03-B14*    | MCKS**-B- 15P6G9-72.0 |
| M83513/03-C14*    | MCKS**-B- 21P6G9-72.0 |
| M83513/03-D14*    | MCKS**-B- 25P6G9-72.0 |
| M83513/03-E14*    | MCKS**-B- 31P6G9-72.0 |
| M83513/03-F14*    | MCKS**-B- 37P6G9-72.0 |
| M83513/03-G14*    | MCKS**-B- 51P6G9-72.0 |
| M83513/03-H14*    | MCKS**-B-100P6G9-72.0 |
| M83513/03-A15*    | MCKS**-B- 9P6Q1-72.0  |
| M83513/03-B15*    | MCKS**-B- 15P6Q1-72.0 |
| M83513/03-C15*    | MCKS**-B- 21P6Q1-72.0 |
| M83513/03-D15*    | MCKS**-B- 25P6Q1-72.0 |
| M83513/03-E15*    | MCKS**-B- 31P6Q1-72.0 |
| M83513/03-F15*    | MCKS**-B- 37P6Q1-72.0 |
| M83513/03-G15*    | MCKS**-B- 51P6Q1-72.0 |
| M83513/03-H15*    | MCKS**-B-100P6Q1-72.0 |
| M83513/03-A16*    | MCKS**-B- 9P6Q9-72.0  |
| M83513/03-B16*    | MCKS**-B- 15P6Q9-72.0 |
| M83513/03-C16*    | MCKS**-B- 21P6Q9-72.0 |
| M83513/03-D16*    | MCKS**-B- 25P6Q9-72.0 |
| M83513/03-E16*    | MCKS**-B- 31P6Q9-72.0 |
| M83513/03-F16*    | MCKS**-B- 37P6Q9-72.0 |
| M83513/03-G16*    | MCKS**-B- 51P6Q9-72.0 |
| M83513/03-H16*    | MCKS**-B-100P6Q9-72.0 |
| M83513/04-A01*    | MCKS**-B- 9S6G1-18.0  |
| M83513/04-B01*    | MCKS**-B- 15S6G1-18.0 |
| M83513/04-C01*    | MCKS**-B- 21S6G1-18.0 |
| M83513/04-D01*    | MCKS**-B- 25S6G1-18.0 |
| M83513/04-E01*    | MCKS**-B- 31S6G1-18.0 |
| M83513/04-F01*    | MCKS**-B- 37S6G1-18.0 |
| M83513/04-G01*    | MCKS**-B- 51S6G1-18.0 |
| M83513/04-H01*    | MCKS**-B-100S6G1-18.0 |
| M83513/04-A02*    | MCKS**-B- 9S6G1-36.0  |
| M83513/04-B02*    | MCKS**-B- 15S6G1-36.0 |
| M83513/04-C02*    | MCKS**-B- 21S6G1-36.0 |
| M83513/04-D02*    | MCKS**-B- 25S6G1-36.0 |
| M83513/04-E02*    | MCKS**-B- 31S6G1-36.0 |
| M83513/04-F02*    | MCKS**-B- 37S6G1-36.0 |
| M83513/04-G02*    | MCKS**-B- 51S6G1-36.0 |
| M83513/04-H02*    | MCKS**-B-100S6G1-36.0 |
| M83513/04-A03*    | MCKS**-B- 9S6G9-18.0  |
| M83513/04-B03*    | MCKS**-B- 15S6G9-18.0 |
| M83513/04-C03*    | MCKS**-B- 21S6G9-18.0 |
| M83513/04-D03*    | MCKS**-B- 25S6G9-18.0 |
| M83513/04-E03*    | MCKS**-B- 31S6G9-18.0 |
| M83513/04-F03*    | MCKS**-B- 37S6G9-18.0 |
| M83513/04-G03*    | MCKS**-B- 51S6G9-18.0 |
| M83513/04-H03*    | MCKS**-B-100S6G9-18.0 |
| M83513/04-A04*    | MCKS**-B- 9S6G9-36.0  |
| M83513/04-B04*    | MCKS**-B- 15S6G9-36.0 |
| M83513/04-C04*    | MCKS**-B- 21S6G9-36.0 |
| M83513/04-D04*    | MCKS**-B- 25S6G9-36.0 |
| M83513/04-E04*    | MCKS**-B- 31S6G9-36.0 |
| M83513/04-F04*    | MCKS**-B- 37S6G9-36.0 |
| M83513/04-G04*    | MCKS**-B- 51S6G9-36.0 |
| M83513/04-H04*    | MCKS**-B-100S6G9-36.0 |
| M83513/04-A05*    | MCKS**-B- 9S5L4-0.5   |
| M83513/04-B05*    | MCKS**-B- 15S5L4-0.5  |
| M83513/04-C05*    | MCKS**-B- 21S5L4-0.5  |
| M83513/04-D05*    | MCKS**-B- 25S5L4-0.5  |

## MIL-DTL-83513 Cross Reference (Continued)

### MCKS (Metal Shell) (Continued)

| Military Part No. | MICRODOT Part No.     |
|-------------------|-----------------------|
| M83513/04-E05*    | MCKS**-B- 31S5L4-0.5  |
| M83513/04-F05*    | MCKS**-B- 37S5L4-0.5  |
| M83513/04-G05*    | MCKS**-B- 51S5L4-0.5  |
| M83513/04-H05*    | MCKS**-B-100S5L4-0.5  |
| M83513/04-A06*    | MCKS**-B- 9S5L4-1.0   |
| M83513/04-B06*    | MCKS**-B- 15S5L4-1.0  |
| M83513/04-C06*    | MCKS**-B- 21S5L4-1.0  |
| M83513/04-D06*    | MCKS**-B- 25S5L4-1.0  |
| M83513/04-E06*    | MCKS**-B- 31S5L4-1.0  |
| M83513/04-F06*    | MCKS**-B- 37S5L4-1.0  |
| M83513/04-G06*    | MCKS**-B- 51S5L4-1.0  |
| M83513/04-H06*    | MCKS**-B-100S5L4-1.0  |
| M83513/04-A07*    | MCKS**-B- 9S5L5-0.5   |
| M83513/04-B07*    | MCKS**-B- 15S5L5-0.5  |
| M83513/04-C07*    | MCKS**-B- 21S5L5-0.5  |
| M83513/04-D07*    | MCKS**-B- 25S5L5-0.5  |
| M83513/04-E07*    | MCKS**-B- 31S5L5-0.5  |
| M83513/04-F07*    | MCKS**-B- 37S5L5-0.5  |
| M83513/04-G07*    | MCKS**-B- 51S5L5-0.5  |
| M83513/04-H07*    | MCKS**-B-100S5L5-0.5  |
| M83513/04-A08*    | MCKS**-B- 9S5L5-1.0   |
| M83513/04-B08*    | MCKS**-B- 15S5L5-1.0  |
| M83513/04-C08*    | MCKS**-B- 21S5L5-1.0  |
| M83513/04-D08*    | MCKS**-B- 25S5L5-1.0  |
| M83513/04-E08*    | MCKS**-B- 31S5L5-1.0  |
| M83513/04-F08*    | MCKS**-B- 37S5L5-1.0  |
| M83513/04-G08*    | MCKS**-B- 51S5L5-1.0  |
| M83513/04-H08*    | MCKS**-B-100S5L5-1.0  |
| M83513/04-A09*    | MCKS**-B- 9S6Q1-18.0  |
| M83513/04-B09*    | MCKS**-B- 15S6Q1-18.0 |
| M83513/04-C09*    | MCKS**-B- 21S6Q1-18.0 |

| Military Part No. | MICRODOT Part No.     |
|-------------------|-----------------------|
| M83513/04-D09*    | MCKS**-B- 25S6Q1-18.0 |
| M83513/04-E09*    | MCKS**-B- 31S6Q1-18.0 |
| M83513/04-F09*    | MCKS**-B- 37S6Q1-18.0 |
| M83513/04-G09*    | MCKS**-B- 51S6Q1-18.0 |
| M83513/04-H09*    | MCKS**-B-100S6Q1-18.0 |
| M83513/04-A10*    | MCKS**-B- 9S6Q1-36.0  |
| M83513/04-B10*    | MCKS**-B- 15S6Q1-36.0 |
| M83513/04-C10*    | MCKS**-B- 21S6Q1-36.0 |
| M83513/04-D10*    | MCKS**-B- 25S6Q1-36.0 |
| M83513/04-E10*    | MCKS**-B- 31S6Q1-36.0 |
| M83513/04-F10*    | MCKS**-B- 37S6Q1-36.0 |
| M83513/04-G10*    | MCKS**-B- 51S6Q1-36.0 |
| M83513/04-H10*    | MCKS**-B-100S6Q1-36.0 |
| M83513/04-A11*    | MCKS**-B- 9S6Q9-18.0  |
| M83513/04-B11*    | MCKS**-B- 15S6Q9-18.0 |
| M83513/04-C11*    | MCKS**-B- 21S6Q9-18.0 |
| M83513/04-D11*    | MCKS**-B- 25S6Q9-18.0 |
| M83513/04-E11*    | MCKS**-B- 31S6Q9-18.0 |
| M83513/04-F11*    | MCKS**-B- 37S6Q9-18.0 |
| M83513/04-G11*    | MCKS**-B- 51S6Q9-18.0 |
| M83513/04-H11*    | MCKS**-B-100S6Q9-18.0 |
| M83513/04-A12*    | MCKS**-B- 9S6Q9-36.0  |
| M83513/04-B12*    | MCKS**-B- 15S6Q9-36.0 |
| M83513/04-C12*    | MCKS**-B- 21S6Q9-36.0 |
| M83513/04-D12*    | MCKS**-B- 25S6Q9-36.0 |
| M83513/04-E12*    | MCKS**-B- 31S6Q9-36.0 |
| M83513/04-F12*    | MCKS**-B- 37S6Q9-36.0 |
| M83513/04-G12*    | MCKS**-B- 51S6Q9-36.0 |
| M83513/04-H12*    | MCKS**-B-100S6Q9-36.0 |
| M83513/04-A13*    | MCKS**-B- 9S6G1-72.0  |
| M83513/04-B13*    | MCKS**-B- 15S6G1-72.0 |

| Military Part No. | MICRODOT Part No.     |
|-------------------|-----------------------|
| M83513/04-C13*    | MCKS**-B- 21S6G1-72.0 |
| M83513/04-D13*    | MCKS**-B- 25S6G1-72.0 |
| M83513/04-E13*    | MCKS**-B- 31S6G1-72.0 |
| M83513/04-F13*    | MCKS**-B- 37S6G1-72.0 |
| M83513/04-G13*    | MCKS**-B- 51S6G1-72.0 |
| M83513/04-H13*    | MCKS**-B-100S6G1-72.0 |
| M83513/04-A14*    | MCKS**-B- 9S6G9-72.0  |
| M83513/04-B14*    | MCKS**-B- 15S6G9-72.0 |
| M83513/04-C14*    | MCKS**-B- 21S6G9-72.0 |
| M83513/04-D14*    | MCKS**-B- 25S6G9-72.0 |
| M83513/04-E14*    | MCKS**-B- 31S6G9-72.0 |
| M83513/04-F14*    | MCKS**-B- 37S6G9-72.0 |
| M83513/04-G14*    | MCKS**-B- 51S6G9-72.0 |
| M83513/04-H14*    | MCKS**-B-100S6G9-72.0 |
| M83513/04-A15*    | MCKS**-B- 9S6Q1-72.0  |
| M83513/04-B15*    | MCKS**-B- 15S6Q1-72.0 |
| M83513/04-C15*    | MCKS**-B- 21S6Q1-72.0 |
| M83513/04-D15*    | MCKS**-B- 25S6Q1-72.0 |
| M83513/04-E15*    | MCKS**-B- 31S6Q1-72.0 |
| M83513/04-F15*    | MCKS**-B- 37S6Q1-72.0 |
| M83513/04-G15*    | MCKS**-B- 51S6Q1-72.0 |
| M83513/04-H15*    | MCKS**-B-100S6Q1-72.0 |
| M83513/04-A16*    | MCKS**-B- 9S6Q9-72.0  |
| M83513/04-B16*    | MCKS**-B- 15S6Q9-72.0 |
| M83513/04-C16*    | MCKS**-B- 21S6Q9-72.0 |
| M83513/04-D16*    | MCKS**-B- 25S6Q9-72.0 |
| M83513/04-E16*    | MCKS**-B- 31S6Q9-72.0 |
| M83513/04-F16*    | MCKS**-B- 37S6Q9-72.0 |
| M83513/04-G16*    | MCKS**-B- 51S6Q9-72.0 |
| M83513/04-H16*    | MCKS**-B-100S6Q9-72.0 |

\*C = Cadmium or N = Nickel (space applications only)

\*\*C2 = Cadmium or N1 = Nickel (space applications only)

### Hardware

| Military Part No. | MICRODOT Part No.     |
|-------------------|-----------------------|
| M83513/05-02      | "A. HD, J/S, L.F. #2" |
| M83513/05-12      | "A. HD, J/S, L.F. #4" |
| M83513/05-03      | "A. HD, J/S,H.F. #2"  |
| M83513/05-13      | "A. HD, J/S, H.F. #4" |

| Military Part No. | MICRODOT Part No.     |
|-------------------|-----------------------|
| M83513/05-05      | "S. HD, J/S, L.F. #2" |
| M83513/05-15      | "S. HD, J/S, L.F. #4" |
| M83513/05-06      | "S. HD, J/S, H.F. #2" |
| M83513/05-16      | "S. HD, J/S, H.F. #4" |

| Military Part No. | MICRODOT Part No.   |
|-------------------|---------------------|
| M83513/05-07      | "JACKPOST ASSY #2"  |
| M83513/05-17      | "JACKPOST ASSY, #4" |

### MCDR (Plastic Shell)

| Military Part No. | MICRODOT Part No. |
|-------------------|-------------------|
| M83513/06-A       | MCDR3-B- 9PS      |
| M83513/06-B       | MCDR3-B-15PS      |
| M83513/06-C       | MCDR3-B-21PS      |
| M83513/06-D       | MCDR3-B-25PS      |
| M83513/06-E       | MCDR3-B-31PS      |
| M83513/06-F       | MCDR3-B-37PS      |
| M83513/06-G       | MCDR3-B-51PS      |
| M83513/07-A       | MCDR3-B- 9SS      |
| M83513/07-B       | MCDR3-B-15SS      |
| M83513/07-C       | MCDR3-B-21SS      |
| M83513/07-D       | MCDR3-B-25SS      |
| M83513/07-E       | MCDR3-B-31SS      |
| M83513/07-F       | MCDR3-B-37SS      |

| Military Part No. | MICRODOT Part No.   |
|-------------------|---------------------|
| M83513/07-G       | MCDR3-B-51SS        |
| M83513/08-A01     | MCDR3-B- 9P6G1-18.0 |
| M83513/08-B01     | MCDR3-B-15P6G1-18.0 |
| M83513/08-C01     | MCDR3-B-21P6G1-18.0 |
| M83513/08-D01     | MCDR3-B-25P6G1-18.0 |
| M83513/08-E01     | MCDR3-B-31P6G1-18.0 |
| M83513/08-F01     | MCDR3-B-37P6G1-18.0 |
| M83513/08-G01     | MCDR3-B-51P6G1-18.0 |
| M83513/08-A02     | MCDR3-B- 9P6G1-36.0 |
| M83513/08-B02     | MCDR3-B-15P6G1-36.0 |
| M83513/08-C02     | MCDR3-B-21P6G1-36.0 |
| M83513/08-D02     | MCDR3-B-25P6G1-36.0 |
| M83513/08-E02     | MCDR3-B-31P6G1-36.0 |

| Military Part No. | MICRODOT Part No.   |
|-------------------|---------------------|
| M83513/08-F02     | MCDR3-B-37P6G1-36.0 |
| M83513/08-G02     | MCDR3-B-51P6G1-36.0 |
| M83513/08-A03     | MCDR3-B- 9P6G9-18.0 |
| M83513/08-B03     | MCDR3-B-15P6G9-18.0 |
| M83513/08-C03     | MCDR3-B-21P6G9-18.0 |
| M83513/08-D03     | MCDR3-B-25P6G9-18.0 |
| M83513/08-E03     | MCDR3-B-31P6G9-18.0 |
| M83513/08-F03     | MCDR3-B-37P6G9-18.0 |
| M83513/08-G03     | MCDR3-B-51P6G9-18.0 |
| M83513/08-A04     | MCDR3-B- 9P6G9-36.0 |
| M83513/08-B04     | MCDR3-B-15P6G9-36.0 |
| M83513/08-C04     | MCDR3-B-21P6G9-36.0 |
| M83513/08-D04     | MCDR3-B-25P6G9-36.0 |

## MIL-DTL-83513 Cross Reference (Continued)

## MCDR (Plastic Shell) (Continued)

| Military Part No. | MICRODOT Part No.   |
|-------------------|---------------------|
| M83513/08-E04     | MCDR3-B-31P6G9-36.0 |
| M83513/08-F04     | MCDR3-B-37P6G9-36.0 |
| M83513/08-G04     | MCDR3-B-51P6G9-36.0 |
| M83513/08-A05     | MCDR3-B- 9P5L4-0.5  |
| M83513/08-B05     | MCDR3-B-15P5L4-0.5  |
| M83513/08-C05     | MCDR3-B-21P5L4-0.5  |
| M83513/08-D05     | MCDR3-B-25P5L4-0.5  |
| M83513/08-E05     | MCDR3-B-31P5L4-0.5  |
| M83513/08-F05     | MCDR3-B-37P5L4-0.5  |
| M83513/08-G05     | MCDR3-B-51P5L4-0.5  |
| M83513/08-A06     | MCDR3-B- 9P5L4-1.0  |
| M83513/08-B06     | MCDR3-B-15P5L4-1.0  |
| M83513/08-C06     | MCDR3-B-21P5L4-1.0  |
| M83513/08-D06     | MCDR3-B-25P5L4-1.0  |
| M83513/08-E06     | MCDR3-B-31P5L4-1.0  |
| M83513/08-F06     | MCDR3-B-37P5L4-1.0  |
| M83513/08-G06     | MCDR3-B-51P5L4-1.0  |
| M83513/08-A07     | MCDR3-B- 9P5L5-0.5  |
| M83513/08-B07     | MCDR3-B-15P5L5-0.5  |
| M83513/08-C07     | MCDR3-B-21P5L5-0.5  |
| M83513/08-D07     | MCDR3-B-25P5L5-0.5  |
| M83513/08-E07     | MCDR3-B-31P5L5-0.5  |
| M83513/08-F07     | MCDR3-B-37P5L5-0.5  |
| M83513/08-G07     | MCDR3-B-51P5L5-0.5  |
| M83513/08-A08     | MCDR3-B- 9P5L5-1.0  |
| M83513/08-B08     | MCDR3-B-15P5L5-1.0  |
| M83513/08-C08     | MCDR3-B-21P5L5-1.0  |
| M83513/08-D08     | MCDR3-B-25P5L5-1.0  |
| M83513/08-E08     | MCDR3-B-31P5L5-1.0  |
| M83513/08-F08     | MCDR3-B-37P5L5-1.0  |
| M83513/08-G08     | MCDR3-B-51P5L5-1.0  |
| M83513/08-A09     | MCDR3-B- 9P6Q1-18.0 |
| M83513/08-B09     | MCDR3-B-15P6Q1-18.0 |
| M83513/08-C09     | MCDR3-B-21P6Q1-18.0 |
| M83513/08-D09     | MCDR3-B-25P6Q1-18.0 |
| M83513/08-E09     | MCDR3-B-31P6Q1-18.0 |
| M83513/08-F09     | MCDR3-B-37P6Q1-18.0 |
| M83513/08-G09     | MCDR3-B-51P6Q1-18.0 |
| M83513/08-A10     | MCDR3-B- 9P6Q1-36.0 |
| M83513/08-B10     | MCDR3-B-15P6Q1-36.0 |
| M83513/08-C10     | MCDR3-B-21P6Q1-36.0 |
| M83513/08-D10     | MCDR3-B-25P6Q1-36.0 |
| M83513/08-E10     | MCDR3-B-31P6Q1-36.0 |
| M83513/08-F10     | MCDR3-B-37P6Q1-36.0 |
| M83513/08-G10     | MCDR3-B-51P6Q1-36.0 |
| M83513/08-A11     | MCDR3-B- 9P6Q9-18.0 |
| M83513/08-B11     | MCDR3-B-15P6Q9-18.0 |
| M83513/08-C11     | MCDR3-B-21P6Q9-18.0 |
| M83513/08-D11     | MCDR3-B-25P6Q9-18.0 |
| M83513/08-E11     | MCDR3-B-31P6Q9-18.0 |
| M83513/08-F11     | MCDR3-B-37P6Q9-18.0 |
| M83513/08-G11     | MCDR3-B-51P6Q9-18.0 |
| M83513/08-A12     | MCDR3-B- 9P6Q9-36.0 |
| M83513/08-B12     | MCDR3-B-15P6Q9-36.0 |
| M83513/08-C12     | MCDR3-B-21P6Q9-36.0 |
| M83513/08-D12     | MCDR3-B-25P6Q9-36.0 |
| M83513/08-E12     | MCDR3-B-31P6Q9-36.0 |
| M83513/08-F12     | MCDR3-B-37P6Q9-36.0 |
| M83513/08-G12     | MCDR3-B-51P6Q9-36.0 |
| M83513/08-A13     | MCDR3-B- 9P6G1-72.0 |

| Military Part No. | MICRODOT Part No.   |
|-------------------|---------------------|
| M83513/08-B13     | MCDR3-B-15P6G1-72.0 |
| M83513/08-C13     | MCDR3-B-21P6G1-72.0 |
| M83513/08-D13     | MCDR3-B-25P6G1-72.0 |
| M83513/08-E13     | MCDR3-B-31P6G1-72.0 |
| M83513/08-F13     | MCDR3-B-37P6G1-72.0 |
| M83513/08-G13     | MCDR3-B-51P6G1-72.0 |
| M83513/08-A14     | MCDR3-B- 9P6G9-72.0 |
| M83513/08-B14     | MCDR3-B-15P6G9-72.0 |
| M83513/08-C14     | MCDR3-B-21P6G9-72.0 |
| M83513/08-D14     | MCDR3-B-25P6G9-72.0 |
| M83513/08-E14     | MCDR3-B-31P6G9-72.0 |
| M83513/08-F14     | MCDR3-B-37P6G9-72.0 |
| M83513/08-G14     | MCDR3-B-51P6G9-72.0 |
| M83513/08-A15     | MCDR3-B- 9P6Q1-72.0 |
| M83513/08-B15     | MCDR3-B-15P6Q1-72.0 |
| M83513/08-C15     | MCDR3-B-21P6Q1-72.0 |
| M83513/08-D15     | MCDR3-B-25P6Q1-72.0 |
| M83513/08-E15     | MCDR3-B-31P6Q1-72.0 |
| M83513/08-F15     | MCDR3-B-37P6Q1-72.0 |
| M83513/08-G15     | MCDR3-B-51P6Q1-72.0 |
| M83513/08-A16     | MCDR3-B- 9P6Q9-72.0 |
| M83513/08-B16     | MCDR3-B-15P6Q9-72.0 |
| M83513/08-C16     | MCDR3-B-21P6Q9-72.0 |
| M83513/08-D16     | MCDR3-B-25P6Q9-72.0 |
| M83513/08-E16     | MCDR3-B-31P6Q9-72.0 |
| M83513/08-F16     | MCDR3-B-37P6Q9-72.0 |
| M83513/08-G16     | MCDR3-B-51P6Q9-72.0 |
| M83513/09-A01     | MCDR3-B- 9S6G1-18.0 |
| M83513/09-B01     | MCDR3-B-15S6G1-18.0 |
| M83513/09-C01     | MCDR3-B-21S6G1-18.0 |
| M83513/09-D01     | MCDR3-B-25S6G1-18.0 |
| M83513/09-E01     | MCDR3-B-31S6G1-18.0 |
| M83513/09-F01     | MCDR3-B-37S6G1-18.0 |
| M83513/09-G01     | MCDR3-B-51S6G1-18.0 |
| M83513/09-A02     | MCDR3-B- 9S6G1-36.0 |
| M83513/09-B02     | MCDR3-B-15S6G1-36.0 |
| M83513/09-C02     | MCDR3-B-21S6G1-36.0 |
| M83513/09-D02     | MCDR3-B-25S6G1-36.0 |
| M83513/09-E02     | MCDR3-B-31S6G1-36.0 |
| M83513/09-F02     | MCDR3-B-37S6G1-36.0 |
| M83513/09-G02     | MCDR3-B-51S6G1-36.0 |
| M83513/09-A03     | MCDR3-B- 9S6G9-18.0 |
| M83513/09-B03     | MCDR3-B-15S6G9-18.0 |
| M83513/09-C03     | MCDR3-B-21S6G9-18.0 |
| M83513/09-D03     | MCDR3-B-25S6G9-18.0 |
| M83513/09-E03     | MCDR3-B-31S6G9-18.0 |
| M83513/09-F03     | MCDR3-B-37S6G9-18.0 |
| M83513/09-G03     | MCDR3-B-51S6G9-18.0 |
| M83513/09-A04     | MCDR3-B- 9S6G9-36.0 |
| M83513/09-B04     | MCDR3-B-15S6G9-36.0 |
| M83513/09-C04     | MCDR3-B-21S6G9-36.0 |
| M83513/09-D04     | MCDR3-B-25S6G9-36.0 |
| M83513/09-E04     | MCDR3-B-31S6G9-36.0 |
| M83513/09-F04     | MCDR3-B-37S6G9-36.0 |
| M83513/09-G04     | MCDR3-B-51S6G9-36.0 |
| M83513/09-A05     | MCDR3-B- 9S5L4-0.5  |
| M83513/09-B05     | MCDR3-B-15S5L4-0.5  |
| M83513/09-C05     | MCDR3-B-21S5L4-0.5  |
| M83513/09-D05     | MCDR3-B-25S5L4-0.5  |
| M83513/09-E05     | MCDR3-B-31S5L4-0.5  |

| Military Part No. | MICRODOT Part No.   |
|-------------------|---------------------|
| M83513/09-F05     | MCDR3-B-37S5L4-0.5  |
| M83513/09-G05     | MCDR3-B-51S5L4-0.5  |
| M83513/09-A06     | MCDR3-B- 9S5L4-1.0  |
| M83513/09-B06     | MCDR3-B-15S5L4-1.0  |
| M83513/09-C06     | MCDR3-B-21S5L4-1.0  |
| M83513/09-D06     | MCDR3-B-25S5L4-1.0  |
| M83513/09-E06     | MCDR3-B-31S5L4-1.0  |
| M83513/09-F06     | MCDR3-B-37S5L4-1.0  |
| M83513/09-G06     | MCDR3-B-51S5L4-1.0  |
| M83513/09-A07     | MCDR3-B- 9S5L5-0.5  |
| M83513/09-B07     | MCDR3-B-15S5L5-0.5  |
| M83513/09-C07     | MCDR3-B-21S5L5-0.5  |
| M83513/09-D07     | MCDR3-B-25S5L5-0.5  |
| M83513/09-E07     | MCDR3-B-31S5L5-0.5  |
| M83513/09-F07     | MCDR3-B-37S5L5-0.5  |
| M83513/09-G07     | MCDR3-B-51S5L5-0.5  |
| M83513/09-A08     | MCDR3-B- 9S5L5-1.0  |
| M83513/09-B08     | MCDR3-B-15S5L5-1.0  |
| M83513/09-C08     | MCDR3-B-21S5L5-1.0  |
| M83513/09-D08     | MCDR3-B-25S5L5-1.0  |
| M83513/09-E08     | MCDR3-B-31S5L5-1.0  |
| M83513/09-F08     | MCDR3-B-37S5L5-1.0  |
| M83513/09-G08     | MCDR3-B-51S5L5-1.0  |
| M83513/09-A09     | MCDR3-B- 9S6Q1-18.0 |
| M83513/09-B09     | MCDR3-B-15S6Q1-18.0 |
| M83513/09-C09     | MCDR3-B-21S6Q1-18.0 |
| M83513/09-D09     | MCDR3-B-25S6Q1-18.0 |
| M83513/09-E09     | MCDR3-B-31S6Q1-18.0 |
| M83513/09-F09     | MCDR3-B-37S6Q1-18.0 |
| M83513/09-G09     | MCDR3-B-51S6Q1-18.0 |
| M83513/09-A10     | MCDR3-B- 9S6Q1-36.0 |
| M83513/09-B10     | MCDR3-B-15S6Q1-36.0 |
| M83513/09-C10     | MCDR3-B-21S6Q1-36.0 |
| M83513/09-D10     | MCDR3-B-25S6Q1-36.0 |
| M83513/09-E10     | MCDR3-B-31S6Q1-36.0 |
| M83513/09-F10     | MCDR3-B-37S6Q1-36.0 |
| M83513/09-G10     | MCDR3-B-51S6Q1-36.0 |
| M83513/09-A11     | MCDR3-B- 9S6Q9-18.0 |
| M83513/09-B11     | MCDR3-B-15S6Q9-18.0 |
| M83513/09-C11     | MCDR3-B-21S6Q9-18.0 |
| M83513/09-D11     | MCDR3-B-25S6Q9-18.0 |
| M83513/09-E11     | MCDR3-B-31S6Q9-18.0 |
| M83513/09-F11     | MCDR3-B-37S6Q9-18.0 |
| M83513/09-G11     | MCDR3-B-51S6Q9-18.0 |
| M83513/09-A12     | MCDR3-B- 9S6Q9-36.0 |
| M83513/09-B12     | MCDR3-B-15S6Q9-36.0 |
| M83513/09-C12     | MCDR3-B-21S6Q9-36.0 |
| M83513/09-D12     | MCDR3-B-25S6Q9-36.0 |
| M83513/09-E12     | MCDR3-B-31S6Q9-36.0 |
| M83513/09-F12     | MCDR3-B-37S6Q9-36.0 |
| M83513/09-G12     | MCDR3-B-51S6Q9-36.0 |
| M83513/09-A13     | MCDR3-B- 9S6G1-72.0 |
| M83513/09-B13     | MCDR3-B-15S6G1-72.0 |
| M83513/09-C13     | MCDR3-B-21S6G1-72.0 |
| M83513/09-D13     | MCDR3-B-25S6G1-72.0 |
| M83513/09-E13     | MCDR3-B-31S6G1-72.0 |
| M83513/09-F13     | MCDR3-B-37S6G1-72.0 |
| M83513/09-G13     | MCDR3-B-51S6G1-72.0 |
| M83513/09-A14     | MCDR3-B- 9S6G9-72.0 |
| M83513/09-B14     | MCDR3-B-15S6G9-72.0 |



## MIL-DTL-83513 Cross Reference (Continued)

### MCDR (Plastic Shell) (Continued)

| Military Part No. | MICRODOT Part No.   |
|-------------------|---------------------|
| M83513/09-C14     | MCDR3-B-21S6G9-72.0 |
| M83513/09-D14     | MCDR3-B-25S6G9-72.0 |
| M83513/09-E14     | MCDR3-B-31S6G9-72.0 |
| M83513/09-F14     | MCDR3-B-37S6G9-72.0 |
| M83513/09-G14     | MCDR3-B-51S6G9-72.0 |
| M83513/09-A15     | MCDR3-B- 9S6Q1-72.0 |
| M83513/09-B15     | MCDR3-B-15S6Q1-72.0 |

| Military Part No. | MICRODOT Part No.   |
|-------------------|---------------------|
| M83513/09-C15     | MCDR3-B-21S6Q1-72.0 |
| M83513/09-D15     | MCDR3-B-25S6Q1-72.0 |
| M83513/09-E15     | MCDR3-B-31S6Q1-72.0 |
| M83513/09-F15     | MCDR3-B-37S6Q1-72.0 |
| M83513/09-G15     | MCDR3-B-51S6Q1-72.0 |
| M83513/09-A16     | MCDR3-B- 9S6Q9-72.0 |
| M83513/09-B16     | MCDR3-B-15S6Q9-72.0 |

| Military Part No. | MICRODOT Part No.   |
|-------------------|---------------------|
| M83513/09-C16     | MCDR3-B-21S6Q9-72.0 |
| M83513/09-D16     | MCDR3-B-25S6Q9-72.0 |
| M83513/09-E16     | MCDR3-B-31S6Q9-72.0 |
| M83513/09-F16     | MCDR3-B-37S6Q9-72.0 |
| M83513/09-G16     | MCDR3-B-51S6Q9-72.0 |

### MCK (Metal Shell)

| Military Part No. | MICRODOT Part No. |
|-------------------|-------------------|
| M83513/10-A01*N   | MCK--B- 9PRT1     |
| M83513/10-B01*N   | MCK--B- 15PRT1    |
| M83513/10-C01*N   | MCK--B- 21PRT1    |
| M83513/10-D01*N   | MCK--B- 25PRT1    |
| M83513/10-E01*N   | MCK--B- 31PRT1    |
| M83513/10-F01*N   | MCK--B- 37PRT1    |
| M83513/10-A01*P   | MCK--P- 9PRT1     |
| M83513/10-B01*P   | MCK--P- 15PRT1    |
| M83513/10-C01*P   | MCK--P- 21PRT1    |
| M83513/10-D01*P   | MCK--P- 25PRT1    |
| M83513/10-E01*P   | MCK--P- 31PRT1    |
| M83513/10-F01*P   | MCK--P- 37PRT1    |
| M83513/10-A02*N   | MCK--B- 9PRT1A    |
| M83513/10-B02*N   | MCK--B- 15PRT1A   |
| M83513/10-C02*N   | MCK--B- 21PRT1A   |
| M83513/10-D02*N   | MCK--B- 25PRT1A   |
| M83513/10-E02*N   | MCK--B- 31PRT1A   |
| M83513/10-F02*N   | MCK--B- 37PRT1A   |
| M83513/10-A02*P   | MCK--P- 9PRT1A    |
| M83513/10-B02*P   | MCK--P- 15PRT1A   |
| M83513/10-C02*P   | MCK--P- 21PRT1A   |
| M83513/10-D02*P   | MCK--P- 25PRT1A   |
| M83513/10-E02*P   | MCK--P- 31PRT1A   |
| M83513/10-F02*P   | MCK--P- 37PRT1A   |
| M83513/10-A03*N   | MCK--B- 9PRT1B    |
| M83513/10-B03*N   | MCK--B- 15PRT1B   |
| M83513/10-C03*N   | MCK--B- 21PRT1B   |
| M83513/10-D03*N   | MCK--B- 25PRT1B   |
| M83513/10-E03*N   | MCK--B- 31PRT1B   |
| M83513/10-F03*N   | MCK--B- 37PRT1B   |
| M83513/10-A03*P   | MCK--P- 9PRT1B    |
| M83513/10-B03*P   | MCK--P- 15PRT1B   |
| M83513/10-C03*P   | MCK--P- 21PRT1B   |
| M83513/10-D03*P   | MCK--P- 25PRT1B   |
| M83513/10-E03*P   | MCK--P- 31PRT1B   |
| M83513/10-F03*P   | MCK--P- 37PRT1B   |
| M83513/11-G01*N   | MCK--B- 51PRT1    |
| M83513/11-G01*P   | MCK--P- 51PRT1    |
| M83513/11-G02*N   | MCK--B- 51PRT1A   |
| M83513/11-G02*P   | MCK--P- 51PRT1A   |
| M83513/11-G03*N   | MCK--B- 51PRT1B   |
| M83513/11-G03*P   | MCK--P- 51PRT1B   |
| M83513/12-H01*N   | MCK--B-100PRT1    |
| M83513/12-H01*P   | MCK--S-100PRT1    |
| M83513/12-H02*N   | MCK--B-100PRT1A   |
| M83513/12-H02*P   | MCK--S-100PRT1A   |
| M83513/12-H03*N   | MCK--B-100PRT1B   |

| Military Part No. | MICRODOT Part No. |
|-------------------|-------------------|
| M83513/12-H03*P   | MCK--S-100PRT1B   |
| M83513/13-A01*N   | MCK--B- 9SRT1     |
| M83513/13-B01*N   | MCK--B- 15SRT1    |
| M83513/13-C01*N   | MCK--B- 21SRT1    |
| M83513/13-D01*N   | MCK--B- 25SRT1    |
| M83513/13-E01*N   | MCK--B- 31SRT1    |
| M83513/13-F01*N   | MCK--B- 37SRT1    |
| M83513/13-A01*P   | MCK--P- 9SRT1     |
| M83513/13-B01*P   | MCK--P- 15SRT1    |
| M83513/13-C01*P   | MCK--P- 21SRT1    |
| M83513/13-D01*P   | MCK--P- 25SRT1    |
| M83513/13-E01*P   | MCK--P- 31SRT1    |
| M83513/13-F01*P   | MCK--P- 37SRT1    |
| M83513/13-A02*N   | MCK--B- 9SRT1A    |
| M83513/13-B02*N   | MCK--B- 15SRT1A   |
| M83513/13-C02*N   | MCK--B- 21SRT1A   |
| M83513/13-D02*N   | MCK--B- 25SRT1A   |
| M83513/13-E02*N   | MCK--B- 31SRT1A   |
| M83513/13-F02*N   | MCK--B- 37SRT1A   |
| M83513/13-A02*P   | MCK--P- 9SRT1A    |
| M83513/13-B02*P   | MCK--P- 15SRT1A   |
| M83513/13-C02*P   | MCK--P- 21SRT1A   |
| M83513/13-D02*P   | MCK--P- 25SRT1A   |
| M83513/13-E02*P   | MCK--P- 31SRT1A   |
| M83513/13-F02*P   | MCK--P- 37SRT1A   |
| M83513/13-A03*N   | MCK--B- 9SRT1B    |
| M83513/13-B03*N   | MCK--B- 15SRT1B   |
| M83513/13-C03*N   | MCK--B- 21SRT1B   |
| M83513/13-D03*N   | MCK--B- 25SRT1B   |
| M83513/13-E03*N   | MCK--B- 31SRT1B   |
| M83513/13-F03*N   | MCK--B- 37SRT1B   |
| M83513/13-A03*P   | MCK--P- 9SRT1B    |
| M83513/13-B03*P   | MCK--P- 15SRT1B   |
| M83513/13-C03*P   | MCK--P- 21SRT1B   |
| M83513/13-D03*P   | MCK--P- 25SRT1B   |
| M83513/13-E03*P   | MCK--P- 31SRT1B   |
| M83513/13-F03*P   | MCK--P- 37SRT1B   |
| M83513/14-G01*N   | MCK--B- 51SRT1    |
| M83513/14-G01*P   | MCK--P- 51SRT1    |
| M83513/14-G02*N   | MCK--B- 51SRT1A   |
| M83513/14-G02*P   | MCK--P- 51SRT1A   |
| M83513/14-G03*N   | MCK--B- 51SRT1B   |
| M83513/14-G03*P   | MCK--P- 51SRT1B   |
| M83513/15-H01*N   | MCK--B-100SRT1    |
| M83513/15-H01*P   | MCK--S-100SRT1    |
| M83513/15-H02*N   | MCK--B-100SRT1A   |
| M83513/15-H02*P   | MCK--S-100SRT1A   |

| Military Part No. | MICRODOT Part No. |
|-------------------|-------------------|
| M83513/15-H03*N   | MCK--B-100SRT1B   |
| M83513/15-H03*P   | MCK--S-100SRT1B   |
| M83513/22-A01*N   | MCK--B- 9PST1     |
| M83513/22-B01*N   | MCK--B- 15PST1    |
| M83513/22-C01*N   | MCK--B- 21PST1    |
| M83513/22-D01*N   | MCK--B- 25PST1    |
| M83513/22-E01*N   | MCK--B- 31PST1    |
| M83513/22-F01*N   | MCK--B- 37PST1    |
| M83513/22-A01*P   | MCK--P- 9PST1     |
| M83513/22-B01*P   | MCK--P- 15PST1    |
| M83513/22-C01*P   | MCK--P- 21PST1    |
| M83513/22-D01*P   | MCK--P- 25PST1    |
| M83513/22-E01*P   | MCK--P- 31PST1    |
| M83513/22-F01*P   | MCK--P- 37PST1    |
| M83513/22-A02*N   | MCK--B- 9PST1A    |
| M83513/22-B02*N   | MCK--B- 15PST1A   |
| M83513/22-C02*N   | MCK--B- 21PST1A   |
| M83513/22-D02*N   | MCK--B- 25PST1A   |
| M83513/22-E02*N   | MCK--B- 31PST1A   |
| M83513/22-F02*N   | MCK--B- 37PST1A   |
| M83513/22-A02*P   | MCK--P- 9PST1A    |
| M83513/22-B02*P   | MCK--P- 15PST1A   |
| M83513/22-C02*P   | MCK--P- 21PST1A   |
| M83513/22-D02*P   | MCK--P- 25PST1A   |
| M83513/22-E02*P   | MCK--P- 31PST1A   |
| M83513/22-F02*P   | MCK--P- 37PST1A   |
| M83513/22-A03*N   | MCK--B- 9PST1B    |
| M83513/22-B03*N   | MCK--B- 15PST1B   |
| M83513/22-C03*N   | MCK--B- 21PST1B   |
| M83513/22-D03*N   | MCK--B- 25PST1B   |
| M83513/22-E03*N   | MCK--B- 31PST1B   |
| M83513/22-F03*N   | MCK--B- 37PST1B   |
| M83513/22-A03*P   | MCK--P- 9PST1B    |
| M83513/22-B03*P   | MCK--P- 15PST1B   |
| M83513/22-C03*P   | MCK--P- 21PST1B   |
| M83513/22-D03*P   | MCK--P- 25PST1B   |
| M83513/22-E03*P   | MCK--P- 31PST1B   |
| M83513/22-F03*P   | MCK--P- 37PST1B   |
| M83513/23-G01*N   | MCK--B- 51PST1    |
| M83513/23-G01*P   | MCK--P- 51PST1    |
| M83513/23-G02*N   | MCK--B- 51PST1A   |
| M83513/23-G02*P   | MCK--P- 51PST1A   |
| M83513/23-G03*N   | MCK--B- 51PST1B   |
| M83513/23-G03*P   | MCK--P- 51PST1B   |
| M83513/24-H01*N   | MCK--B-100PST1    |
| M83513/24-H01*P   | MCK--S-100PST1    |
| M83513/24-H02*N   | MCK--B-100PST1A   |

## MIL-DTL-83513 Cross Reference (Continued)

## MCK (Metal Shell) (Continued)

| Military Part No. | MICRODOT Part No. | Military Part No. | MICRODOT Part No. | Military Part No. | MICRODOT Part No. |
|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|
| M83515/24-H02*P   | MCK-**-S-100PST1A | M83513/25-C02*N   | MCK-**-B- 21SST1A | M83513/25-B03*P   | MCK-**-P- 15SST1B |
| M83513/24-H03*N   | MCK-**-B-100PST1B | M83513/25-D02*N   | MCK-**-B- 25SST1A | M83513/25-C03*P   | MCK-**-P- 21SST1B |
| M83513/24-H03*P   | MCK-**-S-100PST1B | M83513/25-E02*N   | MCK-**-B- 31SST1A | M83513/25-D03*P   | MCK-**-P- 25SST1B |
| M83513/25-A01*N   | MCK-**-B- 9SST1   | M83513/25-F02*N   | MCK-**-B- 37SST1A | M83513/25-E03*P   | MCK-**-P- 31SST1B |
| M83513/25-B01*N   | MCK-**-B- 15SST1  | M83513/25-A02*P   | MCK-**-P- 9SST1A  | M83513/25-F03*P   | MCK-**-P- 37SST1B |
| M83513/25-C01*N   | MCK-**-B- 21SST1  | M83513/25-B02*P   | MCK-**-P- 15SST1A | M83513/26-G01*N   | MCK-**-B- 51SST1  |
| M83513/25-D01*N   | MCK-**-B- 25SST1  | M83513/25-C02*P   | MCK-**-P- 21SST1A | M83513/26-G01*P   | MCK-**-P- 51SST1  |
| M83513/25-E01*N   | MCK-**-B- 31SST1  | M83513/25-D02*P   | MCK-**-P- 25SST1A | M83513/26-G02*N   | MCK-**-B- 51SST1A |
| M83513/25-F01*N   | MCK-**-B- 37SST1  | M83513/25-E02*P   | MCK-**-P- 31SST1A | M83513/26-G02*P   | MCK-**-P- 51SST1A |
| M83513/25-A01*P   | MCK-**-P- 9SST1   | M83513/25-F02*P   | MCK-**-P- 37SST1A | M83513/26-G03*N   | MCK-**-B- 51SST1B |
| M83513/25-B01*P   | MCK-**-P- 15SST1  | M83513/25-A03*N   | MCK-**-B- 9SST1B  | M83513/26-G03*P   | MCK-**-P- 51SST1B |
| M83513/25-C01*P   | MCK-**-P- 21SST1  | M83513/25-B03*N   | MCK-**-B- 15SST1B | M83513/27-H01*N   | MCK-**-B-100SST1  |
| M83513/25-D01*P   | MCK-**-P- 25SST1  | M83513/25-C03*N   | MCK-**-B- 21SST1B | M83513/27-H01*P   | MCK-**-S-100SST1  |
| M83513/25-E01*P   | MCK-**-P- 31SST1  | M83513/25-D03*N   | MCK-**-B- 25SST1B | M83513/27-H02*N   | MCK-**-B-100SST1A |
| M83513/25-F01*P   | MCK-**-P- 37SST1  | M83513/25-E03*N   | MCK-**-B- 31SST1B | M83515/27-H02*P   | MCK-**-S-100SST1A |
| M83513/25-A02*N   | MCK-**-B- 9SST1A  | M83513/25-F03*N   | MCK-**-B- 37SST1B | M83513/27-H03*N   | MCK-**-B-100SST1B |
| M83513/25-B02*N   | MCK-**-B- 15SST1A | M83513/25-A03*P   | MCK-**-P- 9SST1B  | M83513/27-H03*P   | MCK-**-S-100SST1B |

\*C = Cadmium or N = Nickel (space applications only)

\*\*C2 = Cadmium or N1 = Nickel (space applications only)

## MICRODOT Rectangular Connectors Introduction

### Product Facts

- Designed for both military and commercial applications
- Well-suited for external conditions
- Precise contact alignment with extremely low engaging forces
- Product offering consists of metal shell, plastic shell, panel mount, printed circuit board and strip connectors
- Metal shell connector promotes high durability and reliability



Twist Pin contact High Density Microminiature Connectors described in this catalog comprise a complete contact system which is adaptable to a numerous variety of form factors. Precise contact alignment, with extremely low engaging forces, results from the manner in which the Twist Pin contact system is packaged — by constructing the male contact as a breathing helical spring, electrical contact is achieved at many points around the periphery of the pin bundle.

Featured in this catalog is the twist pin contact line, which accommodates round wire and Flat Conductor Cable (FCC), Edgeboard Connectors.

Applications requiring frequent mating and disconnect call for the metal shell connector version. This style connector promotes high durability and reliability.

Designed for both military and aerospace applications, this latest innovation is especially well-suited to use in external conditions.

This catalog also features light-weight plastic

connectors in a strip (MCS) format as well as JACKMATE Connectors (MCJ Series) format for small package application requiring high reliability.

Edgeboard applications are covered in this catalog with a special High Density Standard Module (HDSM) Connector as well as MIL-DTL-55302 (MCEM) Connectors. The high mating forces of these larger connectors are greatly reduced with the use of the low force twist pins and sockets which are standard for this product line.

## MICRODOT Twist Pin Contact Data

### Twist Pin — 24 gauge Pin and Socket Contacts

The contact spring member normally found in socket contacts has been eliminated by creating a breathing helical spring principle on the pin contact — smaller, more durable contacts can be manufactured economically.



Wire range 24-36 AWG solid & stranded.



### Stamped and Formed

#### 24 gauge Pin and Socket contact

The Stamped and Formed Pin contact utilizes a 4 beam design that will achieve 8 points of contact. The crimped version of the Stamped and Formed contact will

accept a 24AWG-36AWG stranded wire. The Solder pot version of the Stamped and Formed contact is a one piece design that eliminates the need for a solder pot adapter.

## MICRODOT MCE Series Plastic Shell Edgeboard Connectors

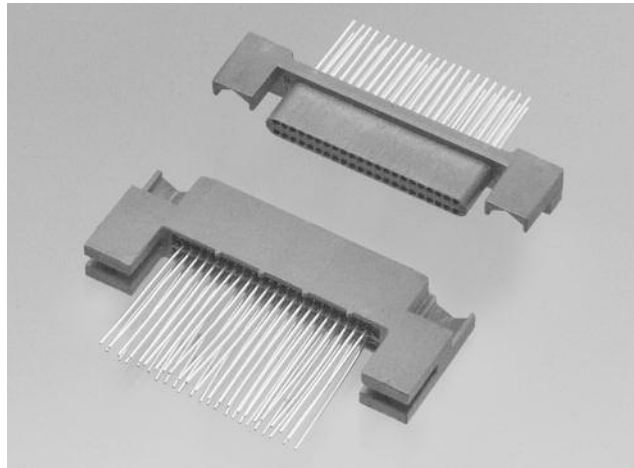
### Plastic Shell Edge Board Connectors

Designed for commercial applications requiring frequent disconnect and connect, including data recorders and computers. Mother board connector can be ordered to fit any pattern on your circuit board.

This new connector features the proven twist pin contact with precision contact alignment with extremely low engaging forces.

Units are available with contacts as few as 40 and as many as 110. Wire sizes 28 through 24, any type of plating or color coding, any kind of wire termination including wire wrap — a high degree of flexibility for your military or commercial application.

Two hexagonal polarizing keys can provide up to 36 different key combinations are supplied.



40 Contacts

### Technical & Performance Data — Twist Pin Plastic Shell Connectors

#### Electrical

**Contact Resistance** — The average mated contact resistance is 4 milliohms, with a maximum value of 8 milliohms, using standard 24 AWG solid copper leads when measured directly behind the crimp joints of the mated pin and socket contacts. The average resistance value at 100 microvolts is 4.8 milliohms.

#### Dielectric Withstanding

**Voltage** — 800 VAC RMS at sea level (600 for solder pots); 200 VAC RMS at 70,000 feet [21,336m] (150 for solder pots).

#### Corrosion Resistance (Per MIL-STD-202C, Method 101B, Condition B)

— Both mated and unmated samples do not exceed the maximum allowable contact resistance (8 milliohms) when subjected to the 48 hour salt spray test.

**Durability** — The contact resistance after 500 mating cycles is less than the maximum allowable, 8 milliohms.

**Insulation Resistance** — Greater than 5,000 megohms at room temperature.

#### Maximum Current Carrying Capacity

— No. 24 contact 3 amperes. It must be recognized however, that all the wires to a connector will not carry their maximum current under all environmental conditions due to wire temperature.

#### Mechanical

##### Contact Engaging & Separation Forces

— 8.0 oz. max. [2.24N] (eng.), 0.5 oz. min. [.14N] (sep.)

#### Environmental

**Temperature Range (Operating)** — -67°F to 257°F [-55° C to +125°C].

#### Vibration (Per MIL-STD-202C, Method 204A, Condition D)

— No discontinuity in excess of 1  $\mu$  sec. during twelve 20 minute sweeps from 10 to 2000 CPS at .06 double amplitude or 20 G forces, whichever is less.

#### Materials

**Insulator** — Liquid Crystal Polymer (LCP) per ASTM D5138 or Polyphenylene Sulfide per MIL-M-24519 or ASTM D4067.

#### Contacts

**Pin contact** — Copper alloy and beryllium copper alloy make up the complete construction.

**Socket contact** — Copper alloy.

**Hardware** — Corrosion resistant stainless steel.

#### Finishes

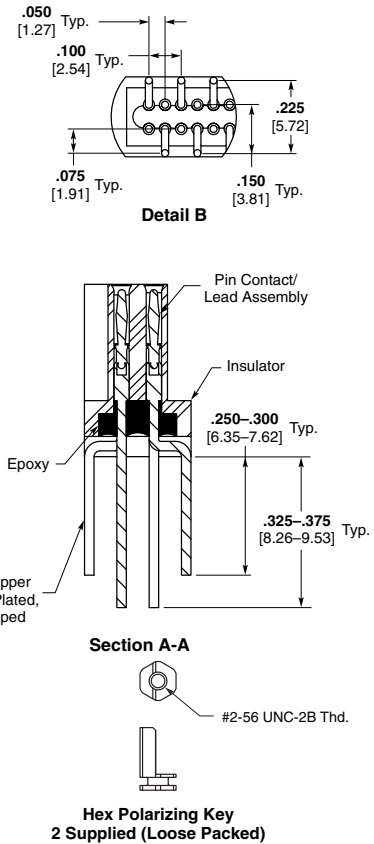
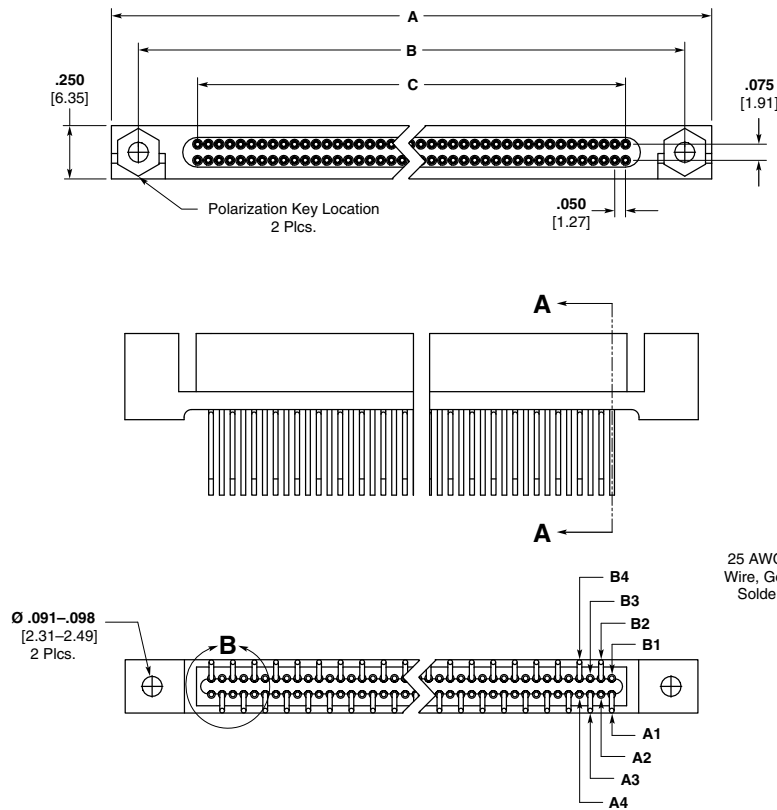
**Insulator** — None.

**Contacts** — Standard finish is 0.000050 [0.00127] gold over copper flash per MIL-G-45204, Type II.

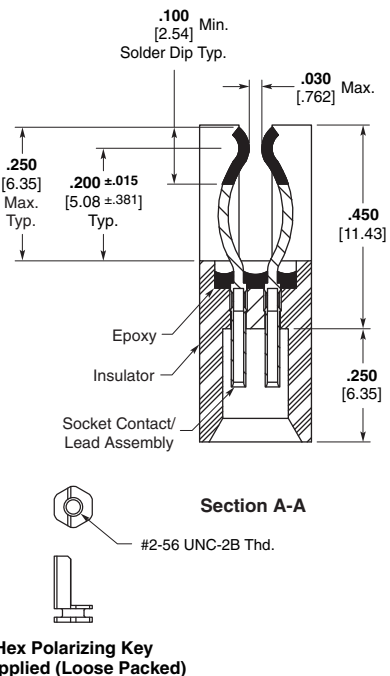
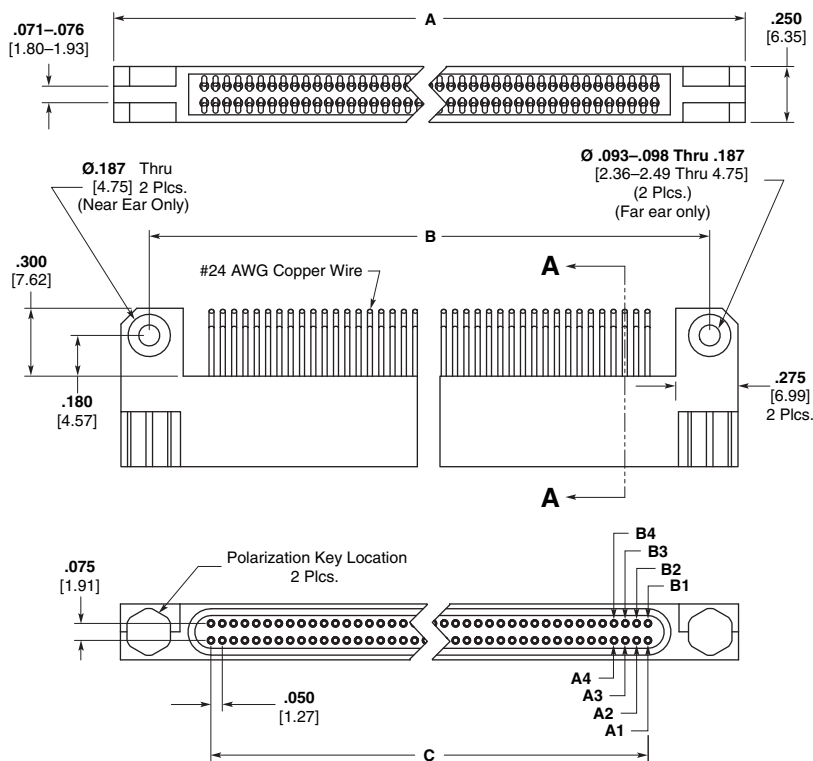
**Hardware** — Passivated per QQ-P-35.

**MICRODOT MCE Series Plastic Shell Edgeboard Connectors (Continued)**

**Mother Board (Pin Side)**



**Daughter Board (Socket Side)**





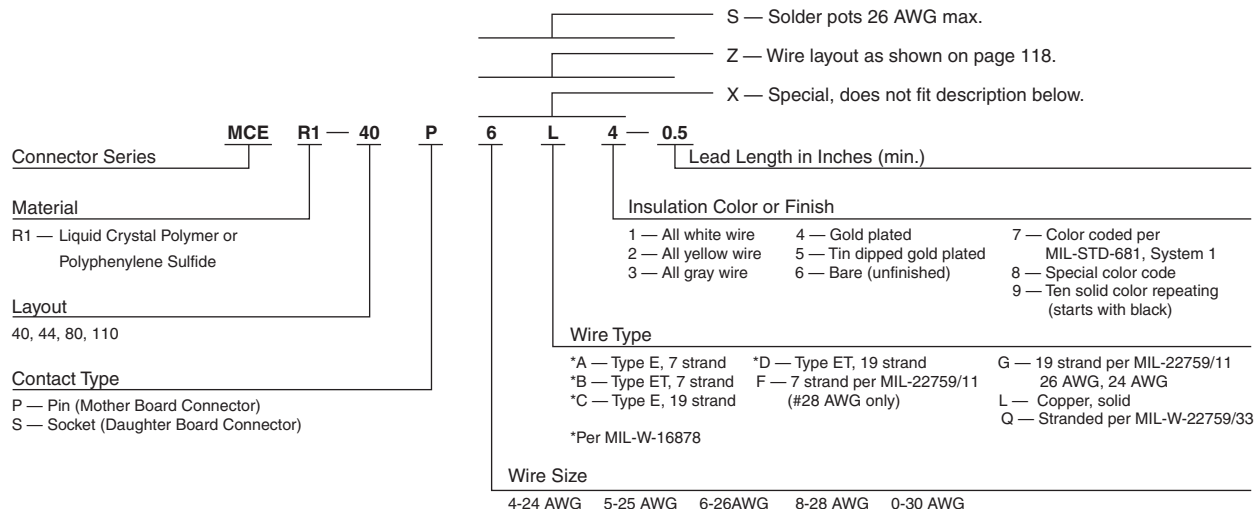
## MICRODOT MCE Series Plastic Shell Edgeboard Connectors (Continued)

### Dimensions for .062 [1.57] PC Board

| No. of<br>Contacts | A<br>± .010<br>[± .254] | B<br>± .005<br>[± .127] | C<br>Basic     |
|--------------------|-------------------------|-------------------------|----------------|
| 40                 | 1.750<br>44.45          | 1.500<br>38.10          | .950<br>24.13  |
| 44                 | 1.850<br>46.99          | 1.600<br>40.64          | 1.050<br>26.67 |
| 80                 | 2.750<br>69.85          | 2.500<br>63.50          | 1.950<br>49.53 |
| 110                | 3.500<br>88.90          | 3.250<br>82.55          | 2.700<br>68.58 |

**Notes:** For PC Boards of different widths, consult TE Connectivity.

## How To Specify



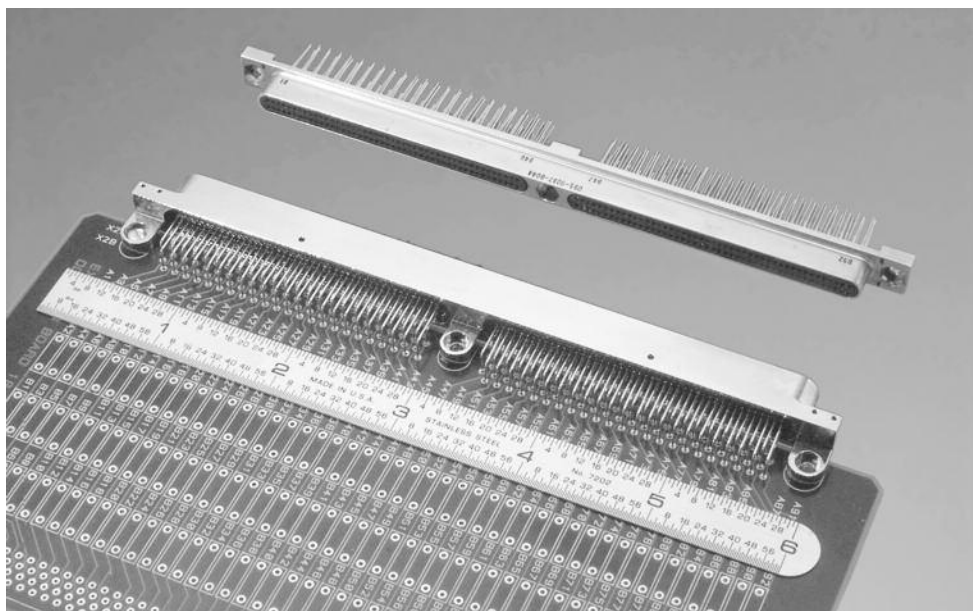
**Mounting** — Holes on the Daughter Board side can be modified.



## MICRODOT MCEM Series Metal Shell Edgeboard Connectors

### Metal Shell Edge Board Connectors

- Meets MIL-DTL-55302 performance requirements
- Layouts 128 and 184 are QPL to slash sheets 120, 121, 122 and 123
- Connectors are available in 40, 44, 80, 110, 128, 152, and 184 positions
- Utilizes low force twist pins and our low force sockets. Mating forces in the 3 to 4 oz. [.83 to 1.11N] range per contact are typical with low force pin and low force socket
- Designed for surface mounting and through-the-board mounting
- Available termination
  - Mother board (pin side) — cactus bend
  - Daughter board (socket side) — coke bottle, right-angle bend to “A” or “B” side
  - Solder pots, and variety of other wire terminations for pin and socket connectors available at customer's request
- Two hexagonal polarizing keys (per MIL-DTL-55302 slash sheet 124) are provided. Jackscrew hardware is available. For programmable keying/jacking modifications consult TE Connectivity



In addition to the plastic versions of the 2 piece edgeboard connectors, a metal shell assembly is designed and tooled. The metal shells are made of aluminum alloy. The insert material is Diallyl phthalate, Polyphenylene sulfide (RYTON), or Liquid Crystal Polymer (LCP). The technical and performance data is

essentially the same as that shown for the MCDM Series on page 5-72. These are rugged, durable connectors and are ideal for use in areas of high density packaging and where frequent connect and disconnects are required. Designed initially for applications in airborne data recorders, computers and associated

equipment in navigational systems. The mother board connector can be ordered to fit any pattern on the circuit board. The units can also be provided with contacts on .100 [2.54] spacing which results in .100 [2.54] grid pattern.

### Performance Data

#### Electrical

**Contact Resistance** — The average mated contact resistance is 4 milliohms, with a maximum value of 8 milliohms. The average resistance value at 100 microvolts is 4.8 milliohms.

**Dielectric Withstanding Voltage** — 800 VAC RMS at sea level (600 for solder pots); 200 VAC RMS at 70,000 feet [21,336m] (150 for solder pots).

**Durability** — Less than the maximum allowable, 8 milliohms after 500 mating cycles.

**Insulation Resistance** — Greater than 5,000 megohms at room ambient temperature.

#### Maximum Current Carrying

**Capacity** — No. 24 contact 3 amperes.

#### Mechanical

**Contact Engaging & Separation Forces** — 5.0 oz. max. [1.39N] (eng.), 0.5 oz. min. [.14N] (sep.).

#### Environmental

**Temperature Range** — -67°F to 302°F [-55°C to +150°C] for Diallyl Phthalate; -67°F to 257°F [-55°C to +125°C] for Polyphenylene Sulfide.

**Vibration** — No discontinuity in excess of 1  $\mu$  sec. during twelve 20 minute sweeps from 10 to 2000 CPS at .06 double amplitude or 20 G forces, whichever is less.

#### Materials and Finish

**Shells** — High grade aluminum alloy, electroless nickel plated per AMS 2404.

**Insulator** — Diallyl Phthalate per MIL-M-14, Type SDG-F (for 128 & 184); Polyphenylene Sulfide per MIL-M-24519 or ASTM D4067 (for 40, 44, 80, 110 & 152), or Liquid Crystal Polymer per ASTM D5138.

#### Contacts

**Pin (low force)** — beryllium and OFHC copper, gold plated.

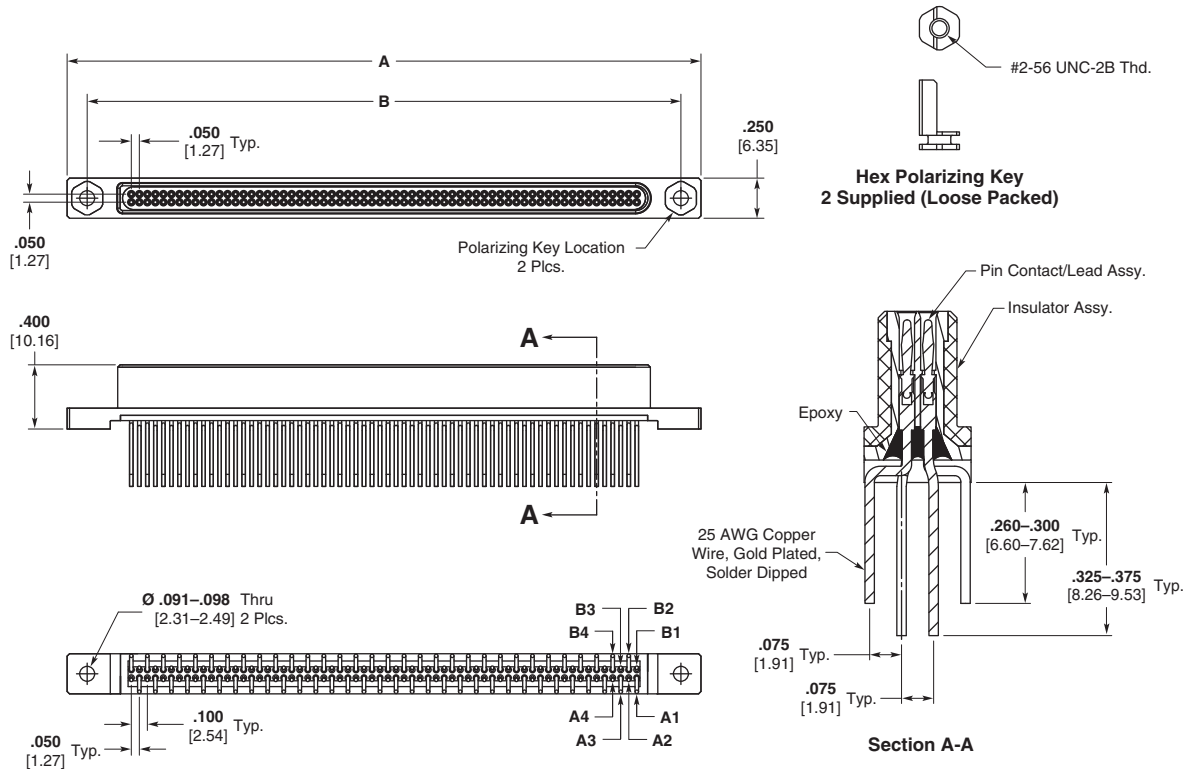
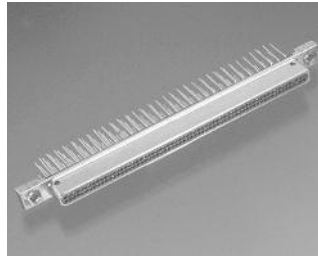
**Socket (low force)** — Copper alloy, gold plated.

**Hardware** — Corrosion resistant stainless steel, passivated.

RYTON is a trademark of Chevron Chemical Company LLC.

**MICRODOT MCEM Series Metal Shell Edgeboard Connectors** (Continued)

**Mother Board (Pin Side)**  
**40, 44, 80, 110, 128 & 152**  
**Positions**



**Dimensions for .062 [1.57] PC Board**

| No. of Contacts | A<br>± .010<br>[± .254] | B<br>± .005<br>[± .127] |
|-----------------|-------------------------|-------------------------|
| 40              | <b>1.750</b><br>44.45   | <b>1.500</b><br>38.10   |
| 44              | <b>1.850</b><br>46.99   | <b>1.600</b><br>40.64   |
| 80              | <b>2.750</b><br>69.85   | <b>2.500</b><br>63.50   |
| 110             | <b>3.500</b><br>88.90   | <b>3.250</b><br>82.55   |
| <b>128</b>      | <b>3.950</b><br>100.33  | <b>3.700</b><br>93.98   |
| 152             | <b>4.550</b><br>115.57  | <b>4.330</b><br>109.98  |

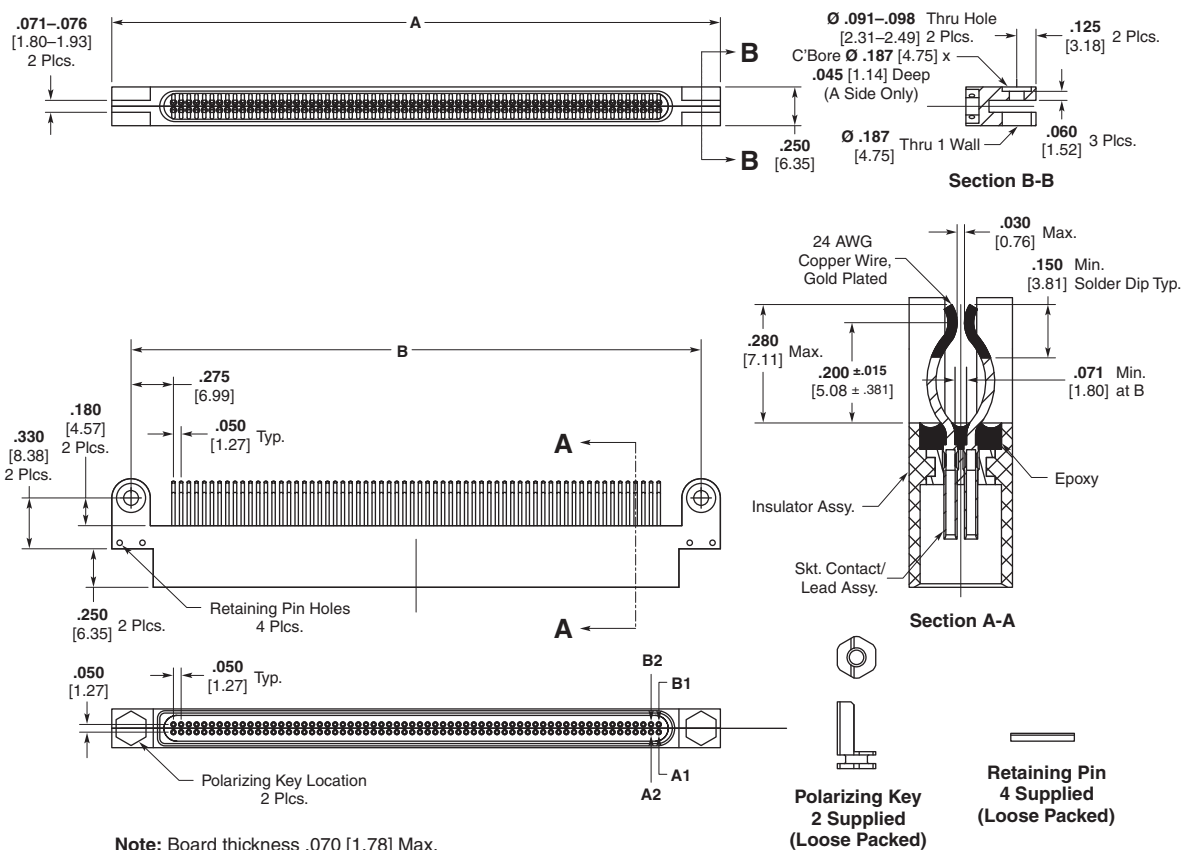
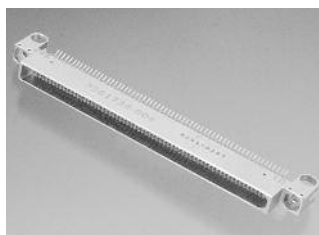
**Note:** For PC Boards of different widths, consult TE Connectivity.

Items in bold italic are qualified to MIL-DTL-55302.  
 Configuration shown is per MIL-DTL-55302/120.

**MICRODOT MCEM Series Metal Shell Edgeboard Connectors** (Continued)

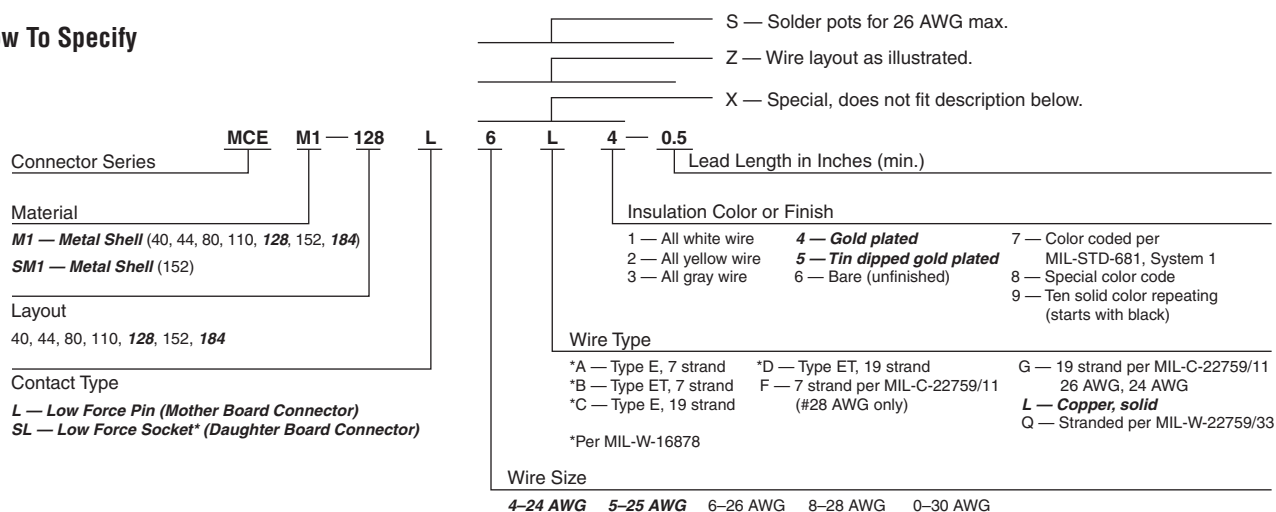
### Daughter Board (Socket Side)

### 40, 44, 80, 110, 128 & 152 Positions



**Note:** Board thickness .070 [1.78] Max.

## How To Specify



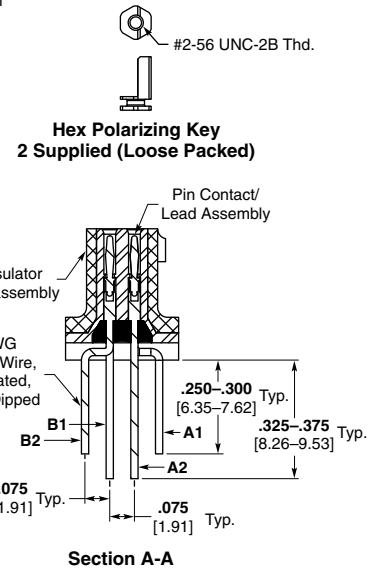
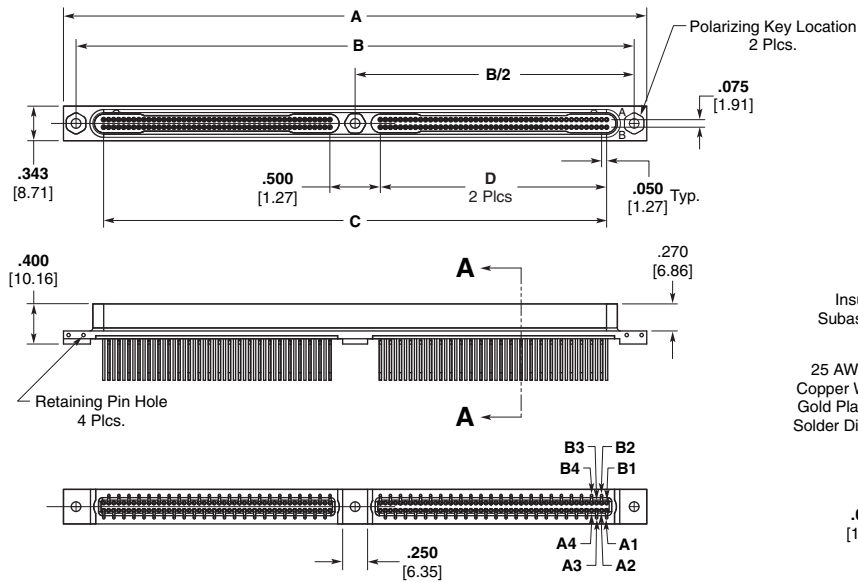
Items in bold italic are qualified to MIL-DTL-55302.  
Configuration shown is per MIL-DTL-55302/121.

Polarization – Hexagonal hardware is supplied with connector.

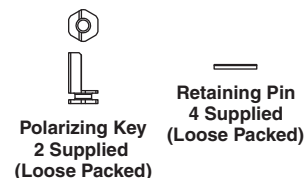
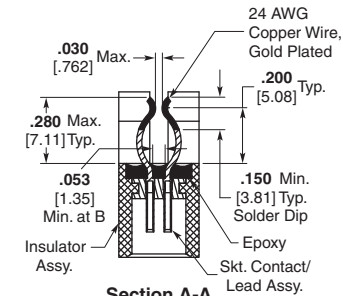
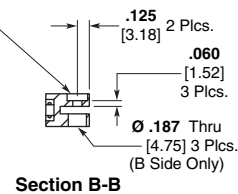
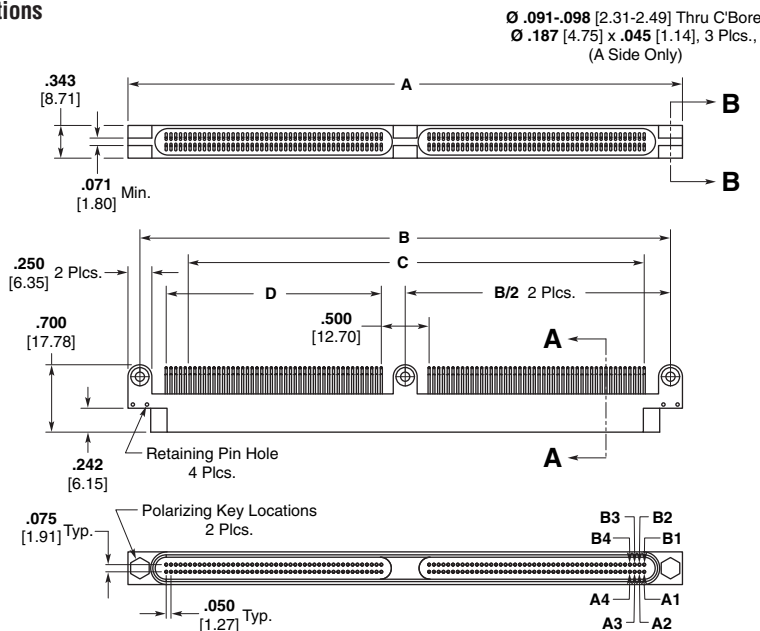
**Mounting** — Standard mounting holes are shown. Consult TE Connectivity for modifications.

**MICRODOT MCEM Series Metal Shell Edgeboard Connectors (Continued)**

**Mother Board (Pin Side)**  
**184 Positions**

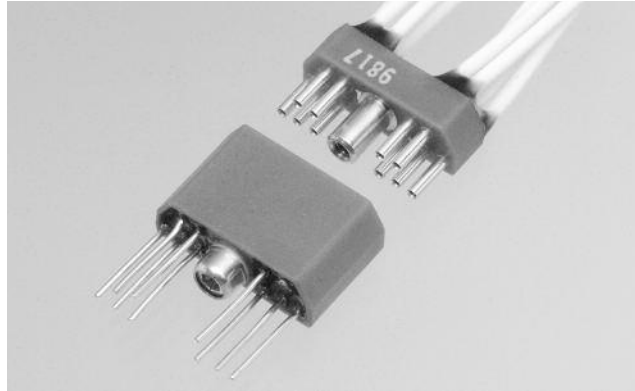


**Daughter Board (Socket Side)**  
**184 Positions**



| No. of Contacts | A<br>± .010<br>[± .254] | B<br>± .005<br>[± .127] | C<br>Basic      | D<br>Basic     |
|-----------------|-------------------------|-------------------------|-----------------|----------------|
| 184             | 5.800<br>147.32         | 5.550<br>140.97         | 5.000<br>127.00 | 2.250<br>57.15 |

## MICRODOT JACKMATE MCJ(M) Series Plastic (Metal) Shell Center Jackscrew Connectors



JACKMATE Connectors are the first Twist Pin contact assemblies designed to accommodate center jackscrews that provide jacking action when mating or unmating the connectors. Although the units were initially developed for high density cord-to-cord or in-line applications, either plug or receptacle can be

adapted to a PC board. The jacking hardware consists of a threaded bushing and a captivated jackscrew which are made of corrosion resistant stainless steel and are molded into the JACKMATE Connector Insulator.

The twist pin contacts are on .050 [1.27] center-to-

center linear spacing and contact terminations are available in solid wire or stranded wire. There is a high degree of flexibility with this JACKMATE connector design for commercial or military applications.

Available on MCJ(M) Series Plastic (Metal) Shells.

## MICRODOT JACKMATE MCJ Series Plastic Shell Center Jackscrew Connectors

### JACKMATE Technical & Performance Data for Plastic Shell

#### Electrical

**Contact Resistance** — The average mated contact resistance is 4 milliohms, with a maximum value of 8 milliohms, using standard 24 AWG solid copper leads when measured directly behind the crimp joints of the mated pin and socket contacts. The average resistance value at 100 microvolts is 4.8 milliohms.

**Dielectric Withstanding Voltage (60 Hz rms room temperature)** —

**Solder Pots** — 600 VAC at sea level; 150 VAC at 70,000 feet [21,336m]

**Wire Terminations** — 750 VAC at sea level; 200 VAC at 70,000 feet [21,336m].

**Corrosion Resistance (Per MIL-STD-202C, Method 101B, Condition B)** — Both mated and unmated samples do not

exceed the maximum allowable contact resistance (8 milliohms) when subjected to the 48 hour salt spray test.

**Durability** — The contact resistance after 500 mating cycles is less than the maximum allowable, 8 milliohms.

**Insulation Resistance** — Greater than 5,000 megohms at room temperature for the materials listed under "Materials".

**Maximum Current Carrying Capacity** — No. 24 contact 3 amperes. It must be recognized, however, that all the wires to a connector will not carry their maximum current under all environmental conditions due to wire temperature.

#### Mechanical

**Contact Engaging & Separation Forces** — 8.0 oz. max. [2.22N] (eng.), 0.5 oz. min. [1.4N] (sep.).

#### Environmental

**Temperature Range (Operating)** — -67°F to 257°F [-55°C to 125°C].

**Vibration (Per MIL-STD-202C, Method 204-A, Condition D)** — No discontinuity in excess of 1  $\mu$  sec. during twelve 20 minute sweeps from 10 to 2000 CPS at .06 double amplitude or 20 G forces, whichever is less.

#### Materials

**Insulator** — Glass filled Nylon Type 6.

#### Contacts

**Pin contact** — copper alloy and beryllium copper alloy make up the complete construction

**Socket contact** — copper alloy.

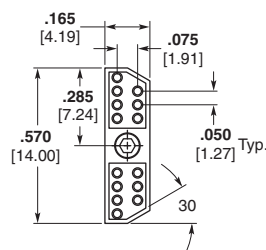
**Hardware** — Corrosive resistant stainless steel.

#### Finishes

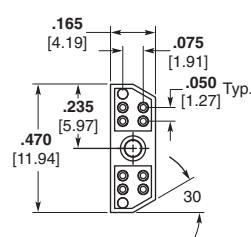
**Contacts** — Standard finish is 0.000050 [0.00127] gold over copper flash per MIL-G-45204, Type II.

**Hardware** — Passivated Per QQ-P-35.

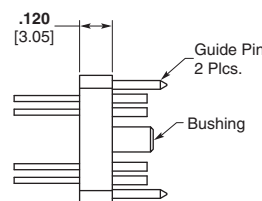
### 10 & 14 Contact Layout



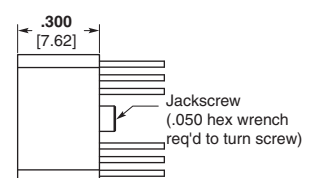
14 Layout



10 Layout



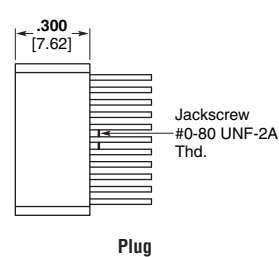
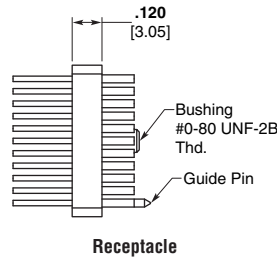
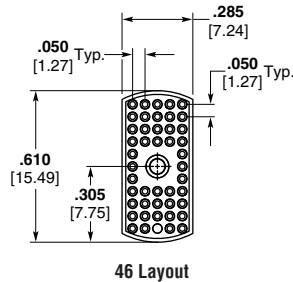
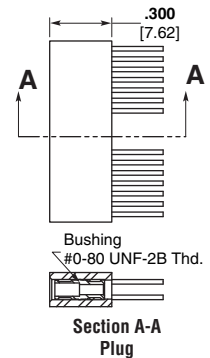
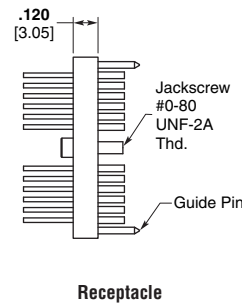
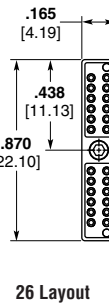
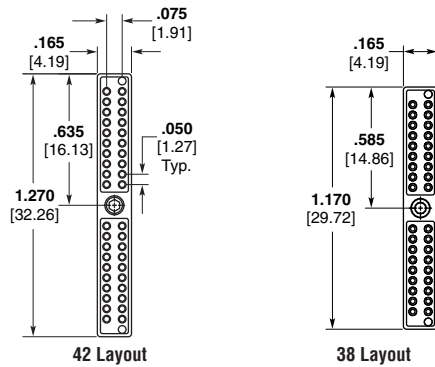
Receptacle



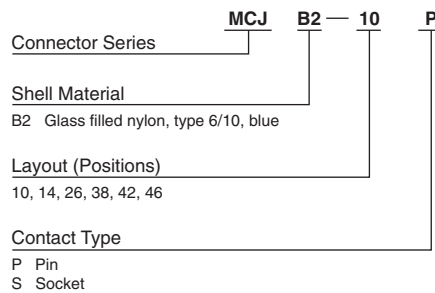
Plug

**MICRODOT JACKMATE MCJ Series Plastic Shell Center Jackscrew Connectors (Continued)**

**26, 38 & 46 Contact Layout**

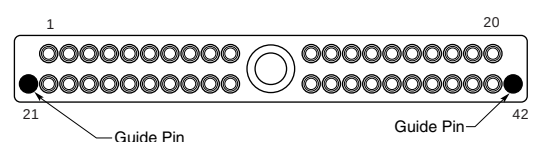
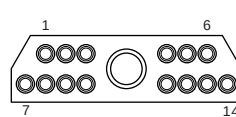
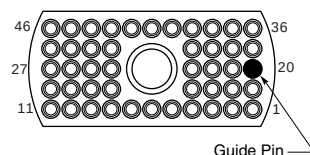
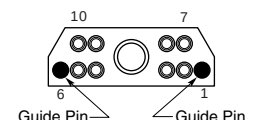
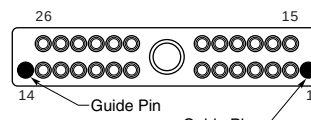
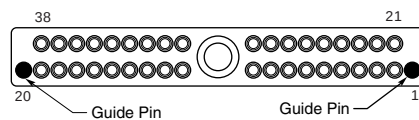


**How To Specify**



|     |                                                 |
|-----|-------------------------------------------------|
| S   | Solder pot for 26 AWG maximum stranded wire.    |
| X   | Special, does not fit description below.        |
| 4   | Lead Length in Inches (min.)                    |
| L   | Insulation Color or Finish                      |
| 4   | 1 All white wire                                |
| 0.5 | 2 All yellow wire                               |
|     | 3 All gray wire                                 |
|     | 4 Gold plated                                   |
|     | 5 Tin dipped gold plated                        |
|     | 6 Bare (unfinished)                             |
|     | 7 Color coded per MIL-STD-681, System 1         |
|     | 8 Special color code                            |
|     | 9 Ten solid color repeating (starts with black) |
|     | Wire Type                                       |
|     | *A Type E, 7 strand                             |
|     | *B Type ET, 7 strand                            |
|     | *C Type E, 19 strand                            |
|     | *D Type ET, 19 strand                           |
|     | F 7 strand per MIL-C-22759/11 (#28 AWG only)    |
|     | G 19 strand per MIL-C-22759/11 26 AWG, 24 AWG   |
|     | L Copper, solid                                 |
|     | Q Stranded per MIL-W-22759/33                   |
|     | *Per MIL-W-16878                                |
|     | Wire Size                                       |
|     | 4—24 AWG 5—25 AWG 6—26 AWG 8—28 AWG 0—30 AWG    |

**Contact Arrangement as Viewed from the Engaging Face of the Pin Side**



Guide pin locations illustrated are for standards configuration only. Any location is available. Guide pins are supplied in socket connectors and blank cavities in pin connector.



## MICRODOT JACKMATE MCJM Series Metal Shell Center Jackscrew Connectors

### Technical and Performance Data for Metal Shell

#### Electrical

**Contact Resistance** — The average mated contact resistance is 4 milliohms, with a maximum value of 8 milliohms, using standard 24 AWG solid copper leads when measured directly behind the crimp joints of the mated pin and socket contacts. The average resistance value at 100 microvolts is 4.8 milliohms.

**Dielectric Withstanding Voltage (60 Hz rms room temperature)** —

**Solder Pots** — 600 VAC at sea level; 150 VAC at 70,000 feet [21,336m].

**Wire Terminations** — 750 VAC at sea level; 200 VAC at 70,000 feet [21,336m].

**Corrosion Resistance (Per MIL-STD-202C, Method 101B, Condition B)** — Both mated and unmated samples do not exceed the maximum allowable contact resistance (8 milliohms) when subjected to the 48 hour salt spray test.

**Durability** — The contact resistance after 500 mating cycles is less than the maximum allowable, 8 milliohms.

**Insulation Resistance** — Greater than 5,000 megohms at room temperature for the materials listed under "Materials".

**Maximum Current Carrying Capacity** — No. 24 contact 3 amperes. It must be recognized, however, that all the wires to a connector will not carry their maximum current under all environmental conditions due to wire temperature.

#### Mechanical

**Contact Engaging & Separation Forces** — 8.0 oz. max. [2.22N] (eng.), 0.5 oz. min. [1.4N] (sep.).

#### Environmental

**Temperature Range (Operating)** — -67°F to 302°F [-55°C to 150°C] for Diallyl Phthalate.

**Vibration (Per MIL-STD-202C, Method 204-A, Condition D)** — No discontinuity in excess of 1  $\mu$  sec. during twelve 20 minute sweeps from 10 to 2000 CPS at .06 double amplitude or 20 G forces, whichever is less.

#### Materials

**Insulator** — Diallyl Phthalate per MIL-M-14, Type SDG-F.

#### Contacts

**Pin contact** — copper alloy and beryllium copper alloy make up the complete construction;

**Socket contact** — copper alloy.

#### Body Shells

**Pin body shell** — stainless steel, Types 304, Condition A per QQ-S-76;

**Socket body shell** — aluminum alloy per QQ-A-591, A-380 alloy.

**Hardware** — Corrosion resistant stainless steel.

#### Finishes

**Contacts** — Standard finish is 0.000050 [0.00127] gold over copper flash per MIL-G-45204, Type II.

#### Body Shells

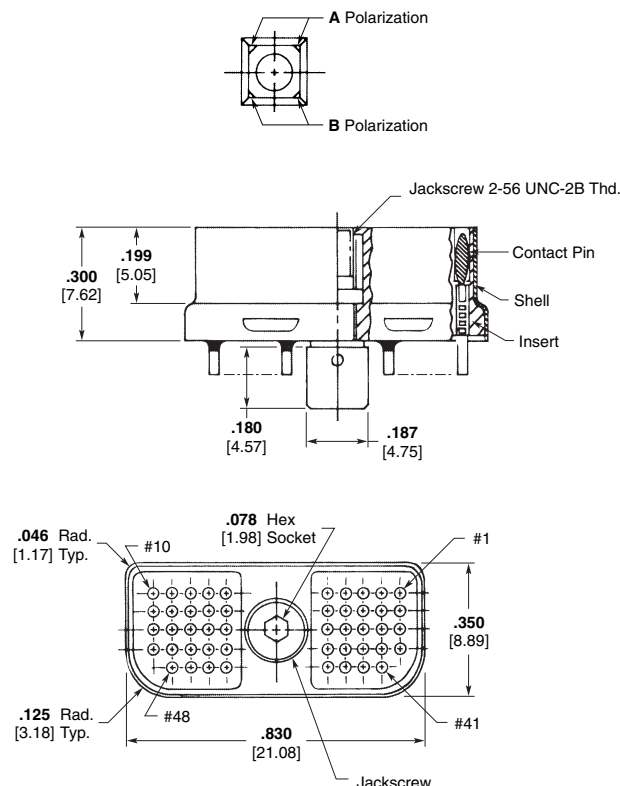
**Pin body shell** — passivated per MIL-F-14072 (E-300);

**Socket body shell** — electroless nickel per AMS 204, Class 3, except thickness is 0.001/0.0015 [0.025/0.038].

**Hardware** — Passivated per QQ-P-35.

**Note:** Insulators are molded into their metal shells — No bonded joint is used. Standard material used unless otherwise specified.

### Plug (Pin Side) Shell Type M1

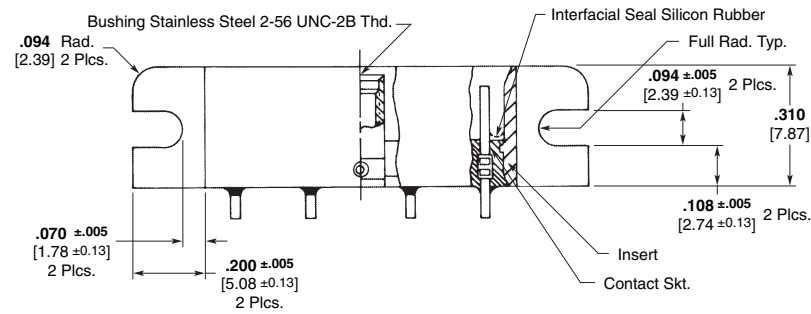
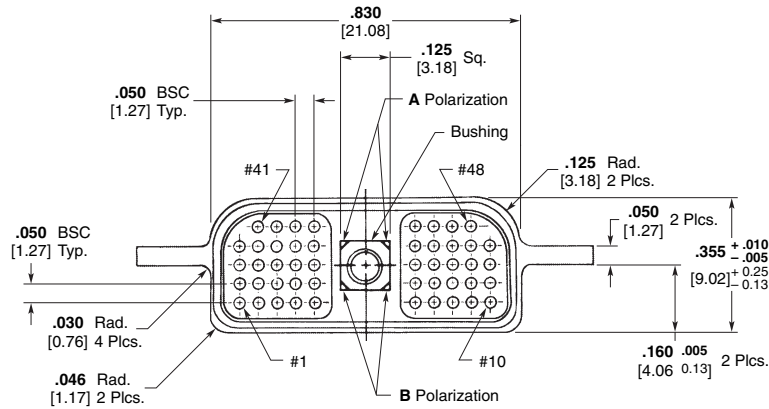




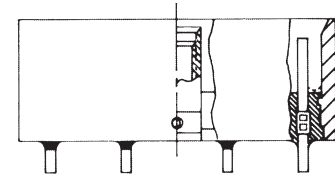
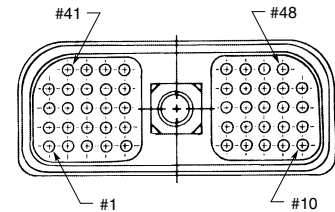
**MICRODOT JACKMATE MCJM Series Metal Shell Center Jackscrew Connectors (Continued)**

**Receptacle (Socket Side)**

**Shell Type M1**



**Shell Type M2**

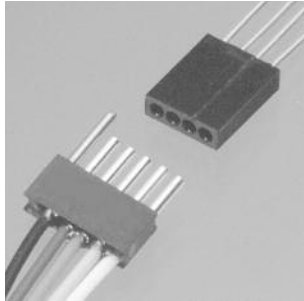


**How To Specify**

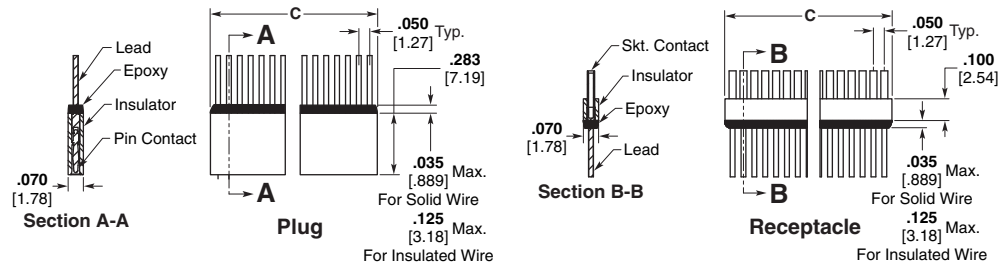
|                                                                                                                |                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |                     |                       |                                         |                      |                               |                      |                      |                     |                                                 |                  |  |                               |
|----------------------------------------------------------------------------------------------------------------|-------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|---------------------|-----------------------|-----------------------------------------|----------------------|-------------------------------|----------------------|----------------------|---------------------|-------------------------------------------------|------------------|--|-------------------------------|
| <p><b>JACKMATE Connector Series</b></p> <p>MCJ M1 A — 48 P</p>                                                 |                               | <p><b>Lead Length in Inches (min.)</b></p> <p>4 L 4 — 0.5</p>                                                                                                                                                                                                                                                                                                                                                                                                |  |                     |                       |                                         |                      |                               |                      |                      |                     |                                                 |                  |  |                               |
| <p><b>Shell Material</b></p> <p>M1 Metal Shell (Standard)</p> <p>M2 Metal Shell (Special receptacles only)</p> |                               | <p><b>Insulation Color or Finish</b></p> <table border="0"> <tr> <td>1 All white wire</td> <td>4 Gold plated</td> <td>7 Color coded per MIL-STD-681, System 1</td> </tr> <tr> <td>2 All yellow wire</td> <td>5 Tin dipped gold plated</td> <td>8 Special color code</td> </tr> <tr> <td>3 All gray wire</td> <td>6 Bare (unfinished)</td> <td>9 Ten solid color repeating (starts with black)</td> </tr> </table>                                            |  | 1 All white wire    | 4 Gold plated         | 7 Color coded per MIL-STD-681, System 1 | 2 All yellow wire    | 5 Tin dipped gold plated      | 8 Special color code | 3 All gray wire      | 6 Bare (unfinished) | 9 Ten solid color repeating (starts with black) |                  |  |                               |
| 1 All white wire                                                                                               | 4 Gold plated                 | 7 Color coded per MIL-STD-681, System 1                                                                                                                                                                                                                                                                                                                                                                                                                      |  |                     |                       |                                         |                      |                               |                      |                      |                     |                                                 |                  |  |                               |
| 2 All yellow wire                                                                                              | 5 Tin dipped gold plated      | 8 Special color code                                                                                                                                                                                                                                                                                                                                                                                                                                         |  |                     |                       |                                         |                      |                               |                      |                      |                     |                                                 |                  |  |                               |
| 3 All gray wire                                                                                                | 6 Bare (unfinished)           | 9 Ten solid color repeating (starts with black)                                                                                                                                                                                                                                                                                                                                                                                                              |  |                     |                       |                                         |                      |                               |                      |                      |                     |                                                 |                  |  |                               |
| <p><b>Polarizing Position</b></p> <p>A, B</p>                                                                  |                               | <p><b>Wire Type</b></p> <table border="0"> <tr> <td>*A Type E, 7 strand</td> <td>*D Type ET, 19 strand</td> <td>G 19 strand per MIL-C-22759/11</td> </tr> <tr> <td>*B Type ET, 7 strand</td> <td>F 7 strand per MIL-C-22759/11</td> <td>26 AWG, 24 AWG</td> </tr> <tr> <td>*C Type E, 19 strand</td> <td>(#28 AWG only)</td> <td>L Copper, solid</td> </tr> <tr> <td colspan="2">*Per MIL-W-16878</td> <td>Q Stranded per MIL-W-22759/33</td> </tr> </table> |  | *A Type E, 7 strand | *D Type ET, 19 strand | G 19 strand per MIL-C-22759/11          | *B Type ET, 7 strand | F 7 strand per MIL-C-22759/11 | 26 AWG, 24 AWG       | *C Type E, 19 strand | (#28 AWG only)      | L Copper, solid                                 | *Per MIL-W-16878 |  | Q Stranded per MIL-W-22759/33 |
| *A Type E, 7 strand                                                                                            | *D Type ET, 19 strand         | G 19 strand per MIL-C-22759/11                                                                                                                                                                                                                                                                                                                                                                                                                               |  |                     |                       |                                         |                      |                               |                      |                      |                     |                                                 |                  |  |                               |
| *B Type ET, 7 strand                                                                                           | F 7 strand per MIL-C-22759/11 | 26 AWG, 24 AWG                                                                                                                                                                                                                                                                                                                                                                                                                                               |  |                     |                       |                                         |                      |                               |                      |                      |                     |                                                 |                  |  |                               |
| *C Type E, 19 strand                                                                                           | (#28 AWG only)                | L Copper, solid                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |                     |                       |                                         |                      |                               |                      |                      |                     |                                                 |                  |  |                               |
| *Per MIL-W-16878                                                                                               |                               | Q Stranded per MIL-W-22759/33                                                                                                                                                                                                                                                                                                                                                                                                                                |  |                     |                       |                                         |                      |                               |                      |                      |                     |                                                 |                  |  |                               |
| <p><b>Layout (Positions)</b></p> <p>48</p>                                                                     |                               | <p><b>Wire Size</b></p> <p>4—24 AWG 5—25 AWG 6—26 AWG 8—28 AWG 0—30 AWG</p>                                                                                                                                                                                                                                                                                                                                                                                  |  |                     |                       |                                         |                      |                               |                      |                      |                     |                                                 |                  |  |                               |
| <p><b>Contact Type</b></p> <p>P Pin</p> <p>S Socket</p>                                                        |                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                              |  |                     |                       |                                         |                      |                               |                      |                      |                     |                                                 |                  |  |                               |

## MICRODOT MCS Series Strip Connectors

## Strip Connectors



## MCS Plastic Strip



| Part No. By Size | C Max.        |
|------------------|---------------|
| MCSAR*-1**       | .070 [1.78]   |
| MCSAR*-2**       | .120 [3.05]   |
| MCSAR*-3**       | .170 [4.32]   |
| MCSAR*-4**       | .220 [5.59]   |
| MCSAR*-5**       | .270 [6.86]   |
| MCSAR*-6**       | .320 [8.13]   |
| MCSAR*-7**       | .420 [10.67]  |
| MCSAR*-8**       | .420 [10.67]  |
| MCSAR*-9**       | .470 [11.94]  |
| MCSAR*-10**      | .520 [13.21]  |
| MCSAR*-11**      | .570 [14.48]  |
| MCSAR*-12**      | .620 [15.75]  |
| MCSAR*-13**      | .670 [17.02]  |
| MCSAR*-14**      | .720 [18.29]  |
| MCSAR*-15**      | .770 [19.56]  |
| MCSAR*-16**      | .820 [20.83]  |
| MCSAR*-17**      | .870 [22.10]  |
| MCSAR*-18**      | .920 [23.37]  |
| MCSAR*-19**      | .970 [24.64]  |
| MCSAR*-20**      | 1.020 [25.91] |
| MCSAR*-21**      | 1.070 [27.18] |
| MCSAR*-22**      | 1.120 [28.45] |
| MCSAR*-23**      | 1.170 [29.72] |
| MCSAR*-24**      | 1.220 [30.99] |
| MCSAR*-25**      | 1.270 [32.26] |
| MCSAR*-26**      | 1.320 [33.53] |
| MCSAR*-27**      | 1.370 [34.80] |
| MCSAR*-28**      | 1.420 [36.07] |
| MCSAR*-29**      | 1.470 [37.34] |
| MCSAR*-30**      | 1.520 [38.61] |

| Part No. By Size | C Max.        |
|------------------|---------------|
| MCSAR*-31**      | 1.570 [39.88] |
| MCSAR*-32**      | 1.620 [41.15] |
| MCSAR*-33**      | 1.670 [42.42] |
| MCSAR*-34**      | 1.720 [43.69] |
| MCSAR*-35**      | 1.770 [44.96] |
| MCSAR*-36**      | 1.820 [46.23] |
| MCSAR*-37**      | 1.870 [47.50] |
| MCSAR*-38**      | 1.920 [48.77] |
| MCSAR*-39**      | 1.970 [50.04] |
| MCSAR*-40**      | 2.020 [51.31] |
| MCSAR*-41**      | 2.070 [52.58] |
| MCSAR*-42**      | 2.120 [53.85] |
| MCSAR*-43**      | 2.170 [55.12] |
| MCSAR*-44**      | 2.220 [56.39] |
| MCSAR*-45**      | 2.270 [57.66] |
| MCSAR*-46**      | 2.320 [58.93] |
| MCSAR*-47**      | 2.370 [60.20] |
| MCSAR*-48**      | 2.420 [61.47] |
| MCSAR*-49**      | 2.470 [62.74] |
| MCSAR*-50**      | 2.520 [64.01] |
| MCSAR*-51**      | 2.570 [65.28] |
| MCSAR*-52**      | 2.620 [66.55] |
| MCSAR*-53**      | 2.670 [67.82] |
| MCSAR*-54**      | 2.720 [69.09] |
| MCSAR*-55**      | 2.770 [70.36] |
| MCSAR*-56**      | 2.820 [71.63] |
| MCSAR*-57**      | 2.870 [72.90] |
| MCSAR*-58**      | 2.920 [74.17] |
| MCSAR*-59**      | 2.970 [75.44] |
| MCSAR*-60**      | 3.020 [76.71] |

| Part No. By Size | C Max.         |
|------------------|----------------|
| MCSAR*-61**      | 3.070 [77.98]  |
| MCSAR*-62**      | 3.120 [79.25]  |
| MCSAR*-63**      | 3.170 [80.52]  |
| MCSAR*-64**      | 3.220 [81.79]  |
| MCSAR*-65**      | 3.270 [83.06]  |
| MCSAR*-66**      | 3.320 [84.33]  |
| MCSAR*-67**      | 3.370 [85.60]  |
| MCSAR*-68**      | 3.420 [86.87]  |
| MCSAR*-69**      | 3.470 [88.14]  |
| MCSAR*-70**      | 3.520 [89.41]  |
| MCSAR*-71**      | 3.570 [90.68]  |
| MCSAR*-72**      | 3.620 [91.95]  |
| MCSAR*-73**      | 3.670 [93.22]  |
| MCSAR*-74**      | 3.720 [94.49]  |
| MCSAR*-75**      | 3.770 [95.76]  |
| MCSAR*-76**      | 3.820 [97.03]  |
| MCSAR*-77**      | 3.870 [98.30]  |
| MCSAR*-78**      | 3.920 [99.57]  |
| MCSAR*-79**      | 3.970 [100.84] |
| MCSAR*-80**      | 4.020 [102.11] |
| MCSAR*-81**      | 4.070 [103.38] |
| MCSAR*-82**      | 4.120 [104.65] |
| MCSAR*-83**      | 4.170 [105.92] |
| MCSAR*-84**      | 4.220 [107.19] |
| MCSAR*-85**      | 4.270 [108.46] |
| MCSAR*-86**      | 4.320 [109.73] |
| MCSAR*-87**      | 4.370 [111.00] |
| MCSAR*-88**      | 4.420 [112.27] |
| MCSAR*-89**      | 4.470 [113.54] |
| MCSAR*-90**      | 4.520 [114.81] |

| Part No. By Size | C Max.         |
|------------------|----------------|
| MCSAR*-91**      | 4.570 [116.08] |
| MCSAR*-92**      | 4.620 [117.35] |
| MCSAR*-93**      | 4.670 [118.62] |
| MCSAR*-94**      | 4.720 [119.89] |
| MCSAR*-95**      | 4.770 [121.16] |
| MCSAR*-96**      | 4.820 [122.43] |
| MCSAR*-97**      | 4.870 [123.70] |
| MCSAR*-98**      | 4.920 [124.97] |
| MCSAR*-99**      | 4.970 [126.24] |
| MCSAR*-100**     | 5.020 [127.51] |
| MCSAR*-101**     | 5.070 [128.78] |
| MCSAR*-102**     | 5.120 [130.05] |
| MCSAR*-103**     | 5.170 [131.32] |
| MCSAR*-104**     | 5.220 [132.59] |
| MCSAR*-105**     | 5.270 [133.86] |
| MCSAR*-106**     | 5.320 [135.13] |
| MCSAR*-107**     | 5.370 [136.40] |
| MCSAR*-108**     | 5.420 [137.67] |
| MCSAR*-109**     | 5.470 [138.94] |
| MCSAR*-110**     | 5.520 [140.21] |
| MCSAR*-111**     | 5.570 [141.48] |
| MCSAR*-112**     | 5.620 [142.75] |
| MCSAR*-113**     | 5.670 [144.02] |
| MCSAR*-114**     | 5.720 [145.29] |
| MCSAR*-115**     | 5.770 [146.56] |
| MCSAR*-116**     | 5.820 [147.83] |
| MCSAR*-117**     | 5.870 [149.10] |
| MCSAR*-118**     | 5.920 [150.37] |
| MCSAR*-119**     | 5.970 [151.64] |
| MCSAR*-120**     | 6.020 [152.91] |

## How To Specify

Connector Series: MCS AR 2 — 26 P 6 A 1 — 18.0

Insulator Type and Material: AR — Polyphenylene Sulfide per MIL-M-24519, or ASTM D4067, or Liquid Crystal Polymer per ASTM D5138

Contact Locations: 1 — Contact in every cavity, 2 — Contact in every other cavity 1, 3, 5..., 3 — Contact in every cavity except guide pin cavity in each end cavity, 4 — Contact in every other cavity 2, 4, 6... and guide pin in each end cavity, X — Other than above

Standard Polarization: Guide pins are in socket connectors. Blank cavities are in pin connectors.

Number of Cavities (120 Max.):

Contact Type: P — Pin S — Socket

Lead Length in Inches (min.):

Insulation Color or Finish: 1 — All white wire, 2 — All yellow wire, 3 — All gray wire, 4 — Gold plated, 5 — Tinned, 6 — Bare (unfinished), 7 — Color coded per MIL-STD-681, System 1, 8 — Special color code, 9 — Ten solid color repeating (starts with black)

Wire Type: \*A — Type E, 7 strand, \*B — Type ET, 7 strand, \*C — Type E, 19 strand, \*D — Type ET, 19 strand, F — 7 strand per MIL-22759/11 (#28 AWG only), G — 19 strand per MIL-22759/11 26 AWG, 24 AWG, M — Copper, solid, Q — Stranded per MIL-W-22759/33

\*Per MIL-W-16878

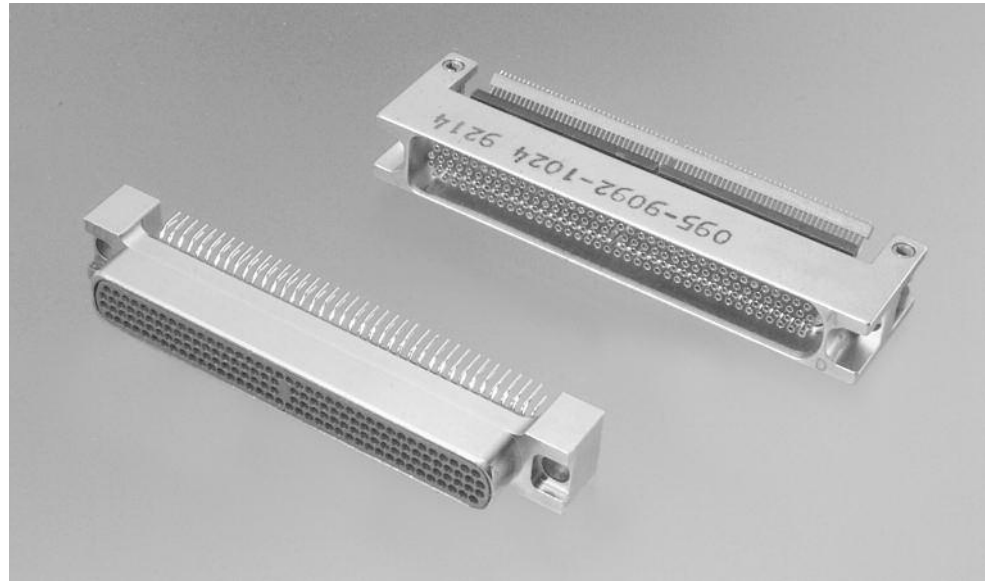
Wire Size: 4—24 AWG 5—25 AWG 6—26 AWG 8—28 AWG 0—30 AWG

## MICRODOT High Density Standard Module (HDSM) Connectors

### Features

- Designed for surface mounting on both daughter board and mother board for increased circuit density
- Basic design offers 38, 78, 120, 152, 200, 304, and 400 contact designs
- High reliability twist pin and socket per MIL-DTL-83513 and MIL-DTL-55302
- Connector permits lateral movement of daughter board to accommodate clamping of the heatsink
- Plated through-hole mounting available
- Available with flying leads
- Extender card option available
- Typical mating force for 304 contacts is 38 pounds
- Designed to withstand vapor phase soldering
- Two rotatable (six position) polarizing keys are provided accommodating 36 possible combinations
- Jackscrew hardware available; consult TE Connectivity
- Different modular inserts may be specified to include coax (Pixi/Con), fiber optic or other special contacts
- Inserts may be partially or fully loaded and installed in the connector shell in various configurations

**Note:** HDSM Connectors may require additional hardware for Rack and Panel Mount Systems



The MICRODOT HDSM connector is designed for 4 row .050 [1.27] pitch density with a special low force twist pin that meets all requirements of MIL-DTL-55302 and MIL-DTL-83513. This high density connector allows the use of construction to double the packaging density with surface mount capability.

### Performance Data Summary

#### Electrical

**Contacts** — Pin 24 AWG twist pin, Socket #24 AWG, Wire range 24 AWG to 32 AWG solid and stranded.

**Contact Resistance (voltage drop)** — 25 millivolts max. at 3 amps, 25° ± 3° C.

**Current Rating** — 3 amps max. per contact

**Dielectric Withstanding Voltage** — Test in accordance with EIA-364-20, Method a, Test Condition IV. Volts RMS 60Hz at room ambient: 600V for Solder Pots at Sea Level. 150V for Solder Pots at 70,000 ft. [21,336m]. 500V for Wire Terminations at Sea Level. 200V for Wire Terminations at 70,000 ft.

**Insulation Resistance** — 5,000 megohms min. at room ambient.

**Magnetic Permeability** — 2 mμ max.

#### Mechanical

**Contact Spacing** — .050 [1.27] centers

**Contact Engagement & Separation** — 5.0 oz max. [1.39N] (eng.) 0.5 oz. min. [.14N] 3.5 oz. typ. [.97N] (sep.) force.

#### Materials and Finishes

**Contacts** — Copper alloy plated with .000050 [0.00127] gold over copper flash per MIL-G-45204, Type II.

**Metal Shell** —

**Insulator** — Liquid Crystal Polymer (LCP) per ASTM D5138 or Polyphenylene Sulfide per MIL-M-24519 or ASTM D4067

**Body Shell** — Aluminum alloy plated Nickel, electroless per MIL-C-26074.

#### Environmental

**Temperature Range** — -67°F to 257°F [-55° C to +125° C].

**Vibration** — No discontinuity in excess of 1 μ second when tested in accordance with EIA-364-28, test condition III.

**Insulator Retention** — Inserts will withstand a 50 lb. per square inch load in either direction.

**Shock** — No discontinuity in excess of 1 μ second when tested in accordance with EIA-364-27, test condition A.

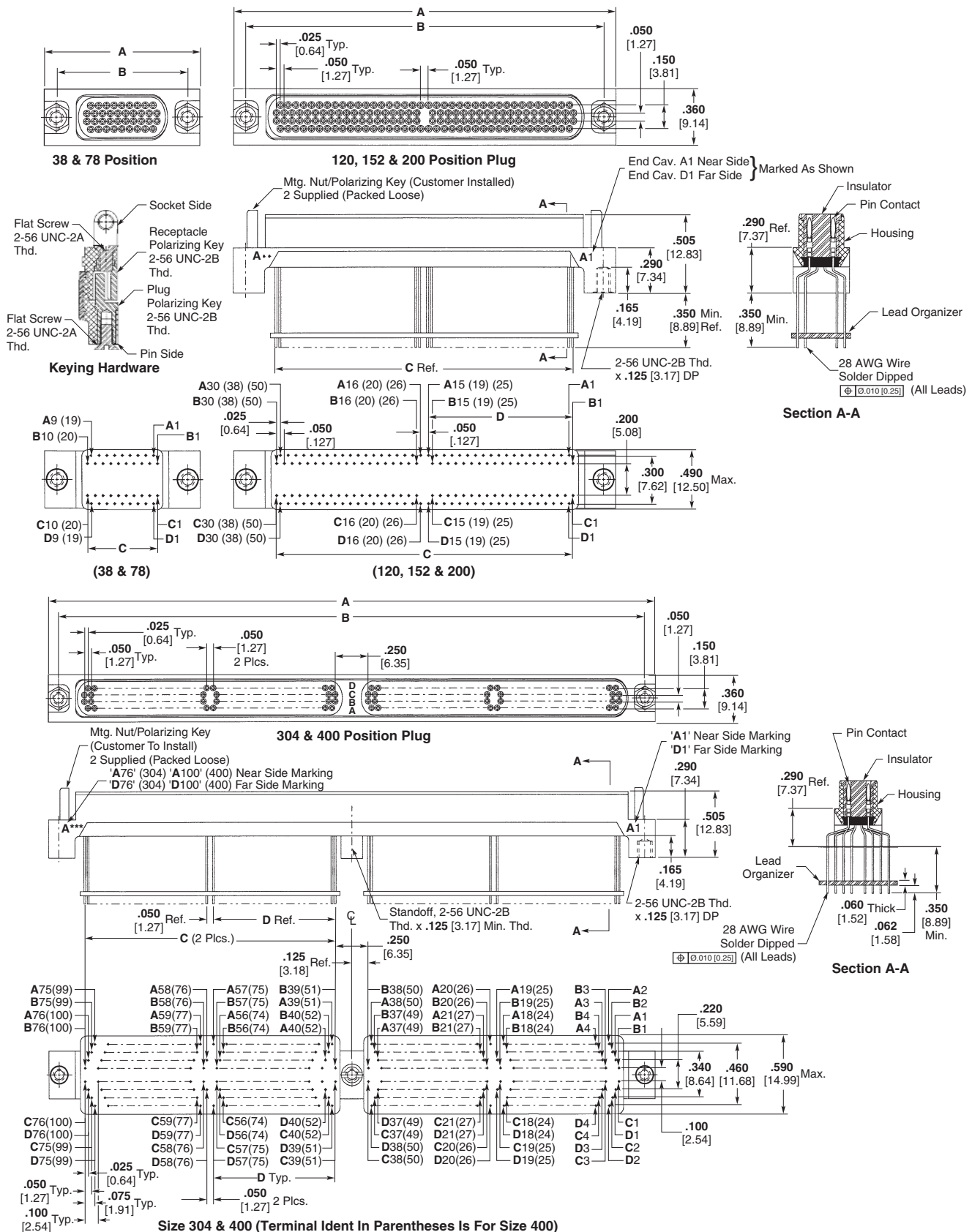
**Durability** — No mechanical or electrical defects detrimental to the function of the connectors after 500 cycles of mating and unmating. (Caution: Mating force increases during durability cycling may be noted).

**Humidity** — After exposure to humidity as specified by EIA-364-31, Method IV, Test Condition B, IR shall be 1 megohm minimum following step 7a of EIA-364-31 section 4.3.6.1 and 1000 megohms minimum after 24 hours of conditioning per EIA-364-31.

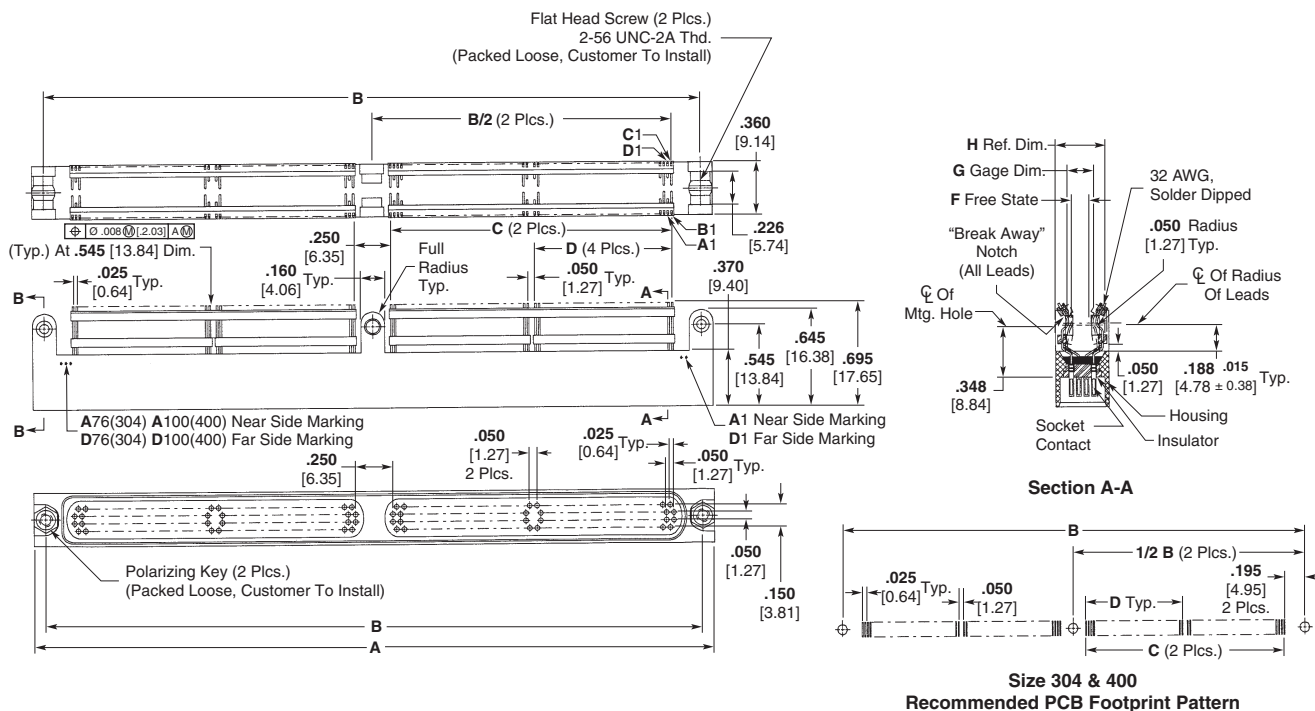
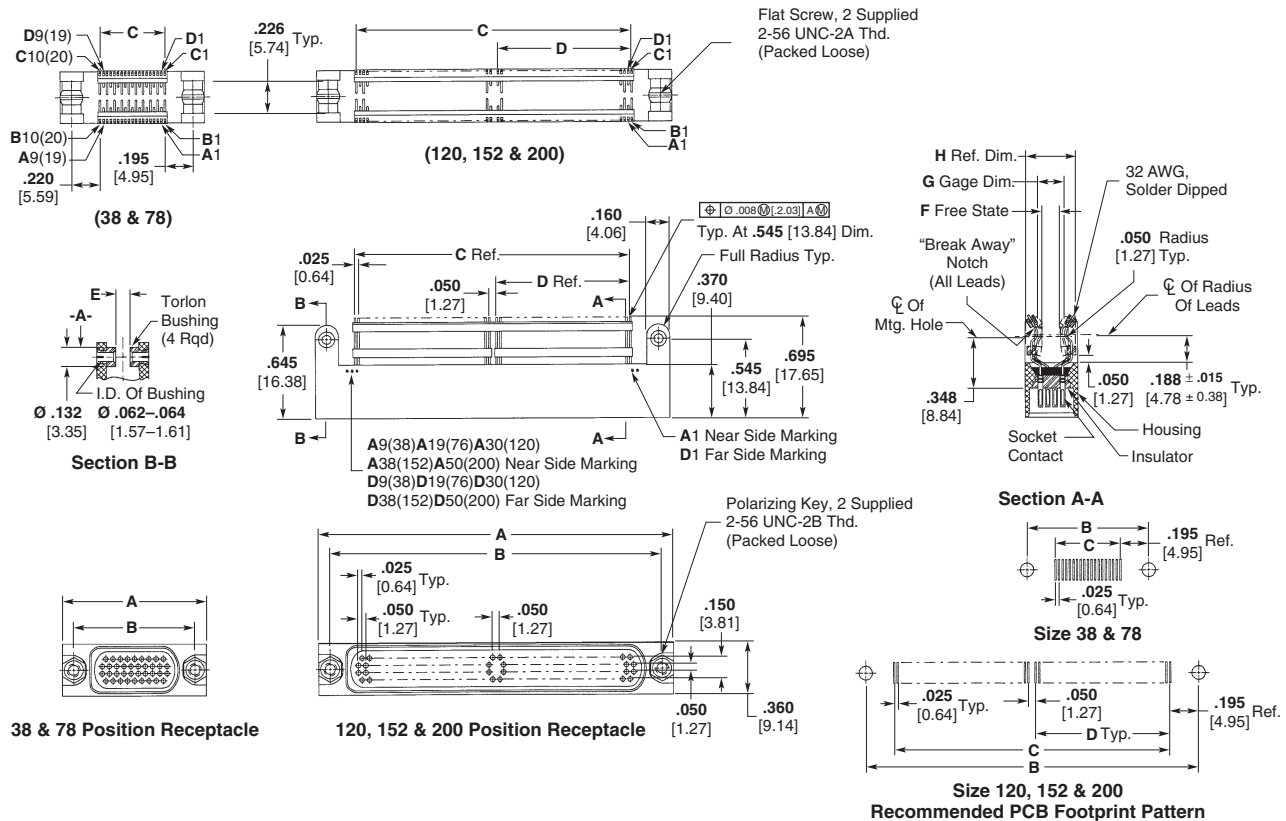
**Salt Spray** — Connectors shall meet the performance requirements of contact resistance, mating and unmating forces, and contact retention after being subjected to the 48 hour 5% solution salt spray test per EIA-364-26, Condition B.

**Crimp Termination Tensile Strength** — Unassembled contacts with crimped stranded wire terminations will not pull out of contacts when the following axial loads are applied: 24 AWG, 5 lbs., 26 AWG, 4 lbs., 28 AWG, 3 lbs.

**MICRODOT High Density Standard Module (HDSM) Connectors (Continued)**



## MICRODOT High Density Standard Module (HDSM) Connectors (Continued)





## MICRODOT High Density Standard Module (HDSM) Connectors (Continued)

| No. of Cavities   | A Dim.                 | B Dim.                 | C Dim.                | D Dim.                |
|-------------------|------------------------|------------------------|-----------------------|-----------------------|
| <b>Single Bay</b> |                        |                        |                       |                       |
| 38                | <b>1.000</b><br>25.40  | <b>.840</b><br>21.34   | <b>.450</b><br>11.43  | —                     |
| 78                | <b>1.500</b><br>38.10  | <b>1.340</b><br>34.04  | <b>.950</b><br>24.13  | —                     |
| 120               | <b>2.050</b><br>52.07  | <b>1.890</b><br>48.01  | <b>1.500</b><br>38.10 | <b>.725</b><br>18.42  |
| 152               | <b>2.450</b><br>62.23  | <b>2.290</b><br>58.17  | <b>1.900</b><br>48.26 | <b>.925</b><br>23.50  |
| 200               | <b>3.050</b><br>77.47  | <b>2.890</b><br>73.41  | <b>2.500</b><br>63.50 | <b>1.225</b><br>31.12 |
| <b>Double Bay</b> |                        |                        |                       |                       |
| 304               | <b>4.600</b><br>116.84 | <b>4.440</b><br>112.78 | <b>1.900</b><br>48.26 | <b>.925</b><br>23.50  |
| 400               | <b>5.800</b><br>147.32 | <b>5.640</b><br>143.26 | <b>2.500</b><br>63.50 | <b>1.225</b><br>31.12 |

### How To Specify

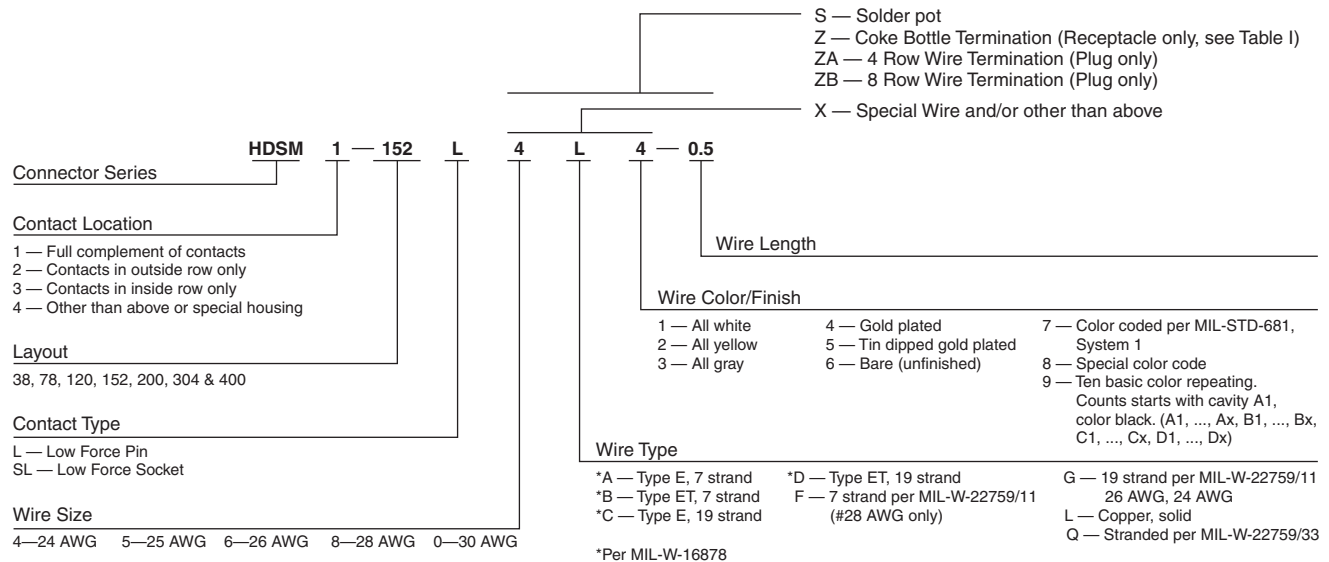


Table I

| Dash No. | Gap Between Bushing "E" | F Dim.              | G Dim.              | H Dim. (Ref.)        |
|----------|-------------------------|---------------------|---------------------|----------------------|
| 1        | <b>.100</b><br>2.54     | <b>.120</b><br>3.05 | <b>.180</b><br>4.57 | <b>.330</b><br>8.38  |
| 2        | <b>.093</b><br>2.36     | <b>.060</b><br>1.52 | <b>.150</b><br>3.81 | <b>.330</b><br>8.38  |
| 3        | <b>.118</b><br>2.99     | <b>.235</b><br>5.97 | <b>.260</b><br>6.60 | <b>.483</b><br>12.27 |
| 4        | <b>.145</b><br>3.68     | <b>.120</b><br>3.05 | <b>.180</b><br>4.57 | <b>.330</b><br>8.38  |

## Table of Contents

### CeeLok FAS-T Connectors, Cable Assemblies, and Associated Products

|                        |             |
|------------------------|-------------|
| Introduction           | .6-2        |
| CeeLok FAS-T Connector | .6-3 to 6-5 |
| Cable Assemblies       | .6-6        |
| Termination Devices    | .6-7        |
| Molded Products        | .6-8        |
| High Data Rate Cables  | .6-8        |

### CeeLok FAS-T Nano Circular Connectors .6-9 to 6-12

### Quadrax Contacts, Connectors and Cables

|                                                           |               |
|-----------------------------------------------------------|---------------|
| Introduction                                              | .6-13         |
| Electrical Characteristics                                | .6-14         |
| Product Family Overview                                   | .6-15         |
| Quadrax Contacts                                          | .6-16 to 6-18 |
| Quadrax/Twinax Contact Accessories                        | .6-19         |
| ARINC Size 8 Quadrax Connectors                           | .6-20, 6-21   |
| Rectangular Connectors                                    | .6-22 to 6-25 |
| Custom MIL-DTL-38999 Series III Style Circular Connectors | .6-26 to 6-30 |
| QUADLITE Quadraxial Cables                                | .6-31 to 6-35 |
| Custom Solutions                                          | .6-36         |



---

**Introducing CeeLok FAS-T Connectors, Cable Assemblies, and Associated Products**

---



TE's CeeLok FAS-T connector is **is one of the most rugged, small form factor, 10 Gigabit Ethernet, field terminable I/O connector** in the Aerospace, Defense and Marine marketplace. It has been designed to

perform in some of the most extreme environments in the industry, while providing substantial size and weight savings via its small shell size 8 form factor.

TE also offers associated products such as Band

Straps, Termination Devices, Molded Boots, Wire and Cable and complete harnessing capabilities that complement this exciting new connector.

## CeeLok FAS-T Connector

### Product Facts

- 1 Gbit-Ethernet and 10 Gbit-Ethernet when used with Cat 5e, Cat 6A or Cat 7 cables
- Crimp snap, 39029-style contacts for easy termination and field repairability
- Backshell integrated in plug body provides low profile, low cost, low weight strain relief and EMI protection
- T-shaped pin pattern improves SI through uniform crosstalk cancellation



- Compatible with multiple braid terminations, adaptor styles and seal boots
- Scoop-proof design
- Insert assembly mechanically retained for ≤ 25 lb. retention force
- Robust coupling ring mechanism
- Size 8 shell saves weight and space



### Applications

- 1 Gbit-Ethernet or 10 Gbit-Ethernet in extreme aerospace, defense and marine environments such as:

#### Military

- Rotary and Fixed Wing
- Ground Vehicles
- Soldier Systems
- Missiles and Smart Munitions
- Space
- Shipboard
- C4I

#### Commercial and Civilian Aircraft

- In Flight Entertainment & Connectivity
- Production Breaks (high speed signal)
- Avionics
- Communication Systems

### Electrical

- 1 Gbit-Ethernet and 10 Gbit-Ethernet when used with Cat5e, Cat6A or Cat7 cables
- Electrical performance specifications:
  - Insulation resistance: 5000 mega-ohms ambient, 1000 mega-ohms at 175°C

- Dielectric withstanding voltage: 500 VAC sea level, 100 VAC @ 70,000 ft.
- Shielding effectiveness per MIL-DTL-38999
- Shell to shell conductivity - 5mV initial, 10mV final

### Mechanical

- Performance specifications:
  - Vibration, Sine: MIL-DTL-38999 Series III (60G), 4 hrs per axis, no elevated temperature
  - Vibration, Random: EIA-364-28 Condition VI Letter J (43.92G)
  - Durability: 500 mating cycles
  - Contact Retention: 10 lb. min.
  - Coupling Torque: 8 in-lb. max.

### Environmental Properties

- Operating Temperature: -65°C to +175°C
- Sealing:
  - Altitude Immersion: 70,000 ft. (mated condition)
  - IP67: Mated condition
  - IPX6 (water jet): Receptacle, panel mounted (unmated condition)
- Corrosion Resistance: 500 hr. Salt Mist - Black Zinc Nickel per AMS-2417

### Materials

Shell: Shells available in Electroless Nickel or Black Zinc for DOD-Approved, RoHS compliant, corrosion resistance (500 hr Salt Mist)

Insert: High temperature thermoplastic for excellent temperature endurance. Low dielectric constant for superior signal integrity.

Contacts: BeCu alloy

### Standards and Specifications

Product Specification: 108-2482

Application Specification: 114-32025

Instruction Sheet: 408-32046

Test Report: 501-134002

### Application Tooling

Hand Crimp Tool: M22520/2-01

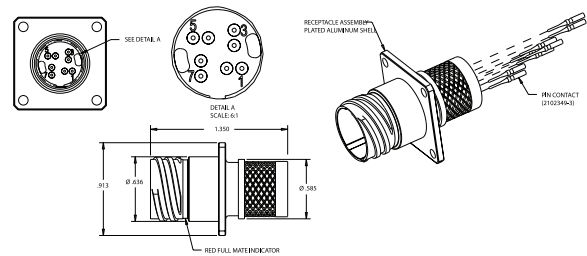
Crimp Positioner: TE PN 2217375-1

Insertion/Extraction Tool: TE PN 2217376-1

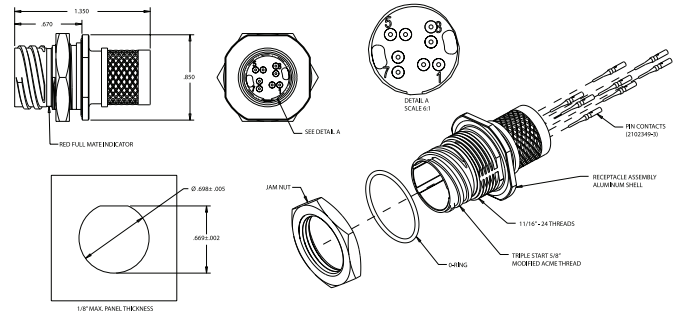
## CeeLok FAS-T Connector (Continued)

### Product Dimensions

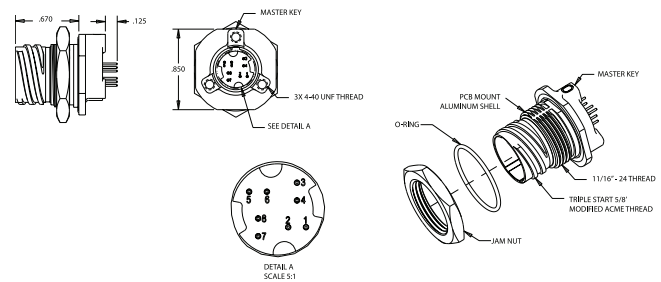
#### Boxmount Receptacle Kit Assembly Part Number 2102343



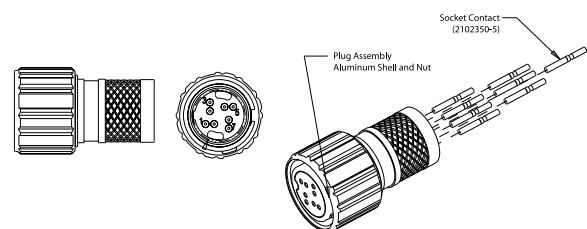
#### Receptacle Kit Assembly Part Number 2102352



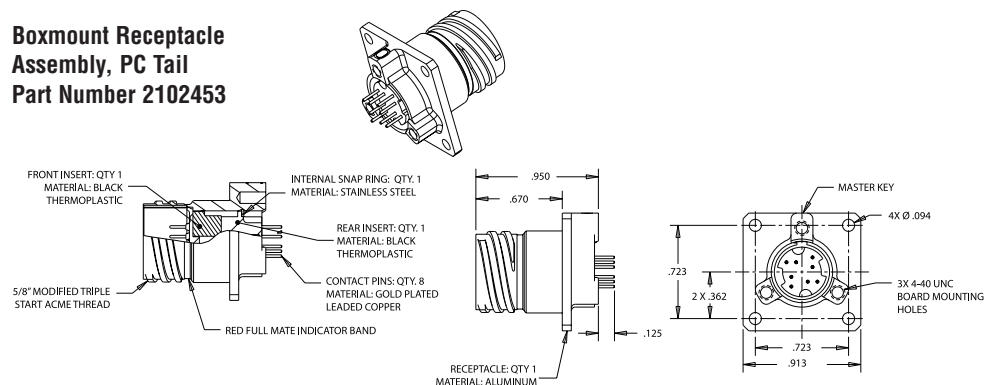
#### Jam Nut Receptacle Assembly, PC Tail Part Number 2102351



#### Plug Kit Assembly Part Number 2102353

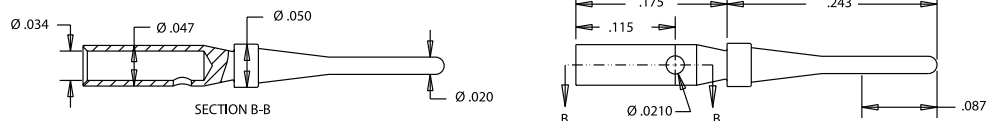


#### Boxmount Receptacle Assembly, PC Tail Part Number 2102453

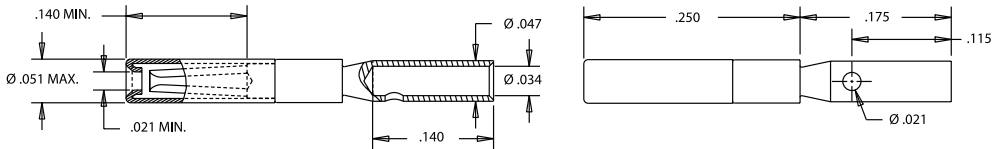


## CeeLok FAS-T Connector (Continued)

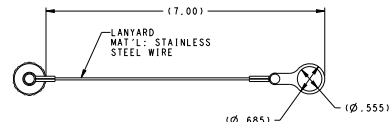
**Pin Contact**  
24-26 AWG  
Part Number 2102349-3



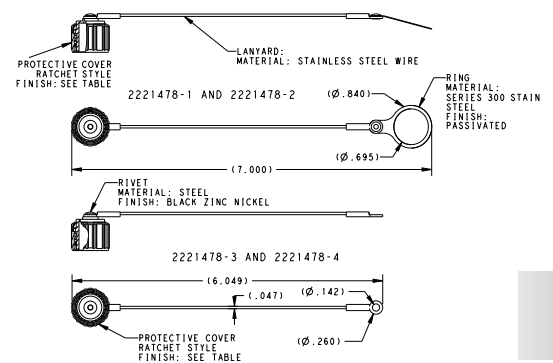
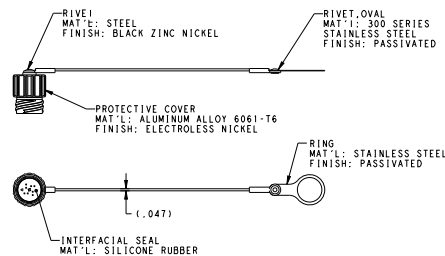
**Socket Contact**  
24-26 AWG, Hooded  
Part Number 2102350-5



**Protective Cover Cap, Plug**  
Part Number 2221682-1



**Protective Cover Cap, Receptacle**  
Part Number 2221478-1



## Product Offering

| TE Part Numbers | Description                  | Plating    | Key |
|-----------------|------------------------------|------------|-----|
| 2102343-1       | Receptacle Kit, Boxmount     | ElNi       | N   |
| 2102343-2       | Receptacle Kit, Boxmount     | Black ZnNi | N   |
| 2102343-3       | Receptacle Kit, Boxmount     | ElNi       | A   |
| 2102343-4       | Receptacle Kit, Boxmount     | Black ZnNi | A   |
| 2102343-5       | Receptacle Kit, Boxmount     | ElNi       | B   |
| 2102343-6       | Receptacle Kit, Boxmount     | Black ZnNi | B   |
| 2102351-1       | Jam Nut Receptacle, PC Tail  | ElNi       | N   |
| 2102351-2       | Jam Nut Receptacle, PC Tail  | Black ZnNi | N   |
| 2102351-3       | Jam Nut Receptacle, PC Tail  | ElNi       | A   |
| 2102351-4       | Jam Nut Receptacle, PC Tail  | Black ZnNi | A   |
| 2102351-5       | Jam Nut Receptacle, PC Tail  | ElNi       | B   |
| 2102351-6       | Jam Nut Receptacle, PC Tail  | Black ZnNi | B   |
| 2102352-1       | Receptacle Kit               | ElNi       | N   |
| 2102352-2       | Receptacle Kit               | Black ZnNi | N   |
| 2102352-3       | Receptacle Kit               | ElNi       | A   |
| 2102352-4       | Receptacle Kit               | Black ZnNi | A   |
| 2102352-5       | Receptacle Kit               | ElNi       | B   |
| 2102352-6       | Receptacle Kit               | Black ZnNi | B   |
| 2102353-1       | Plug Kit                     | ElNi       | N   |
| 2102353-2       | Plug Kit                     | Black ZnNi | N   |
| 2102353-3       | Plug Kit                     | ElNi       | A   |
| 2102353-4       | Plug Kit                     | Black ZnNi | A   |
| 2102353-5       | Plug Kit                     | ElNi       | B   |
| 2102353-6       | Plug Kit                     | Black ZnNi | B   |
| 2102453-1       | Boxmount Receptacle, PC Tail | ElNi       | N   |
| 2102453-2       | Boxmount Receptacle, PC Tail | Black ZnNi | N   |
| 2102453-3       | Boxmount Receptacle, PC Tail | ElNi       | A   |
| 2102453-4       | Boxmount Receptacle, PC Tail | Black ZnNi | A   |
| 2102453-5       | Boxmount Receptacle, PC Tail | ElNi       | B   |
| 2102453-6       | Boxmount Receptacle, PC Tail | Black ZnNi | B   |

## Cable Assemblies

### Product Facts

- End-to-end systems solutions provider
- Quick design turnaround using in-house software
- Full electrical and environmental testing capability
- Certified test processes and equipment ensures optimal signal integrity
- Qualified assembly experts
- Complete lot traceability
- Reliability in harsh environments
- ISO 9001: AS 9100 certified



### Description

- TE supplies proven technology for high bandwidth data links to customers in the aerospace, ground systems and marine industries. Military cable requirements are designed, manufactured and tested to perform reliably in harsh environments.
- Proper cable assembly is critical to realizing the full potential of the cable and connector technologies. TE's lightweight military cables and connector solutions are designed to reduce size and remove weight from your application, leading to benefits that include reduced fuel consumption and increased payload capacity.

### Protocols

Data assemblies can be developed with the CeeLok FAS-T connector for the following high speed protocols:

- 100BASE-T Ethernet
- 1000BASE-T Ethernet
- 10GBASE-T Ethernet
- USB 2.0

### Electrical

Testing capabilities include:

- DWV/IR
- Characteristic Impedance
- Return Loss/VSWR
- Insertion Loss
- Crosstalk
- Attenuation
- Eye Diagrams, etc.

### Mechanical Tests Available:

- Vibration
- Mechanical Shock
- Mechanical Durability

### Environmental Tests Available:

- Salt Spray
- Thermal Shock / Temperature Life
- Humidity / Fluid Immersion

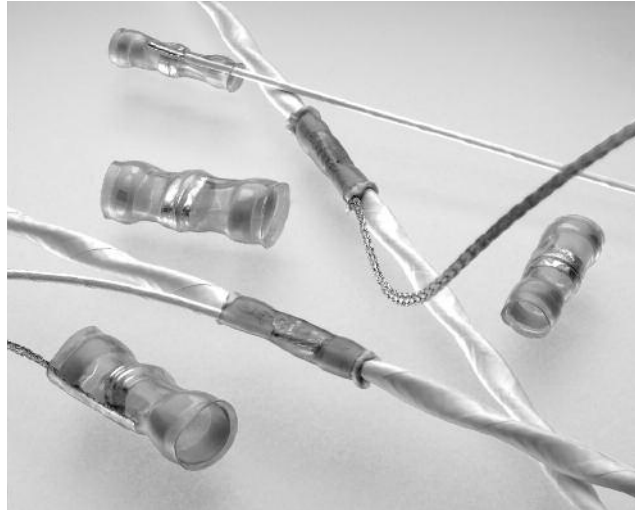
### Test Lab



## Termination Devices

### Product Facts

- Available with and without pigtails
- Simple, quick termination
- Center or end strip for ease of termination
- Handles wide range of high data rate cables and diameters



### Description

- TE's SolderSleeve shield terminators attach a ground lead to cable shield for the purpose of grounding the EMI on the shield.

### Environmental

- Operating Temperature: -55°C to +200°C
- Environmentally sealed
- Mechanically robust

### Physical or Other Properties

- Terminates Tin, Silver and Nickel flat or round braids
- Provides 360° of shielding

### Product Offering

**Contact TE for a complete listing of SolderSleeve Shield Terminators.**

## Band Straps

### Product Facts

- Quick, easy, cost-effective and reliable termination of braided metallic shielding
- Low profile, one-piece design eliminates EMI leakage paths
- Band should be double wrapped to provide effective shield termination



### Description

- TE's CRES-Lock band strap provides a quick, easy, cost-effective and reliable termination of braided metallic shielding to the CeeLok FAS-T connector.
- Approved for aerospace and defense, the CRES-Lock band straps have successfully passed shock, vibration and environmental testing.

### Material

- Passivated 304 stainless steel - 8" long x .125" wide

### Electrical

- Operating Temperature: -65°C to +200°C
- Electrical Resistance: Meets ≤1.0 milliohm requirement of AS85049/128
- Corrosion Resistance: 500 hr. salt spray

### Mechanical

- Tensile Strength: 200 lb.
- Braid Retention: Meets 100 lb. requirement of AS85049/128

### Application Tooling

- Micro Tie-Dex II, A30199

### Product Offering

| TE Part Numbers | Description |
|-----------------|-------------|
| BND-0812-S      | Band Strap  |



## Molded Products

### Product Facts

- Only one boot needed for lower inventory cost
- Boots available in 3 configurations - conforms to the installation
- Boot materials of various temperature angles for ease of installation in different environments
- Epoxy sealing kits available



### Description

- Backshell boots (molded parts) add sealing and strain relief to the wires and cables used with the CeeLok FAS-T connectors. When provided with pre-applied adhesives, these heat shrinkable boots install quickly with high reliability sealing to IP67 levels.
- Backshell boots can be either straight, 45 or 90 degrees in shape to fit a variety of installation needs.

### Application Tooling

- HL1910E or the HG-501A ThermoGun heat gun and appropriate hot air reflectors

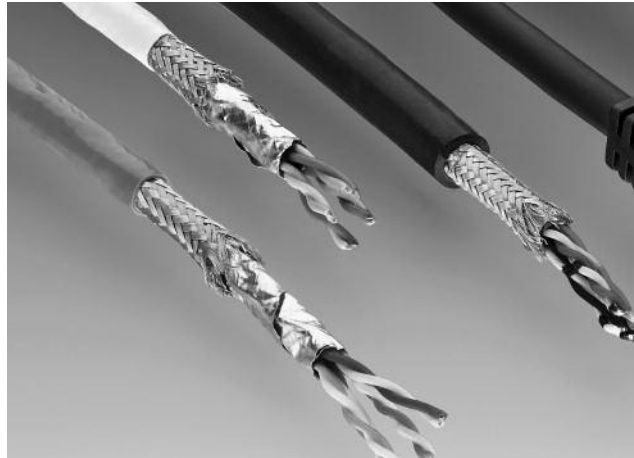
### Product Offering

| Part Number | Description - Straight Boot | Part Number | Description - 90° Boot | Operating Temperature |
|-------------|-----------------------------|-------------|------------------------|-----------------------|
| 878182-000  | 202K132-12-0                | 878183-000  | 222K132-12-0           | -55°C to 200°C        |
| 481350-000  | 202K132-25/225-0            | 131250-000  | 222K132-25/225-0       | -75°C to 150°C        |
| 878495-000  | 202K132-25-0                | 878512-000  | 222K132-25-0           | -75°C to 150°C        |
| 879222-000  | 202K132-25/86-0             | 879268-000  | 222K132-25/86-0        | -55°C to 120°C        |
| 879514-000  | 202K132-4/42-0              | 879515-000  | 222K132-4/42-0         | -20°C to 60°C         |
| 822542-000  | 202K132-4-0                 | 822548-000  | 222K132-4-0            | -55°C to 135°C        |
| 830903-000  | 202K121-4/42-0              | 273122-000  | 222K121-4/42-0         | -20°C to 60°C         |

## High Data Rate Cables

### CABLE PROTOCOLS

- ETHERNET:
  - Quadrx (100BaseT, 100 Mbit/s)
  - Cat 5e (1000 BaseT or Gigabit Ethernet, 1 Gbit/s)
  - IEEE 1394
  - USB



### Description

- Lightweight, ruggedized high speed copper cables complete the CeeLok FAS-T connector end-to-end solution. Designs are available to meet a number of common data protocols, and can be customized to meet mission critical needs such as EMI, fluid resistance, and flammability.
- These high data rate cables utilize specialized polymer formulations, developed by TE that allow better

mechanical and thermal performance in harsh environments. These polymer formulations enable the cables to be smaller and lighter weight because of TE's thin wall technology.

- For aerospace applications, TE has developed a state-of-the-art patented foaming process which affords better signal transmission through the dielectric. This lightweight material is rated to withstand temperatures up to 200°C, and is FAA approved.

- For marine applications, TE developed a ruggedized zero halogen jacket that passes the rigorous military standards for flammability while meeting stringent smoke and toxicity requirements.
- TE also offers solutions to couple with the CeeLok FAS-T connector in marine and ground system markets where fluid resistance and flexibility are paramount.

### Cable Protocol Details

- Operating temperature range from -55°C to +200°C
- Size range: 22 AWG to 28 AWG
- FAA approval
- Electrical testing capability including skew and eye patterns
- Full range of EMI shielding options
- Customized and hybrid designs available



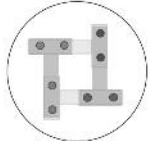
## CeeLok FAS-T Nano Circular Connectors

### Product Facts

#### ■ High Speed Performance

1 or 10 GbE rates for high-speed transmission of data, ideal for tight link budgets

T-shaped pin pattern improves signal integrity through uniform cross talk cancellation



#### ■ Space and Weight Savings

Nanominature size enables high-speed connectivity in an extremely small space envelope

Lightweight NANONICS housing available in push-pull or threaded coupling for a broad-range of applications and uses

#### ■ Versatile

Available in board-mount and cable-applied versions

#### ■ Rugged

Withstands the harsh operating environment typical of Aerospace, Defense and Marine applications



The latest addition to TE's line of high speed copper I/O connectors, CeeLok FAS-T nano circular takes the noise cancellation technology of the original CeeLok FAS-T connector and re-engineers it to fit our standard NANONICS connector shell. The new connector delivers up to 10 GbE speeds in nanominature form factor, creating an industry-leading combination of high-speed, small size and low weight.

### Description

TE Connectivity's (TE) CeeLok FAS-T Nano Circular connector is a rugged, nano-miniature I/O connector capable of meeting 10 GbE performance. The patented, noise-cancelling contact configuration minimizes cross talk making it ideal for a variety of markets.

### Applications

Typical applications include:

- Military Weapons
- Ground Support Systems
- Soldier Worn Applications
- Avionics
- Instrumentation
- Down-hole Telemetry Tools

### Mechanical

- Vibration, Sine: 10-2000 Hz, 20g (EIA-364-28, Test Condition IV)
- Vibration, Random: 50-2000 Hz, 46.3g (EIA-364-28, Test Condition V, Letter K)
- Mating Cycles (Min): 250 Electroless Nickel plated aluminum shells
- Mechanical Shock: 300g, 3ms, Half-sine (EIA364-27, Test Condition D)
- Weights: Push-pull plug with a straight backshell and 1 meter of TurboTwin cable weighs less than 13g. A PCB mount receptacle weighs less than 3g.

### Electrical

- 10 GbE using Madison Cable's TurboTwin cable (factory terminated)
- IR: 5000 MOhms ambient; 1000 MOhms at temperature
- DWV: 500 VAC Sea Level; 100 VAC @ 70,000 feet

### Environmental

- Operating Temperature: -55°C to +125°C\*
- Sealing: Immersion: IP68, Mated Water Jet: IPX6, Mated Dust: IP6X, Mated

\*This is utilizing high-temp Madison TurboTwin cable.

## CeeLok FAS-T Nano Circular Connectors (Continued)

### Standards and Specifications

Product Specification:  
108-32048

Qualification Test Report:  
501-134021

### Material

Shells: Electroless Nickel  
Plated Aluminum (standard)  
or Passivated Stainless Steel  
(increased durability)

Insert: High temperature  
thermoplastic for excellent  
temperature endurance  
and superior signal integrity

Contacts:  
Gold plated BeCu Alloy

### Accessories

Straight braid-clamp style  
backshells as well as right-  
angle versions are factory  
installed. Right-angle  
backshells can be oriented in  
8 different directions. See PN  
chart below.

Note: for Band straps and Molded Parts -  
contact TE Connectivity

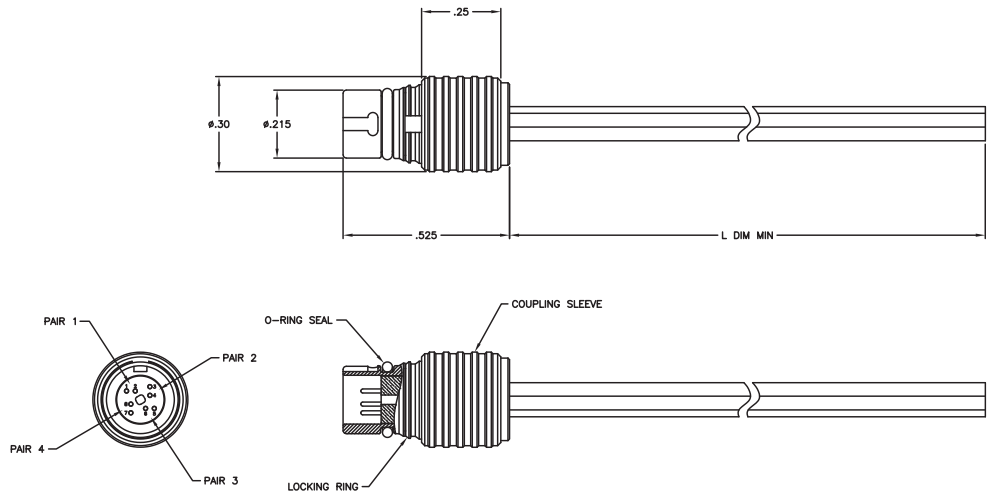
### Part Numbers

| TE Part Numbers | Position | Description                                                                                                                             |
|-----------------|----------|-----------------------------------------------------------------------------------------------------------------------------------------|
| 1925248-1 *     | 8        | Quick disconnect, metal, plug, 30 AWG 10G TurboTwin pair, 36"                                                                           |
| 1925249-1       | 8        | Quick disconnect, metal, plug, 30 AWG 10G TurboTwin pair, 36", straight braid clamp backshell                                           |
| 1925250-1       | 8        | Quick disconnect, metal, 30 AWG 10G TurboTwin pair, 36", right-angle braid clamp backshell, orientation 5                               |
| 1925251-1 *     | 8        | Threaded coupling, metal, plug, 30 AWG 10G TurboTwin pair, 36"                                                                          |
| 1925252-1 *     | 8        | Threaded coupling, metal, plug, 30 AWG 10G TurboTwin pair, 36", straight braid clamp backshell                                          |
| 1925253-1       | 8        | Threaded coupling, metal, plug, 30 AWG 10G TurboTwin pair, 36", right-angle braid clamp backshell, orientation 5                        |
| 1925254-1       | 8        | Flanged coupling quick disconnect, metal, plug, 30 AWG 10G TurboTwin pair, 36"                                                          |
| 1925255-1       | 8        | Flanged coupling quick disconnect, metal, plug, 30 AWG 10G TurboTwin pair, 36", straight braid clamp backshell                          |
| 1925256-1       | 8        | Flanged coupling quick disconnect, metal, plug, 30 AWG 10G TurboTwin pair, 36", right angle braid clamp backshell, orientation 5        |
| 1925257-1       | 8        | Quick disconnect, metal, receptacle, 30 AWG 10G TurboTwin pair, 36" front flush mount                                                   |
| 1925258-1       | 8        | Quick disconnect, metal, receptacle, 30 AWG 10G TurboTwin pair, 36", rear panel mount                                                   |
| 1925259-1       | 8        | Quick disconnect, metal, receptacle, 30 AWG 10G TurboTwin pair, 36", rear panel mount, straight braid clamp backshell                   |
| 1925260-1       | 8        | Quick disconnect, metal, receptacle, 30 AWG 10G TurboTwin pair, 36", rear panel mount, right angle braid clamp backshell, orientation 5 |
| 1925261-1       | 8        | Quick disconnect, metal, receptacle, vertical PCB mount, through-hole, 10GbE, .125" tin/lead solder dipped leads, panel mount           |

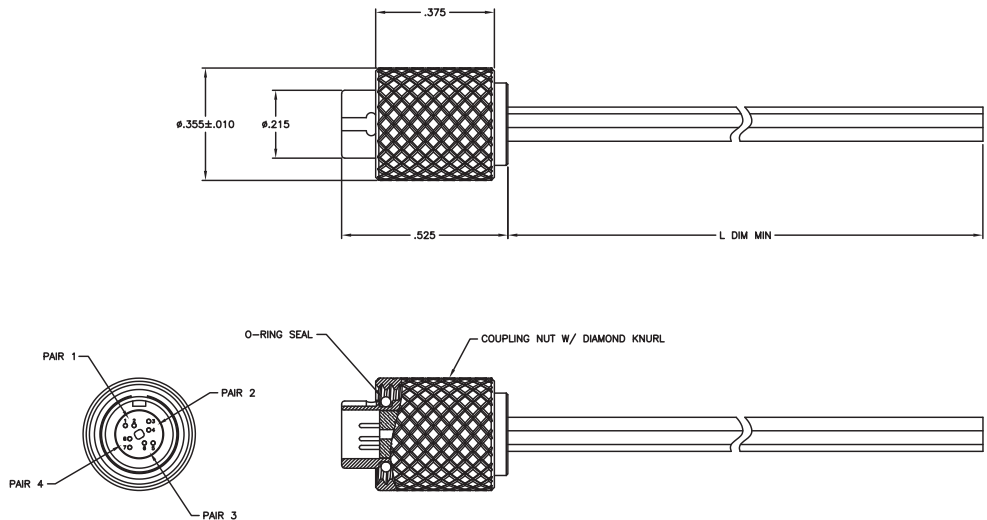
\*Drawings shown on pages 6-11 and 6-12.

## CeeLok FAS-T Nano Circular Connectors (Continued)

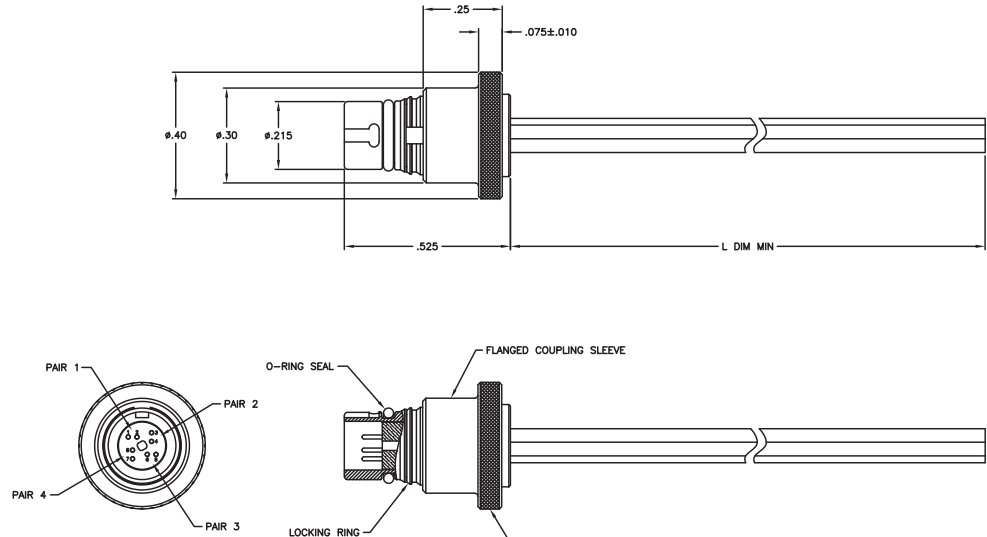
### Part Number 1925248-1 Quick Disconnect Plug



### Part Number 1925251-1 Threaded Coupling Plug

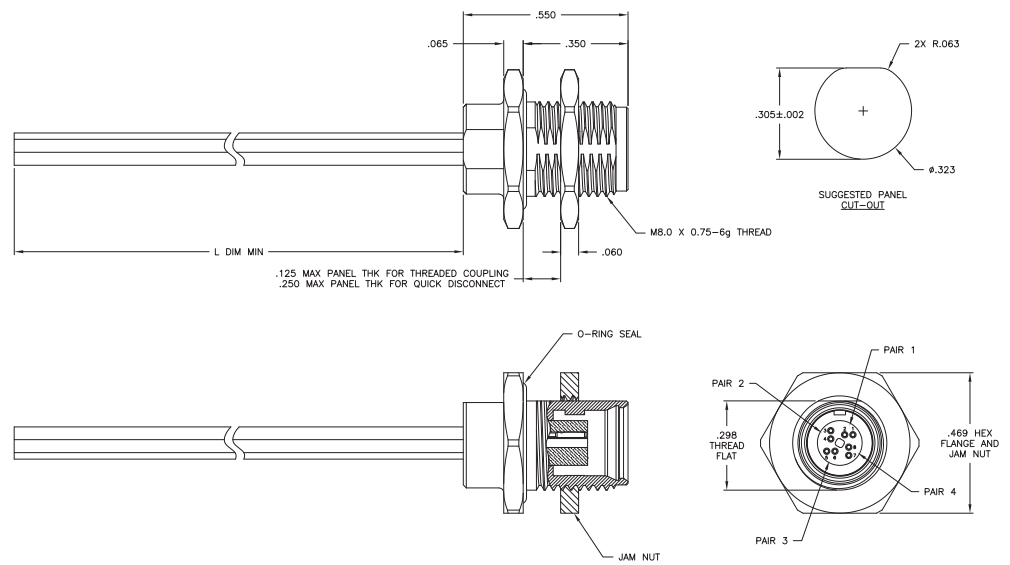


### Part Number 1925254-1 Flanged Coupling Plug

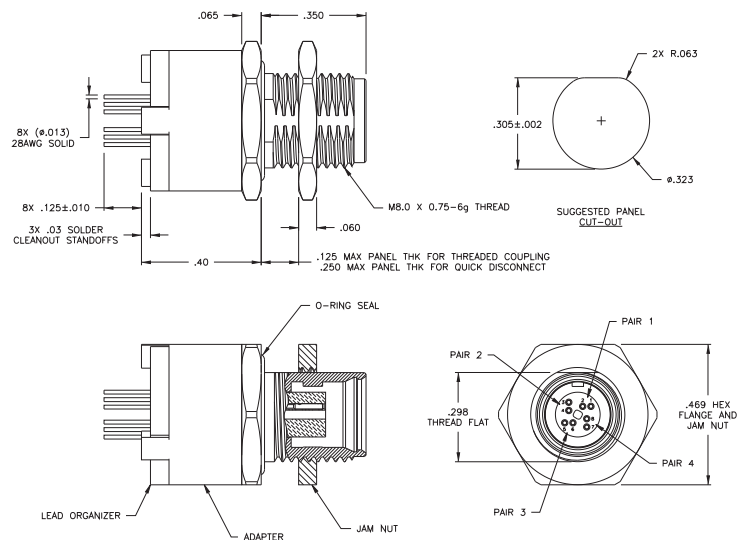


## CeeLok FAS-T Nano Circular Connectors (Continued)

### Part Number 1925258-1 Quick Disconnect Receptacle



### Part Number 1925261-1 Quick Disconnect Vertical PCB Mount Receptacle



## Introduction

### Product Facts

- 2 mm centerlines
- Designed per ARINC 600 — Supplement 18
- Fits into keyed connector inserts for connectors such as: ARINC 404 & 600, General Purpose Rectangular (GPR), MIL-DTL-38999 style, BACC65/EPXB, and custom interconnects
- Patented single piece dielectric design simplifies termination and improves reliability
- Size 8 contacts are designed for standard hex crimp per M2252/5-01 and M22520/5-45
- 24 AWG internal contacts are designed for crimp tooling M22520/2-01 and Daniels K-709
- Shells are keyed for proper orientation inside connector insert blocks
- Rear Release/Rear Remove cable versions and Front Release/Front Remove PCB versions
- Uses standard insertion/extraction tool
- Meets ASTM E595 outgassing limits for spacecraft materials



A multi-signal contact system consisting of two differential pairs (matched impedance) used with quadaxial Ethernet and Fiber Channel cables. Available in shell size 8 (keyed); 24 AWG pin and socket contacts, Hex Crimp version as well as pin PCB tail solderable versions. Adaptable to a variety of connectors (ARINC 600, 404, D-Subminiature connectors, MIL-DTL-38999 style, etc.)

Designed for use in high speed applications such as Gigabit Ethernet, IEEE 802.3Z and Fiber Channel X3T11.2 for use on Commercial Avionics Systems, Aircraft Data Networks, Military Communications, In-Flight Entertainment, and Space applications.

### Materials

**Contacts, Shells, Ferrules** — Copper alloy with gold over nickel finish. One-piece thermoplastic dielectric.

### Performance Characteristics

**Maximum Mating Force per Contact Assembly** — 2.75 lbf.

**Minimum Un-mating Force per Contact Assembly** — 1.25 lbf.

**Durability** — 500 mating/unmating cycles

### Typical Electrical Performance

**Bandwidth** — as high as 3 GHz (see characterization chart on page 6-10)

**Data Rate** — in excess of 2 Gb/s

**Characteristic Impedance** — 100 ohms  $\pm$  10 ohms

**Maximum Voltage Rating** — 500 Vrms @ sea level

**Dielectric Withstanding Voltage** — 1000 VAC rms between any two contacts @ sea level; 500 VAC rms between any contact and outer shell @ sea level

### Technical Documents

#### Product Specifications —

- 108-2131 Quadrax Cable and PCB Connectors
- 108-2199 Quadrax MIL-DTL-38999 Style Connectors
- 108-2311 Quadrax 4Q4 In-Line D-Sub Style Connectors

#### Test Reports

- 501-574 Quadrax Cable and PCB Connectors
- 501-660 Quadrax MIL-DTL-38999 Style Connectors
- 501-738 Quadrax 4Q4 In-Line D-Sub Style Connectors
- 502-1182 Quadrax Rectangular Connector
- Qualified to Boeing Spec. BPS-C-193

#### Application Specifications

- 114-13123 Quadrax Rectangular Connectors and Quadrax Contacts
- 114-13163 Quadrax Circular Connectors and Quadrax Contacts
- 114-13190 In-Line Quadrax/Twinax Connectors
- 114-13233 Quadrax D-Sub Connectors and Quadrax Contacts

## Electrical Characteristics

- Designed for use with 100 ohm and 150 ohm characteristic impedance star quad cable. Reference contact chart on page 10.
- Signal integrity testing was completed per SFF-8410 (see engineering test report 502-1182).
- Characteristic impedance: 100 ohm  $\pm$  10 ohm nominal (measured 102.85 ohms)
- Near end cross talk (NEXT) in the time domain: 0.89% measured on Tek 11801C Digital Sampling Oscilloscope
- Eye Patterns (Differential Mode, 1 meter and 11.2 meter cable test lengths)
- The minimum output eye opening for a 1 V launch voltage measured at 50% of the period is:
  - 1 meter, 100 MHz Eye Opening 928.53 mV
  - 1 meter, 1.25 GHz Eye Opening 839.77 mV
  - 11.2 meter, 100 MHz Eye Opening 761.60 mV
  - 11.2 meter, 1.25 GHz Eye Opening 315.20 mV

### Return Loss

#### 1 Meter Cable Length

| Frequency MHz | dB    | VSWR* |
|---------------|-------|-------|
| 50            | 34.33 | 1.039 |
| 62            | 36.03 | 1.032 |
| 102           | 40.21 | 1.02  |
| 502           | 21.21 | 1.191 |
| 1002          | 13.34 | 1.549 |
| 1954          | 9.32  | 2.039 |
| 2950          | 10.27 | 1.884 |

#### 11.2 Meter Cable Length

| Frequency MHz | dB    | VSWR* |
|---------------|-------|-------|
| 50            | 35.26 | 1.035 |
| 62            | 36.87 | 1.029 |
| 102           | 38.90 | 1.023 |
| 502           | 26.02 | 1.105 |
| 1002          | 14.62 | 1.456 |
| 1798          | 11.74 | 1.698 |
| 2502          | 13.34 | 1.549 |
| 3702          | 6.54  | 2.781 |

\*calculated

### Insertion Loss

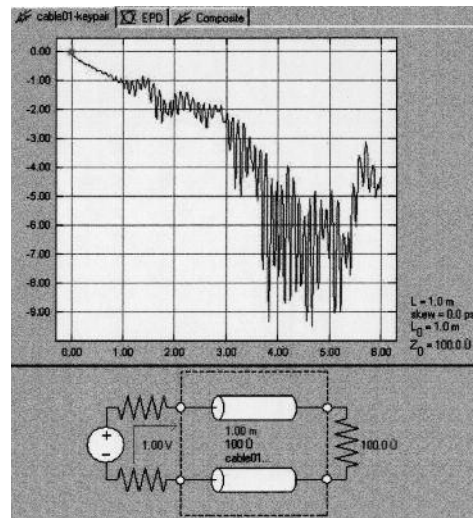
#### 1 Meter Cable Length

| Frequency MHz | dB   |
|---------------|------|
| 50            | 0.13 |
| 62            | 0.19 |
| 102           | 0.27 |
| 502           | 0.87 |
| 1002          | 1.39 |
| 2002          | 2.48 |
| 3002          | 3.29 |

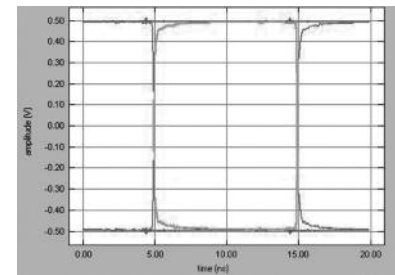
#### 11.2 Meter Cable Length

| Frequency MHz | dB    |
|---------------|-------|
| 50            | 1.87  |
| 62            | 2.13  |
| 102           | 2.72  |
| 502           | 6.38  |
| 1002          | 10.06 |
| 1798          | 15.69 |
| 2502          | 19.47 |
| 3702          | 28.20 |

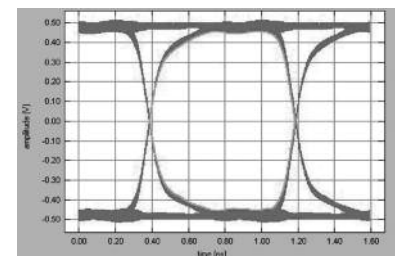
### Typical Insertion Loss 1 Meter Length, 100 Ohm Cable



### Eye Pattern, 100 Ohm Cable (Time Domain Measurement of Voltage vs. Time)



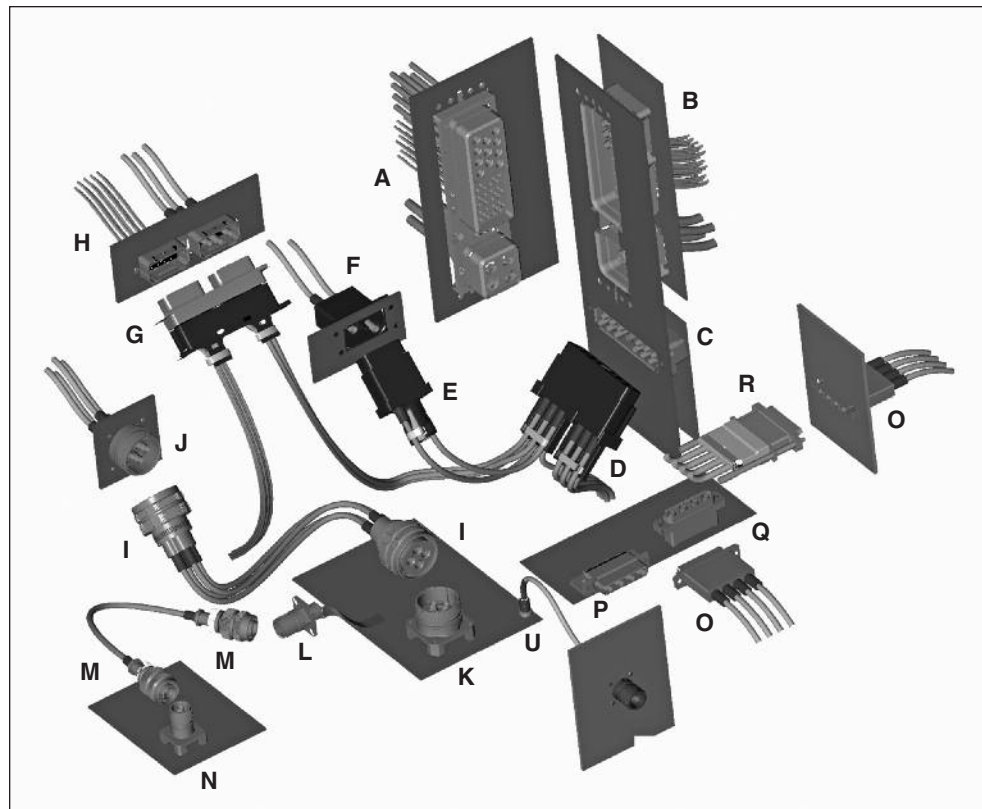
#### 100 Mb/s Data Rate



#### 1 Gb/s Data Rate



## Product Family Overview



### Legend

#### ARINC 600 Connectors:

**A** Size 2 Plug Assembly with Q11 Quadrax Insert

**B** Size 2 Receptacle Assembly with Q11 PCB Tail Quadrax

#### Quadrax Rectangular Connectors:

**C** 12 Position Receptacle

**D** 12 Position Plug Assembly with Strain Relief and Seal Boots

**E** 2 Position Plug Assembly with Strain Relief and Seal Boots

**F** 2 Position Panel Mount Receptacle with Strain Relief and Seal Boots

**U** Direct Attach

#### General Purpose Rectangular Connectors:

**G** GPRB2 Plug, Dual Insert Configuration w/3 Pos. Quadrax Insert

**H** GPRB2 Receptacle, Dual Insert Configuration w/3 Pos. Quadrax insert

#### 38999 Style Circular Connectors:

**I** Size 19 Plug, 4Q4 Quadrax arrangement with Seal Boots

**J** Size 19 Receptacle, 4Q4 Quadrax arrangement, Panel Mount Configuration w/Seal Boots

**K** Size 19 Receptacle, 4Q4 Quadrax arrangement, PCB Mount

**L** Size 9 Receptacle, 1Q1 Quadrax arrangement, Panel Mount w/Custom Flex Circuit Assembly for direct attachment to printed circuit board

**M** Size 9 Plug, 1Q1 Quadrax arrangement with Seal Boot

**N** Size 9 Receptacle, 1Q1 Quadrax arrangement, PCB Mount

#### D-Sub Style Quadrax Rectangular Connectors:

**O** Plug with Seal Boots

**P** Receptacle, for right-angle PCB mount

**Q** Receptacle, for vertical PCB mount

**R** Cable Receptacle with Seal Boots





## Product Facts

- Patented one-piece dielectric inserts for easy assembly and lowest applied cost
- Available with silicone seal boots rated for 50,000 ft. altitude immersion
- Crimp type, screw machined, 24 AWG contacts
- Quadrax size 8 shells are keyed per ARINC 600 for correct orientation inside connector inserts
- Twinax contacts: Qualification tests pending
- Direct Attach to PCB
  - Asymmetric standoff leg provides built-in keying to PC board
- Internally keyed contacts for MIL-DTL-38999 connectors
  - One-piece dielectric inserts for easy assembly and lowest applied cost



## Quadrax Contacts

### PC Tail Contacts

| Part Number | Description               | Dim. A       |
|-------------|---------------------------|--------------|
| 1445626-1   | Contact, Pin, Solder Tail | .228 [5.79]  |
| 1445626-2   | Contact, Pin, Solder Tail | .422 [10.72] |
| 1445626-3   | Contact, Pin, Solder Tail | .181 [4.60]  |
| 1445626-4   | Contact, Pin, Solder Tail | .297 [7.54]  |
| 1445626-5*  | Contact, Pin, Solder Tail | .297 [7.54]  |

### Crimp Style Contacts<sup>1</sup>

| Part Number    | Description                                     | Hex Crimp |
|----------------|-------------------------------------------------|-----------|
| 1445692-1      | Contact Kit, Pin, Crimp                         | .218      |
| 1445692-3**    | Contact Kit, Pin, Crimp, with wire seal boot    | .218      |
| 1445692-4 ***  | Contact Kit, Pin, Crimp, with wire seal boot*   | —         |
| 1445693-1      | Contact Kit, Socket, Crimp                      | .218      |
| 1445693-3**    | Contact Kit, Socket, Crimp, with wire seal boot | .218      |
| 1445693-4 **** | Contact Kit, Socket, Crimp, with wire seal boot | —         |

Reference cables: Tensolite NF24Q100, NF26Q100, 24443/03130X-4(LD), 24443/9P025X-4(LD); Raychem CEC-RWC-18687, Raychem CEC-RWC-18664

|             |                                                |      |
|-------------|------------------------------------------------|------|
| 1445692-5** | Contact Kit, Pin, Crimp with wire seal boot    | .218 |
| 1445692-6   | Contact Kit, Pin, Crimp                        | .218 |
| 1445693-5** | Contact Kit, Socket, Crimp with wire seal boot | .218 |
| 1445693-6   | Contact Kit, Socket, Crimp                     | .218 |

Reference cables: DRAKA F4703-3, F4704-4—insulation diameter is larger

|             |                                                | Hex Crimp |
|-------------|------------------------------------------------|-----------|
| 1877039-1   | Contact Kit, Pin, Crimp                        | .231      |
| 1877039-2** | Contact Kit, Pin, Crimp with wire seal boot    | .231      |
| 1877040-1   | Contact Kit, Socket, Crimp                     | .231      |
| 1877040-2** | Contact Kit, Socket, Crimp with wire seal boot | .231      |

Reference cables: Tensolite 26473/02006X-4(LD); Raychem CEC-RWC-18684, Raychem CEC-RWC-18680

\*Tails are solder dipped

\*\*Used with Quadrax rectangular and circular connectors

\*\*\*Qualified to Boeing BACC47GA1

\*\*\*\*Qualified to Boeing BACC47GB1

(1) For other cables, contact TE.

### Size 8 Quadrax Contacts

| Part Number | Description                        | Hex Crimp |
|-------------|------------------------------------|-----------|
| 1811010-1   | Socket kit with heat-shrink tubing | .218      |
| 1811269-1   | Pin kit with heat-shrink tubing    | .218      |

### PC Tail Contact – Direct Attach to PCB

| Part Number | Description | Tail Length | Dim A       |
|-------------|-------------|-------------|-------------|
| 1954576-1   | 150 Ohm     | .125 [3.18] | .250 [6.35] |
| 1954576-2   | 100 Ohm     | .125 [3.18] | .270 [6.86] |
| 1954576-3   | 100 Ohm     | .205 [5.21] | .270 [6.86] |

### Size 8 Differential Twinax Contacts

| Part Number | Description              | Hex Crimp |
|-------------|--------------------------|-----------|
| 1811865-1   | Assembly, Pin, Twinax    | .218      |
| 1811866-1   | Assembly, Socket, Twinax | .218      |

See page 6-13 for Application Specifications

## Quadrax Contacts (Continued)

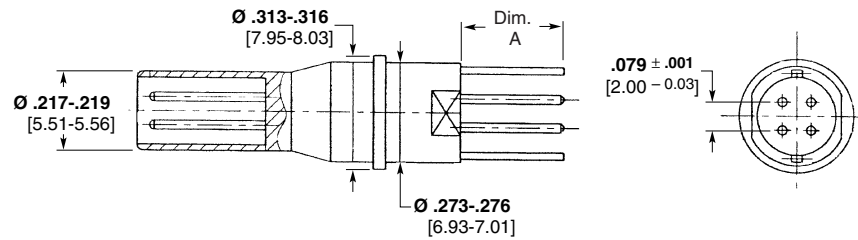
### Size 8 Quadrax PCB Pin Contact

Front Release/

Front Remove Design

Part No. 1445626-1\*\*

\*\*various tail lengths

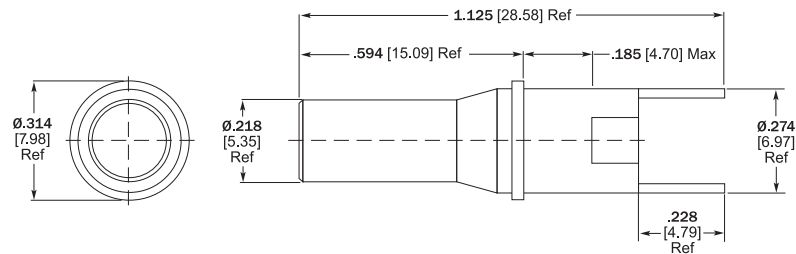


### Blank

Front Release/

Front Remove Design

Part No. 1604940-2



### Size 8 Quadrax Pin Contact —

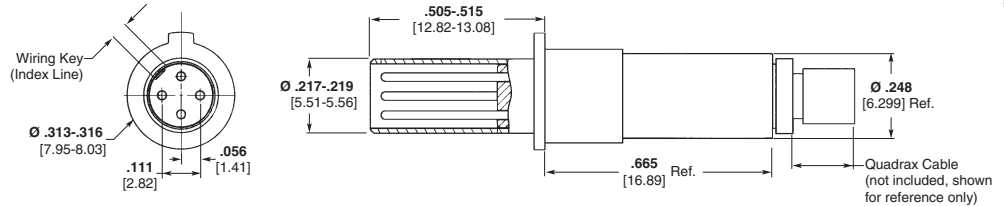
Crimp Style

Rear Release/

Rear Remove Design

Part No. 1445692-1\*

\*-3 with boot



### Size 8 Quadrax Socket Contact —

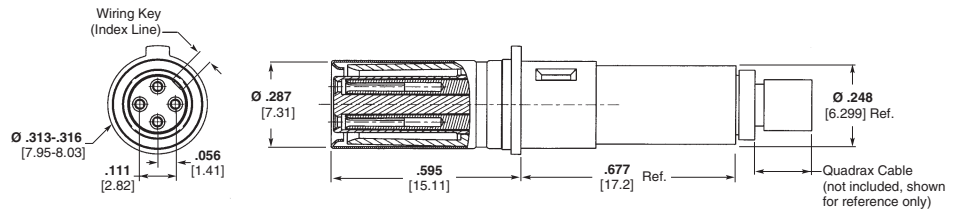
Crimp Style

Rear Release/

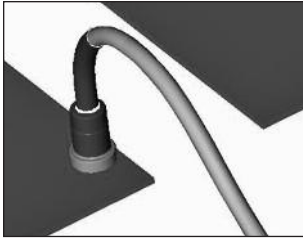
Rear Remove Design

Part No. 1445693-1\*

\*-3 with boot

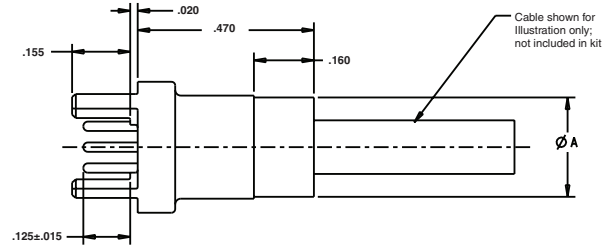
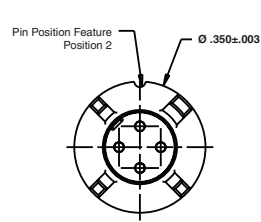


## Quadrax Contacts (Continued)



### PC Tail Contact – Direct Attach to PCB

- 100 and 150 ohm Systems
- Simple Direct Attach to PCB without connector for component reduction
- Designed from ARINC size 8 Quadrax contacts
- Low cost solution from both assembly and component ends



Part Number 1954576-1, -2: B = .125

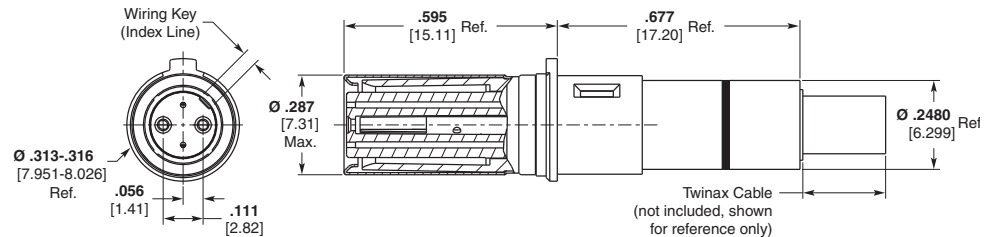
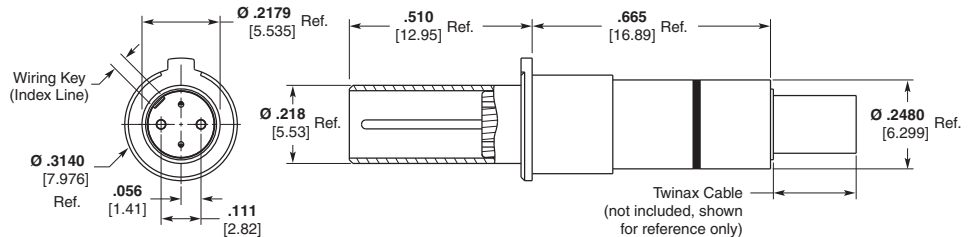
Part Number 1954576-3: B = .205

| Part Number | Impedance ( $\Omega$ ) | Dim A (Max) | Dim B       |
|-------------|------------------------|-------------|-------------|
| 1954576-1   | 150                    | .270 [6.86] | .125 [3.18] |
| 1954576-2   | 100                    | .250 [6.35] | .125 [3.18] |
| 1954576-3   | 100                    | .250 [6.35] | .205 [5.21] |

## Size 8 Differential Twinax Contacts

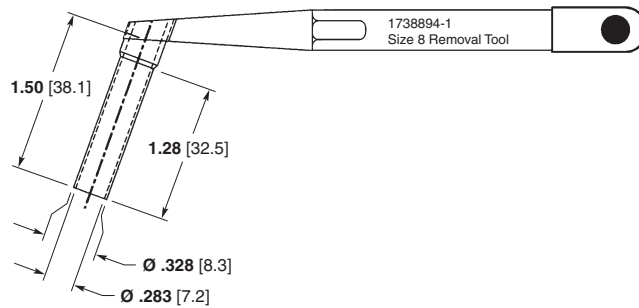
### 100 Ohm Differential Pair Twinax Contact

- Designed to meet the requirements of ARINC Specification 810 for 100 ohm size 8 non-concentric twin-axial contacts
- Works in all connectors accepting ARINC 600 style Quadrax contacts

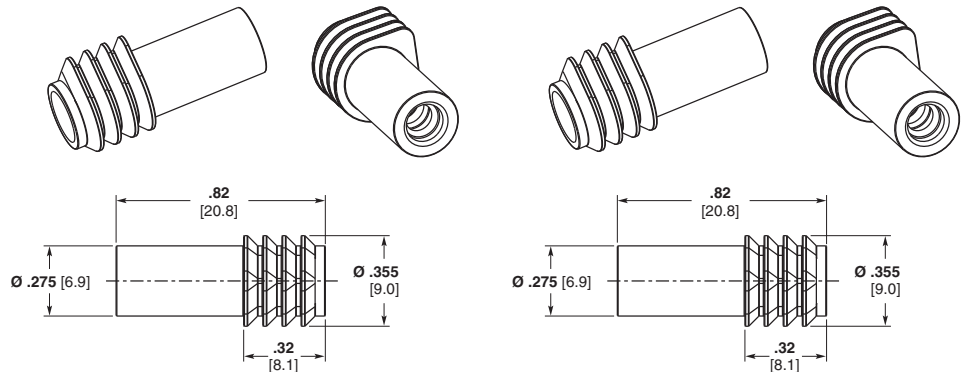


## Quadrax/Twinax Contact Accessories

### Size 8 Quadrax Extraction Tool Part No. 1738894-1

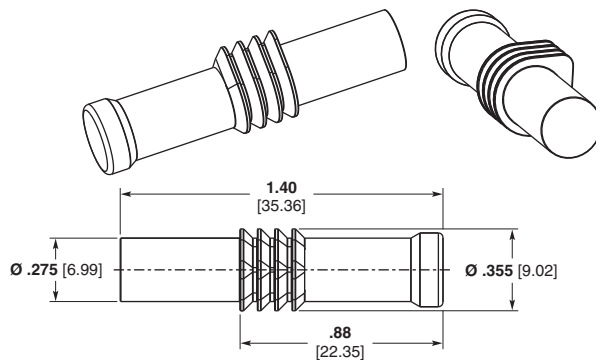


### Seal Boots



**Wire Seal Boot**  
Part No. 1811481-1  
Cable O.D. .145-.175  
.218 Hex Crimp

**Wire Seal Boot**  
Part No. 1811943-1  
Cable O.D. .170-.200  
.231 Hex Crimp



**Solid Seal Boot**  
Part No. 1811633-1

## ARINC Size 8 Quadrax Connectors

### Product Facts

- Utilizes four size 24 screw-machined contacts with standard crimp tooling per M22520/2-01 and M22520/5-01 for ease of termination
- Front release/front removable PCB mount contact design for use in ARINC 600 receptacle connectors
- Rear release/rear remove crimp contact design for use in ARINC 600 plug connectors & receptacles
- Quadrax housing is keyed to assure mating alignment
- Contacts are on 2 mm centerline per ARINC 600 specification
- To extract Quadrax contact from connector insert, use Extraction Tool Part Number 1738894-1
- Per Supplement 18 to ARINC Specification 600



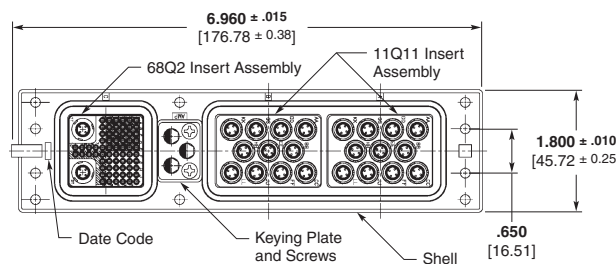
### ARINC Size 2 Connectors

| Part Number | Type       | Insert Arrangement |     |      | Style                      | Shell Features                                       | Contacts                                                                                   |
|-------------|------------|--------------------|-----|------|----------------------------|------------------------------------------------------|--------------------------------------------------------------------------------------------|
|             |            | A                  | B   | C    |                            |                                                      |                                                                                            |
| 1484406-2   | Receptacle | Q11                | Q11 | 68Q2 | Front Release Front Remove | Electroless Nickel Plated, no clinch nuts            | Size 22 signal & Quadrax contacts supplied loaded in inserts; post extension = .25 [6.35]  |
| 1484407-2   | Plug       | Q11                | Q11 | 68Q2 | Rear Release Rear Remove   | Electroless Nickel Plated, no clinch nuts            | Crimp style size 22 signal and Quadrax contacts supplied unloaded                          |
| 1663032-1   | Receptacle | 150                | 150 | 11Q2 | Front Release Front Remove | Chromate with six 4-40 clinch nuts                   | Signal, Power and Quadrax contacts supplied loaded in inserts; post extension = .25 [6.35] |
| 1663900-1   | Receptacle | Q11                | Q11 | 85   | Front Release Front Remove | Chromate, no clinch nuts                             | Signal, Power and Quadrax contacts supplied loaded in inserts; post extension = .25 [6.35] |
| 1484620-1   | Receptacle | Q11                | Q11 | 85   | Front Release Front Remove | Electroless Nickel Plated, with ten 4-40 clinch nuts | Signal, Power and Quadrax contacts supplied loaded in inserts; post extension = .15 [3.81] |
| 1484621-1   | Plug       | Q11                | Q11 | 85   | Rear Release Rear Remove   | Electroless Nickel Plated, no clinch nuts            | Crimp contacts                                                                             |

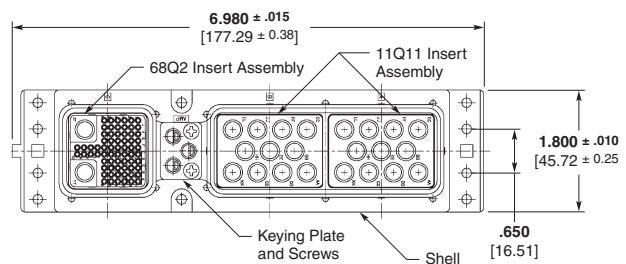
### ARINC Size 3 Connectors

| Part Number | Type       | Insert Arrangement |            |              | Style                          | Shell Features                          | Contacts                                                                                                                           |
|-------------|------------|--------------------|------------|--------------|--------------------------------|-----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|
|             |            | A<br>D             | B<br>E     | C<br>F       |                                |                                         |                                                                                                                                    |
| 1663018-1   | Receptacle | 150<br>150         | 150<br>150 | 11Q2<br>11Q2 | Front Release/<br>Front Remove | Electroless Nickel Plated               | No contacts                                                                                                                        |
| 1663018-2   | Receptacle | 150<br>150         | 150<br>150 | 11Q2<br>11Q2 | Front Release/<br>Front Remove | Electroless Nickel Plated               | Signal, Power and Quadrax contacts supplied loaded in inserts; post extension signal and power = .25 [6.35]; Quadrax = .200 [5.08] |
| 1663018-3   | Receptacle | 150<br>150         | 150<br>150 | 11Q2<br>11Q2 | Front Release<br>Front Remove  | Chromate with fourteen 6-32 clinch nuts | Signal, Power and Quadrax contacts supplied loaded in inserts, post extension = .25 [6.35]                                         |
| 1663019-1   | Plug       | 150<br>150         | 150<br>150 | 11Q2<br>11Q2 | Rear Release<br>Rear Remove    | Electroless Nickel Plated               | No contacts                                                                                                                        |
| 1663019-2   | Plug       | 150<br>150         | 150<br>150 | 11Q2<br>11Q2 | Rear Release<br>Rear Remove    | Electroless Nickel Plated               | Crimp contacts                                                                                                                     |
| 1663019-3   | Plug       | 150<br>150         | 150<br>150 | 11Q2<br>11Q2 | Rear Release<br>Rear Remove    | Chromate                                | Crimp contacts                                                                                                                     |

Note: Custom insert combinations available upon request. Contact TE.



**Receptacle, Assembly Size 2  
Front Release/Front Remove  
Part No. 1484406-2 shown**

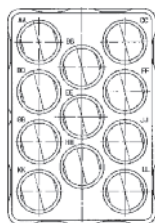


**Plug, Assembly Size 2  
Rear Release/Rear Remove  
Part No. 1484407-2 shown**

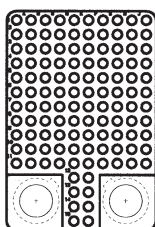
## ARINC Size 8 Quadrax Connectors (Continued)

### Contact Inserts & Arrangement Codes — Shell Size 2 or 3

#### Shell Module A, B, D or E



**Q11 1, 2, 3**  
**11 Size 8 Quadrax Metal**



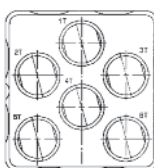
**118Q2 2, 3, 4**  
**118 Size 22**  
**2 Size 8 Quadrax**

#### Note:

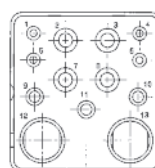
1. Available for plug or receptacle with rear release/remove contacts.
2. Available for receptacle only with all contacts front release/remove.
3. Standard size 8 contacts will not fit in Quadrax size 8 inserts. Also, Quadrax size 8 contacts will not fit into standard size 8 inserts.
4. Available for plug only with all contacts rear release/remove.

For complete listing of all ARINC 600 insert arrangements, reference catalog 1308940.

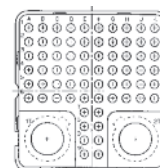
#### Shell Module C or F



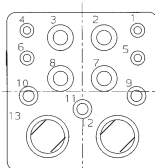
**Q6 1, 2, 3**  
**6 Size 8 Quadrax Metal**



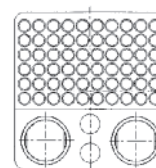
**11Q2 1, 2, 3**  
**4 Size 20**  
**4 Size 12**  
**3 Size 16**  
**2 Size 8 Quadrax**



**68Q2 2, 3, 4**  
**68 Size 22**  
**2 Size 8 Quadrax**

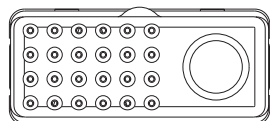


**13CQ2 2, 3**  
**4 Size 20**  
**3 Size 16**  
**4 Size 12**  
**2 Size 8 Quadrax**

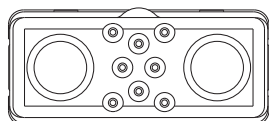


**62Q2 2, 3, 4**  
**60 Size 22**  
**2 Size 16**  
**2 Size 8 Quadrax**

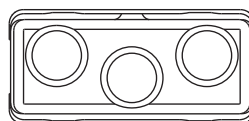
### GPRB Insert Arrangements<sup>1,2</sup>



**25QI3**



**10Q23**



**3Q33**

#### Keying:



#### Note:

1. Pin inserts: Mating faces shown above.
2. In a GPRB2 shell, one insert must be "A" keyed and the other one must be "B" keyed (See at right).
3. Size 8 cavity applicable for use with Arinc 600 Quadrax or Twinax contacts.

For complete listing of all General Purpose Rectangular insert arrangements, reference catalog 1654763.



## Rectangular Connectors

### Product Facts

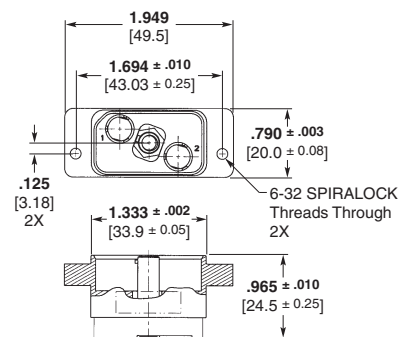
- High performance rectangular connector
- Available in 2, 4, and 12 positions
- Designed for use with wire seal boots and rated for use up to 50,000 ft. altitude
- Center jackscrew design for fast, reliable mating
- Aluminum shells are keyed and polarized, and are available with lightweight plastic backshell strain reliefs
- Provides excellent density in a rectangular profile for packaging flexibility.
- Qualified to Boeing Part Standard BPS-C-193



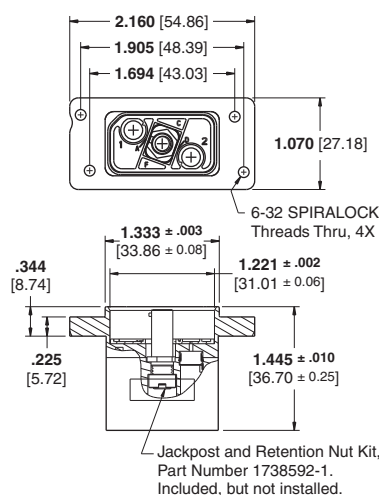
| Position | Part Number | Type                          | Mounting Style | Style                      | Polarization | Note:                        |
|----------|-------------|-------------------------------|----------------|----------------------------|--------------|------------------------------|
| 2        | 1604896-2*  | Receptacle                    | PCB            | Front Release/Front Remove | Flat         |                              |
|          | 1604897-5*  | Receptacle                    | Panel Mount    | Rear Release/Rear Remove   | Flat         |                              |
|          | 1604898-5*  | Plug                          | Free-Hanging   | Rear Release/Rear Remove   | Flat         |                              |
|          | 1604905-1*  | Backshell - (1 pc)            | —              | —                          | —            | Use w/1604897-5 or 1604898-5 |
| 4        | 1738949-2*  | Receptacle                    | PCB            | Front Release/Front Remove | Flat         |                              |
|          | 1738950-2*  | Receptacle                    | Panel Mount    | Rear Release/Rear Remove   | Flat         |                              |
|          | 1738951-2*  | Plug                          | Free-Hanging   | Rear Release/Rear Remove   | Flat         |                              |
|          | 1738955-1*  | Backshell - (1 pc)            | —              | —                          | —            | Use w/1738950-2 or 1738951-2 |
| 12       | 1604798-2*  | Receptacle                    | PCB            | Front Release/Front Remove | Flat         |                              |
|          | 1604799-5*  | Receptacle                    | Panel Mount    | Rear Release/Rear Remove   | Flat         |                              |
|          | 1604800-5*  | Plug                          | Free-Hanging   | Rear Release/Rear Remove   | Flat         |                              |
|          | 1604874-1*  | Backshell - Receptacle (2 pc) | —              | —                          | —            | Use w/1604799-5              |
|          | 1604874-2*  | Backshell - Plug (2 pc)       | —              | —                          | —            | Use w/1604800-5              |

\*Jackscrew/Jackpost hardware included but not installed

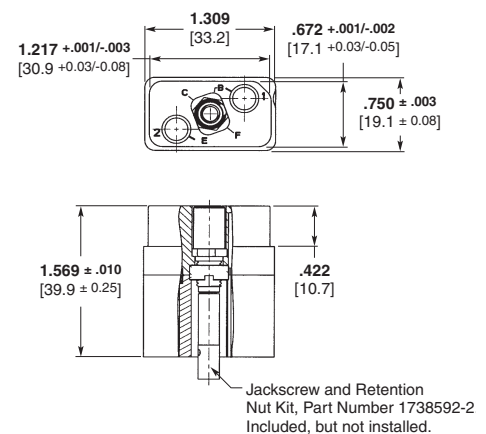
### 2 Position



**PCB Mount Receptacle**  
(Part No. 1604896)



**Panel Mount Receptacle**  
(Part No. 1604897)



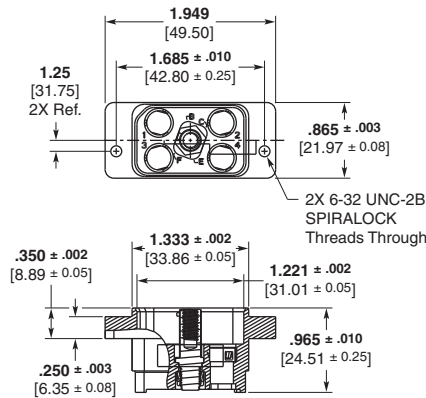
**Free-Hanging Plug**  
(Part No. 1604898)

SPIRALOCK is a trademark of Detroit Tool Industries Corporation.

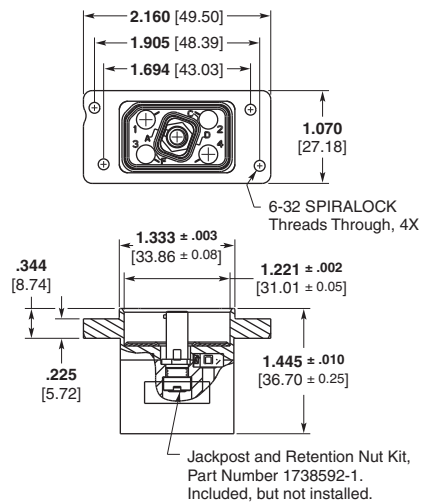


## Rectangular Connectors (Continued)

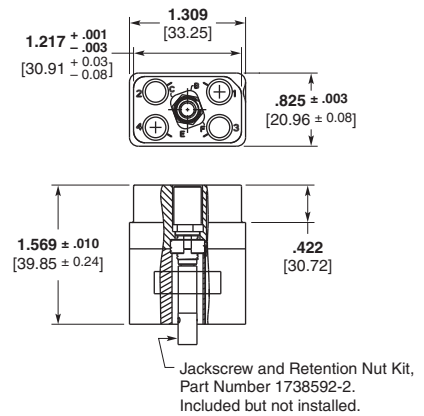
### 4 Position



**PCB Mount Receptacle**  
(Part No. 1738949)

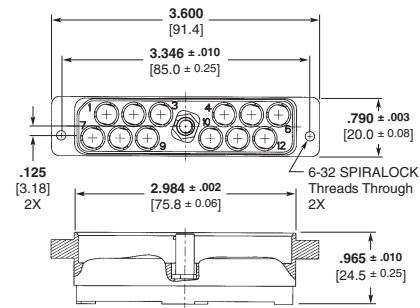


**Panel Mount Receptacle**  
(Part No. 1738950)

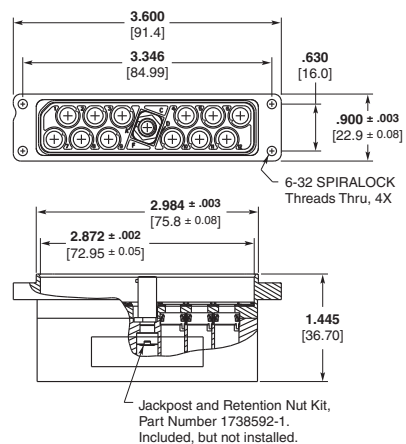


**Free-Hanging Plug**  
(Part No. 1738951)

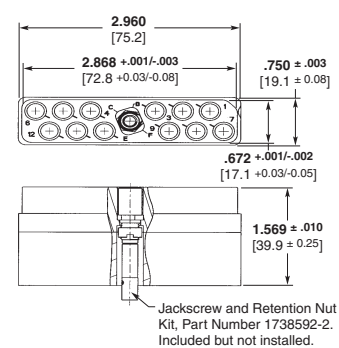
### 12 Position



**PCB Mount Receptacle**  
(Part No. 1604798)



**Panel Mount Receptacle**  
(Part No. 1604799)



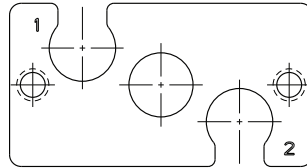
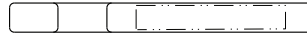
**Free-Hanging Plug**  
(Part No. 1604800)

SPIRALLOCK is a trademark of  
Detroit Tool Industries Corporation.

## Rectangular Connectors (Continued)

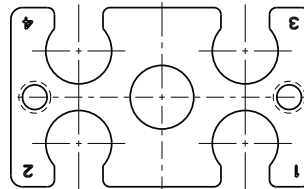
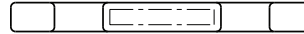
### Accessories

**2 Position Low Profile Seal Retainer**  
Part No. 2101752-1



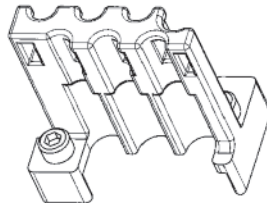
ORIENTATION OF BOOT SEAL  
PLATE FOR PLUG APPLICATION

**4 Position Low Profile Seal Retainer**  
Part No. 2157322-1



ORIENTATION OF BOOT SEAL  
PLATE FOR PLUG APPLICATION

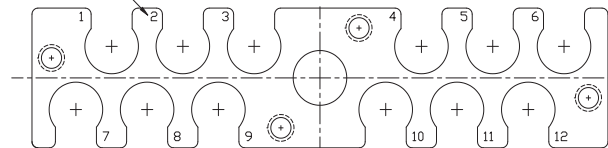
**12 Position Backshell/Strain Relief Kit**  
Part No. 1996373-1 for receptacle;  
Part No. 1996373-2 for plug



**12 Position Low Profile Seal Retainer**  
Part No. 1996544-2

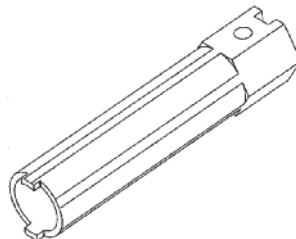


CAVITY IDENTIFICATION  
MARKED AS SHOWN

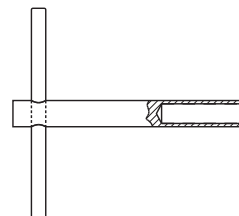


ORIENTATION OF SEAL BOOT PLATE FOR PLUG APPLICATIONS

**Wrench, Retention Nut, Jackscrew and Jackpost, Quadrax Rectangular Connector**  
Part No. 1604972-1



**Wrench, Retention Nut, T-handle Tool**  
Part No. 1950030-1

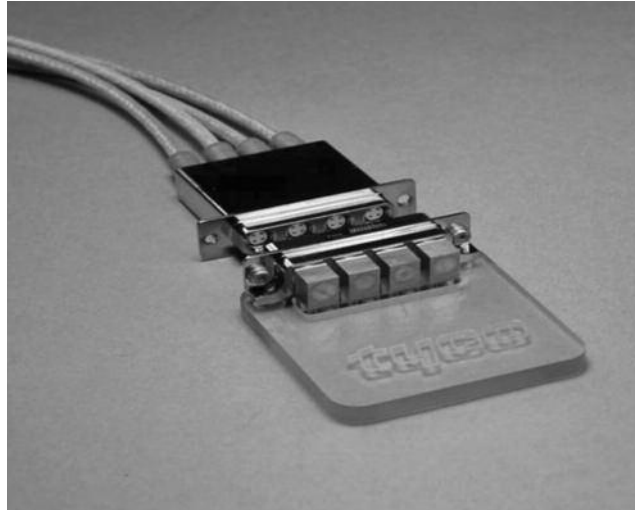


## Rectangular Connectors (Continued)

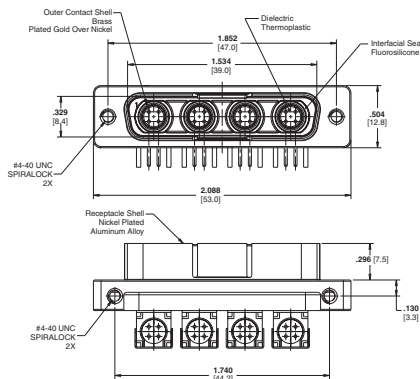
### Low Profile Rectangular Connector Assemblies

#### Product Facts

- Designed to provide a ruggedized in-line solution for Quadrax cable to printed circuit board mount applications, in a blind-mateable D-subminiature configuration
- Quadrax contacts ground directly to connector shell

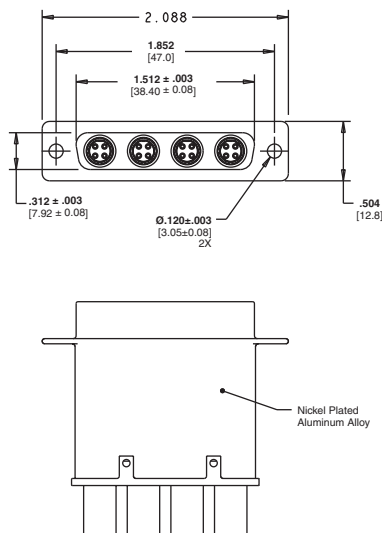


### 4Q4



**Right Angle PCB Mount Receptacle**  
(Part No. 2000314)

Accepts standard AMPLIMITE Boardlock Hardware (sold separately).



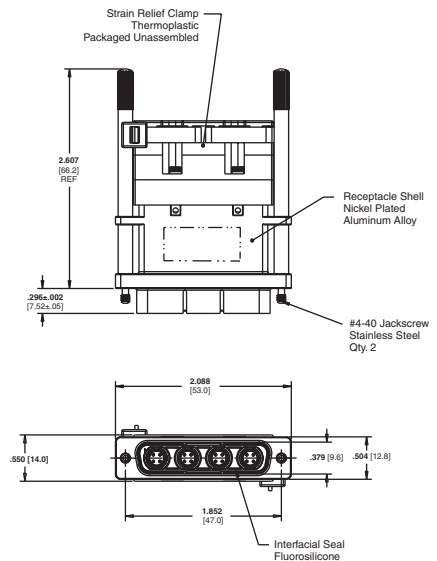
**Panel-Mount or Free-Hanging Plug Kit**  
(Part No. 2000317)

Socket Contacts included in kit.  
Accepts standard AMPLIMITE Screwlock Hardware (sold separately).

#### **Female Screwlock** Part No. 212447-1

#### **Nut Driver Part No. 811262-1**

For assembling female screwlocks to connector flange.



**Free-Hanging Receptacle Kit**  
(Part No. 2000263)

Jackscrews, Strain Relief, and Crimp Pin Contacts included in kit.

## Custom MIL-DTL-38999 Series III Style Circular Connectors

### Product Facts

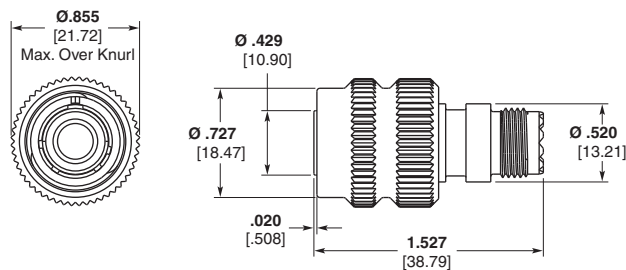
- Available in various shell sizes: 9 (1Q1), 17 (2Q2), 19 (4Q4) and 25 (8Q8)
- Designed for use with wire seal boots for sealing and optimized alignment
- Front metal-shell design provides a full ground plane
- Lightweight composite rear shell available in size 19 for reduced weight
- Accepts standard backshells



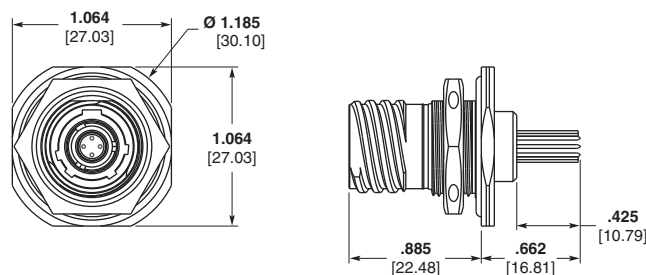
| Shell Size | Part Number | Type       | Description                                                                             |
|------------|-------------|------------|-----------------------------------------------------------------------------------------|
| 9          | 1877384     | Plug       | Single Quadrax, RR-RR                                                                   |
|            | 1738916     | Receptacle | 38999 Style, Single Quadrax, FR-FR, Jam Nut Style, with PC Tail Contacts                |
|            | 1811184     | Receptacle | 38999 Style, Single Quadrax, FR-FR, PCB Mount with Stand-offs and PC Tail Contacts      |
|            | 2157694     | Receptacle | 38999 Style, Single Quadrax, with 1 Contact, FR-FR, Jam Nut Style, Series III           |
| 17         | 1877775     | Plug       | 38999 Style, Arrangement 2Q2, RR-RR                                                     |
|            | 1877774     | Receptacle | 38999 Style, Arrangement 2Q2, RR-RR                                                     |
|            | 2157455     | Receptacle | 38999 Style, Arrangement 2Q2, FR-FR, PCB Mount                                          |
|            | 2157695     | Receptacle | 38999 Style, with 2 Quadrax Contacts, Arrangement 2Q2, FR-FR, Jam Nut Style, Series III |
| 19         | 1811902     | Plug       | 38999 Style, Arrangement 4Q4, RR-RR                                                     |
|            | 1738974     | Receptacle | 38999 Style, with 4 Quadrax Contacts, FR-FR                                             |
|            | 1877732     | Receptacle | 38999 Style, with 4 Quadrax Contacts, FR-FR, with PC Tail Contacts                      |
|            | 1811901     | Receptacle | 38999 Style, Arrangement 4Q4, RR-RR                                                     |
| 21         | 2157696     | Receptacle | 38999 Style, with 4 Quadrax Contacts, Arrangement 2Q2, FR-FR, Jam Nut Style, Series III |
|            | 1954355     | Plug       | 38999 Style, Arrangement 4Q4, FR-FR, Series III                                         |
| 23         | 1954353     | Receptacle | 38999 Style, Arrangement 4Q4, FR-FR, Series III, with PC Tail Contacts                  |
|            | 1877921     | Plug       | 38999 Style, Arrangement 6Q6, Series III                                                |
| 25         | 1954577     | Receptacle | 38999 Style, Arrangement 6Q6, Series III                                                |
|            | 1811928     | Plug       | 38999 Style, Arrangement 8Q8, RR-RR                                                     |
|            | 1811927     | Receptacle | 38999 Style, Arrangement 8Q8, RR-RR                                                     |
|            | 2101395     | Receptacle | 38999 Style, Arrangement 8Q8, FR-FR, with PC Tail Contacts                              |

See TE Customer Drawing for finish options

### Plug, Shell Size 9 Single Quadrax, RR-RR Part No. 1877384



### Receptacle, Shell Size 9, 38999 Style Single Quadrax, FR-FR Jam Nut Style Part No. 1738916

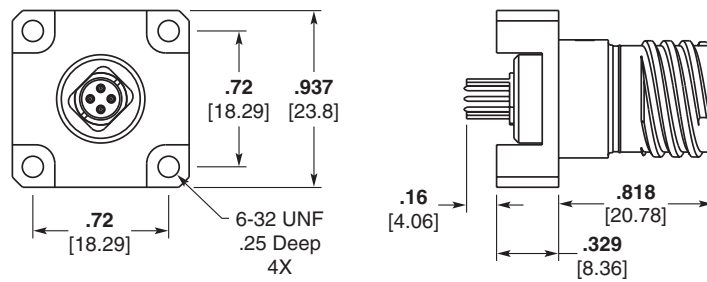


Contacts sold separately  
(unless noted) see page 6-16

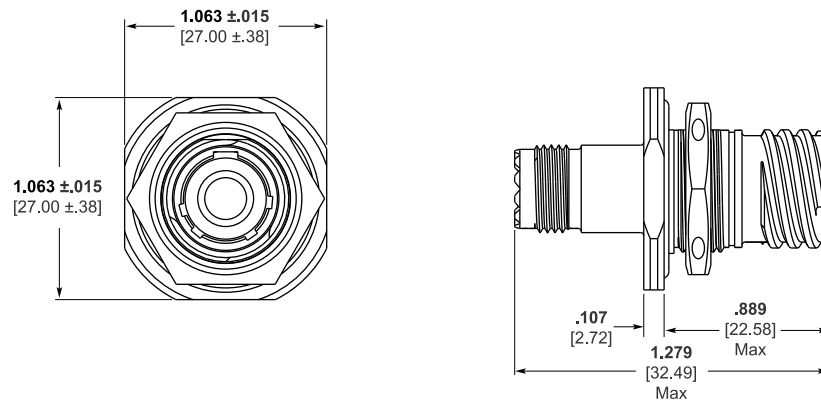
**Custom MIL-DTL-38999 Series III Style Circular Connectors (Continued)**

**Receptacle, Shell Size 9,  
38999 Style  
Single Quadrax, FR-FR  
PCB Mount with Stand-offs**

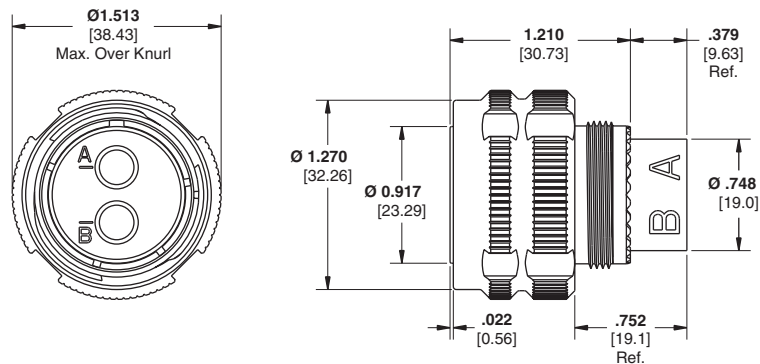
**Part No. 1811184  
(with PC tail contacts)**



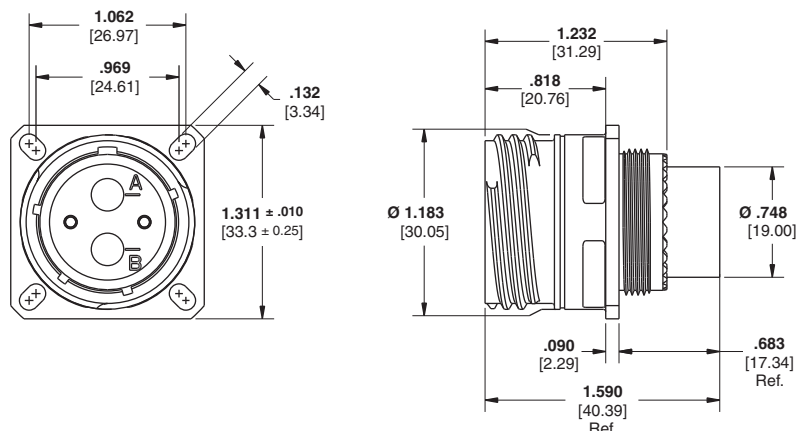
**Receptacle, Shell Size 9  
38999 Style  
Single Quadrax, FR-FR  
Jam Nut Style  
Part No. 2157694**



**Plug, Shell Size 17,  
38999 Style  
Arrangement 2Q2, RR-RR  
Part No. 1877775**



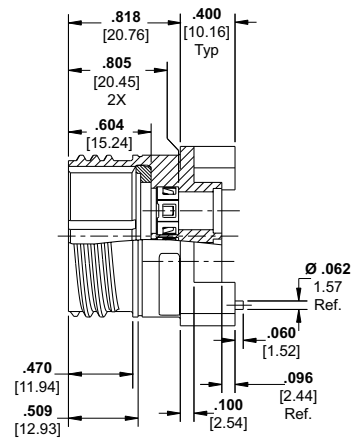
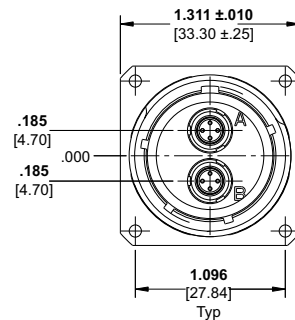
**Receptacle, Shell Size 17  
38999 Style  
Arrangement 2Q2, RR-RR  
Part No. 1877774**



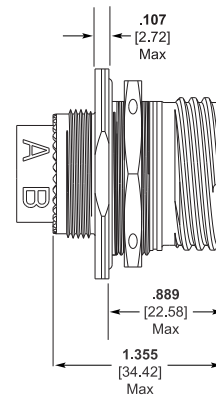
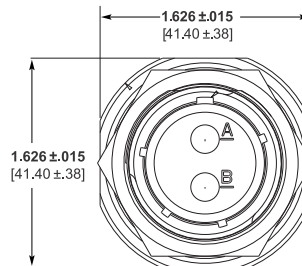
**Contacts sold separately  
(unless noted) see page 6-16**

## Custom MIL-DTL-38999 Series III Style Circular Connectors (Continued)

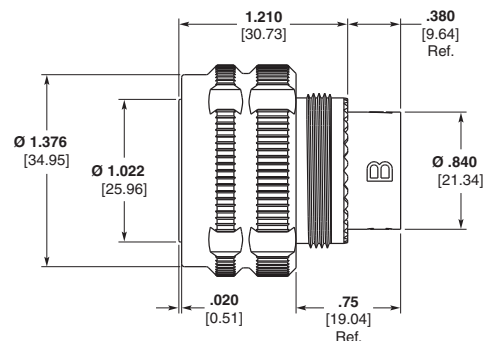
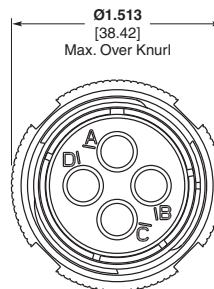
**Receptacle, Shell Size  
1738999 Style  
Arrangement 2Q2, FR-FR  
Part No. 2157455**



**Receptacle, Shell Size  
1738999 Style  
Arrangement 2Q2, FR-FR  
Jam Nut Style  
Part No. 2157695**



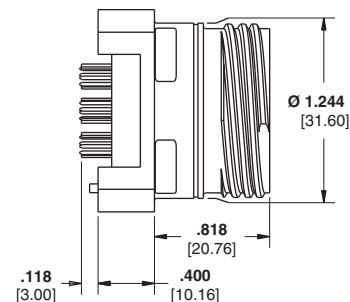
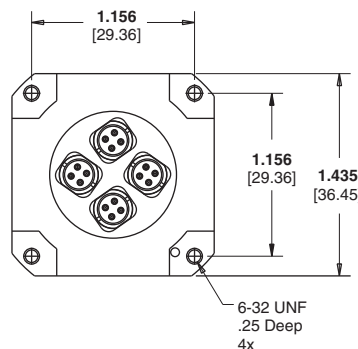
**Plug, Shell Size 19  
38999 Style  
Arrangement 4Q4, RR-RR  
Part No. 1811902**



**Receptacle, Shell Size 19,  
38999 Style w/4 Quadrax  
Contacts, FR-FR**

**Part No. 1877732  
(w/ PC Tail Contacts)**

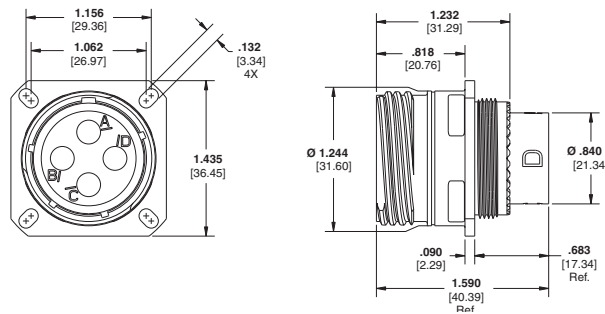
**Part No. 1738974  
(connector only)**



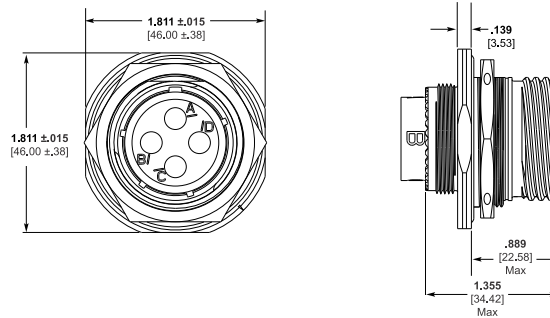
**Contacts sold separately  
(unless noted) see page 6-16**

## Custom MIL-DTL-38999 Series III Style Circular Connectors (Continued)

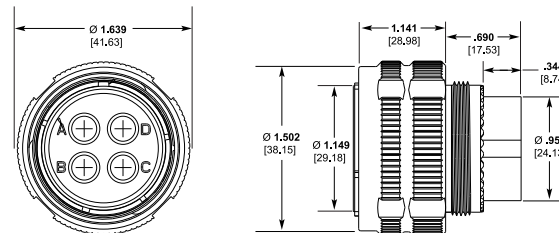
**Receptacle, Shell Size 19,  
38999 Style  
Arrangement 4Q4, RR-RR  
Part No. 1811901**



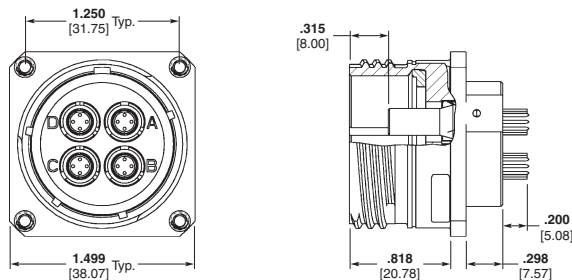
**Receptacle, Shell Size  
1938999 Style  
Arrangement 4Q4, FR-FR  
Jam Nut Style  
Part No. 2157696**



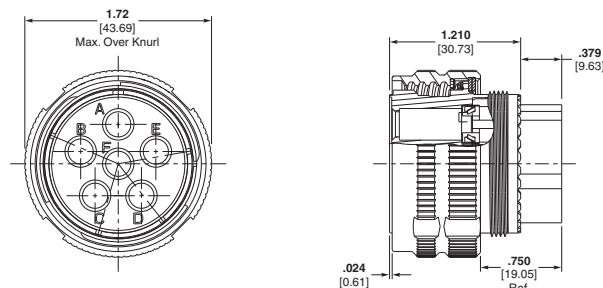
**Plug, Shell Size 21,  
38999 Style  
Arrangement 4Q4, FR-FR  
Series III  
Part No. 1954355**



**Receptacle, Shell Size 21,  
38999 Style  
Arrangement 4Q4, FR-FR  
Series III  
Part No. 1954353**



**Plug, Shell Size 23,  
38999 Style  
Arrangement 6Q6,  
Series III  
Part No. 1877921**

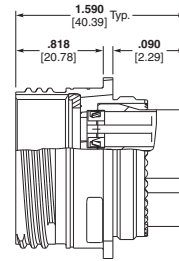
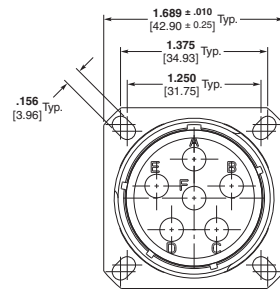


**Contacts sold separately  
(unless noted) see page 6-16**

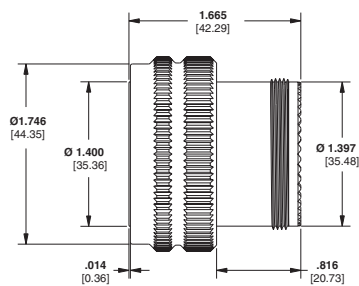
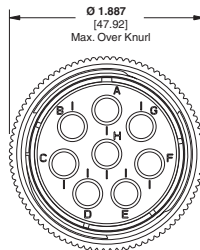


## Custom MIL-DTL-38999 Series III Style Circular Connectors (Continued)

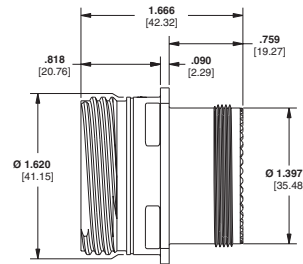
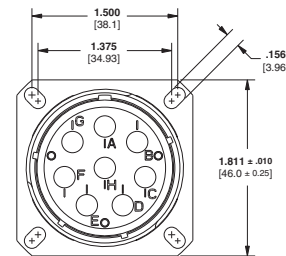
**Receptacle, Shell Size 23,  
M38999 Style  
Arrangement 6Q6,  
Series III  
Part No. 1954577**



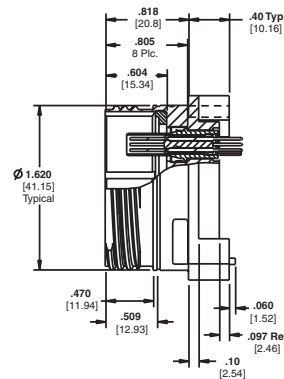
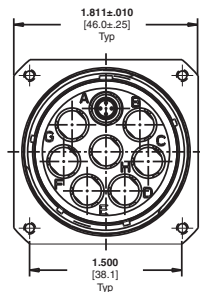
**Plug, Shell Size 25  
38999 Style  
Arrangement 8Q8, RR-RR  
Part No. 1811928**



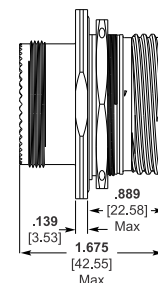
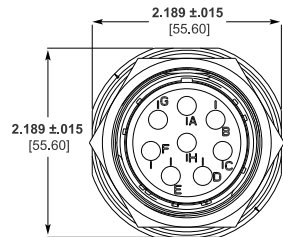
**Receptacle, Shell Size 25  
38999 Style  
Arrangement 8Q8, RR-RR  
Part No. 1811927**



**Receptacle, Shell Size 25  
38999 Style  
Arrangement 8Q8, FR-FR  
Part No. 2101395  
(w/ PC Tail Contacts)**



**Receptacle, Shell Size 25  
38999 Style  
Arrangement 8Q8  
Jam Nut  
Part No. 2157628**

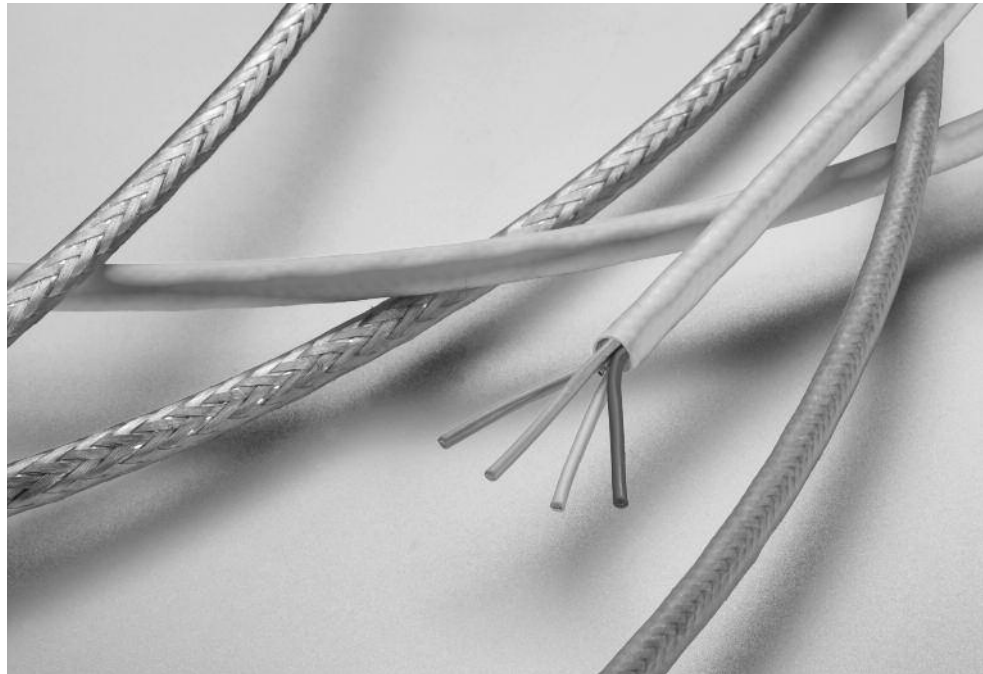


**Contacts sold separately  
(unless noted) see page 6-16**

## QUADLITE Quadraxial Cables

### Product Facts

- 100 ohm and 150 ohm cables
- Materials rated from -65°C to +200°C
- Low outgassing materials (PTFE, FEP)
- Custom design capabilities
- Proven technologies and materials
- Lightweight
- Low smoke and low toxicity
- Available in 150°C and 200°C rated construction



TE's Quadlite family of lightweight, fluoropolymer cables are for use in high speed, high bandwidth applications such as 100Base-T, Gigabit Ethernet, IEEE 1394 and Fiber Channel employed in commercial avionics systems, aircraft data networks, in-flight entertainment systems and military communications.

The Quadlite cables are designed to meet the flammability requirements of FAR Part 25 and the rigorous smoke and toxicity requirements found in commercial aerospace standards such as EN3475.

Quadlite cables are to be used with the Quadrax contacts and connectors.

### Applications

Cables are used in communications, control and instrumentation for:

- In-Flight Entertainment
- Satellite TV
- Flight Subsystems
- Military Communications

### Materials

**Dielectrics** — Foamed FEP

**Jacket** — FEP

### Standards and Specifications

TE Specification 1200

ANSI/TIA-568-B.2

IEEE 1394

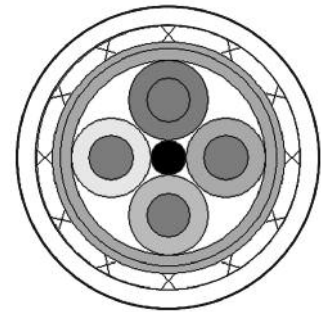
ARINC 664

**QUADLITE Quadraxial Cables** (Continued)

**100Base-T Ethernet Cables**  
**100 Ohms - 150°C**

| TE Part No.                           | CEC-RWC-18634 | CEC-RWC-18664  | CEC-RWC-18666 |
|---------------------------------------|---------------|----------------|---------------|
| Conductor AWG Size (19 Strand)        | 26            | 24             | 22            |
| Conductor Material:                   | SCCA          | SCCA           | SCC           |
| Nom. Conductor Diameter (in.):        | 0.0185        | 0.0235         | 0.0295        |
| Insulation Material:                  | Formed FEP    | Formed FEP     | Formed FEP    |
| Nom. Insulation OD $\pm$ 0.002 (in.): | 0.037         | 0.042          | 0.057         |
| Nom. Cable OD (in.):                  | 0.145         | 0.154          | 0.195         |
| Nom. Cable Weight (lb/1 kft):         | 17.7          | 20.3           | 32.0          |
| Shield Material:                      | TCC           | TCC            | TCC           |
| Jacket Material:                      | FEP           | FEP            | FEP           |
| Impedance $\pm$ 10% ( $\Omega$ ):     | 100           | 100            | 100           |
| Temp. Rating:                         | 150°C         | 150°C          | 150°C         |
| Nom. Capacitance (pF/ft):             | 13.5          | 13.0           | 12.9          |
| Nom. Attenuation (dB/100 m):          |               |                |               |
| 1 MHz                                 | 4.0           | 2.2            | 1.6           |
| 10 MHz                                | 10.5          | 6.8            | 5.9           |
| 100 MHz                               | 36.0          | 24.8           | 21.0          |
|                                       | <b>10 MHz</b> | <b>100 MHz</b> | <b>10 MHz</b> |
| Min. NEXT (dB)                        | 50            | 35             | 50            |
| Min. SRL (dB)                         | 23            | 16             | 23            |

| TE Part No.                           | CEC-RWC-20555 | CEC-RWC-20333  |
|---------------------------------------|---------------|----------------|
| Conductor AWG Size (19 Strand)        | 26            | 24             |
| Conductor Material:                   | SCCA          | SCCA           |
| Nom. Conductor Diameter (in.):        | 0.0185        | 0.0235         |
| Insulation Material:                  | Formed FEP    | Formed FEP     |
| Nom. Insulation OD $\pm$ 0.002 (in.): | 0.037         | 0.042          |
| Nom. Cable OD (in.):                  | 0.144         | 0.153          |
| Nom. Cable Weight (lb/1 kft):         | 18.7          | 22.2           |
| Shield Material:                      | TCC           | TCC            |
| Jacket Material:                      | FEP           | FEP            |
| Impedance $\pm$ 10% ( $\Omega$ ):     | 100           | 100            |
| Temp. Rating:                         | 150°C         | 150°C          |
| Nom. Capacitance (pF/ft):             | 13.5          | 13.0           |
| Nom. Attenuation (dB/100 m):          |               |                |
| 1 MHz                                 | 4.0           | 2.2            |
| 10 MHz                                | 10.5          | 6.8            |
| 100 MHz                               | 36.0          | 24.8           |
|                                       | <b>10 MHz</b> | <b>100 MHz</b> |
| Min. NEXT (dB)                        | 50            | 35             |
| Min. SRL (dB)                         | 23            | 16             |


**100Base-T Ethernet**

### QUADLITE Quadraxial Cables (Continued)

#### 100Base-T Ethernet Cables 100 Ohms - 200°C

| TE Part No.                       | CEC-RWC-18658 |  | CEC-RWC-18687 |  | CEC-RWC-18665 |  |
|-----------------------------------|---------------|--|---------------|--|---------------|--|
| Conductor AWG Size (19 Strand)    | 26            |  | 24            |  | 22            |  |
| Conductor Material:               | SCCA          |  | SCCA          |  | SCC           |  |
| Nom. Conductor Diameter (in.):    | 0.0185        |  | 0.0235        |  | 0.0295        |  |
| Insulation Material:              | Formed FEP    |  | Formed FEP    |  | Formed FEP    |  |
| Nom. Insulation OD ± 0.002 (in.): | 0.037         |  | 0.042         |  | 0.057         |  |
| Nom. Cable OD (in.):              | 0.144         |  | 0.153         |  | 0.194         |  |
| Nom. Cable Weight (lb/1 kft):     | 18.7          |  | 22.2          |  | 34.3          |  |
| Shield Material:                  | SCC           |  | SCC           |  | SCC           |  |
| Jacket Material:                  | FEP           |  | FEP           |  | FEP           |  |
| Impedance ± 10% (Ω):              | 100           |  | 100           |  | 100           |  |
| Temp. Rating:                     | 200°C         |  | 200°C         |  | 200°C         |  |
| Nom. Capacitance (pF/ft):         | 13.5          |  | 13.0          |  | 12.9          |  |
| Nom. Attenuation (dB/100 m):      |               |  |               |  |               |  |
| 1 MHz                             | 4.0           |  | 2.2           |  | 1.6           |  |
| 10 MHz                            | 10.5          |  | 6.8           |  | 5.9           |  |
| 100 MHz                           | 36.0          |  | 24.8          |  | 21.0          |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |
|                                   |               |  |               |  |               |  |

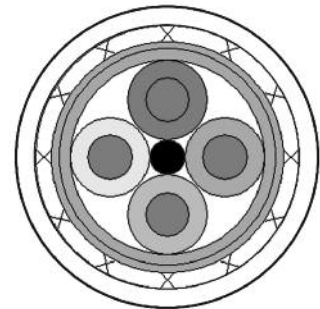
**QUADLITE Quadraxial Cables** (Continued)

**Fiber Channel Cables**  
**150 Ohms - 150°C**

| TE Part No.                           | CEC-RWC-18680 | CEC-RWC-18681 | CEC-RWC-18682 |
|---------------------------------------|---------------|---------------|---------------|
| Conductor AWG Size (19 Strand)        | 26            | 24            | 22            |
| Conductor Material:                   | SCCA          | SCCA          | SCC           |
| Nom. Conductor Diameter (in.):        | 0.0185        | 0.0235        | 0.0295        |
| Insulation Material:                  | Formed FEP    | Formed FEP    | Formed FEP    |
| Nom. Insulation OD $\pm$ 0.002 (in.): | 0.058         | 0.077         | 0.094         |
| Nom. Cable OD (in.):                  | 0.193         | 0.224         | 0.281         |
| Nom. Cable Weight (lb/1 kft):         | 23.4          | 38.3          | 57.2          |
| Shield Material:                      | TCC           | TCC           | TCC           |
| Jacket Material:                      | FEP           | FEP           | FEP           |
| Impedance $\pm$ 10% ( $\Omega$ ):     | 150           | 150           | 150           |
| Temp. Rating:                         | 150°C         | 150°C         | 150°C         |
| Nom. Capacitance (pF/ft):             | 6.0           | 6.0           | 6.0           |
| Nom. Attenuation (dB/100 m):          |               |               |               |
| 531 MHz                               | 13            | 11            | 9             |
| 1062 MHz                              | 21            | 17            | 13            |

**150 Ohms - 200°C**

| TE Part No.                           | CEC-RWC-18684 | CEC-RWC-18685 | CEC-RWC-18686 |
|---------------------------------------|---------------|---------------|---------------|
| Conductor AWG Size (19 Strand)        | 26            | 24            | 22            |
| Conductor Material:                   | SCCA          | SCCA          | SCC           |
| Nom. Conductor Diameter (in.):        | 0.0185        | 0.0235        | 0.0295        |
| Insulation Material:                  | Formed FEP    | Formed FEP    | Formed FEP    |
| Nom. Insulation OD $\pm$ 0.002 (in.): | 0.058         | 0.077         | 0.094         |
| Nom. Cable OD (in.):                  | 0.192         | 0.247         | 0.284         |
| Nom. Cable Weight (lb/1 kft):         | 25.8          | 38.3          | 57.2          |
| Shield Material:                      | SCC           | SCC           | SCC           |
| Jacket Material:                      | FEP           | FEP           | FEP           |
| Impedance $\pm$ 10% ( $\Omega$ ):     | 150           | 150           | 150           |
| Temp. Rating:                         | 200°C         | 200°C         | 200°C         |
| Nom. Capacitance (pF/ft):             | 6.0           | 6.0           | 6.0           |
| Nom. Attenuation (dB/100 m):          |               |               |               |
| 531 MHz                               | 13            | 11            | 9             |
| 1062 MHz                              | 21            | 17            | 13            |


**Fiber Channel**

## QUADLITE Quadraxial Cables (Continued)

### 4-Pair Cat 5E Constructions 100 Ohms - 150°C/200°C

| TE Part No.                       | CEC-RWC-20412 | CEC-RWC-21064 | CEC-RWC-20638 |
|-----------------------------------|---------------|---------------|---------------|
| Conductor AWG Size (19 Strand)    | 24            | 24            | 26 (7 strand) |
| Conductor Material:               | SCHSCA        | SCC           | SCC           |
| Nom. Conductor Diameter (in.):    | 0.0235        | 0.0235        | 0.019         |
| Insulation Material:              | Formed FEP    | Formed FEP    | Formed FEP    |
| Nom. Insulation OD ± 0.002 (in.): | 0.046         | 0.046         | 0.036         |
| Nom. Cable OD (in.):              | 0.279         | 0.249         | 0.204         |
| Nom. Cable Weight (lb/1 kft):     | 46.2          | 39.5          | 29.8          |
| Shield Material:                  | TCC           | TCC           | SCC           |
| Jacket Material:                  | FEP           | XL-ETFE       | FEP           |
| Impedance ± 10% (Ω):              | 100           | 100           | 100           |
| Temp. Rating:                     | 150°C         | 150°C         | 150°C         |
| Nom. Capacitance (pF/ft):         | 13.5          | 13.5          | 13.5          |
| Nom. Attenuation (dB/100 m):      |               |               |               |
| 1 MHz                             | 2.4           | 2.2           | 2.4           |
| 100 MHz                           | 7.5           | 6.8           | 8.8           |
| 100 MHz                           | 26.4          | 24.8          | 30.5          |
|                                   | <b>10 MHz</b> | <b>10 MHz</b> | <b>10 MHz</b> |
| Min. NEXT (dB)                    | 50            | 50            | 50            |
| Min. SRL (dB)                     | 25            | 25            | 23            |

### Cat 6 Constructions 100 Ohms - 100°C/90°C

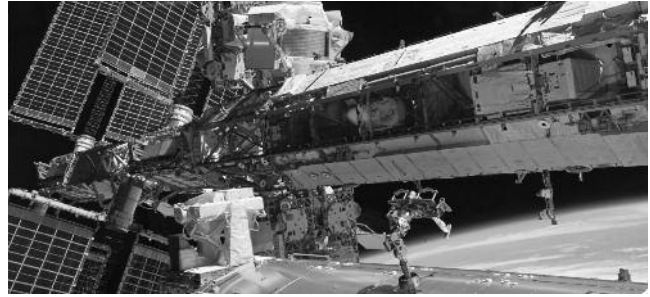
| TE Part No.                       | CEC-RWC-20837 | CEC-RWC-21088 |
|-----------------------------------|---------------|---------------|
| Conductor AWG Size (19 Strand)    | 23            | 23            |
| Conductor Material:               | Bare Copper   | Bare Copper   |
| Nom. Conductor Diameter (in.):    | 0.021         | 0.021         |
| Insulation Material:              | Foamed PE     | PE            |
| Nom. Insulation OD ± 0.002 (in.): | 0.046         | 0.046         |
| Nom. Cable OD (in.):              | 0.350         | 0.249         |
| Nom. Cable Weight (lb/1 kft):     | 52.6          | 39.5          |
| Shield Material:                  | TCC           | TCC           |
| Jacket Material:                  | FDR-25        | Raythane      |
| Impedance ± 10% (Ω):              | 100           | 100           |
| Temp. Rating:                     | 100°C         | 100°C         |
| Nom. Capacitance (pF/ft):         | 13.5          | 13.5          |
| Nom. Attenuation (dB/100 m):      |               |               |
| 1 MHz                             | 1.8           | 1.8           |
| 100 MHz                           | 5.5           | 5.5           |
| 100 MHz                           | 18.3          | 18.3          |
| 250 MHz                           | 30.4          | 30.4          |
|                                   | <b>10 MHz</b> | <b>10 MHz</b> |
| Min. NEXT (dB)                    | 70            | 70            |
| Min. SRL (dB)                     | 36            | 36            |

## Custom Solutions

### Spacecraft Applications

#### Product Facts

- Quadrax contacts and QUADLITE cables meet ASTM E595 outgassing limits for spacecraft applications



### Custom Cable and Flex Assemblies

#### Product Facts

- Quadrax contacts and connectors can be provided as custom cable and flex assemblies for customer specific applications

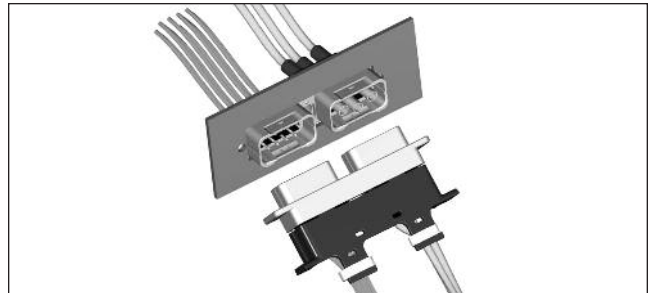


### General Purpose Rectangular (GPR) Connector Assemblies (See Catalog 1654763)

This product is sold by TE under license from Radiall S.A.

#### Product Facts

- Quadrax inserts are available for the rugged, modular General Purpose Rectangular connector, facilitating the mix of high speed signals with a variety of other power, fiber optic, signal, and coax insert configurations in a single connector system



### Single Splice Quadrax Part No. 1996500

#### Product Facts

- Provides field repairable splicing mechanism
- Ideally suited for a Quadrax cable production break where space is limited



Contact TE for additional information on any of these custom solutions.



## Table of Contents

### Circular HD Connectors

|                                                            |              |
|------------------------------------------------------------|--------------|
| Introduction                                               | 7-2          |
| Descriptive Information: Sample of Descriptive Part Number | 7-3          |
| Shell Series 1                                             | 7-4 to 7-6   |
| Shell Series 2                                             | 7-7, 7-8     |
| Shell Series 3                                             | 7-9, 7-10    |
| Shell Series 4                                             | 7-11 to 7-13 |
| Shell Series 5                                             | 7-14 to 7-16 |
| Connector Accessories                                      | 7-17         |
| Cross Reference: Descriptive Part Number to TE Part Number | 7-18         |

### Metal-Shell Micro Circular Connectors

### NANONICS Environmentally Sealed Circular Connectors

|                                                                          |              |
|--------------------------------------------------------------------------|--------------|
| Introduction                                                             | 7-25         |
| Quick Disconnect                                                         |              |
| Plug Assemblies                                                          | 7-26, 7-27   |
| Plug Assemblies with Backshells                                          | 7-28 to 7-31 |
| Receptacle Assemblies, Flush Mount                                       | 7-32, 7-33   |
| Threaded Coupling                                                        |              |
| Plug Assemblies                                                          | 7-34, 7-35   |
| Plug Assemblies with Backshells                                          | 7-36 to 7-39 |
| Receptacle Assemblies, Panel Mount                                       | 7-40, 7-41   |
| Panel Mount Receptacle Assemblies w/Backshells                           | 7-42, 7-43   |
| Part Numbering Guideline for Environmentally Sealed Circular Connectors  | 7-43         |
| Thru-hole, Receptacle Assemblies, Vertical Mount                         | 7-44         |
| Part Numbering Guideline for Board Mount Termination Circular Connectors | 7-45         |
| Part Number Index Cross Reference                                        | 7-46         |

## Introduction

### Product Facts

- Five shell body size ranging from 14 mm diameter to 27 mm diameter
- Chromate or black chromate finish
- Panel-mount receptacles: IP68 rated with potted, solder cup or pcb termination
- Cable-attach plugs and receptacles: solder cup termination
- Push/pull self-locking mating and unmating
- Scoop proof, blindmating
- Full range of insert configurations
  - Power
  - Signal
  - Power and signal
- Up to 122 signal contacts
- Up to 20 A current rating
- Multiple keying options

### Technical Documents

**Product Specification** — 108-127005

**Qualification Test Report** — 501-127002

### Performance Characteristics

#### Environmental

**Temperature Range** — -65°C to +125°C

**Salt Spray** — 96 hr

**Temperature Life** — 1000 hr at 125°C (wired, mated connectors)

**Hydrostatic Pressure** — Panel-mount receptacle, IP68, 1 m submersion for 2 hr

#### Electrical

**Low-Level Contact Resistance** — See Table 1

**Dielectric Withstanding Voltage** — See Table 2

**Insulation Resistance** — 5000 megohms min.  
100 megohms min. at elevated temperature (125°C)



### Mechanical

**Random Vibration** — 15 grms between 10-2000 Hz

**Mechanical Shock** — 50 g half-sine pulse of 3 ms duration

**Durability** — 1000 mating cycles

### Materials

**Shells** — Chromate- or black chromate-plated brass

**Contacts** — Gold-plated copper alloy

**Dielectric** — Thermoplastic, PEEK

### Introduction

TE Connectivity Circular HD Connectors offer the ease of push/pull, self-locking mating for I/O applications. The small, high-density connectors have the advantage of blind mating into small spaces that may normally require

clearance for hand tightening to mate. The connectors are widely used in military and civilian use, including radio equipment, medical equipment, test equipment, audio and video equipment, data acquisition and industrial control.

**Table 1: Contact and Wire Information**

| Contact Dia. (mm) | Solder Cup Dia. (mm) | Wire Size (Max) |                 | Contact Resistance (mΩ) | Separation Force (N), Contact Pair |
|-------------------|----------------------|-----------------|-----------------|-------------------------|------------------------------------|
|                   |                      | AWG             | mm <sup>2</sup> |                         |                                    |
| 0.5               | 0.4                  | 28              | 0.06            | 21                      | 0.15~0.6                           |
| 0.7               | 0.6                  | 24              | 0.15            | 21                      | 0.2~0.6                            |
| 0.9               | 0.8                  | 22              | 0.38            | 5                       | 0.5~1                              |
| 1.3               | 1.2                  | 18              | 0.62            | 3                       | 0.8~2                              |
| 1.6               | 1.8                  | 16              | 2.0             | 2.5                     | 0.5~2                              |
| 2.0               | 2.0                  | 14              | 2.0             | 2                       | 1~3                                |
| 2.3               | 2.1                  | 12              | 3.0             | 1.5                     | 2~3                                |
| 3.0               | 3.1                  | 10              | 5.0             | 1                       | 4~7                                |

**Table 2: Insert Dielectric Withstanding Voltage**

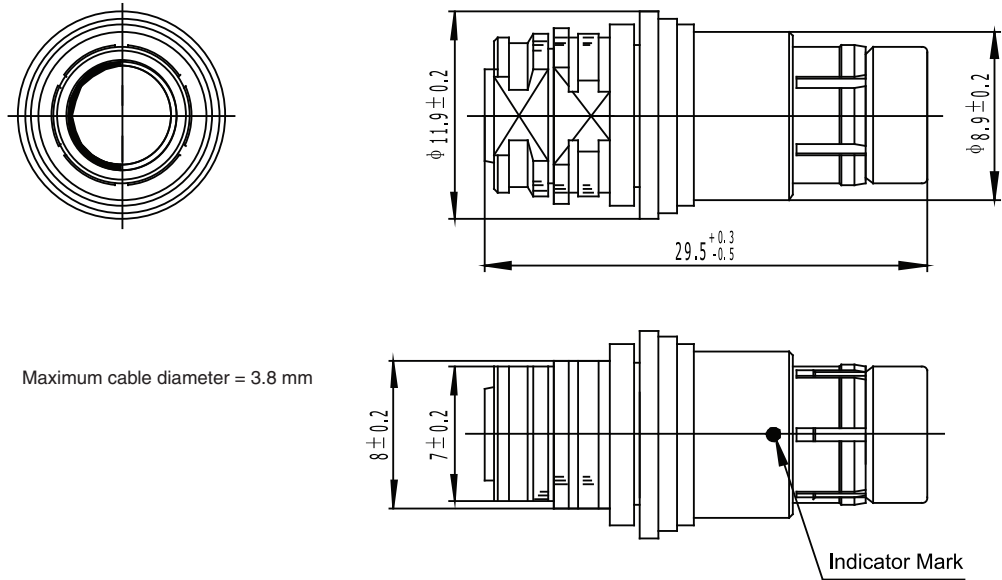
| Insert Configuration | VAC @ Height |                      |
|----------------------|--------------|----------------------|
|                      | Sea Level    | 70,000 ft (21,336 m) |
| I                    | 1000         | 250                  |
| II                   | 875          | 225                  |
| III                  | 725          | 175                  |

### Descriptive Information: Sample of Descriptive Part Number

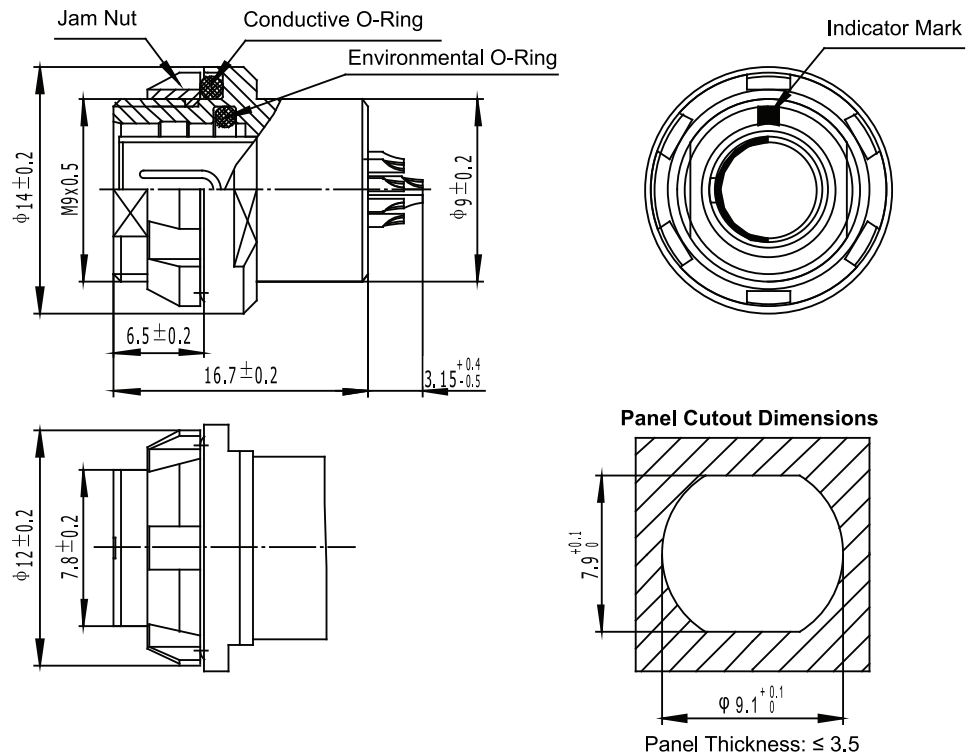
|                                                               | Shell Size | Shell Finish | Connector Type/Gender | Insert Layout | Contact Layout | Keying Options |
|---------------------------------------------------------------|------------|--------------|-----------------------|---------------|----------------|----------------|
|                                                               | 3          | B            | p                     | 053           | 1              | 1              |
| <b>Shell Size Series</b>                                      |            |              |                       |               |                |                |
| 1                                                             |            |              |                       |               |                |                |
| 2                                                             |            |              |                       |               |                |                |
| 3                                                             |            |              |                       |               |                |                |
| 4                                                             |            |              |                       |               |                |                |
| 5                                                             |            |              |                       |               |                |                |
| <b>Shell Finish</b>                                           |            |              |                       |               |                |                |
| <b>B</b> Black Chromate                                       |            |              |                       |               |                |                |
| <b>N</b> Natural Chromate                                     |            |              |                       |               |                |                |
| <b>Connector Type/Gender</b>                                  |            |              |                       |               |                |                |
| <b>P</b> Plug, Cable Attach                                   |            |              |                       |               |                |                |
| <b>R</b> Receptacle, Cable Attach                             |            |              |                       |               |                |                |
| <b>A</b> Receptacle, Panel Mount, Wire Attach                 |            |              |                       |               |                |                |
| <b>B</b> Receptacle, Panel Mount, Board-Mount                 |            |              |                       |               |                |                |
| <b>Insert Layout</b>                                          |            |              |                       |               |                |                |
| See Individual Shell Size Series Pages for Insert Layout Code |            |              |                       |               |                |                |
| <b>Contact Layout</b>                                         |            |              |                       |               |                |                |
| <b>1</b> – Receptacle with Sockets                            |            |              |                       |               |                |                |
| <b>2</b> – Plug with Pins                                     |            |              |                       |               |                |                |
| <b>3</b> – Receptacle with Pins                               |            |              |                       |               |                |                |
| <b>4</b> – Plug with Sockets                                  |            |              |                       |               |                |                |
| <b>Keying Options</b>                                         |            |              |                       |               |                |                |
| <b>1</b> – Single Key                                         |            |              |                       |               |                |                |
| <b>2</b> – Double Key                                         |            |              |                       |               |                |                |
| <b>3</b> – Triple Key                                         |            |              |                       |               |                |                |

## Shell Series 1

### Free-Hanging Cable-Attach Plug

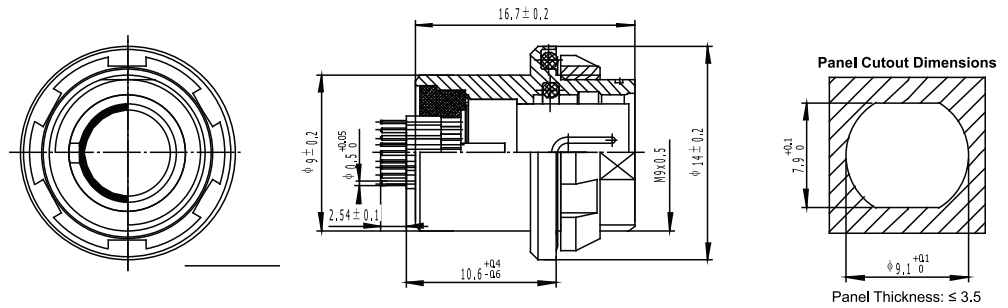


### Panel-Mount Wire Termination Receptacle



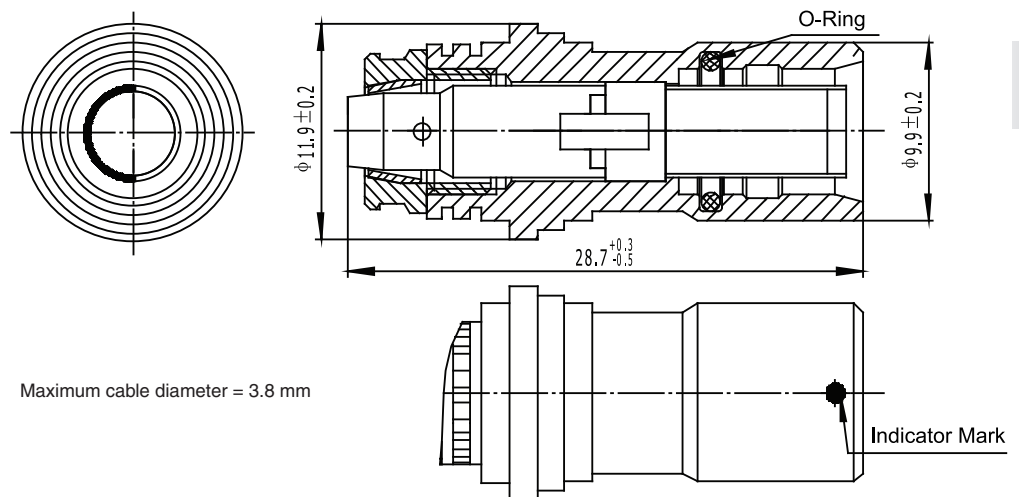
## Shell Series 1 (Continued)

### Panel-Mount, Board-Mount Receptacle



**Note:** Available for 0.5, 0.7, and 0.9-mm-dia contacts

### Free-Hanging Cable-Attach Receptacle



Maximum cable diameter = 3.8 mm

## Shell Series 1 Contact Arrangements

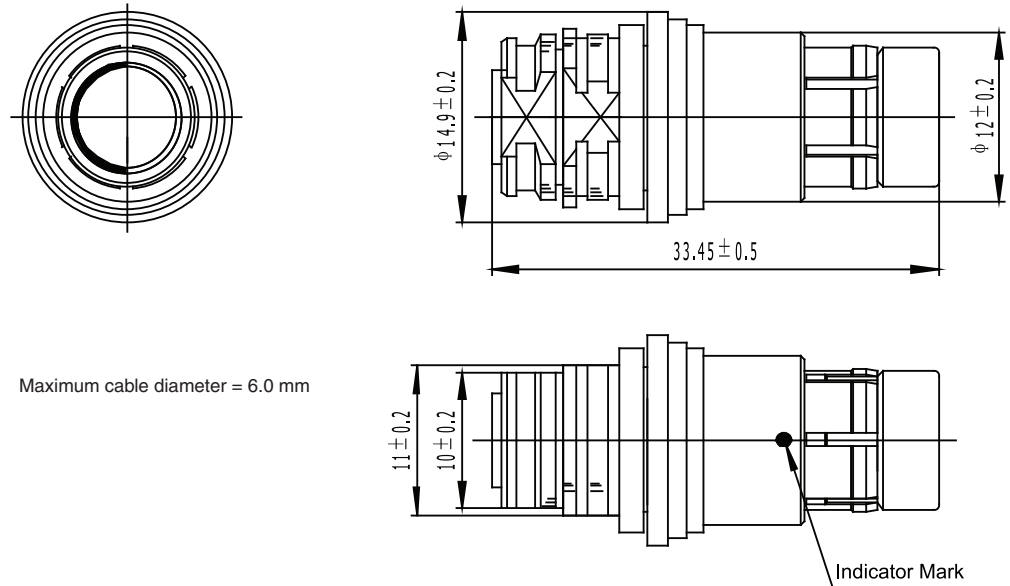
### Contact Arrangement

| Receptacle (A)<br>Socket Contacts                                                  | Plug (B)<br>Pin Contacts                                                           | Receptacle (A)<br>Pin Contacts                                                     | Plug (B)<br>Socket Contacts                                                        | Layout<br>Code | No. of Contacts<br>(Contact Dia.) | Current<br>Rating (A) | DWV* |
|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|----------------|-----------------------------------|-----------------------|------|
|   |   |   |   | 051            | 2 (0.9 mm)                        | 6.3                   | II   |
|   |   |   |   | 052            | 3 (0.9 mm)                        | 5.5                   | II   |
|   |   |   |   | 053            | 4 (0.7 mm)                        | 3.8                   | III  |
|   |   |   |   | 054            | 5 (0.7 mm)                        | 3.6                   | III  |
|   |   |   |   | 056            | 7 (0.5 mm)                        | 1.5                   | III  |
|  |  |  |  | 059            | 9 (0.5 mm)                        | 1.0                   | III  |

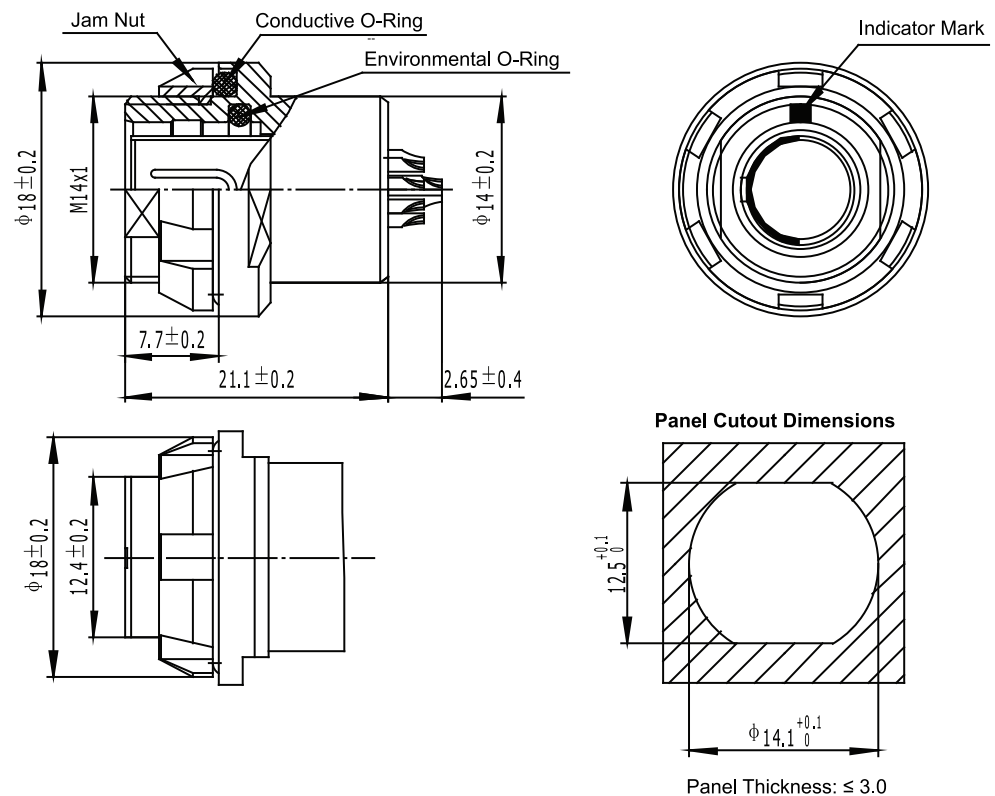
\*Dielectric Withstanding Voltage: See Table 2, page 2

## Shell Series 2

### Free-Hanging Cable-Attach Plug



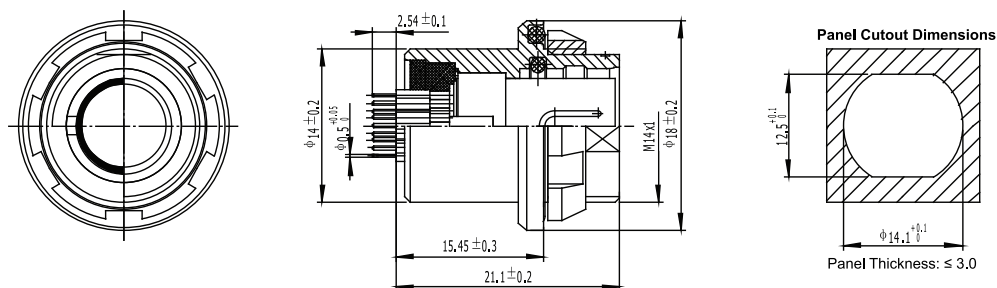
### Panel-Mount Wire Termination Receptacle





### Shell Series 2 (Continued)

### Panel-Mount, Board-Mount Receptacle



**Note:** Available for 0.5, 0.7, and 0.9-mm-dia contacts

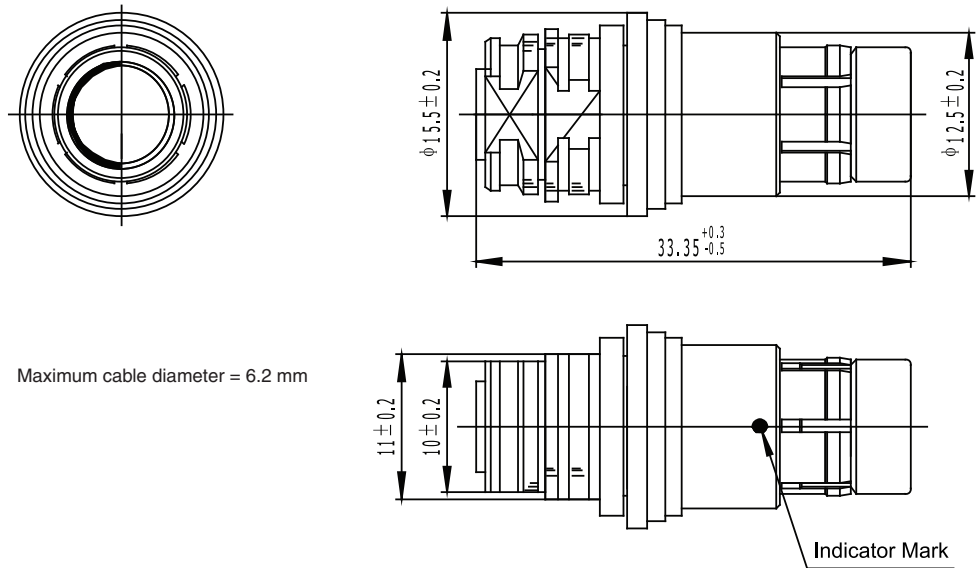
### Contact Arrangement

| Receptacle (A)<br>Socket Contacts                                                   | Plug (B)<br>Pin Contacts                                                            | Receptacle (A)<br>Pin Contacts                                                      | Plug (B)<br>Socket Contacts                                                         | Layout<br>Code | No. of Contacts<br>(Contact Dia.) | Current<br>Rating (A) | DWV* |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------|-----------------------------------|-----------------------|------|
|    |    |    |    | 051            | 2 (1.3 mm)                        | 9                     | I    |
|  |  |  |  | 052            | 3 (1.3 mm)                        | 8.5                   | I    |
|  |  |  |  | 053            | 4 (0.9 mm)                        | 5.0                   | II   |
|  |  |  |  | 054            | 5 (0.9 mm)                        | 4.8                   | II   |
|  |  |  |  | 056            | 6 (0.7 mm)                        | 3.5                   | II   |
|  |  |  |  | 057            | 7 (0.7 mm)                        | 3.2                   | II   |
|  |  |  |  | 058            | 8 (0.7 mm)                        | 2.5                   | III  |
|  |  |  |  | 062            | 12 (0.5 mm)                       | 1.5                   | III  |

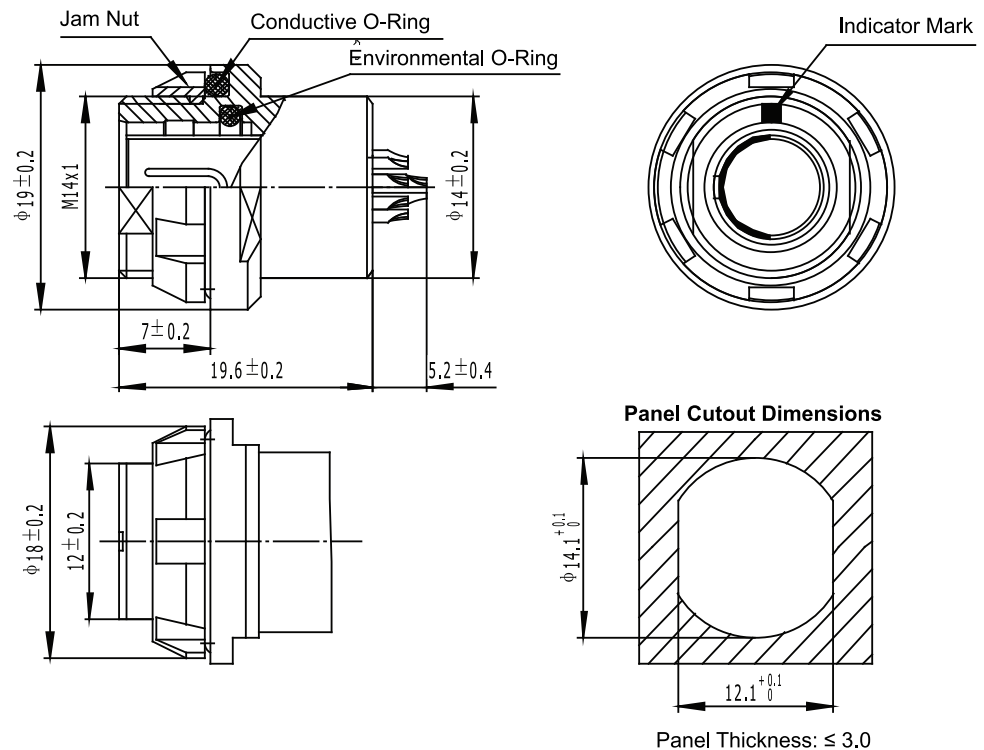
\*Dielectric Withstanding Voltage: See Table 2, page 2

## Shell Series 3

### Free-Hanging Cable-Attach Plug

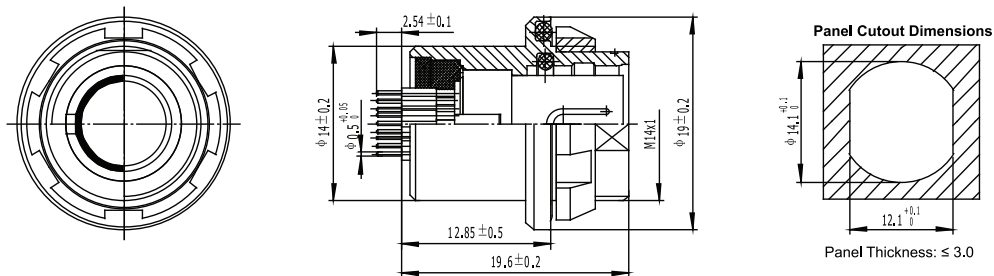


### Panel-Mount Wire Termination Receptacle



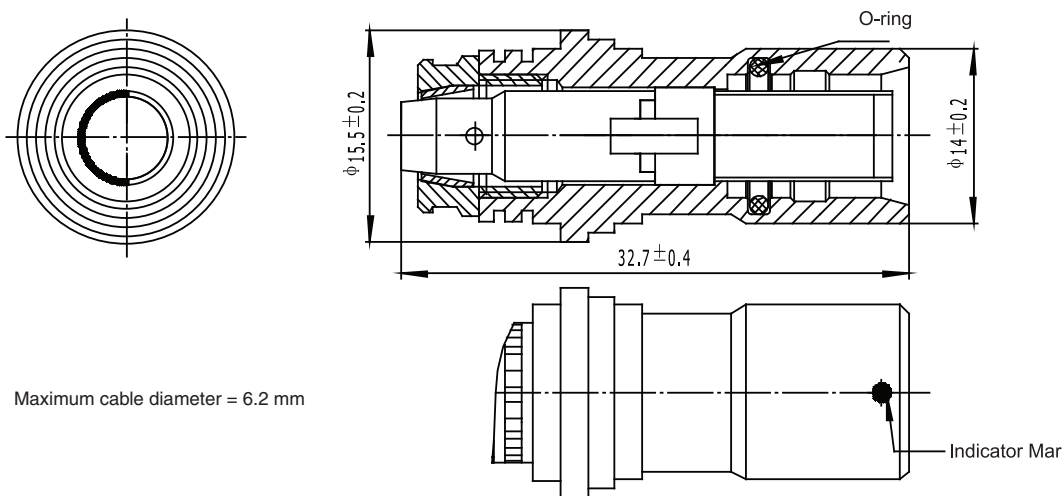
## Shell Series 3 (Continued)

### Panel-Mount, Board-Mount Receptacle



**Note:** Available for 0.5, 0.7-mm-dia contacts

### Free-Hanging Cable-Attach Receptacle



Maximum cable diameter = 6.2 mm

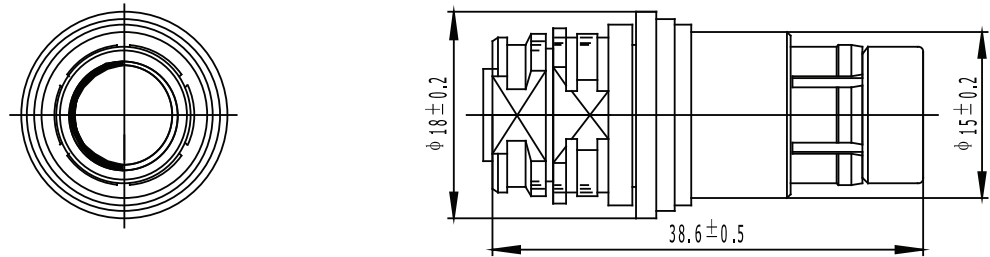
### Contact Arrangement

| Receptacle (A)<br>Socket Contacts | Plug (B)<br>Pin Contacts | Receptacle (A)<br>Pin Contacts | Plug (B)<br>Socket Contacts | Layout<br>Code | No. of Contacts<br>(Contact Dia.) | Current<br>Rating (A) | DWV* |
|-----------------------------------|--------------------------|--------------------------------|-----------------------------|----------------|-----------------------------------|-----------------------|------|
|                                   |                          |                                |                             | 010            | 10 (0.7 mm)                       | 3.2                   | II   |
|                                   |                          |                                |                             | 012            | 12 (0.7 mm)                       | 3.0                   | II   |
|                                   |                          |                                |                             | 019            | 19 (0.5 mm)                       | 1.8                   | III  |

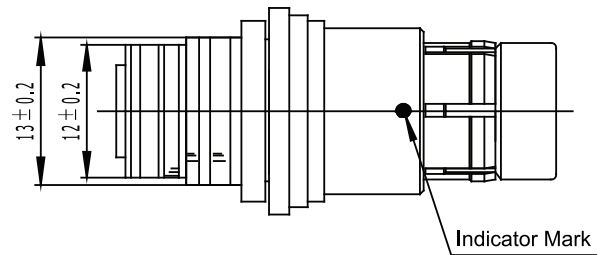
\*Dielectric Withstanding Voltage: See Table 2, page 2

## Shell Series 4

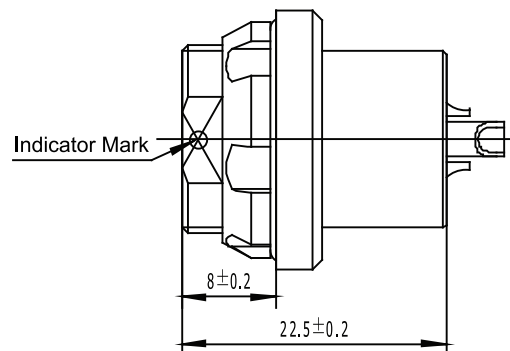
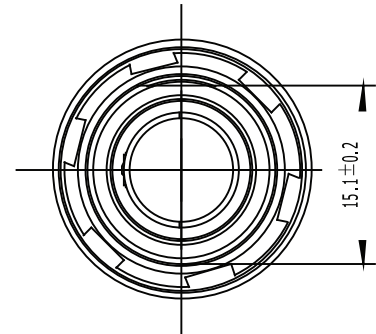
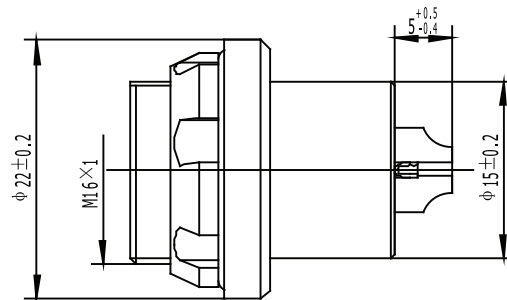
### Free-Hanging Cable-Attach Plug



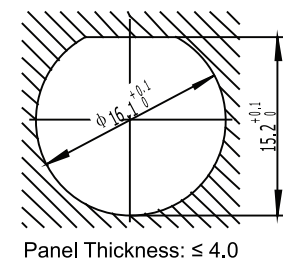
Maximum cable diameter = 8.0 mm



### Panel-Mount Wire Termination Receptacle

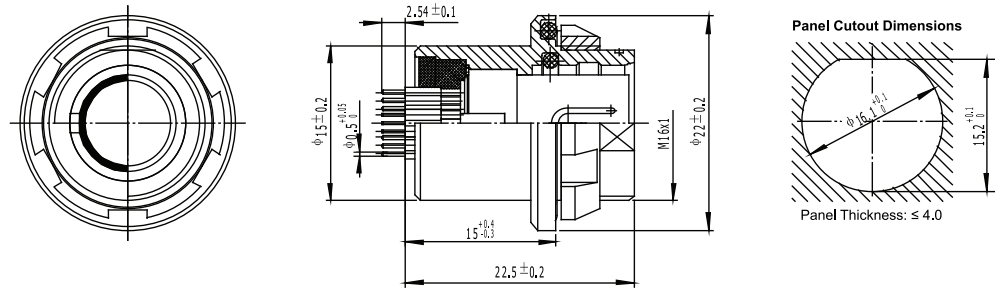


#### Panel Cutout Dimensions



## Shell Series 4 (Continued)

### Panel-Mount, Board-Mount Receptacle

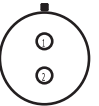
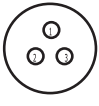
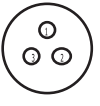
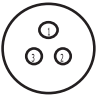
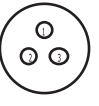
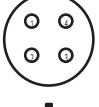
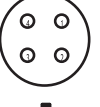
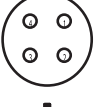
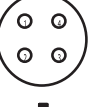
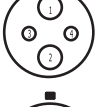
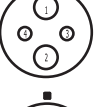
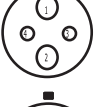
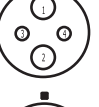
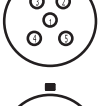
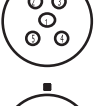
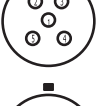
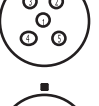
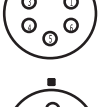
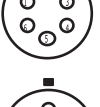
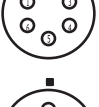
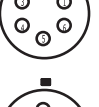
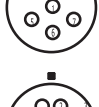
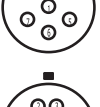
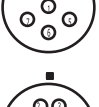
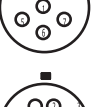
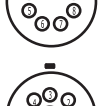
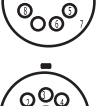
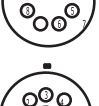
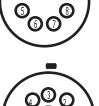
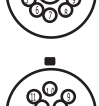
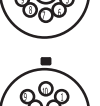
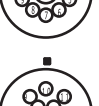
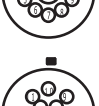
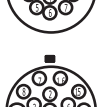
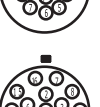
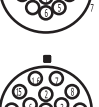
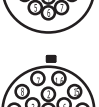
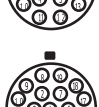
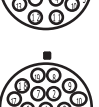
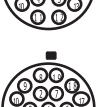
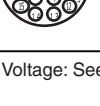
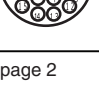
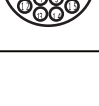


**Note:** Available for 0.5, 0.7, and 0.9-mm-dia contacts



## Shell Series 4 Contact Arrangements

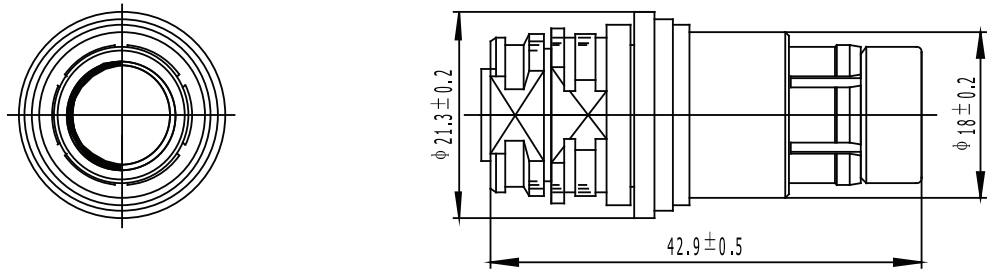
### Contact Arrangement

| Receptacle (A)<br>Socket Contacts                                                   | Plug (B)<br>Pin Contacts                                                            | Receptacle (A)<br>Pin Contacts                                                      | Plug (B)<br>Socket Contacts                                                         | Layout<br>Code | No. of Contacts<br>(Contact Dia.) | Current<br>Rating (A) | DWV* |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------|-----------------------------------|-----------------------|------|
|    |    |    |    | 051            | 2 (1.6 mm)                        | 15                    | I    |
|    |    |    |    | 040            | 3 (1.6 mm)                        | 13                    | I    |
|    |    |    |    | 037            | 4 (1.3 mm)                        | 8                     | II   |
|    |    |    |    | 087            | 2 (2.3 mm)<br>2 (0.9 mm)          | 20<br>2.0             | II   |
|   |   |   |   | 053            | 5 (1.3 mm)                        | 7.5                   | II   |
|  |  |  |  | 065            | 6 (0.9 mm)                        | 4.5                   | II   |
|  |  |  |  | 054            | 7 (0.9 mm)                        | 4.5                   | II   |
|  |  |  |  | 066            | 8 (0.9 mm)                        | 4.5                   | II   |
|  |  |  |  | 055            | 1 (1.3 mm)<br>8 (0.9 mm)          | 8.0<br>4.0            | II   |
|  |  |  |  | 056            | 11 (0.9 mm)                       | 4.0                   | II   |
|  |  |  |  | 086            | 16 (0.7 mm)                       | 2.8                   | III  |
|  |  |  |  | 092            | 19 (0.7 mm)                       | 2.5                   | III  |

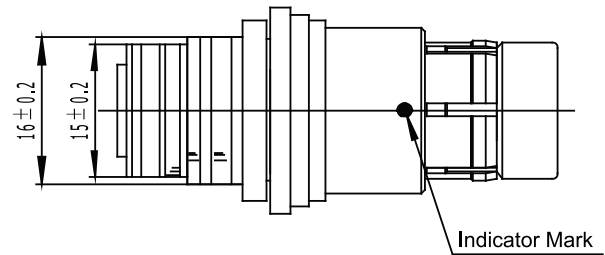
\*Dielectric Withstanding Voltage: See Table 2, page 2

## Shell Series 5

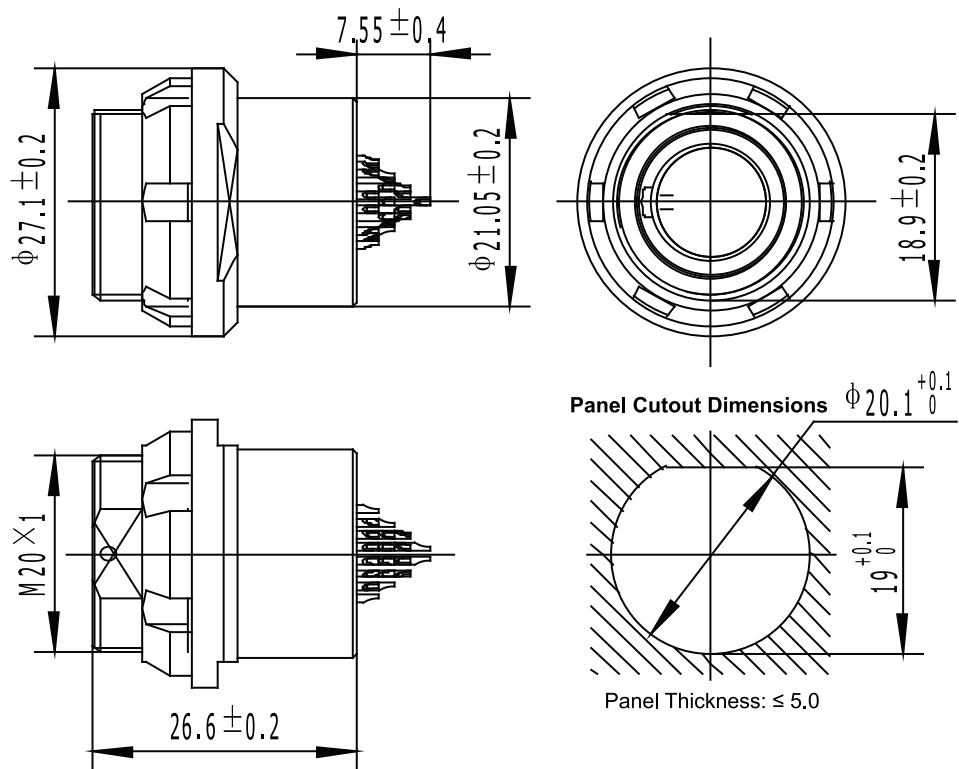
### Free-Hanging Cable-Attach Plug



Maximum cable diameter = 10.0 mm



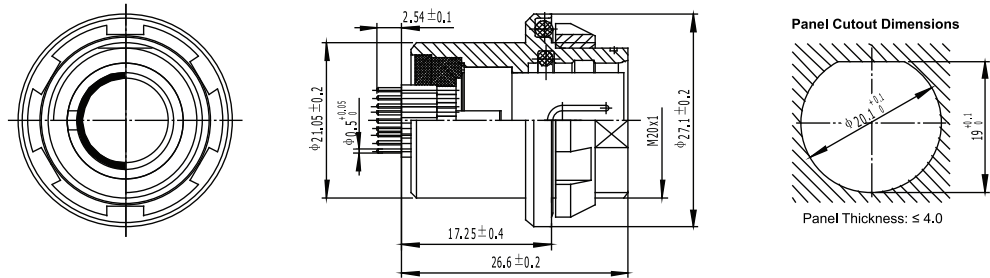
### Panel-Mount Wire Termination Receptacle





## Shell Series 5 (Continued)

### Panel-Mount, Board-Mount Receptacle



**Note:** Available for 0.5, 0.7, and 0.9-mm-dia contacts

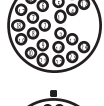
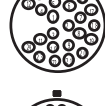
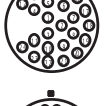
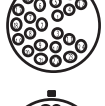
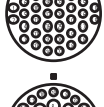
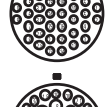
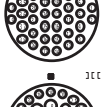
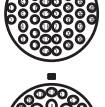
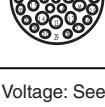
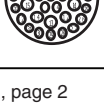
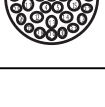
### Contact Arrangement

| Receptacle (A)<br>Socket Contacts | Plug (B)<br>Pin Contacts | Receptacle (A)<br>Pin Contacts | Plug (B)<br>Socket Contacts | Layout<br>Code | No. of Contacts<br>(Contact Dia.) | Current<br>Rating (A) | DWV* |
|-----------------------------------|--------------------------|--------------------------------|-----------------------------|----------------|-----------------------------------|-----------------------|------|
|                                   |                          |                                |                             | 051            | 2 (2.0 mm)                        | 18                    | I    |
|                                   |                          |                                |                             | 087            | 2 (3.0 mm)                        | 20                    | I    |
|                                   |                          |                                |                             | 052            | 3 (2.0 mm)                        | 16                    | I    |
|                                   |                          |                                |                             | 053            | 4 (2.0 mm)                        | 14                    | II   |
|                                   |                          |                                |                             | 054            | 1 (2.0 mm)<br>6 (1.3 mm)          | 19<br>5.0             | II   |
|                                   |                          |                                |                             | 067            | 8 (1.3 mm)                        | 7.2                   | II   |
|                                   |                          |                                |                             | 101            | 1 (2.0 mm)<br>8 (1.3 mm)          | 19<br>4.0             | II   |
|                                   |                          |                                |                             | 062            | 10 (1.3 mm)                       | 6.3                   | II   |
|                                   |                          |                                |                             | 069            | 12 (1.3 mm)                       | 5.5                   | II   |

\*Dielectric Withstanding Voltage: See Table 2, page 2

## Shell Series 5 Contact Arrangements (Continued)

### Contact Arrangement

| Receptacle (A)<br>Socket Contacts                                                   | Plug (B)<br>Pin Contacts                                                            | Receptacle (A)<br>Pin Contacts                                                      | Plug (B)<br>Socket Contacts                                                         | Layout<br>Code | No. of Contacts<br>(Contact Dia.) | Current<br>Rating (A) | DWV* |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|----------------|-----------------------------------|-----------------------|------|
|    |    |    |    | 104            | 3 (1.3 mm)<br>10 (0.7 mm)         | 10<br>1               | II   |
|    |    |    |    | 058            | 15 (0.9 mm)                       | 2.7                   | II   |
|    |    |    |    | 110            | 4 (1.6 mm)<br>12 (0.7 mm)         | 10<br>0.5             | II   |
|    |    |    |    | 038            | 18 (0.9 mm)                       | 3.2                   | III  |
|   |   |   |   | 102            | 27 (0.7 mm)                       | 2.2                   | III  |
|  |  |  |  | 093            | 24 (0.7 mm)                       | 2.5                   | III  |
|  |  |  |  | 122            | 40 (0.5 mm)                       | 1                     | III  |
|  |  |  |  | 137            | 10 (0.7 mm)<br>27 (0.5 mm)        | 2.2<br>1              | III  |

\*Dielectric Withstanding Voltage: See Table 2, page 2



## Connector Accessories

### Sealing Boots



**Table 1: Contact and Wire Information**

| Series, Free-Hanging Connector | Cable Diameter Range (in) | Part No.                    |                        |
|--------------------------------|---------------------------|-----------------------------|------------------------|
|                                |                           | Boot Description (Straight) | Boot Description (90°) |
| Series 1                       | > 0.15                    | 202A111-3/42-0              | 222A111-3/42-0         |
| Series 2                       | 0.15-0.24                 | 202A111-3/42-0              | 222A111-3/42-0         |
|                                | 0.21-0.24                 | 202A121-3/42-0              | 222A121-3/42-0         |
| Series 3                       | 0.15-0.24                 | 202A111-3/42-0              | 222A111-3/42-0         |
|                                | 0.21-0.24                 | 202A121-3/42-0              | 222A121-3/42-0         |
| Series 4                       | 0.21-0.31                 | 202A121-3/42-0              | 222A121-3/42-0         |
| Series 5                       | 0.26-0.39                 | 202A132-3/42-0              | 222A132-3/42-0         |

**Note:** If the cable diameter falls below the minimum diameter heat shrink tubing may be used to shim the boot. All boots are precoated with Raychem /42 hot-melt adhesive.

### Dust Caps



**Table 2: Insert Dielectric Withstanding Voltage**

| Series   | Part No.  |            |
|----------|-----------|------------|
|          | Plug      | Receptacle |
| Series 1 | 2157014-1 | 2157015-1  |
| Series 2 | 2101580-1 | 2101579-1  |
| Series 3 | 2157927-1 | 2157928-1  |
| Series 4 | 2157929-1 | 2157930-1  |
| Series 5 | 2101580-2 | 2101579-2  |

### Cross Reference: Descriptive Part Number to TE Part Number

| Shell Series | Type                   | Configuration                                 | Descriptive Part No. | TE Part No. |
|--------------|------------------------|-----------------------------------------------|----------------------|-------------|
| 1            | Panel-Mount Receptacle | 3 Pos Sockets, PCB Tails, Single Key          | 1-B-B-052-1-1        | 2157738-1   |
|              |                        | 7 Pos Sockets, PCB Tails, Double Key          | 1-B-B-056-1-2        | 2157951-1   |
|              |                        | 7 Pos Sockets, PCB Tails, Single Key          | 1-B-B-056-1-1        | 2157949-1   |
|              |                        | 9 Pos Sockets, PCB Tails, Double Key          | 1-B-B-059-1-2        | 2157952-1   |
|              |                        | 9 Pos Sockets, PCB Tails, Single Key          | 1-B-B-059-1-1        | 2157950-1   |
|              | Plug                   | 3 Pos Pins, Solder Cup Tails, Single Key      | 1-B-P-052-2-1        | 2157739-1   |
|              |                        | 7 Pos Pins, Solder Cup Tails, Double Key      | 1-B-P-056-2-2        | 2157947-1   |
|              |                        | 7 Pos Pins, Solder Cup Tails, Single Key      | 1-B-P-056-2-1        | 2157945-1   |
|              |                        | 9 Pos Pins, Solder Cup Tails, Double Key      | 1-B-P-059-2-2        | 2157948-1   |
|              |                        | 9 Pos Pins, Solder Cup Tails, Single Key      | 1-B-P-059-2-1        | 2157946-1   |
| 2            | Panel-Mount Receptacle | 7 Pos Sockets, PCB Tails, Single Key          | 2-B-B-057-1-1        | 2101553-1   |
|              |                        | 7 Pos Sockets, PCB Tails, Double Key          | 2-B-B-057-1-2        | 2101553-2   |
|              |                        | 7 Pos Sockets, Solder Cup Tails, Single Key   | 2-B-A-057-1-1        | 2101676-1   |
|              |                        | 7 Pos Sockets, Solder Cup Tails, Double Key   | 2-B-A-057-1-2        | 2101676-2   |
|              |                        | 8 Pos Sockets, PCB Tails, Single Key          | 2-B-B-058-1-1        | 2157375-1   |
|              |                        | 8 Pos Sockets, PCB Tails, Double Key          | 2-B-B-058-1-2        | 2157375-2   |
|              |                        | 8 Pos Sockets, PCB Tails, Third Key           | 2-B-B-058-1-3        | 2157375-3   |
|              |                        | 12 Pos Sockets, PCB Tails, Double Key         | 2-B-B-062-1-2        | 2157538-2   |
|              | Plug                   | 12 Pos Sockets, PCB Tails, Single Key         | 2-B-B-062-1-1        | 2157538-1   |
|              |                        | 7 Pos Pins, Solder Cup Tails, Single Key      | 2-B-P-057-2-1        | 2101550-1   |
|              |                        | 7 Pos Pins, Solder Cup Tails, Double Key      | 2-B-P-057-2-2        | 2101550-2   |
|              |                        | 8 Pos Pins, Solder Cup Tails, Single Key      | 2-B-P-058-2-1        | 2157376-1   |
|              |                        | 8 Pos Pins, Solder Cup Tails, Double Key      | 2-B-P-058-2-2        | 2157376-2   |
|              |                        | 8 Pos Pins, Solder Cup Tails, Third Key       | 2-B-P-058-2-3        | 2157376-3   |
|              |                        | 12 Pos Pins, Solder Cup Tails, Double Key     | 2-B-P-062-2-2        | 2157539-2   |
|              |                        | 12 Pos Pins, Solder Cup Tails, Single Key     | 2-B-P-062-2-1        | 2157539-1   |
| 4            | Panel-Mount Receptacle | 4 Pos Pins, Solder Cup Tails, Single Key      | 4-B-A-087-3-1        | 2157468-1   |
|              |                        | 4 Pos Pins, Solder Cup Tails, Double Key      | 4-B-A-087-3-2        | 2157468-2   |
|              |                        | 19 Pos Sockets, PCB Tails, Single Key         | 4-B-B-092-1-1        | 2157342-1   |
|              |                        | 19 Pos Sockets, Solder Cup Tails, Single Key  | 4-B-A-092-1-1        | 2157343-1   |
|              | Plug                   | 4 Pos Sockets, Solder Cup Tails, Single Key   | 4-B-P-087-4-1        | 2157469-1   |
|              |                        | 4 Pos Sockets, Solder Cup Tails, Double Key   | 4-B-P-087-4-2        | 2157469-2   |
|              |                        | 19 Pos Pins, Solder Cup Tails, Single Key     | 4-B-P-092-2-1        | 2157344-1   |
| 5            | Panel-Mount Receptacle | 40 Pos Sockets, PCB Tails, Single Key         | 5-B-B-122-1-1        | 2101549-1   |
|              |                        | 40 Pos Sockets, Solder Cup Tails, Single Key  | 5-B-A-122-1-1        | 2101677-1   |
|              |                        | 40 Pos, Sockets, PCB Tails, Double Key        | 5-B-B-122-1-2        | 2101549-2   |
|              |                        | 40 Pos, Sockets, Solder Cup Tails, Double Key | 5-B-A-122-1-2        | 2101677-2   |
|              | Plug                   | 40 Pos Pins, Solder Cup Tails, Double Key     | 5-B-P-122-2-2        | 2101551-2   |
|              |                        | 40 Pos Pins, Solder Cup Tails, Single Key     | 5-B-P-122-2-1        | 2101551-1   |

## Metal-Shell Micro Circular Connectors

### Compatible

USB 2.0 signal compatible

### Flexible Configurations

Three coupling styles:

- Push-pull
- Bayonet
- Threaded

Common internal design for all three coupling styles

Two types of well-established contacts:

- Pin and socket
- Spring probe

### Reliable

Individual O-rings on all contacts provide improved sealing

IP67 sealing

Metal adapter for shield termination and overmolding:

### Versatile

Signal only and hybrid signal/power versions

Solder cup wire termination; solder tails for receptacle board mounting

Jam nut style, rear panel mounting

### High-Performance Materials

LCP insulator material

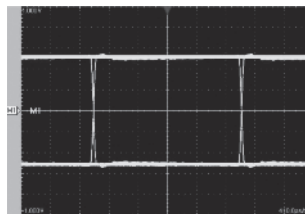
Brass shell with black tin-nickel plating, rated at more than 120 hours salt spray  
30 to 26 AWG wire range (24 AWG when using 7-strand and solid conductors)



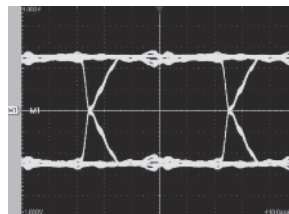
### Eye Pattern: Spring Probe Contact System

Mask per USB 2.0 Specification, 480 Mb/s

#### Input



#### Output



### Performance Characteristics

#### Electrical

##### Current-Carrying Capacity —

2 amps max.

##### Operating Voltage —200 VAC max

**Termination Resistance** —30 milliohms max.

#### Mechanical and Environmental

**Durability** —2000 mating cycles

**Operating Temperature** —55°C to +150°C

**Sealing** — IP67

### Materials

**Shell** —Brass, black tin-nickel plated

**Insert** —LCP

**Contacts** —Brass, plated gold over nickel

**O-Ring** —Fluorosilicone

### Technical Documents

#### Product Specification —

108-78938 (for 7 and 19 pin)

108-78967 (for 14 and 30 pin)

#### Qualification Test Report —

501-78493 (for 7 and 19 pin)

501-78526 (for 14 and 30 pin)

## Metal-Shell Micro Circular Connectors (Continued)

### Signal Connectors: Pin and Socket Contacts

| Shell Size | No. of Pos. | Coupling  | Keying | Part No.          |                        |                         |
|------------|-------------|-----------|--------|-------------------|------------------------|-------------------------|
|            |             |           |        | CPlug Solder Cups | Receptacle Solder Cups | Receptacle, Solder Tail |
| M11        | 7           | Push-Pull | N      | 2174219-1         | 2174222-1              | 2174225-1               |
|            |             |           | A      | 2174219-2         | 2174222-2              | 2174225-2               |
|            |             |           | B      | 2174219-3         | 2174222-3              | 2174225-3               |
|            |             | Bayonet   | N      | 2174220-1         | 2174223-1              | 2174226-1               |
|            |             |           | A      | 2174220-2         | 2174223-2              | 2174226-2               |
|            |             |           | B      | 2174220-3         | 2174223-3              | 2174226-3               |
|            |             | Threaded  | N      | 2174221-1         | 2174224-1              | 2174227-1               |
|            |             |           | A      | 2174221-2         | 2174224-2              | 2174227-2               |
|            |             |           | B      | 2174221-3         | 2174224-3              | 2174227-3               |
| M14        | 19          | Push-Pull | N      | 2174210-1         | 2174213-1              | 2174216-1               |
|            |             |           | IA     | 2174210-2         | 2174213-2              | 2174216-2               |
|            |             |           | B      | 2174210-3         | 2174213-3              | 2174216-3               |
|            |             | Bayonet   | N      | 2174211-1         | 2174214-1              | 2174217-1               |
|            |             |           | A      | 2174211-2         | 2174214-2              | 2174217-2               |
|            |             |           | B      | 2174211-3         | 2174214-3              | 2174217-3               |
|            |             | Threaded  | N      | 2174212-1         | 2174215-1              | 2174218-1               |
|            |             |           | A      | 2174212-2         | 2174215-2              | 2174218-2               |
|            |             |           | B      | 2174212-3         | 2174215-3              | 2174218-3               |

### Signal Connectors: Spring Probe Contacts

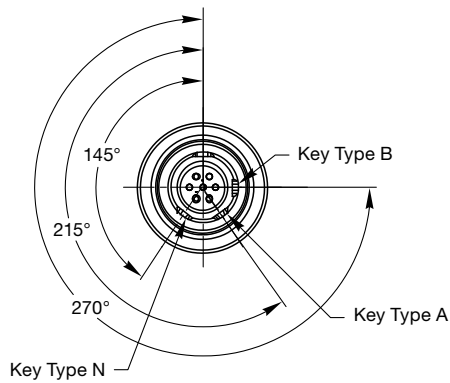
| Shell Size | No. of Pos. (Signal) | Coupling  | Keying | Part No.          |                        |                         |
|------------|----------------------|-----------|--------|-------------------|------------------------|-------------------------|
|            |                      |           |        | CPlug Solder Cups | Receptacle Solder Cups | Receptacle, Solder Tail |
| M11        | 7                    | Bayonet   | N      | 2174201-1         | 2174205-1              | 2174208-1               |
|            |                      |           | A      | 2174201-2         | 2174205-2              | 2174208-2               |
|            |                      |           | B      | 2174201-3         | 2174205-3              | 2174208-3               |
|            |                      | Threaded  | N      | 2174202-1         | 2174206-1              | 2174209-1               |
|            |                      |           | A      | 2174202-2         | 2174206-2              | 2174209-2               |
|            |                      |           | B      | 2174202-3         | 2174206-3              | 2174209-3               |
|            |                      | Push-Pull | N      | 2174191-1         | 2174194-1              | 2174197-1               |
|            |                      |           | A      | 2174191-2         | 2174194-2              | 2174197-2               |
|            |                      |           | B      | 2174191-3         | 2174194-3              | 2174197-3               |
| M14        | 19                   | Bayonet   | N      | 2174192-1         | 2174195-1              | 2174198-1               |
|            |                      |           | IA     | 2174192-2         | 2174195-2              | 2174198-2               |
|            |                      |           | B      | 2174210-3         | 2174213-3              | 2174216-3               |
|            |                      | Threaded  | N      | 2174193-1         | 2174196-1              | 2174199-1               |
|            |                      |           | A      | 2174193-2         | 2174196-2              | 2174199-2               |
|            |                      |           | B      | 2174193-3         | 2174196-3              | 2174199-3               |

### Hybrid Signal + Power Connectors: Pin and Socket Contacts

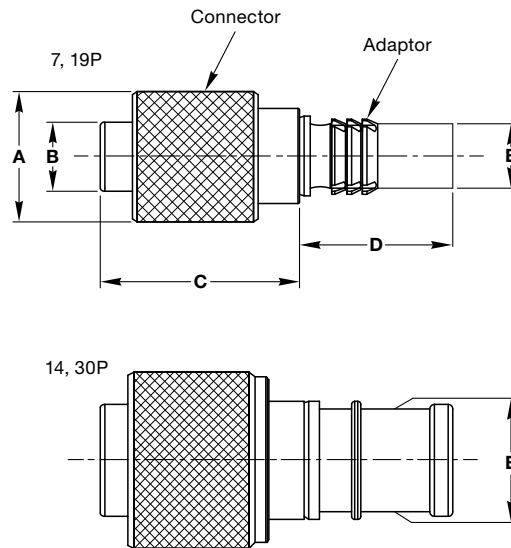
| Shell Size | No. of Pos.             | Coupling | Keying | Part No.          |                        |                         |
|------------|-------------------------|----------|--------|-------------------|------------------------|-------------------------|
|            |                         |          |        | CPlug Solder Cups | Receptacle Solder Cups | Receptacle, Solder Tail |
| M15        | 14 (12 Signal, 2 Power) | Bayonet  | N      | 2201481-1         | —                      | 2201482-1               |
| M22        | 30 (28 Signal, 2 Power) | Threaded | N      | 2201712-1         | —                      | 2201713-1               |

## Metal-Shell Micro Circular Connectors (Continued)

### Keying

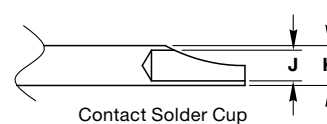


### Plug Connectors, Solder Cup



| Coupling  | No. of Pos. | Power Contacts | A (Dia.) | B (Dia.) | C     | D             |              | E    | Key Type |
|-----------|-------------|----------------|----------|----------|-------|---------------|--------------|------|----------|
|           |             |                |          |          |       | Short Version | Long Version |      |          |
| Push-Pull | 7           | —              | 14       | 6.96     | 21.45 | 8.42          | 15.48        | 6.89 | N, A, B  |
|           | 19          | —              | 17       | 9.36     | 21.85 | 8.42          | 15.48        | 8.65 | N, A, B  |
| Bayonet   | 7           | —              | 14       | 7.62     | 21.45 | 8.42          | 15.48        | 6.89 | N, A, B  |
|           | 19          | —              | 17       | 10.16    | 21.75 | 8.42          | 15.48        | 8.65 | N, A, B  |
|           | 14          | 2              | 19       | 12.16    | 21.95 | 19.4          | 20.3         | 12   | N        |
| Threaded  | 7           | —              | 14       | 7.62     | 21.45 | 8.42          | 15.48        | 6.89 | N, A, B  |
|           | 19          | —              | 16       | 10.16    | 21.45 | 8.42          | 15.48        | 8.65 | N, A, B  |
|           | 30          | 2              | 25       | 18.4     | 13.3  | 16            | 24           | 19.1 | N        |

### Contact Solder Cup Dimensions

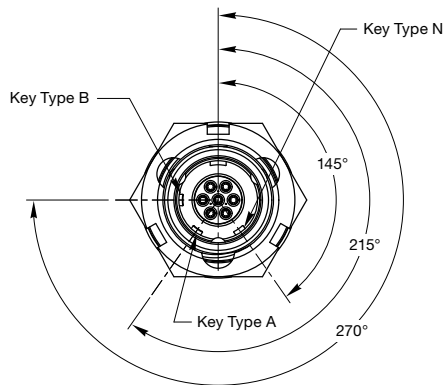


| No. of Pos. | Power Contacts | Signal |      | Power |     |
|-------------|----------------|--------|------|-------|-----|
|             |                | J      | K    | J     | K   |
| 7, 19       | —              | 0.65   | 0.85 | —     | —   |
| 14          | 2              | 0.9    | 1.15 | 1.2   | 1.5 |
| 30          | 2              | 0.76   | 1    | 1     | 1.3 |

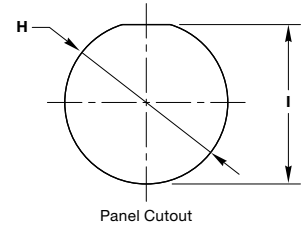
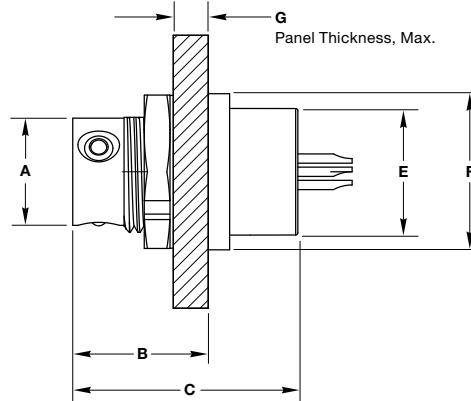


## Metal-Shell Micro Circular Connectors (Continued)

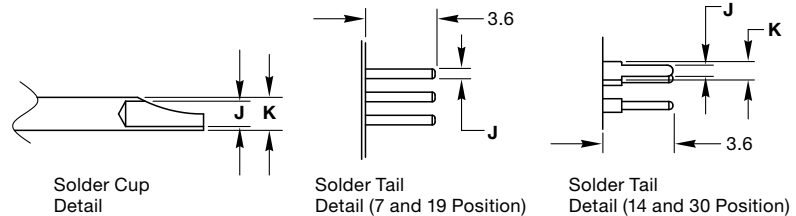
### Keying



### Receptacle Connectors



| Coupling  | No. of Pos. | A (Dia.) | B     | C     | E (Dia.) | F (Dia.) | G   |
|-----------|-------------|----------|-------|-------|----------|----------|-----|
| Push-Pull | 7           | 9.82     | 12.41 | 20.64 | 11.6     | 14.3     | 3.2 |
|           | 19          | 12.36    | 12.41 | 20.73 | 13.4     | 18       | 3.2 |
| Bayonet   | 7           | 9.85     | 15.41 | 20.6  | 11.6     | 14.3     | 2.8 |
|           | 19          | 12.05    | 15.41 | 20.5  | 14.4     | 18       | 2.8 |
|           | 14          | 14.05    | 15.41 | 20.7  | 14.7     | —        | 3.0 |
| Threaded  | 7           | 10.54    | 13.44 | 18.6  | 11.6     | 14.3     | 3.2 |
|           | 19          | 13.34    | 13.44 | 18.4  | 14.4     | 18       | 3.2 |
|           | 30          | —        | 13.15 | 19.7  | 19.3     | —        | 3.6 |



### Contacts

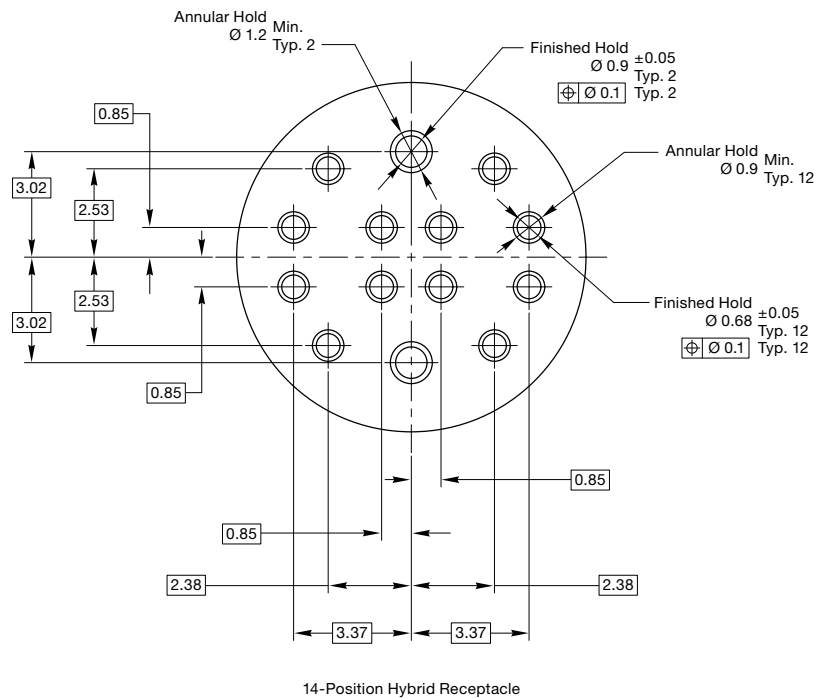
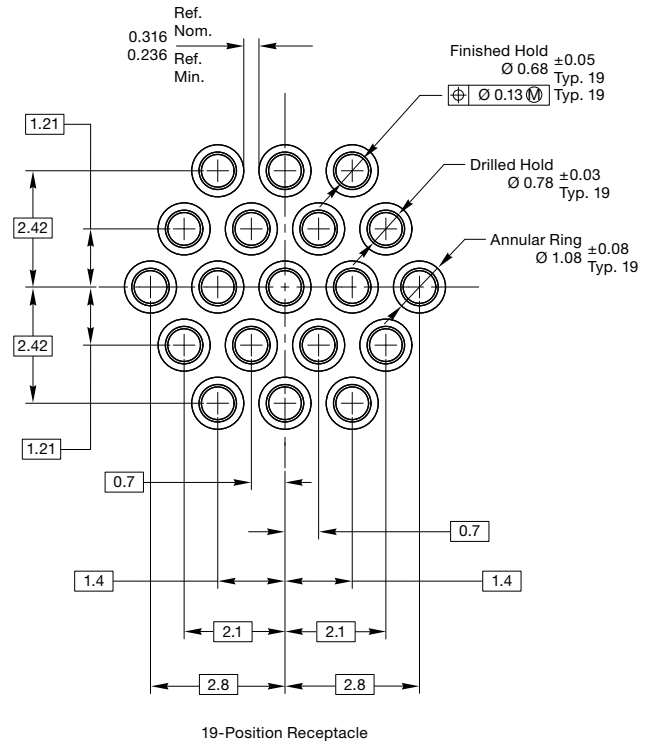
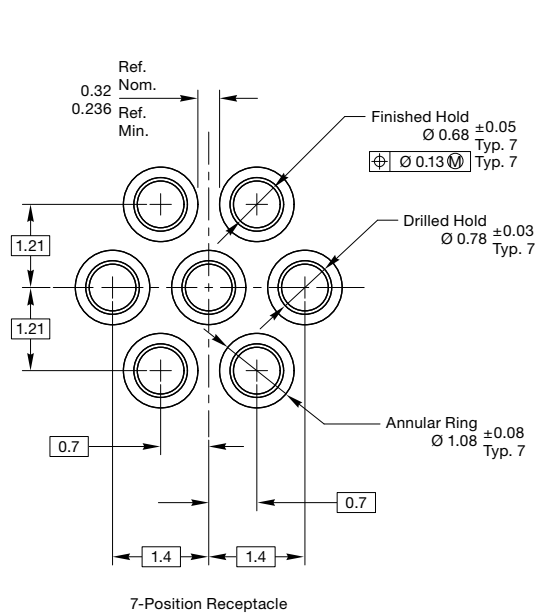
| Contact Type | No. of Pos. | Power Contacts | Signal |      | Power |      |
|--------------|-------------|----------------|--------|------|-------|------|
|              |             |                | J      | K    | J     | K    |
| Solder Cup   | 7, 19       | —              | 0.65   | 0.85 | —     | —    |
|              | 7, 19       | —              | .5     | —    | —     | —    |
| Solder Tail  | 14          | 2              | .5     | .85  | .7    | 1.15 |
|              | 30          | 2              | .5     | .85  | .7    | 1.16 |

### Panel Cutout Dimensions

| Shell Size | H (Dia.) | I     |
|------------|----------|-------|
| M11        | 11.2     | 10.95 |
| M14        | 14.4     | 13.5  |
| M15        | 16.2     | 15.3  |
| M22        | 22.5     | 21.5  |

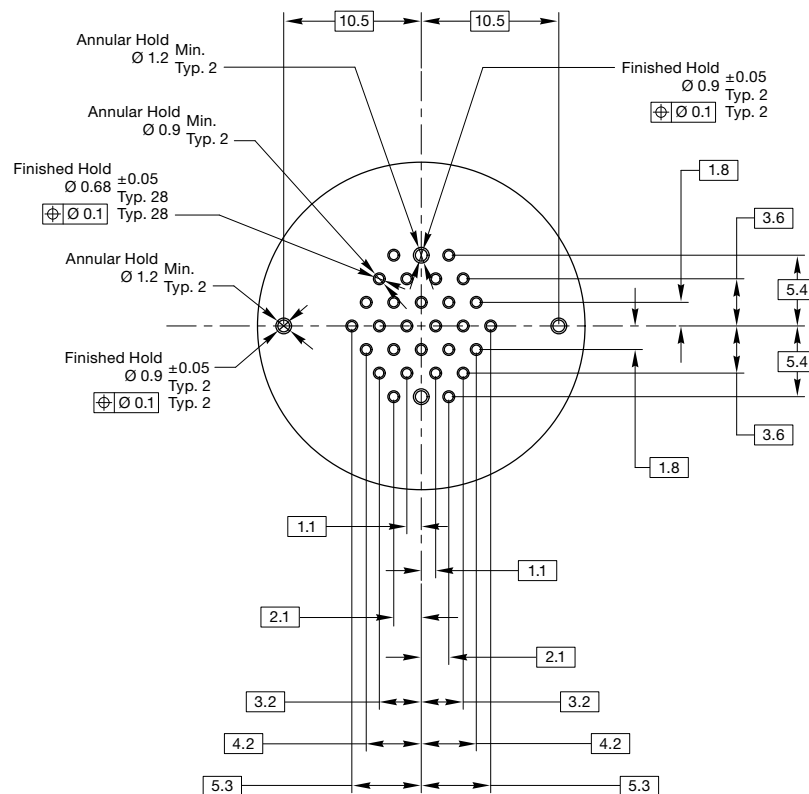
## Metal-Shell Micro Circular Connectors (Continued)

### PCB Layouts for Solder Tail Receptacles



## Metal-Shell Micro Circular Connectors (Continued)

### PCB Layouts for Solder Tail Receptacles



### Accessories

#### Dust Caps

| Shell Size | Coupling  | Part No.  |            |
|------------|-----------|-----------|------------|
|            |           | Plug      | Receptacle |
| M11        | Push-Pull | *         | 2201013-x  |
|            | Bayonet   | 2229015-x | 2201014-x  |
|            | Threaded  | *         | 2201015-x  |
| M14        | Push-Pull | *         | 2201011-x  |
|            | Bayonet   | *         | 2201010-x  |
|            | Threaded  | *         | 2201012-x  |
| M15        | Bayonet   | *         | *          |
| M22        | Threaded  | *         | *          |

-x suffix is length of wire rope: -1 = 70 mm • -2 = 100 mm • -3 = 120 mm • -4 = 150 mm.

\*Consult TE.

## NANONICS Environmentally Sealed Circular Connectors Introduction



NANONICS environmentally sealed circular offering represents one of the industry's smallest and most reliable connector designs. These connectors are ideally suited for applications where high density and reliability, and reduced size and weight are serious design parameters. Along with these attributes, they also meet the immersion requirements of IP68, more specifically, one meter of water for two hours, in a mated condition only. Utilizing the same contact

system and materials as the DUALOBE rectangular series of connectors, the circular connectors are manufactured to the performance specifications of MIL-DTL-83513.

The plug connectors are offered in both a quick disconnect or threaded coupling configuration, and the receptacle connectors are offered in either a front panel mount or rear panel mount configuration. The quick disconnect plug will mate with both the front and

rear panel mount receptacles, while the threaded coupling plug will only mate with the rear panel mount receptacle. These connectors are available in pin counts of 7, 19, and 44. Optional backshells are also available for the plug connectors and the rear panel mount receptacle. Ideal for cable-to-cable, cable-to-panel, or cable-to-board applications, TE Connectivity can also accommodate harness assemblies and custom configurations.

### Specifications

#### Technical and Performance Data

##### Electrical

**Contact Resistance** — .003 - .008 ohms

**Current Rating** — 1 amp max. per contact

**Dielectric Withstanding Voltage** — Volts RMS 60 Hz at room ambient conditions. At sea level 500V. At 70,000 ft. 150V.

**Insulation Resistance** — 5000 megohms min. (@ 500 VDC) at room ambient conditions.

**Magnetic Permeability** — 2 mu max.

**Temperature Range** — -55°C to +200°C

**Durability** — 250 mates/demates

##### Jam Nut Torque

7 Pos. — 6 in-lbs. max.  
19 Pos. — 8 in-lbs. max.  
44 Pos. — 10 in-lbs. max.

##### Coupling Nut Torque

7 Pos. — 6 in-lbs. max.  
19 Pos. — 8 in-lbs. max.  
44 Pos. — 10 in-lbs. max.

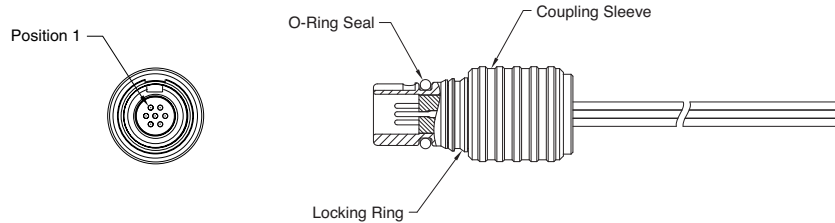
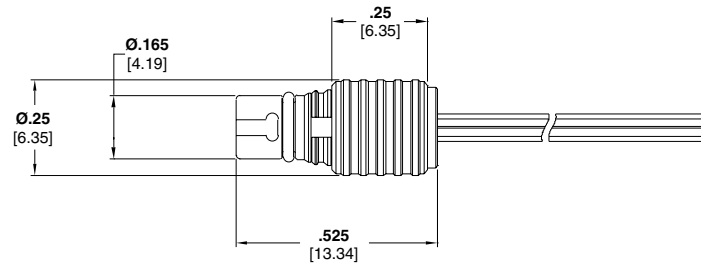
## NANONICS Quick Disconnect — Plug Assemblies



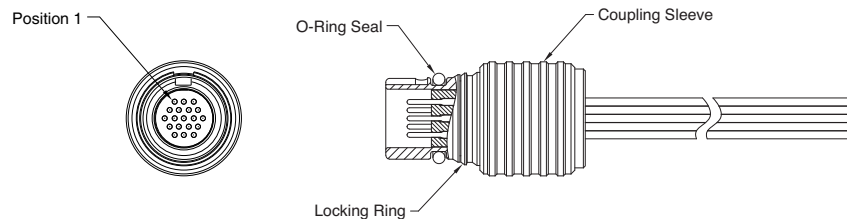
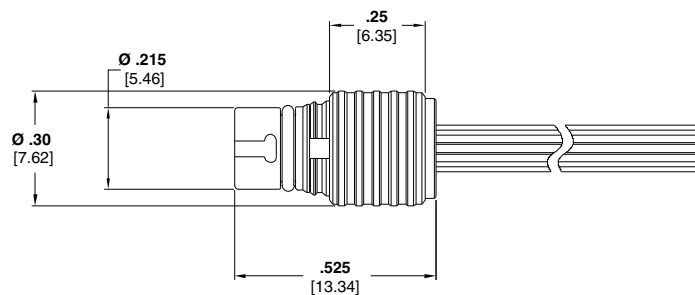
19 Position

### Product Facts

- Metal Shell
- Positions: 7, 19 and 44
- Environmental O-ring seal
- Push-Pull quick-disconnect coupling
- Factory wired to your specifications
- Contact TE Connectivity for custom configurations

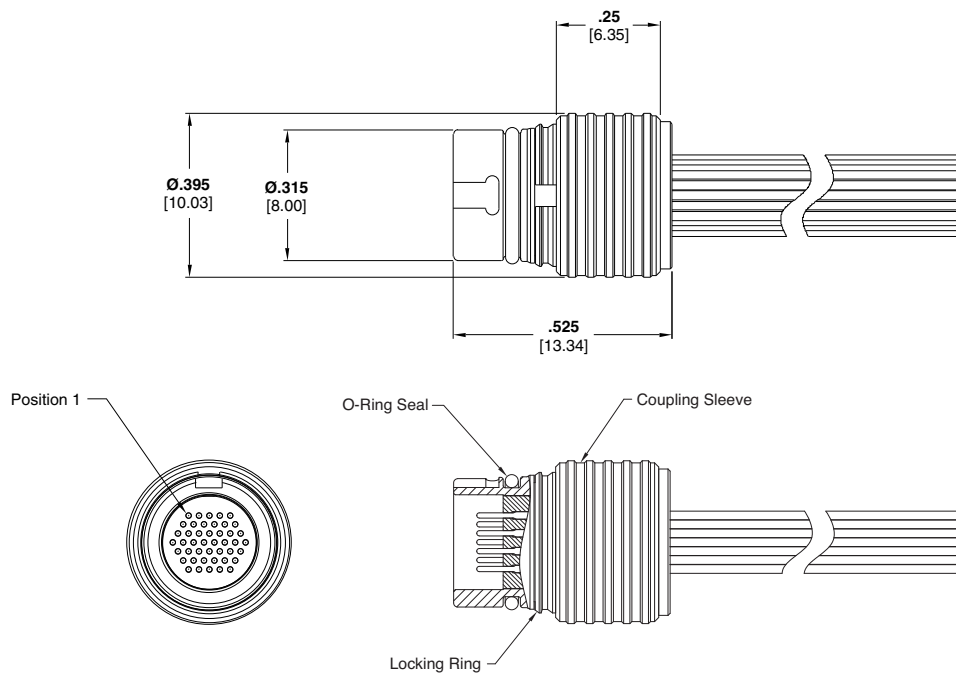


7 Position  
Drawing Number 1589055



19 Position  
Drawing Number 1589057

## NANONICS Quick Disconnect — Plug Assemblies (Continued)

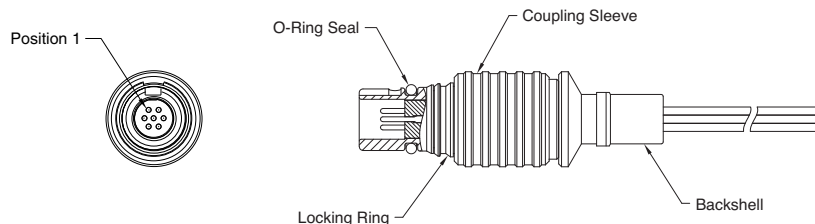
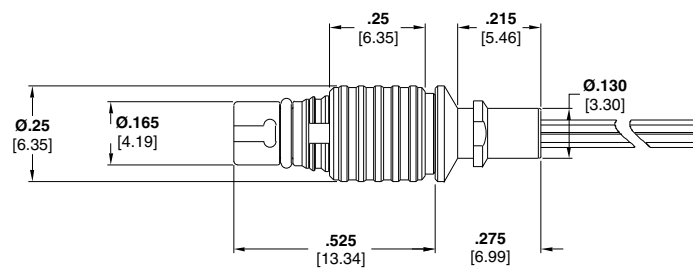


**44 Position**  
**Drawing Number 1589059**

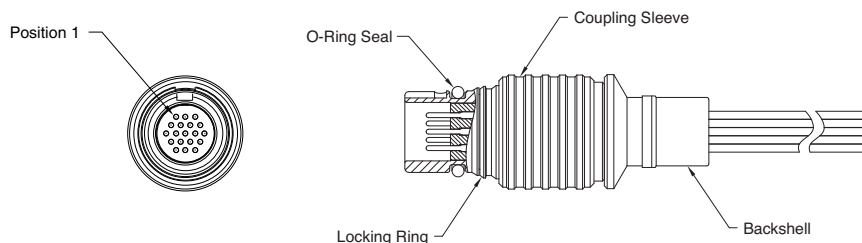
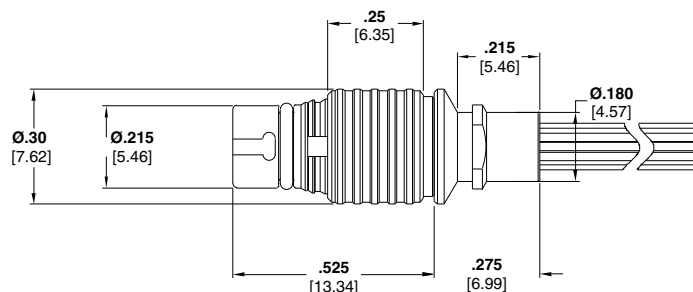
## NANONICS Quick Disconnect — Plug Assemblies with Backshells

### Product Facts

- Metal Shell
- Positions: 7, 19 and 44
- Environmental O-ring seal
- Factory wired to your specifications
- Backshell installed at factory
- Contact TE Connectivity for custom configurations



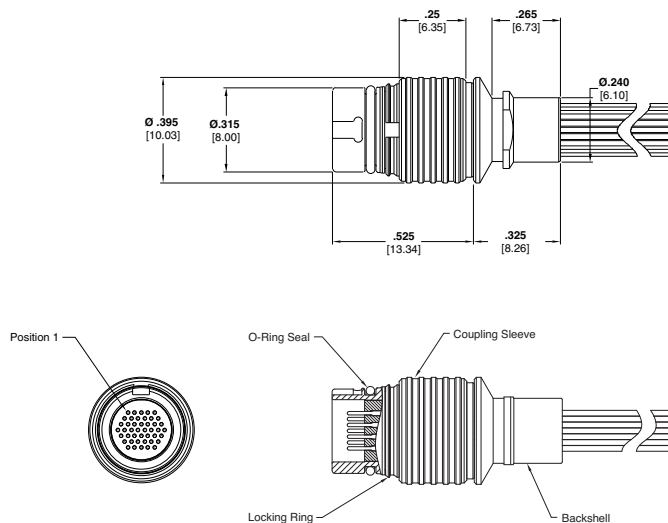
**7 Position**  
**Drawing Number 1589691**



**19 Position**  
**Drawing Number 1589692**

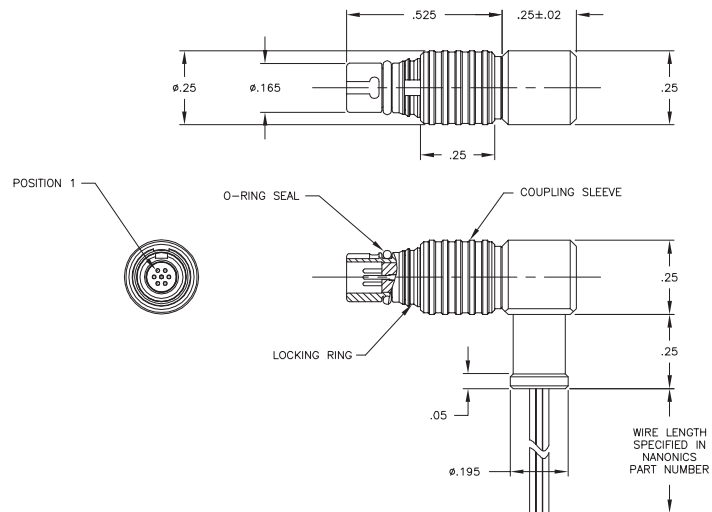


**NANONICS Quick Disconnect — Plug Assemblies with Backshells** (Continued)

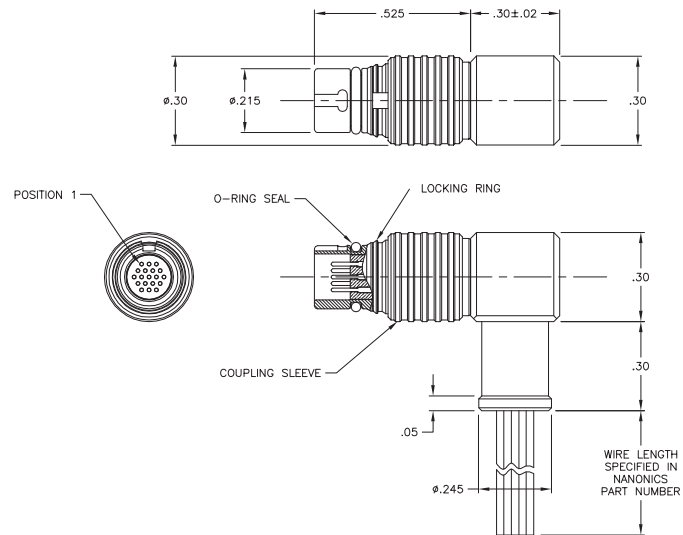


**44 Position**  
**Drawing Number 1589693**

## NANONICS Quick Disconnect — Plug Assemblies with Backshells

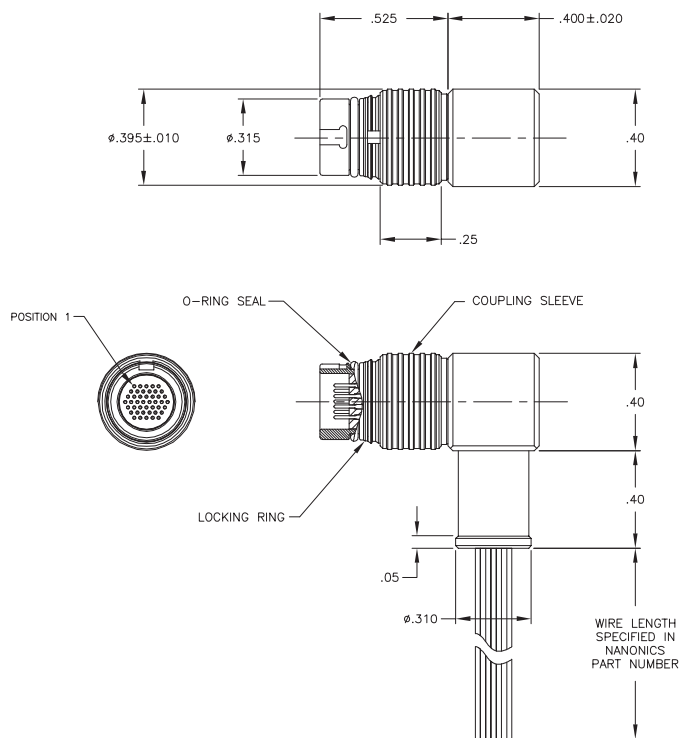


**7 Position**  
**Drawing Number 1925026**



**19 Position**  
**Drawing Number 1925027**

## NANONICS Quick Disconnect — Plug Assemblies with Backshells (Continued)



44 Position  
Drawing Number 1925028

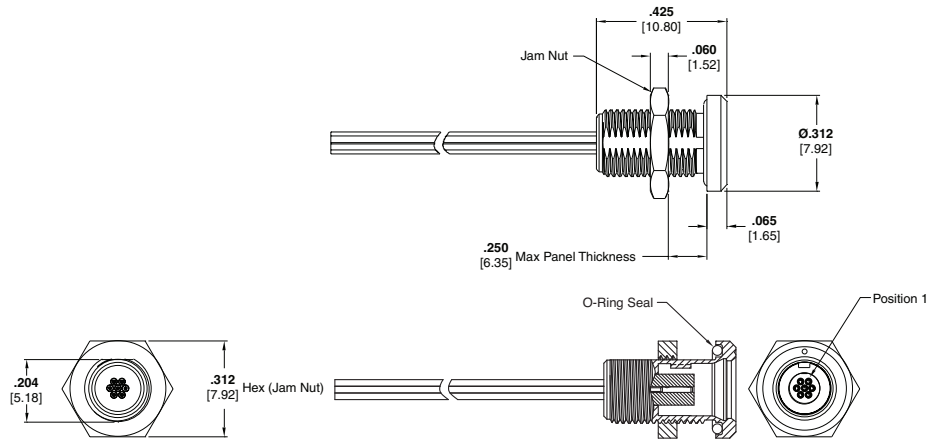
## NANONICS Quick Disconnect — Receptacle Assemblies, Flush Mount



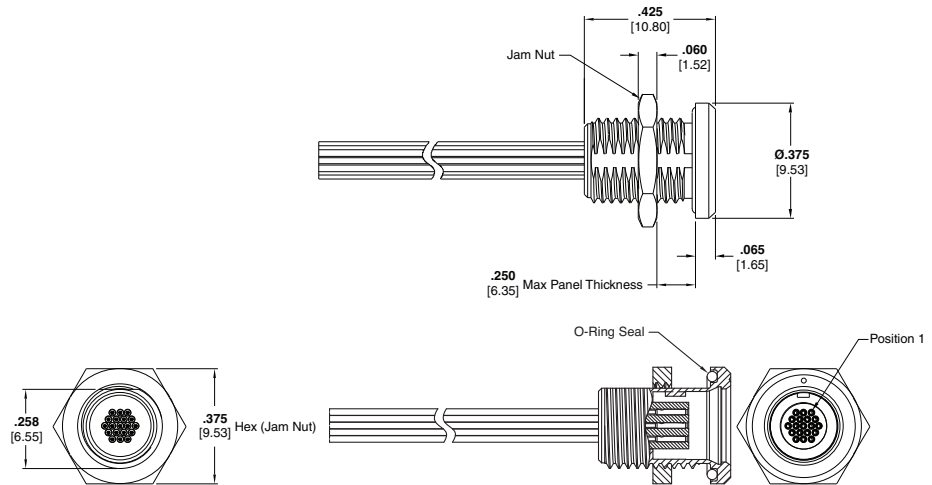
19 Position

### Product Facts

- Metal Shell
- Positions: 7, 19 and 44
- Bulkhead O-ring seal
- Factory wired to your specifications
- Contact TE Connectivity for custom configurations

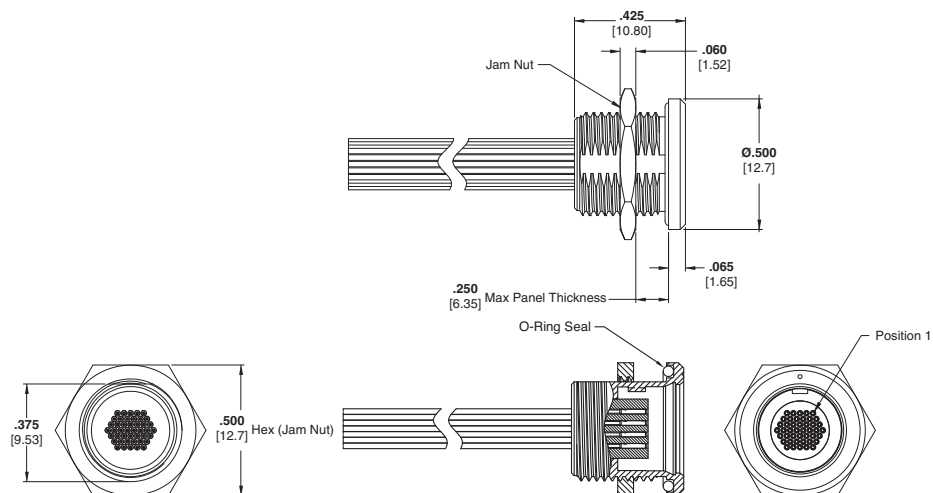


7 Position  
Drawing Number 1589056



19 Position  
Drawing Number 1589058

## NANONICS Quick Disconnect — Receptacle Assemblies, Flush Mount (Continued)



**44 Position**  
**Drawing Number 1589690**

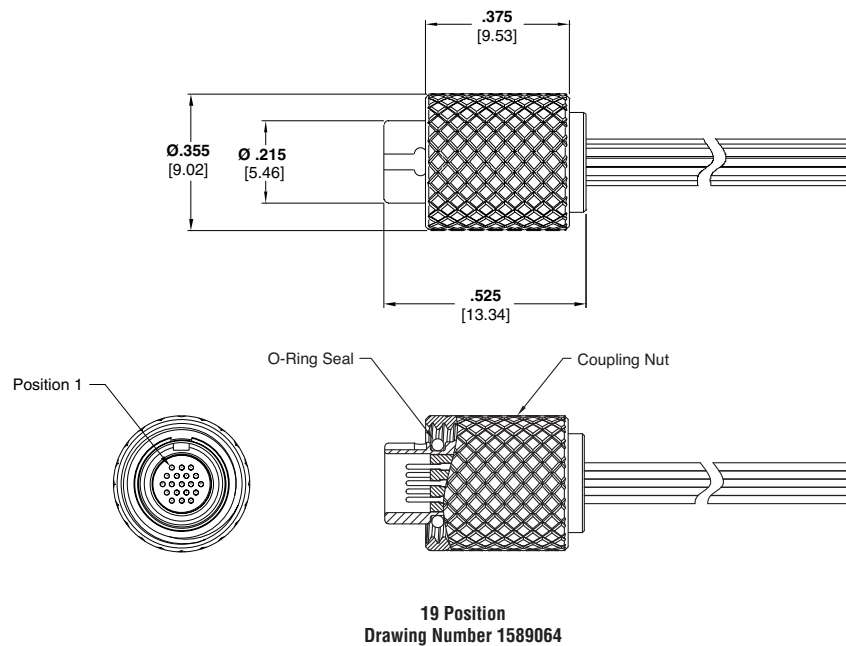
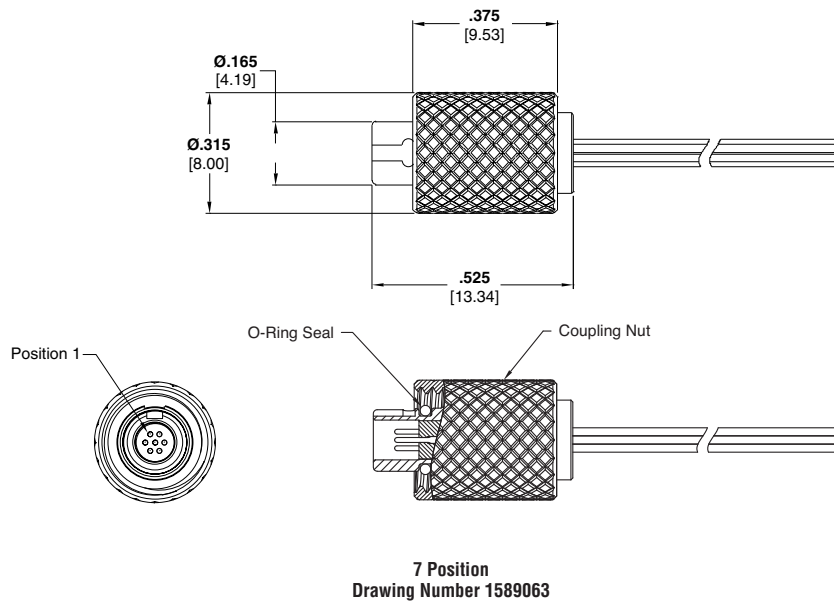
## NANONICS Threaded Coupling — Plug Assemblies



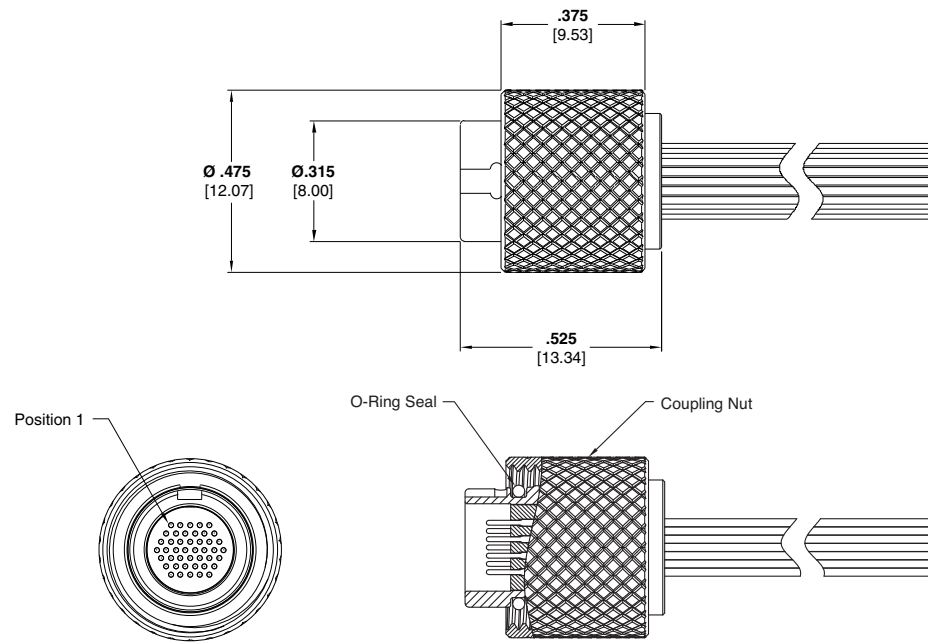
19 Position

### Product Facts

- Metal Shell
- Positions: 7, 19 and 44
- Environmental O-ring seal
- Factory wired to your specifications
- Contact TE Connectivity for custom configurations



**NANONICS Threaded Coupling — Plug Assemblies (Continued)**



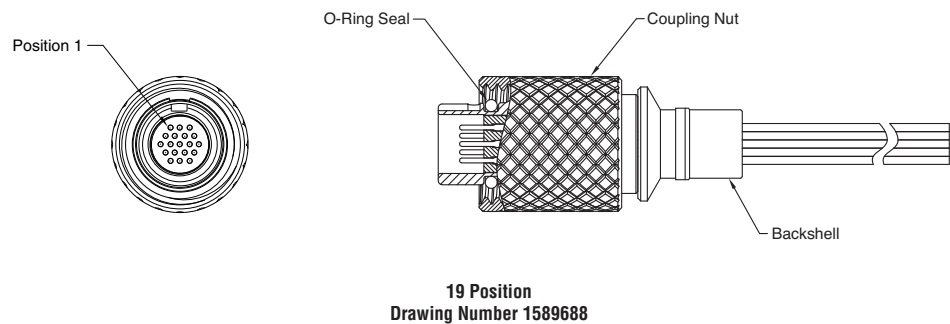
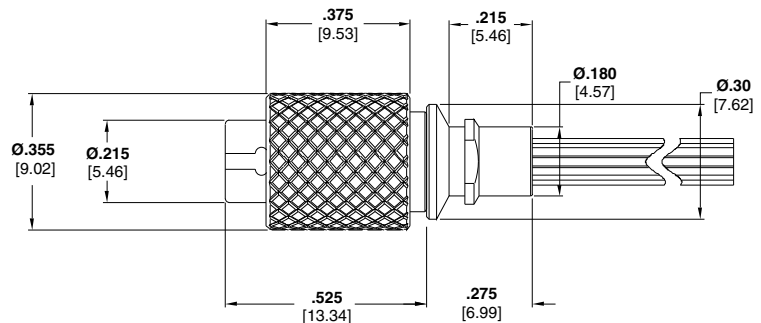
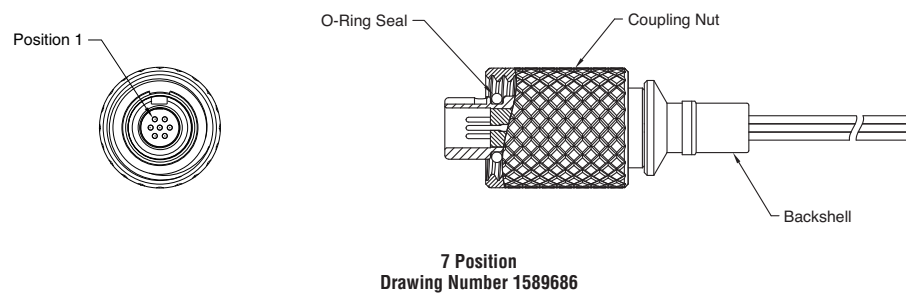
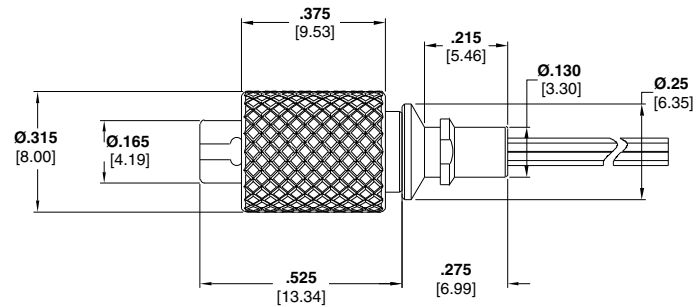
**44 Position**  
**Drawing Number 1589065**



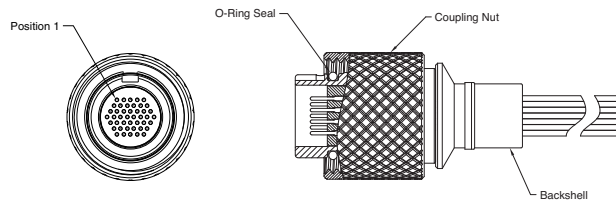
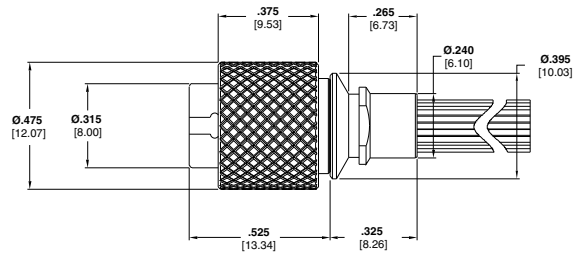
## NANONICS Threaded Coupling — Plug Assemblies with Backshells

### Product Facts

- Metal Shell
- Positions: 7, 19 and 44
- Environmental O-ring seal
- Factory wired to your specifications
- Backshell installed at factory
- Contact TE Connectivity for custom configurations

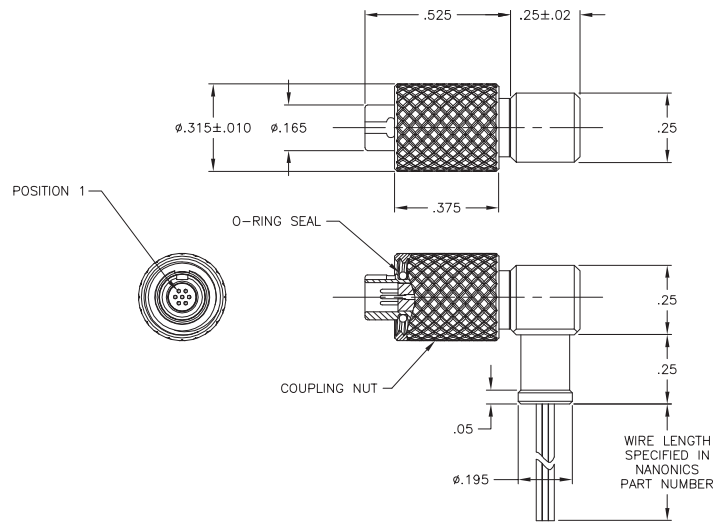


**NANONICS Threaded Coupling — Plug Assemblies with Backshells (Continued)**

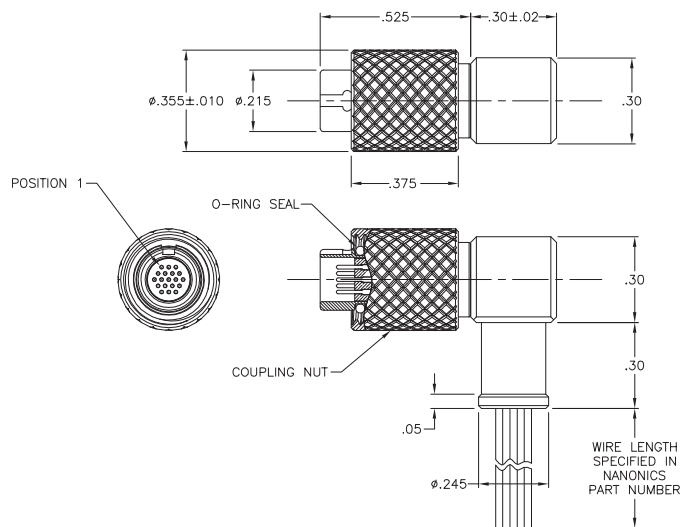


**44 Position**  
**Drawing Number 1589694**

**NANONICS Threaded Coupling — Plug Assemblies with Backshells (Continued)**

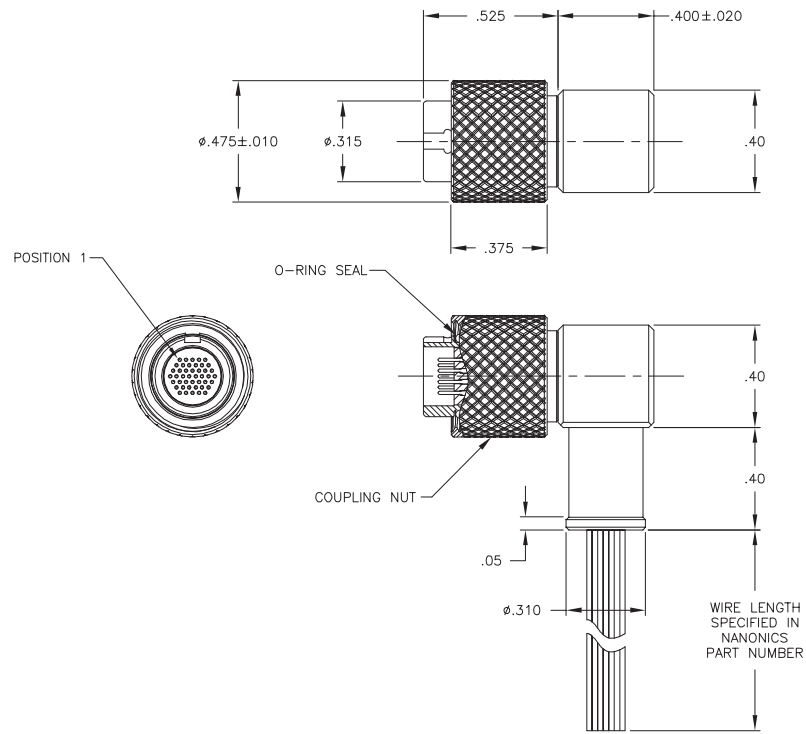


**7 Position**  
**Drawing Number 1925029**



**19 Position**  
**Drawing Number 1925030**

**NANONICS Threaded Coupling — Plug Assemblies with Backshells (Continued)**

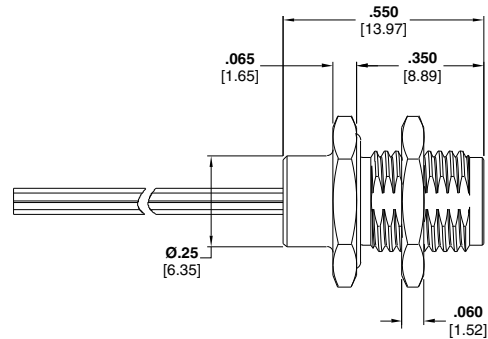


**44 Position**  
**Drawing Number 1925031**

## NANONICS Threaded Coupling/Quick Disconnect — Receptacle Assemblies, Panel Mount

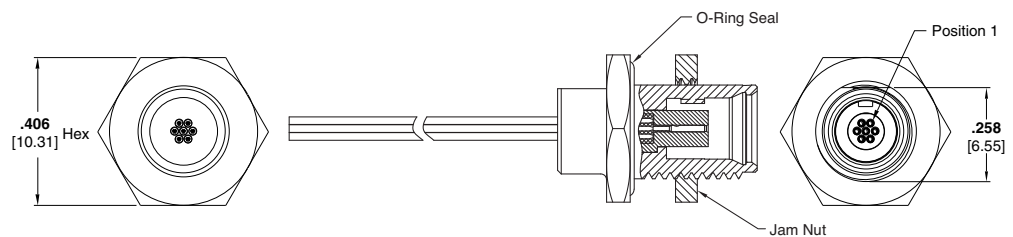
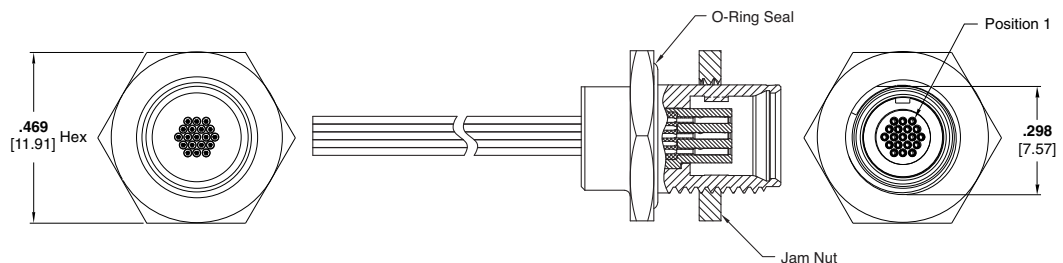
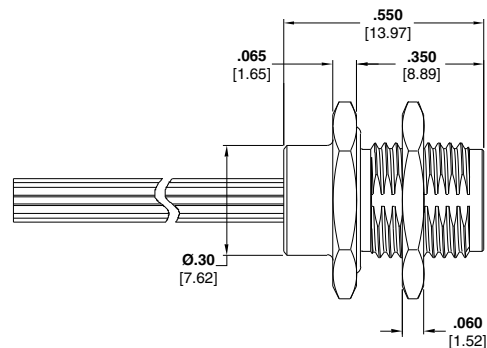


19 Position

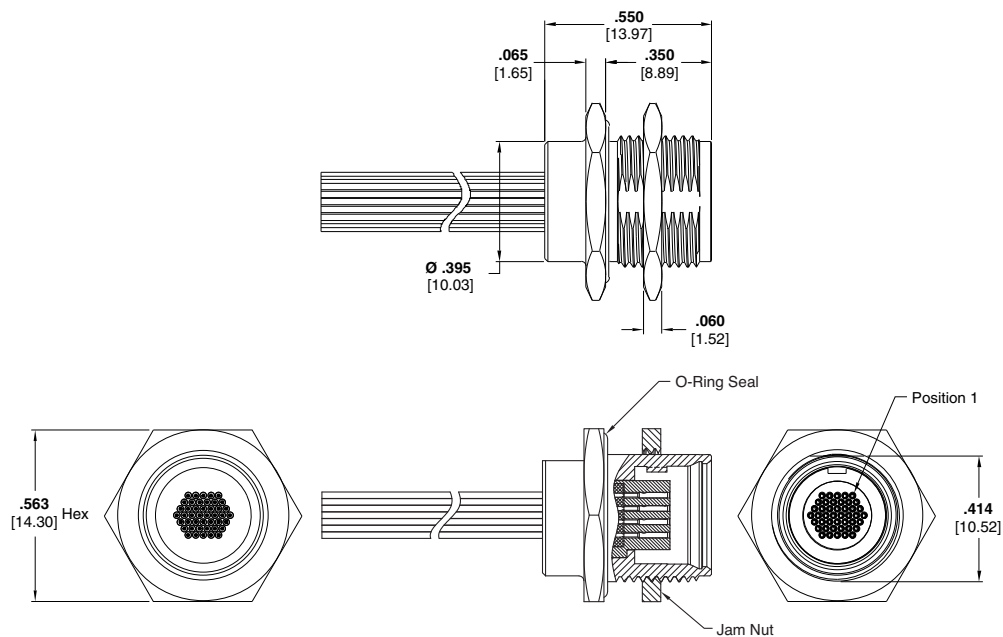


### Product Facts

- Metal Shell
- Positions: 7, 19 and 44
- Bulkhead O-ring seal
- Factory wired to your specifications
- Panel Mount receptacle mates with the Quick Disconnect Plug and the Threaded Coupling Plug
- Contact TE Connectivity for custom configurations


7 Position  
Drawing Number 1589060

19 Position  
Drawing Number 1589061

**NANONICS Threaded Coupling/Quick Disconnect — Receptacle Assemblies, Panel Mount**  
(Continued)

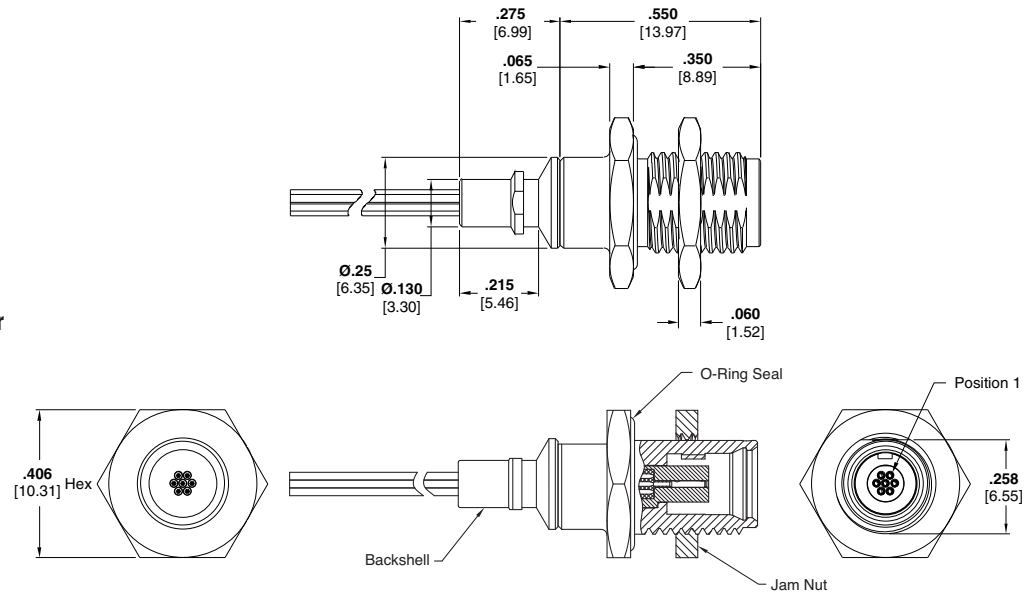


**44 Position**  
**Drawing Number 1589062**

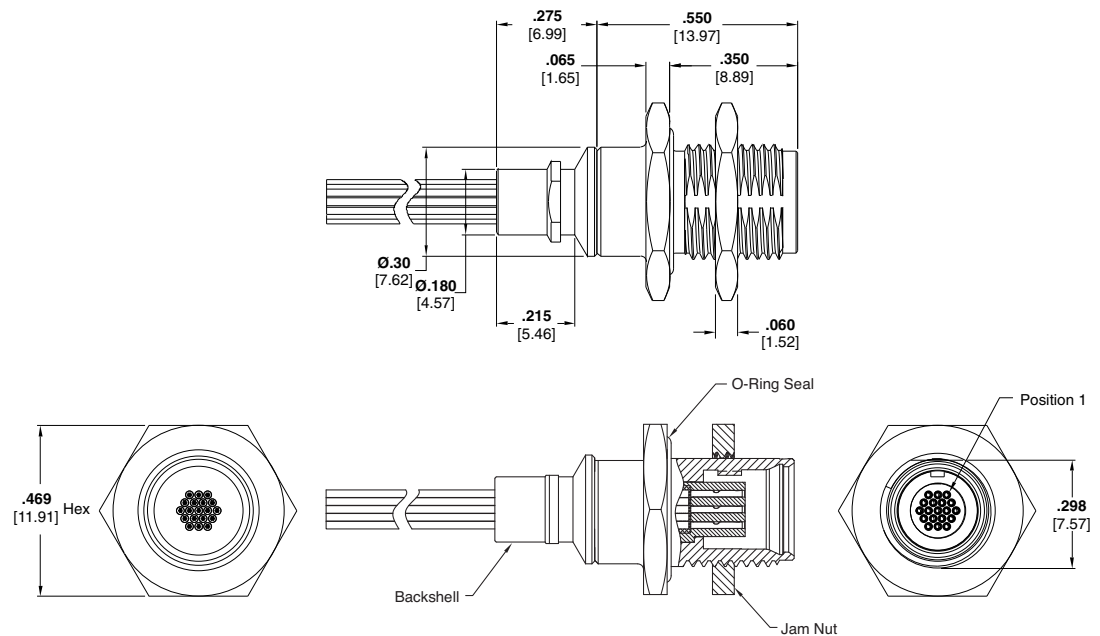
## NANONICS Threaded Coupling/Quick Disconnect — Panel Mount Receptacle Assemblies w/Backshells

### Product Facts

- Metal Shell
- Positions: 7, 19 and 44
- Bulkhead O-ring seal
- Factory wired to your specifications
- Panel Mount receptacle mates with the Quick Disconnect Plug and the Threaded Coupling Plug
- Contact TE Connectivity for custom configurations



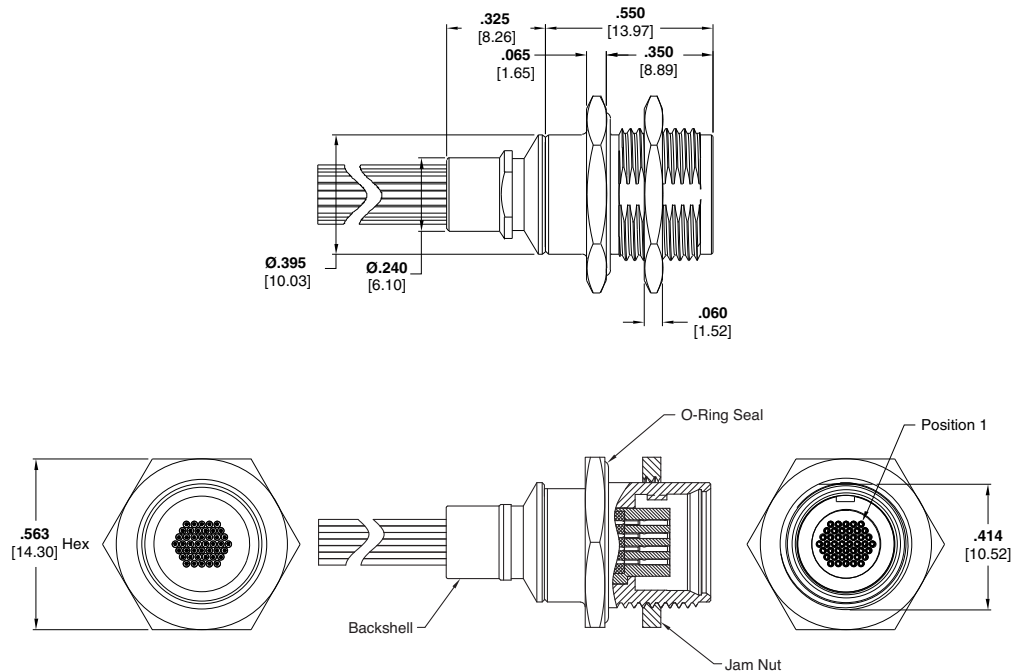
Receptacle Assembly 7 Position  
Drawing Number 1589685



Receptacle Assembly 19 Position  
Drawing Number 1589687



### NANONICS Threaded Coupling/Quick Disconnect — Panel Mount Receptacle Assemblies w/Backshells (Continued)



**Receptacle Assembly 44 Position**  
**Drawing Number 1589695**

## Part Numbering Guideline for NANONICS Environmentally Sealed Circular Connectors

## Circular Connectors - Wire Terminations

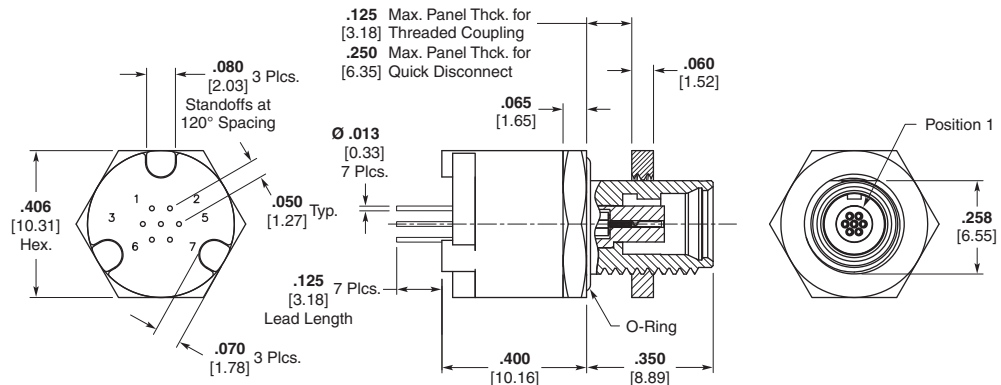
[illegible]

## NANONICS Thru-Hole, Receptacle Assemblies, Vertical Mount

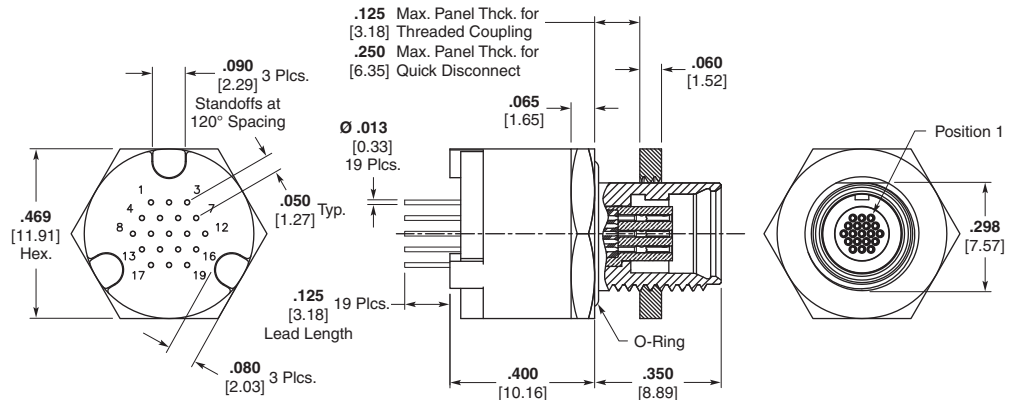


### Product Facts

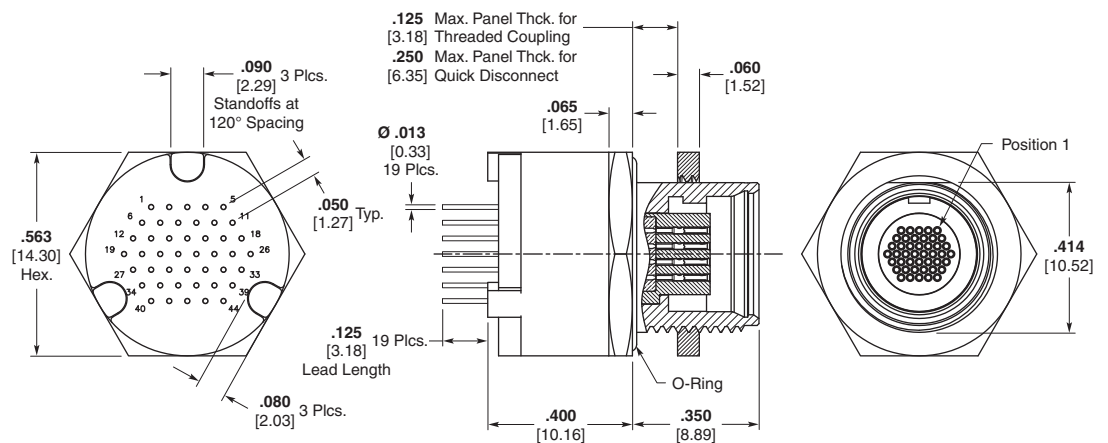
- Metal Shell
- Positions: 7, 19 and 44
- Bulkhead O-ring seal
- Mates with Quick Disconnect Plug and Threaded Coupling Plug
- Contact TE Connectivity for custom configurations



Receptacle Assembly 7 Position  
Drawing Number 1589953



Receptacle Assembly 19 Position  
Drawing Number 1589954



Receptacle Assembly 44 Position  
Drawing Number 1589955

## Part Numbering Guideline for NANONICS Board Mount Termination Circular Connectors

### Circular Connectors - Board Mount Terminations

| Class/Type                            | QCM | XXX | M5            | P | Mounting            |
|---------------------------------------|-----|-----|---------------|---|---------------------|
| QCM Quick Disconnect, Circular, Metal |     |     |               | P | Rear Panel Mount    |
| Positions                             |     |     | Configuration |   |                     |
| 007 7 Position                        |     |     | M5            |   | Vertical, Thru-Hole |
| 019 19 Position                       |     |     |               |   |                     |
| 044 44 Position                       |     |     |               |   |                     |

## Part Number Index Cross Reference

| NANONICS<br>Part Number | Tyco Electronics<br>Part Number | NANONICS<br>Part Number | Tyco Electronics<br>Part Number | NANONICS<br>Part Number  | Tyco Electronics<br>Part Number | NANONICS<br>Part Number | Tyco Electronics<br>Part Number |
|-------------------------|---------------------------------|-------------------------|---------------------------------|--------------------------|---------------------------------|-------------------------|---------------------------------|
| <b>Quick Disconnect</b> |                                 | QCM019PC2DCC10          | 1-1589057-1                     | QCM044SC2DC019PB         | 0-1589695-1                     | TCM044PC2DC036          | 0-1589065-8                     |
| QCM007PC2DC003          | 0-1589055-1                     | QCM019PC2DMC150         | 1-1589057-2                     | QCM044SC2DC020F          | 0-1589690-1                     | TCM044PC2DC036B         | 0-1589694-5                     |
| QCM007PC2DC006          | 0-1589055-2                     | QCM019PC2DMC150B        | 0-1589692-4                     | QCM044SC2DC020P          | 1-1589062-2                     | TCM044PC2DC020B         | 0-1589694-7                     |
| QCM007PC2DC006B         | 0-1589691-5                     | QCM019PC2DMC46          | 0-1589057-8                     | QCM044SC2DC024F          | 0-1589690-8                     | TCM044PC2DM036          | 1-1589065-1                     |
| QCM007PC2DC012          | 0-1589055-3                     | QCM019PC2DMM01          | 1-1589057-0                     | QCM044SC2DC024P          | 1-1589062-6                     | TCM044PC2DM120          | 1-1589065-6                     |
| QCM007PC2DC012B         | 0-1589691-1                     | QCM019PC2DXC30          | 0-1589057-9                     | QCM044SC2DC036P          | 0-1589062-5                     | TCM044PC2DM120B         | 0-1589694-6                     |
| QCM007PC2DC018B         | 0-1589691-2                     | QCM019SC0DC012F         | 0-1589058-1                     | QCM044SC2DC060F          | 0-1589690-6                     | TCM044PC2DMC46          | 1-1589065-0                     |
| QCM007PC2DC020          | 0-1589055-6                     | QCM019SC0DC036P         | 1-1589061-4                     | QCM044SC2DC080P          | 1-1589062-1                     |                         |                                 |
| QCM007PC2DC020B         | 0-1589691-9                     | QCM019SC0DCC15P         | 0-1589061-1                     | QCM044SC2DC180F          | 0-1589690-2                     |                         |                                 |
| QCM007PC2DC028          | 1-1589055-3                     | QCM019SC0DM012F         | 1-1589058-7                     | QCM044SC2DM036P          | 0-1589062-9                     |                         |                                 |
| QCM007PC2DC036B         | 0-1589691-3                     | QCM019SC0DM072F         | 0-1589058-2                     | QCM044SC2DM120P          | 1-1589062-0                     |                         |                                 |
| QCM007PC2DC040          | 0-1589055-8                     | QCM019SC0DMC30P         | 1-1589061-2                     | QCM044SC2DMC16P          | 0-1589062-6                     |                         |                                 |
| QCM007PC2DC072          | 0-1589055-9                     | QCM019SC0DXC15P         | 0-1589061-2                     | QCM044SC2DMC46P          | 0-1589062-7                     |                         |                                 |
| QCM007PC2DCC20B         | 0-1589691-6                     | QCM019SC2DC003F         | 1-1589058-8                     | QCM044SC2DMC50P          | 1-1589062-7                     |                         |                                 |
| QCM007PC2DCC30          | 1-1589055-0                     | QCM019SC2DC003P         | 0-1589061-3                     | QCM044SC3DC012F          | 0-1589690-7                     |                         |                                 |
| QCM007PC2DCC50B         | 1-1589691-0                     | QCM019SC2DC006F         | 0-1589058-3                     |                          |                                 |                         |                                 |
| QCM007PC2DCM01          | 1-1589055-4                     | QCM019SC2DC006P         | 0-1589061-4                     | <b>Threaded Coupling</b> |                                 |                         |                                 |
| QCM007PC2DCM02          | 1-1589055-8                     | QCM019SC2DC012F         | 1-1589058-6                     | TCM007PC2DC003           | 0-1589063-1                     |                         |                                 |
| QCM007PC2DCM03          | 1-1589055-5                     | QCM019SC2DC012P         | 0-1589061-5                     | TCM007PC2DC006           | 0-1589063-2                     |                         |                                 |
| QCM007PC2DMC150         | 1-1589055-6                     | QCM019SC2DC018F         | 0-1589058-4                     | TCM007PC2DC006B          | 0-1589686-2                     |                         |                                 |
| QCM007PC2DMC150B        | 0-1589691-7                     | QCM019SC2DC020F         | 0-1589058-5                     | TCM007PC2DC012           | 0-1589063-4                     |                         |                                 |
| QCM007PC2DMC46          | 1-1589055-1                     | QCM019SC2DC020P         | 0-1589061-6                     | TCM007PC2DC012B          | 0-1589686-3                     |                         |                                 |
| QCM007PC2DMC50          | 1-1589055-7                     | QCM019SC2DC024P         | 1-1589061-5                     | TCM007PC2DC018B          | 0-1589686-4                     |                         |                                 |
| QCM007PC2DMC50B         | 0-1589691-8                     | QCM019SC2DC036P         | 0-1589061-7                     | TCM007PC2DC020           | 0-1589063-9                     |                         |                                 |
| QCM007PC2DX006B         | 0-1589691-4                     | QCM019SC2DC180F         | 1-1589058-4                     | TCM007PC2DC036           | 0-1589063-7                     |                         |                                 |
| QCM007SC2DC003P         | 0-1589060-1                     | QCM019SC2DCC30P         | 0-1589061-8                     | TCM007PC2DCM02           | 1-1589063-0                     |                         |                                 |
| QCM007SC2DC004P         | 0-1589060-2                     | QCM019SC2DM006PB        | 0-1589687-2                     | TCM007PC2DM003           | 0-1589063-8                     |                         |                                 |
| QCM007SC2DC006F         | 0-1589056-1                     | QCM019SC2DM024P         | 1-1589061-6                     | TCM007PC2DM006B          | 0-1589686-1                     |                         |                                 |
| QCM007SC2DC006P         | 0-1589060-3                     | QCM019SC2DM027PB        | 0-1589687-1                     | TCM007PC2DYC10B          | 0-1589686-5                     |                         |                                 |
| QCM007SC2DC012P         | 0-1589060-4                     | QCM019SC2DM036P         | 1-1589061-0                     | TCM007PC2DYM01B          | 0-1589686-6                     |                         |                                 |
| QCM007SC2DC012PB        | 0-1589685-2                     | QCM019SC2DMC05F         | 1-1589058-5                     | TCM019PC0DC036           | 1-1589064-5                     |                         |                                 |
| QCM007SC2DC018PB        | 0-1589685-3                     | QCM019SC2DMC16F         | 0-1589058-6                     | TCM019PC0DCC10           | 0-1589064-1                     |                         |                                 |
| QCM007SC2DC020F         | 0-1589056-2                     | QCM019SC2DMC30P         | 1-1589061-3                     | TCM019PC0DXC10           | 0-1589064-2                     |                         |                                 |
| QCM007SC2DC020P         | 1-1589060-1                     | QCM019SC2DMC46F         | 0-1589058-7                     | TCM019PC2DC003           | 0-1589064-3                     |                         |                                 |
| QCM007SC2DC036P         | 0-1589060-7                     | QCM019SC2DXC30F         | 0-1589058-8                     | TCM019PC2DC006           | 0-1589064-4                     |                         |                                 |
| QCM007SC2DC036PB        | 0-1589685-4                     | QCM019SC2DXC30P         | 0-1589061-9                     | TCM019PC2DC006B          | 0-1589688-2                     |                         |                                 |
| QCM007SC2DCC15F         | 0-1589056-9                     | QCM019SC4DX006P         | 1-1589061-1                     | TCM019PC2DC012           | 0-1589064-6                     |                         |                                 |
| QCM007SC2DCC15P         | 1-1589060-4                     | QCM044PC2DC003          | 0-1589059-1                     | TCM019PC2DC012B          | 0-1589688-3                     |                         |                                 |
| QCM007SC2DCC20F         | 0-1589056-7                     | QCM044PC2DC006          | 0-1589059-2                     | TCM019PC2DC020           | 1-1589064-4                     |                         |                                 |
| QCM007SC2DCC30F         | 0-1589056-3                     | QCM044PC2DC006B         | 0-1589693-1                     | TCM019PC2DC024           | 0-1589064-8                     |                         |                                 |
| QCM007SC2DCC30P         | 0-1589060-9                     | QCM044PC2DC012          | 0-1589059-4                     | TCM019PC2DC036           | 0-1589064-9                     |                         |                                 |
| QCM007SC2DM003P         | 1-1589060-0                     | QCM044PC2DC012B         | 0-1589693-2                     | TCM019PC2DC060B          | 0-1589688-4                     |                         |                                 |
| QCM007SC2DM006PB        | 0-1589685-5                     | QCM044PC2DC020          | 0-1589059-6                     | TCM019PC2DC066           | 1-1589064-1                     |                         |                                 |
| QCM007SC2DM050PB        | 0-1589685-1                     | QCM044PC2DC030          | 0-1589059-7                     | TCM019PC2DCC30           | 1-1589064-2                     |                         |                                 |
| QCM007SC2DMC05F         | 0-1589056-8                     | QCM044PC2DC036          | 1-1589059-1                     | TCM019PC2DM006B          | 0-1589688-1                     |                         |                                 |
| QCM007SC2DMC16F         | 0-1589056-4                     | QCM044PC2DC040          | 1-1589059-2                     | TCM019PC2DM024           | 1-1589064-6                     |                         |                                 |
| QCM007SC2DMC46F         | 0-1589056-5                     | QCM044PC2DC050          | 1-1589059-0                     | TCM019PC2DM036           | 1-1589064-3                     |                         |                                 |
| QCM007SC2DX006F         | 0-1589056-6                     | QCM044PC2DC060B         | 0-1589693-3                     | TCM044PC0DM036           | 1-1589065-3                     |                         |                                 |
| QCM007SC2DYC15P         | 1-1589060-2                     | QCM044PC2DC120B         | 0-1589693-4                     | TCM044PC0DM048           | 1-1589065-4                     |                         |                                 |
| QCM007SC2DYM02P         | 1-1589060-5                     | QCM044PC2DC180B         | 0-1589693-5                     | TCM044PC0DM060           | 1-1589065-5                     |                         |                                 |
| QCM007SC2DYM1.5P        | 1-1589060-3                     | QCM044SC0DM036P         | 1-1589062-1                     | TCM044PC2DC003           | 0-1589065-1                     |                         |                                 |
| QCM019PC0DC012          | 0-1589057-1                     | QCM044SC0DM048P         | 1-1589062-4                     | TCM044PC2DC006           | 0-1589065-2                     |                         |                                 |
| QCM019PC0DM072B         | 0-1589692-1                     | QCM044SC0DM060P         | 1-1589062-5                     | TCM044PC2DC006B          | 0-1589694-1                     |                         |                                 |
| QCM019PC2DC003          | 0-1589057-3                     | QCM044SC2DC003P         | 0-1589062-1                     | TCM044PC2DC012           | 0-1589065-4                     |                         |                                 |
| QCM019PC2DC006          | 0-1589057-4                     | QCM044SC2DC006F         | 0-1589690-3                     | TCM044PC2DC012B          | 0-1589694-2                     |                         |                                 |
| QCM019PC2DC006B         | 0-1589692-3                     | QCM044SC2DC006P         | 0-1589062-2                     | TCM044PC2DC018B          | 0-1589694-3                     |                         |                                 |
| QCM019PC2DC012          | 0-1589057-5                     | QCM044SC2DC012F         | 0-1589690-4                     | TCM044PC2DC019B          | 0-1589694-4                     |                         |                                 |
| QCM019PC2DC020          | 0-1589057-6                     | QCM044SC2DC012P         | 0-1589062-3                     | TCM044PC2DC020           | 1-1589065-2                     |                         |                                 |
| QCM019PC2DC020B         | 0-1589692-5                     | QCM044SC2DC018F         | 0-1589690-5                     | TCM044PC2DC020B          | 0-1589694-8                     |                         |                                 |
| QCM019PC2DC120B         | 0-1589692-2                     | QCM044SC2DC018P         | 0-1589062-8                     | TCM044PC2DC024           | 1-1589065-7                     |                         |                                 |

## Table of Contents

### General Purpose Rectangular (GPR) Connectors

|                                                     |               |
|-----------------------------------------------------|---------------|
| Introduction                                        | .8-3 to 8-5   |
| Performance Characteristics                         | .8-6          |
| GPRA1 Shell Descriptive Part Numbers and Dimensions | .8-7, 8-8     |
| GPRB1 Shell Descriptive Part Numbers and Dimensions | .8-9, 8-10    |
| GPRB2 Horizontal Shells                             | .8-11 to 8-14 |
| GPRB2 Vertical (Square) Shells                      | .8-15         |
| Insert Descriptive Part Numbers                     | .8-16 to 8-21 |
| Insert Arrangements                                 | .8-22, 8-23   |
| Insert Assemblies for High Speed Applications       | .8-24 to 8-27 |
| Contacts & Application Tools                        | .8-28, 8-29   |
| Spare Parts & Tools                                 | .8-30         |
| EMI Backshells & Strain Reliefs                     | .8-31         |
| Gallery Insert (GAIN) Connectors                    | .8-32         |
| Custom Shells (4 cavity)                            | .8-33         |
| Custom Solutions & In Development Products          | .8-34         |

### AMPLIMITE Subminiature Connectors

|                                                                            |                |
|----------------------------------------------------------------------------|----------------|
| Introduction                                                               | .8-35, 8-36    |
| Series 109 Standard Density Connectors                                     | .8-37 to 8-59  |
| Coax Mix Connectors                                                        | .8-60 to 8-66  |
| Series 90 Connectors                                                       | .8-67 to 8-80  |
| ULTRA-LITE Connectors                                                      | .8-81 to 8-86  |
| Application Tooling                                                        | .8-87          |
| Mating and Mounting Specifications for Series 109 and Series 90 Connectors | .8-88          |
| PCB Layouts                                                                | .8-89 to 8-92  |
| Accessories                                                                | .8-93 to 8-96  |
| Part Number Cross References                                               | .8-97 to 8-103 |

### High Density Rectangular Connectors

|                                         |                 |
|-----------------------------------------|-----------------|
| Introduction                            | .8-104          |
| Contacts                                | .8-105          |
| Housings                                | .8-106 to 8-108 |
| Printed Circuit Board Connector         | .8-109          |
| Preloaded Housings for Automatic Wiring | .8-110 to 8-112 |
| Accessories                             | .8-113, 8-114   |
| Application Tooling                     | .8-115, 8-116   |

## Table of Contents (Continued)

### MTC High-Performance Modular Rectangular Connectors with Removable Contacts

|                                                      |                |
|------------------------------------------------------|----------------|
| Introduction                                         | 8-117          |
| 20-Cavity Inserts                                    | 8-118, 8-119   |
| 5-Cavity Inserts                                     | 8-120          |
| Hybrid Inserts                                       | 8-121          |
| MTC Shells Ordering Information                      | 8-122          |
| Accessories                                          | 8-123          |
| MTCR Size 12 Connectors                              | 8-124, 8-125   |
| EME Shielding Accessories for MTC Connectors         | 8-126, 8-127   |
| MTC Boxmount Connectors                              | 8-128          |
| MTC Selection Guide                                  | 8-129          |
| MTC100 Connectors                                    | 8-130, 8-131   |
| MTC50 Connectors                                     | 8-132, 8-133   |
| MTCP 20 Cavity Inserts                               | 8-134          |
| MTCT High Performance Modular Rectangular Connectors | 8-135, 8-136   |
| Screening                                            | 8-137          |
| Application and Installation                         | 8-138 to 8-140 |

### “G” Series Modular Connectors

|                                        |                |
|----------------------------------------|----------------|
| Introduction                           | 8-141, 8-142   |
| Module Specifications                  | 8-143          |
| Multimate Contacts, Type I             | 8-143          |
| Signal Contacts, Type II and Type III+ | 8-144, 8-145   |
| Multimate Contacts                     |                |
| Type VI Contacts                       | 8-146          |
| Type XII Power Contacts                | 8-147          |
| Miniature Coaxicon Contacts            | 8-148          |
| Selection Charts                       | 8-149          |
| Coaxial Contacts                       | 8-150, 8-151   |
| Shell Specifications                   | 8-152 to 8-154 |
| Accessories                            | 8-155          |
| Application Tooling                    | 8-156 to 8-158 |

### Terminal Junction System (MIL-T-81714 and Commercial)

|                                                                 |                |
|-----------------------------------------------------------------|----------------|
| Introduction                                                    | 8-159          |
| Performance Specifications                                      | 8-160          |
| Contacts, Sealing Plugs and Assembly Tools                      | 8-160          |
| Feedback Terminal Junction Modules                              | 8-161 to 8-163 |
| Feedthru Terminal Junction Modules                              | 8-161, 8-165   |
| Feedback Grounding Flange Modules                               | 8-166          |
| Wire Splices                                                    | 8-167          |
| Electronic Module Blocks and Splices                            | 8-168 to 8-170 |
| Commercial Electronic Splices                                   | 8-171          |
| Electronic Module Blocks and Splices Part Numbering Information | 8-172          |
| Military Cross Reference                                        | 8-173 to 8-179 |

## Introduction



- |                                                                        |                                                                              |                                                                        |
|------------------------------------------------------------------------|------------------------------------------------------------------------------|------------------------------------------------------------------------|
| <b>1</b> Custom 4-cavity receptacle shell                              | <b>5</b> F12 ARINC 801 sleeve holder                                         | <b>9</b> Custom 40 position pin insert with PC tail contacts installed |
| <b>2</b> GPRB2 vertical shell & strain relief assembly                 | <b>6</b> Size 22 posted PC tail pin, Size 20 crimp pin, Size 5 Coax contacts | <b>10</b> GPRA plug shell assembly and 14M socket insert assembly      |
| <b>3</b> GPRB2 GAIN shell - with spring-loaded, floatmounting design   | <b>7</b> GPRB2 receptacle shell, with 30 & 40 position inserts installed     | <b>11</b> GPRA 14M pin insert assembly                                 |
| <b>4</b> GPRB1 plug shell w/F12 ARINC 801 insert and termini installed | <b>8</b> 30 position insert with terminated Size 20 Pin contacts installed   |                                                                        |

This product is sold by TE under license from Radiall S.A.



## Introduction

### Product Facts

- **A high density solution compared to circular connectors**
  - Slim shell design with high contact density
  - Stackable shells that do not require additional space for locking and unlocking the connectors
  - Uses two to three times less space
- **A versatile solution suitable for disconnect panels or equipment with three mounting styles:**
  - Rack
  - Cable to cable
  - Panel mounting
- **A modular concept with a large variety of options**
  - Shell can accommodate a wide variety of inserts for signal, power, coax, data bus and fiber optic contacts
  - Optional grounding blocks (to meet FAA HIRF requirements)
  - Pin and socket inserts can be mounted on either plug or receptacle shells
- **A cost savings and user friendly solution**
  - Inserts can be wired in the shop and later installed in the shells
  - A common panel cut out eases the connector installation and reduces cost
  - Inserts can be easily installed and removed from the shell
  - Inserts and shells are keyed to prevent mismatching
  - Standard MIL tools for contact crimping and contact insertion/extraction
  - Field replaceable subassemblies
  - Vibration resistant self-locking threads

### A Smart Connector

The General Purpose Rectangular A & B Series connectors complement our ARINC connectors and provide additional flexibility with improved performance in a smaller mating area compared to standard circular Mil-Spec connectors.

The GPRA and GPRB series offer a wide range of solutions based on two insert sizes, a large variety of shells and contacts. GPRA inserts are a good option for low density applications whereas GPRB inserts offer twice the density of GPRA inserts. In addition, the concept is completely modular and expandable.

They can also be easily tailored for custom requirements, such as shell modifications for additional inserts.

### Technical Documents

#### Product Specification:

108-2398

#### Test Report:

501-734

### New Features

#### Connector Interface

#### Connectors for Galley Insert (GAIN) Equipment:

- Page 8-32 lists the GPRB2 shells, insert arrangements, contacts, seal plugs, strain reliefs and cable that will be used, per ARINC 810. This is the standard connector interface for new galley equipment such as ovens and beverage makers for new commercial aircraft. This includes the twin-axial cable and contacts needed for the CANbus data bus system used for GAIN

#### Shells

##### GPRB1

- Shells have been improved to a greater level of performance under vibration. Also EMI performance has been maintained while eliminating the need for separate EMI springs.

#### Contacts

Size 22 Socket Contact with integral spring clip

An economy version socket contact is available for size 22 contacts and uses M39029 style interface.

### Insert Arrangements

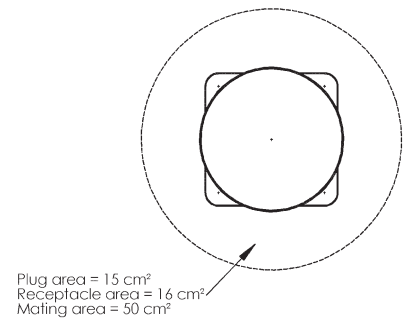
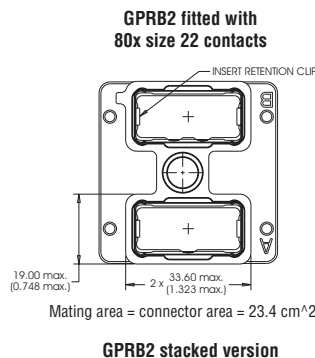
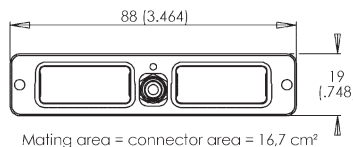
- New insert configurations for high speed data transmission - both fiber and quadax
- GPRB - Fiber Optics
  - F12 - holds up to 12 ARINC 801 fiber optic termini (see page 8-24)
  - M2 - holds two 4-channel Mini-Expanded Beam inserts (see page 8-25)
- GPRB - Quadax/Twinax
  - These size 8 quadax contacts can be used in three insert arrangements - 10Q2, 25Q1 and 3Q3

These feature the exclusive TE one-piece dielectric that makes our quadax and twinax contacts the easiest to install. If sealing is required with quadax or twinax contacts, there is a size 8 seal boot assembly available (see page 8-30). Use of this seal boot provides 50,000 foot altitude immersion protection as tested per Boeing Spec BPS-C-179.

- GPRB - Power
  - These inserts all accommodate Size 5 Power Contacts - P3, 13P1, 20P1 and 25P1
- GPRB - Signal
  - Features 48 Size 22 contacts in a standard GPRB insert

#### Note:

Quadax contacts available for use are listed in our Quadax catalog #1654012.



MIL-C-38999 21-35 fitted with 79x size 22 contacts

## Introduction (Continued)

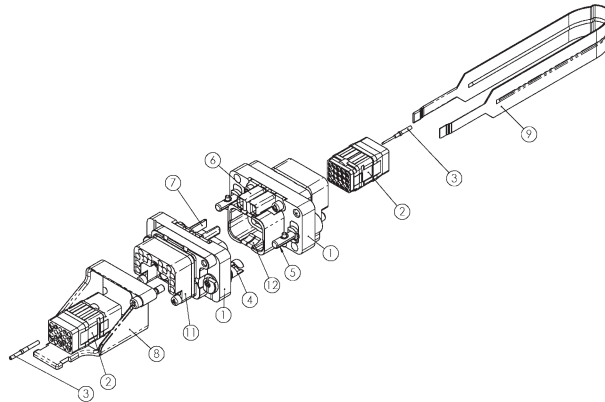
### GPRA1

2 quarter-turn fasteners

16 keying positions

Max. density:

20 x 22 contacts



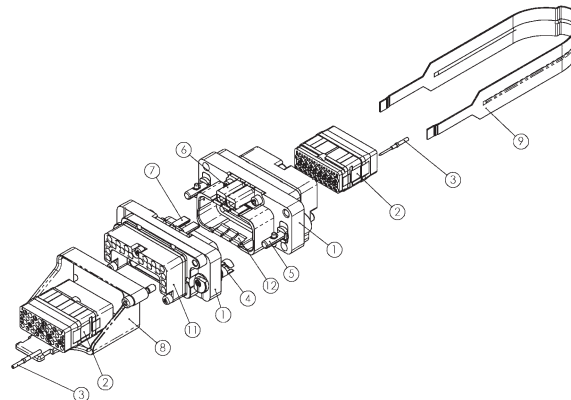
### GPRB1

2 quarter-turn fasteners

16 keying positions

Max. density:

40 x 22 contacts



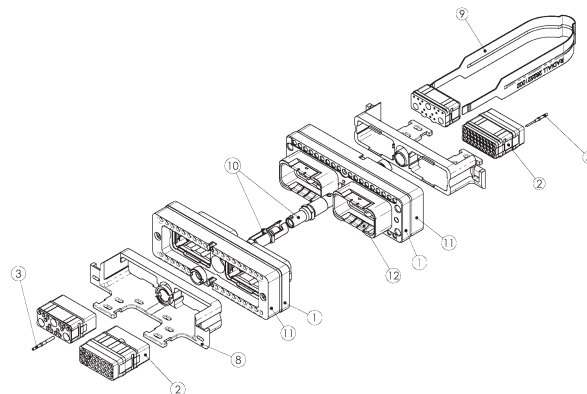
### GPRB2

1 central jackscrew/jacknut

12 keying positions

Max. density:

80 x 22 contacts



- |                           |                                    |
|---------------------------|------------------------------------|
| ① shell                   | ⑧ backshell                        |
| ② insert                  | ⑨ insert insertion/extraction tool |
| ③ contact                 | ⑩ locking & polarization device    |
| ④ & ⑤ locking device      | ⑪ grounding block                  |
| ⑥ & ⑦ polarization device | ⑫ grounding springs                |

## Performance Characteristics

### Contacts

Electrical characteristics conform to MIL-C-39029 Type A

### Electrical Characteristics Grounding Block Contact

|                             | Contact with Wire Size | Current Amps |
|-----------------------------|------------------------|--------------|
| Contact to Contact          | Contact + 20 AWG       | 7.5          |
| Contact to Mounting Surface | Contact + 20 AWG       | 7.5          |

### Contacts

| Contact Size   |        | Size of Conductors<br>standard cables | Outer Dia. of<br>Cables (mm) |      | Current<br>(A) per<br>Contact |
|----------------|--------|---------------------------------------|------------------------------|------|-------------------------------|
| Contact        | Barrel |                                       | Min.                         | Max. |                               |
| 22             | 22     | 22                                    | 0.86                         | 1.45 | 5                             |
|                |        | 24                                    | 0.86                         | 1.45 | 3                             |
|                |        | 26                                    | 0.86                         | 1.45 | 2                             |
| 20             | 20     | 20                                    | 1.02                         | 1.80 | 7.5                           |
|                |        | 22                                    | 1.02                         | 1.80 | 5                             |
|                |        | 24                                    | 1.02                         | 1.80 | 3                             |
| 18             | 16     | 16                                    | 1.73                         | 2.62 | 13                            |
|                |        | 18                                    | 1.73                         | 2.62 | 13                            |
|                |        | 20                                    | 1.73                         | 2.62 | 7.5                           |
| 12             | 12     | 12                                    | 2.46                         | 3.43 | 23                            |
|                |        | 14                                    | 2.46                         | 3.43 | 17                            |
| 8              | 8      | 8                                     | 4.80                         | 5.75 | 46                            |
| 5 <sup>1</sup> | 8      | 8                                     | 4.80                         | 5.75 | 80                            |
|                |        | 10                                    | 4.80                         | 5.75 | 33                            |

<sup>1</sup> Size 5 contacts are not part of MIL-C-39029 type A.

### EMI Shielding Effectiveness

| Frequency (MHz) | Leakage Attenuation (dB) |
|-----------------|--------------------------|
| 100             | 65                       |
| 200             | 63                       |
| 300             | 63                       |
| 400             | 62                       |
| 500             | 60                       |
| 600             | 60                       |

### Mechanical Characteristics

**Mating/Unmating Durability** — 100 cycles

**Mating Torque for GPRB2 Jackscrew** — 1.2 Nm [11 in. lbs.]

**Random Vibration** —

GPRA & legacy GPRB1 — 20g (MIL-STD-1344/Method 2005.1, test condition 4)

GPRB1 (new aluminum & composite versions) & GPRB2 — random vibration, 26.4g (rms) (MIL-STD-1344/Method 2005.1, test condition 6, letter G)

**Shock** — 50g (MIL-STD-1344/Method 2004.1, test condition A)

### Environmental Characteristics

**Temperature Range** — -65°C to +175°C [-85°F to +347°F]

**Temperature Life** — 1000 h @ 155°C [311°F]

**Salt Spray** — 96 hours (nickel plating) (MIL-STD-1344/Method 1001.1, test condition A)

**Humidity** — 10 days

**Altitude Immersion** — 3 cycles at 15,240 m [50,000 ft.] (MIL-STD-1344/Method 1004.1)

**Fluid Immersion** — (MIL-STD-1344/Method 1016)

### Dielectric Withstanding Voltage (MIL-STD-1344/Method 3001.1.1 with Leakage Current < 1 mΩ)

| Level                  | Voltage (VRMS) |
|------------------------|----------------|
| Sea level              | 1500           |
| 15,240 m [50,000 feet] | 800            |

### Insulation Resistance (MIL-STD-1344/Method 3003.1)

|                     |            |
|---------------------|------------|
| Ambient Temperature | > 5,000 MΩ |
| 175°C [347°F]       | > 200 MΩ   |

### Other Characteristics

**Shell to Shell Conductivity** — < 2.5 mΩ

**Operating Voltage** — 400 Vrms or 500 Vdc at sea level

**Voltage Stability (Ground Block)** — Maximum variation 4mV (MIL-T-81714)

**Magnetic Permeability** — < 2

**Comparative Tracking Index** — 250 V

### Contact Retention — (MIL-STD-1344/Method 2007.1 on terminated connectors)

| Contact Size | Retention Force |           | Max. Displacement  |
|--------------|-----------------|-----------|--------------------|
| Ground Block | 88 N            | [20 lbs.] | 0.3 mm [.012 in.]  |
| 22           | 53.4 N          | [12 lbs.] | 0.38 mm [.015 in.] |
| 20           | 89 N            | [20 lbs.] | 0.38 mm [.015 in.] |
| 16           | 111.2 N         | [25 lbs.] | 0.38 mm [.015 in.] |
| 12           | 133.45 N        | [30 lbs.] | 0.38 mm [.015 in.] |

### Insert Retention — 500 N [112 lbs.] (MIL-STD-1344/Method 2010.1)

## GPRA1 Shell Descriptive Part Number Format

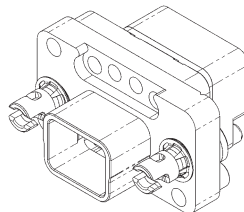
### Descriptive Part Numbering System

Use this guide to construct descriptive part numbers for GPRA1 shells. Refer to table below for the corresponding TE Connectivity Part Number.

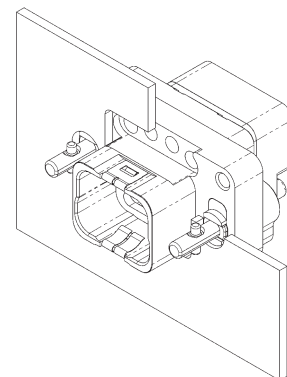
|                                                                                                          | GPRA | 1 | P | B | 0 | 4 | N |
|----------------------------------------------------------------------------------------------------------|------|---|---|---|---|---|---|
| <b>I – GPRA Series</b>                                                                                   |      |   |   |   |   |   |   |
| <b>II – Shell Size</b>                                                                                   |      |   |   |   |   |   |   |
| 1 — Shell size 1 (1 cavity shell)                                                                        |      |   |   |   |   |   |   |
| <b>III – Shell Style</b>                                                                                 |      |   |   |   |   |   |   |
| P — Plug                                                                                                 |      |   |   |   |   |   |   |
| R — Receptacle                                                                                           |      |   |   |   |   |   |   |
| W — Plug with grounding block                                                                            |      |   |   |   |   |   |   |
| Z — Receptacle with grounding block and grounding springs                                                |      |   |   |   |   |   |   |
| <b>IV – Modification Code</b>                                                                            |      |   |   |   |   |   |   |
| B — No mounting holes (for plug only)                                                                    |      |   |   |   |   |   |   |
| M — Panel rear mounted connector with 2 x 6.32 UNC mounting holes for receptacle shell only (see note 1) |      |   |   |   |   |   |   |
| <b>V – Locking Device</b>                                                                                |      |   |   |   |   |   |   |
| 0 — Quarter-turn fastener                                                                                |      |   |   |   |   |   |   |
| <b>VI – Polarization Code</b>                                                                            |      |   |   |   |   |   |   |
| 4 — Shell delivered with polarizing hardware unassembled                                                 |      |   |   |   |   |   |   |
| 5 — Shell delivered with no polarizing hardware                                                          |      |   |   |   |   |   |   |
| <b>VII – Shell Material/Plating</b>                                                                      |      |   |   |   |   |   |   |
| N — Nickel plating (96H Salt spray)                                                                      |      |   |   |   |   |   |   |

Note 1: Self-locking mounting holes are designed for rear panel mounting.

| Size | Style                                                | Modification                              | Locking Device    | Polarization Hardware             | Plating | Descriptive Part Number | TE Part Number |
|------|------------------------------------------------------|-------------------------------------------|-------------------|-----------------------------------|---------|-------------------------|----------------|
| 1    | Plug                                                 | No mounting holes                         | 1/4-Turn Fastener | Kit: Shell & Hardware Unassembled | Nickel  | GPRA1PB04N              | 1738228-1      |
|      |                                                      |                                           |                   | No Hardware                       |         | GPRA1PB05N              | 1738229-1      |
|      | Plug, with Grounding Block                           |                                           |                   | Kit: Shell & Hardware Unassembled |         | GPRA1WB04N              | 1738230-1      |
|      |                                                      |                                           |                   | No Hardware                       |         | GPRA1WB05N              | 1738231-1      |
|      | Receptacle                                           | Rear Panel Mount, with two 6-32 UNC holes |                   | Kit: Shell & Hardware Unassembled |         | GPRA1RM04N              | 1738232-1      |
|      |                                                      |                                           |                   | No Hardware                       |         | GPRA1RM05N              | 1738233-1      |
|      | Receptacle, with Grounding Block & Grounding Springs |                                           |                   | Kit: Shell & Hardware Unassembled |         | GPRA1ZM04N              | 1738234-1      |
|      |                                                      |                                           |                   | No Hardware                       |         | GPRA1ZM05N              | 1738235-1      |

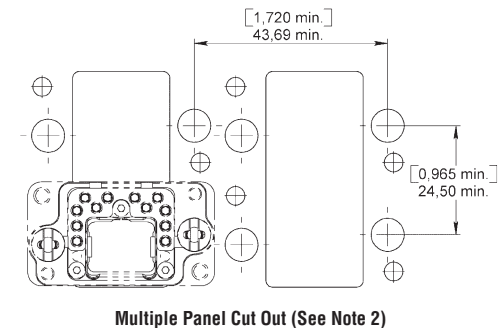
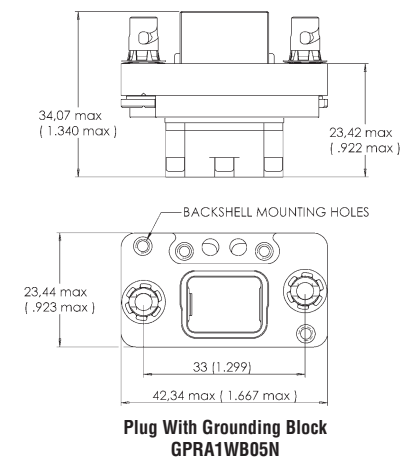
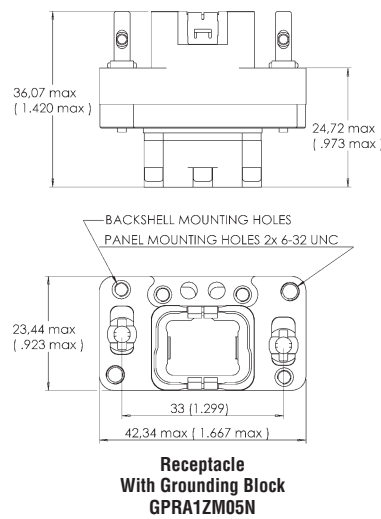
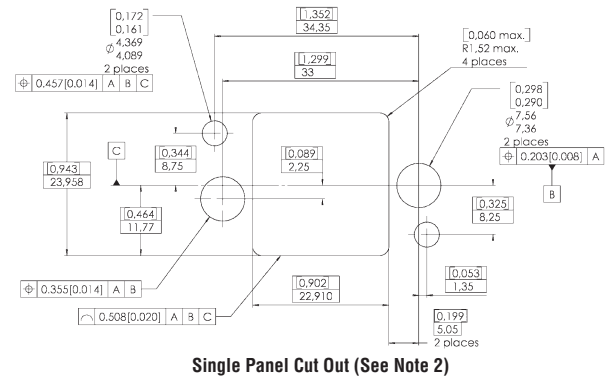
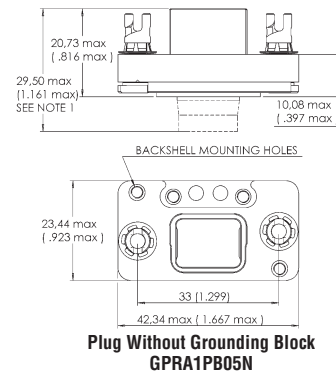
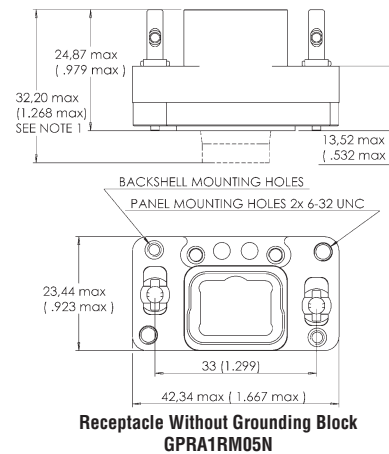


GPRA1WB05N



GPRA1ZM05N  
Panel Rear Mounted Connector

## GPRA1 Shell Dimensions



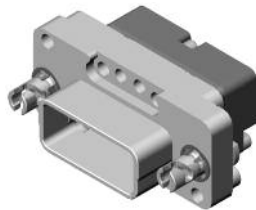
**Note 1:** Maximum dimension for inserts with grommets (Part Number GPRAE and GPRAH)  
**Note 2:** Rear mounting side view with key post oriented to the upper side (receptacle only)

## GPRB1 Shell Descriptive Part Number Format

### Descriptive Part Numbering System

Use this guide to construct descriptive part numbers for GPRB1 shells. Refer to table below for the corresponding TE Part Number.

Note: Legacy designs are not backward compatible with the improved B1 shell designs.



GPRB1WB05N

|                                                                                                          | GPRB | 1 | W | B | 0 | 5 | K |
|----------------------------------------------------------------------------------------------------------|------|---|---|---|---|---|---|
| <b>I – GPRB Series</b>                                                                                   |      |   |   |   |   |   |   |
| <b>II – Shell Size</b>                                                                                   |      |   |   |   |   |   |   |
| 1 — Shell size 1 (1 cavity shell)                                                                        |      |   |   |   |   |   |   |
| <b>III – Shell Style</b>                                                                                 |      |   |   |   |   |   |   |
| P — Plug                                                                                                 |      |   |   |   |   |   |   |
| R — Receptacle                                                                                           |      |   |   |   |   |   |   |
| W — Plug with grounding block                                                                            |      |   |   |   |   |   |   |
| Z — Receptacle with ground block and ground fingers                                                      |      |   |   |   |   |   |   |
| <b>IV – Shell Mounting Option</b> (see note 1)                                                           |      |   |   |   |   |   |   |
| B — No mounting holes (for plug only)                                                                    |      |   |   |   |   |   |   |
| M — Panel rear mounted connector with 2 x 6.32 UNC mounting holes for receptacle shell only (see note 2) |      |   |   |   |   |   |   |
| <b>V – Locking Device</b>                                                                                |      |   |   |   |   |   |   |
| 0 — Quarter-turn fastener                                                                                |      |   |   |   |   |   |   |
| <b>VI – Polarization Code</b>                                                                            |      |   |   |   |   |   |   |
| 4 — Shell delivered with polarizing hardware unassembled                                                 |      |   |   |   |   |   |   |
| 5 — Shell delivered with no polarizing hardware                                                          |      |   |   |   |   |   |   |
| <b>VII – Shell Material/Plating</b>                                                                      |      |   |   |   |   |   |   |
| M — Nickel-plated composite                                                                              |      |   |   |   |   |   |   |
| N — Nickel-plated aluminum - Legacy Design                                                               |      |   |   |   |   |   |   |
| K — Nickel-plated aluminum w/Flexible side wall design                                                   |      |   |   |   |   |   |   |

Note 1: Recommended locking torque: 1.6 Nm (14.161 in-lbs) for metallic shell and 1 Nm (8.85 in-lbs) min. 1.1 Nm (9.73 in-lbs) max. for composite shell.

Note 2: Self-locking mounting holes are designed for rear panel mounting.

### Legacy Design - Aluminum

| Size | Style                                                | Modification                              | Locking Device    | Polarization Hardware             | Shell Material | Descriptive Part Number | TE Part Number |
|------|------------------------------------------------------|-------------------------------------------|-------------------|-----------------------------------|----------------|-------------------------|----------------|
| 1    | Plug                                                 | No mounting holes                         | 1/4-Turn Fastener | Kit: Shell & Hardware Unassembled | Aluminum       | GPRB1PB04N              | 1738236-1      |
|      |                                                      |                                           |                   | No Hardware                       |                | GPRB1PB05N              | 1738237-1      |
|      | Plug, with Grounding Block                           |                                           |                   | Kit: Shell & Hardware Unassembled |                | GPRB1WB04N              | 1738238-1      |
|      |                                                      |                                           |                   | No Hardware                       |                | GPRB1WB05N              | 1738239-1      |
|      | Receptacle                                           | Rear Panel Mount, with two 6-32 UNC holes |                   | Kit: Shell & Hardware Unassembled |                | GPRB1RM04N              | 1738240-1      |
|      |                                                      |                                           |                   | No Hardware                       |                | GPRB1RM05N              | 1738241-1      |
|      | Receptacle, with Grounding Block & Grounding Springs |                                           |                   | Kit: Shell & Hardware Unassembled |                | GPRB1ZM04N              | 1738242-1      |
|      |                                                      |                                           |                   | No Hardware                       |                | GPRB1ZM05N              | 1738243-1      |

### Flexible Sidewall Design - Composite & Aluminum

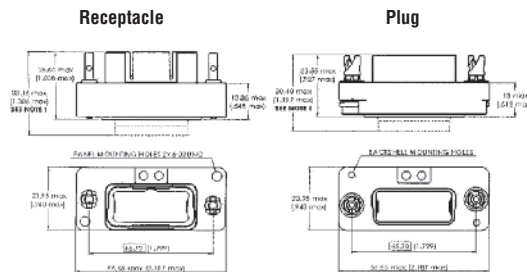
| Size | Style                                                | Modification      | Locking Device    | Polarization Hardware             | Shell Material                            | Descriptive Part Number | TE Part Number |
|------|------------------------------------------------------|-------------------|-------------------|-----------------------------------|-------------------------------------------|-------------------------|----------------|
| 1    | Plug                                                 | No mounting holes | 1/4-Turn Fastener | Kit: Shell & Hardware Unassembled | Composite                                 | GPRB1PB04M              | 1811680-1      |
|      | Plug, with Grounding Block                           |                   |                   |                                   | Aluminum                                  | —                       | —              |
|      |                                                      |                   |                   |                                   | Composite                                 | GPRB1WB04M              | 1954285-1      |
|      | Receptacle                                           |                   |                   |                                   | Rear Panel Mount, with two 6-32 UNC holes | Aluminum                | GPRB1WB04K     |
|      |                                                      | Composite         |                   |                                   |                                           | GPRB1RM04M              | 2000142-1      |
|      | Receptacle, with Grounding Block & Grounding Springs | Aluminum          |                   |                                   |                                           | —                       | —              |
|      |                                                      | Composite         |                   |                                   |                                           | GPRB1ZM04M              | 1954284-1      |
|      |                                                      | Aluminum          |                   |                                   |                                           | GPRB1ZM04K              | 1877945-1      |

## GPRB1 Shell Dimensions - Flexible Sidewall Design

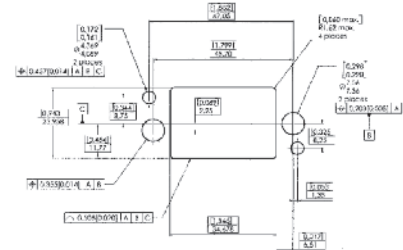
### Product Facts

- A high density solution compared to circular connectors
- Shell-to-shell grounding with integral grounding springs - does not require separate spring clip components
- Improved vibration performance
- New 1/4-turn fastener profile with reduced risk of breakage
- L-shaped keys – easier to install and remove, each face is identified, shape decrease risk of incorrect assembly

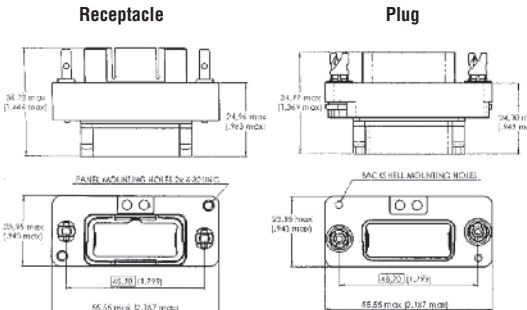
Without grounding block



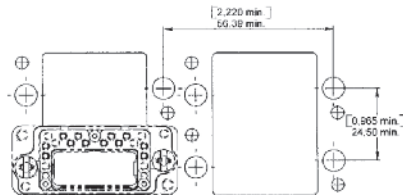
Single panel cut out  
See Note 2



With grounding block



Multiple panel cut out  
See Note 2



Note 1: Maximum dimension for inserts with grommets (Part Number GPRBE and GPRBH)  
For inserts without grommets, max. dimensions will be for the receptacle 25.55 mm - 1.006 in. and for the plug 23.52 mm - .926 in.

For inserts with optical contacts F12 and 12F6, the max. dimensions will be for the receptacle 38.70 mm - 1.524 in. and for the plug 36.00 mm - 1.418 in.

Note 2: Rear mounting side view with key post oriented to the upper side (receptacle only)



## GPRB2 (Horizontal) Shell Descriptive Part Number Format

### Descriptive Part Numbering System

Use this guide to construct descriptive part numbers for GPRB2 shells. Refer to page 8-12 for the corresponding TE Part Number.

|                                                                                | GPRB | 2 | P | B | 1 | 2 | N |
|--------------------------------------------------------------------------------|------|---|---|---|---|---|---|
| <b>I – GPRB Series</b>                                                         |      |   |   |   |   |   |   |
| <b>II – Shell Size</b>                                                         |      |   |   |   |   |   |   |
| 2 — Shell size 2 (2 cavities shell)                                            |      |   |   |   |   |   |   |
| <b>III – Shell Style</b>                                                       |      |   |   |   |   |   |   |
| P — Plug (see note 1)                                                          |      |   |   |   |   |   |   |
| H — Receptacle with grounding springs (see note 1)                             |      |   |   |   |   |   |   |
| W — Plug with grounding block (see note 2)                                     |      |   |   |   |   |   |   |
| Z — Receptacle with grounding block and grounding springs (see note 2)         |      |   |   |   |   |   |   |
| L — Receptacle with flange and grounding springs (see note 1)                  |      |   |   |   |   |   |   |
| <b>IV – Modification Code</b>                                                  |      |   |   |   |   |   |   |
| A — Panel rear mounted connector with 4 x 6.32 UNC mounting holes (see note 3) |      |   |   |   |   |   |   |
| B — No mounting holes                                                          |      |   |   |   |   |   |   |
| F — Panel rear mounted w/2 x 6.32 UNC mounting holes (see note 3)              |      |   |   |   |   |   |   |
| D — Connector with 2 x Ø 3.10 mm thru holes                                    |      |   |   |   |   |   |   |
| L — Panel rear mounted connector with 2 x 4.40 UNC mounting holes (see note 3) |      |   |   |   |   |   |   |
| <b>V – Locking &amp; Polarizing Device</b>                                     |      |   |   |   |   |   |   |
| 1 — Jackscrew (see note 4)                                                     |      |   |   |   |   |   |   |
| 2 — Jacknut (see note 4)                                                       |      |   |   |   |   |   |   |
| 3 — Without locking device (see note 5)                                        |      |   |   |   |   |   |   |
| 4 — Polarizing Guide Post for Rack and Panel application (see note 6)          |      |   |   |   |   |   |   |
| 5 — Polarizing Guide Socket for Rack and Panel application (see note 6)        |      |   |   |   |   |   |   |
| <b>VI – Polarization Code</b>                                                  |      |   |   |   |   |   |   |
| 2 — Polarizing device A to F delivered unassembled (see note 7)                |      |   |   |   |   |   |   |
| 3 — Polarizing device N to Z delivered unassembled (see note 7)                |      |   |   |   |   |   |   |
| <b>VII – Shell Material/Plating</b>                                            |      |   |   |   |   |   |   |
| M — Nickel plated composite *                                                  |      |   |   |   |   |   |   |
| N — Nickel plating (96H Salt spray)                                            |      |   |   |   |   |   |   |

- Notes: 1. The standard modification codes for these shells are B, D or L.  
2. With modification codes A or B only.  
3. Self-locking mounting holes are designed for rear panel mounting.  
4. Jackscrew/Jacknut can be mounted on either plug or receptacle shell. However, the standard options are:  
—Jackscrew for plug shells  
—Jacknut for receptacle shells  
5. Option 3 in paragraph V cancels the polarization code paragraph IV, i.e. the shell is delivered with no polarizing device.  
6. Pin/Socket polarization guides can be mounted on either plug or receptacle shells. However, the standard options are:  
—Pin polarization guide for plug shells  
—Socket polarization guide for receptacle shells  
7. Polarizing device is delivered unassembled, it must be locked with resin by the user (LOCTITE™ 272 must be used).  
—if no polarizing device is required, omit this step and go to VII.

\*Contact TE Connectivity

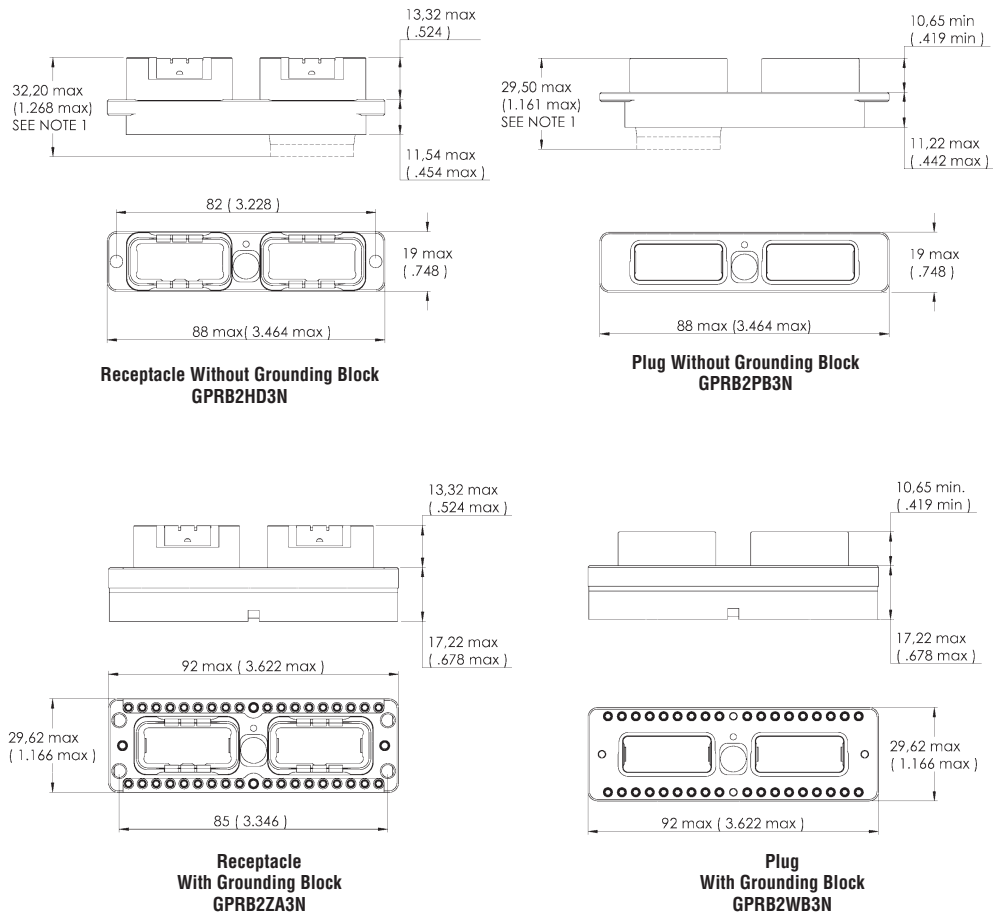
**GPRB2 (Horizontal) Shell Descriptive Part Number Format (Continued)**

| Size | Style                                       | Modification                                 | Locking & Polarization Device | Polarization Hardware                                                          | Plating | Descriptive Part Number | TE Part Number |
|------|---------------------------------------------|----------------------------------------------|-------------------------------|--------------------------------------------------------------------------------|---------|-------------------------|----------------|
| 2    | Plug                                        | No mounting holes                            | N/A                           | N/A                                                                            | Nickel  | GPRB2PB3N               | 1738244-1      |
|      |                                             |                                              | Jackscrow                     | Kit: Shell & A-F Hardware Unassembled<br>Kit: Shell & N-Z Hardware Unassembled |         | GPRB2PB12N              | 1738245-1      |
|      |                                             |                                              | Polarizing Guide Post         | Kit: Shell & A-F Hardware Unassembled<br>Kit: Shell & N-Z Hardware Unassembled |         | GPRB2PB13N              | 1738246-1      |
|      |                                             |                                              | N/A                           | N/A                                                                            |         | GPRB2PB42N              | 1738247-1      |
|      |                                             | Connector with two thru-holes [3.10 mm Dia.] | Jackscrow                     | Kit: Shell & A-F Hardware Unassembled<br>Kit: Shell & N-Z Hardware Unassembled |         | GPRB2PB43N              | 1738248-1      |
|      |                                             |                                              | Polarizing Guide Post         | Kit: Shell & A-F Hardware Unassembled<br>Kit: Shell & N-Z Hardware Unassembled |         | GPRB2PD3N               | 1738249-1      |
|      |                                             |                                              | Jackscrow                     | Kit: Shell & A-F Hardware Unassembled<br>Kit: Shell & N-Z Hardware Unassembled |         | GPRB2PD12N              | 1738250-1      |
|      |                                             |                                              | Polarizing Guide Post         | Kit: Shell & A-F Hardware Unassembled<br>Kit: Shell & N-Z Hardware Unassembled |         | GPRB2PD13N              | 1738251-1      |
|      |                                             | Rear Panel Mount, with two 4-40 UNC holes    | Jackscrow                     | Kit: Shell & A-F Hardware Unassembled<br>Kit: Shell & N-Z Hardware Unassembled |         | GPRB2PD42N              | 1738252-1      |
|      |                                             |                                              | Polarizing Guide Post         | Kit: Shell & A-F Hardware Unassembled<br>Kit: Shell & N-Z Hardware Unassembled |         | GPRB2PD43N              | 1738253-1      |
|      |                                             |                                              | Jackscrow                     | Kit: Shell & A-F Hardware Unassembled<br>Kit: Shell & N-Z Hardware Unassembled |         | GPRB2PL3N               | 1738254-1      |
|      |                                             |                                              | Polarizing Guide Post         | Kit: Shell & A-F Hardware Unassembled<br>Kit: Shell & N-Z Hardware Unassembled |         | GPRB2PL12N              | 1738255-1      |
|      | Plug, with Grounding Block                  | No mounting holes                            | N/A                           | N/A                                                                            |         | GPRB2PL13N              | 1738256-1      |
|      |                                             |                                              | Jackscrow                     | Kit: Shell & A-F Hardware Unassembled<br>Kit: Shell & N-Z Hardware Unassembled |         | GPRB2PL42N              | 1738257-1      |
|      |                                             |                                              | Polarizing Guide Post         | Kit: Shell & A-F Hardware Unassembled<br>Kit: Shell & N-Z Hardware Unassembled |         | GPRB2PL43N              | 1738258-1      |
|      |                                             |                                              | N/A                           | N/A                                                                            |         | GPRB2WB3N               | 1738259-1      |
|      |                                             | Rear Panel Mount, with four 6-32 UNC holes   | Jackscrow                     | Kit: Shell & A-F Hardware Unassembled<br>Kit: Shell & N-Z Hardware Unassembled |         | GPRB2WB12N              | 1738260-1      |
|      |                                             |                                              | Polarizing Guide Post         | Kit: Shell & A-F Hardware Unassembled<br>Kit: Shell & N-Z Hardware Unassembled |         | GPRB2WB13N              | 1738261-1      |
|      |                                             |                                              | Jackscrow                     | Kit: Shell & A-F Hardware Unassembled<br>Kit: Shell & N-Z Hardware Unassembled |         | GPRB2WB42N              | 1738262-1      |
|      |                                             |                                              | Polarizing Guide Post         | Kit: Shell & A-F Hardware Unassembled<br>Kit: Shell & N-Z Hardware Unassembled |         | GPRB2WB43N              | 1738263-1      |
|      |                                             | No mounting holes                            | N/A                           | N/A                                                                            |         | GPRB2WA3N               | 1738264-1      |
|      |                                             |                                              | Jackscrow                     | Kit: Shell & A-F Hardware Unassembled<br>Kit: Shell & N-Z Hardware Unassembled |         | GPRB2WA12N              | 1738265-1      |
|      |                                             |                                              | Polarizing Guide Post         | Kit: Shell & A-F Hardware Unassembled<br>Kit: Shell & N-Z Hardware Unassembled |         | GPRB2WA13N              | 1738266-1      |
|      |                                             |                                              | Jackscrow                     | Kit: Shell & A-F Hardware Unassembled<br>Kit: Shell & N-Z Hardware Unassembled |         | GPRB2WA42N              | 1738267-1      |
|      | Receptacle, with Grounding Springs          | No mounting holes                            | N/A                           | N/A                                                                            |         | GPRB2WA43N              | 1738268-1      |
|      |                                             |                                              | Jacknut                       | Kit: Shell & A-F Hardware Unassembled<br>Kit: Shell & N-Z Hardware Unassembled |         | GPRB2HB3N               | 1738269-1      |
|      |                                             |                                              | Polarizing Guide Socket       | Kit: Shell & A-F Hardware Unassembled<br>Kit: Shell & N-Z Hardware Unassembled |         | GPRB2HB22N              | 1738270-1      |
|      |                                             |                                              | Jacknut                       | Kit: Shell & A-F Hardware Unassembled<br>Kit: Shell & N-Z Hardware Unassembled |         | GPRB2HB23N              | 1738271-1      |
|      |                                             | Connector with two thru-holes [3.10 mm Dia.] | Polarizing Guide Socket       | Kit: Shell & A-F Hardware Unassembled<br>Kit: Shell & N-Z Hardware Unassembled |         | GPRB2HB52N              | 1738272-1      |
|      |                                             |                                              | Jacknut                       | Kit: Shell & A-F Hardware Unassembled<br>Kit: Shell & N-Z Hardware Unassembled |         | GPRB2HB53N              | 1738273-1      |
|      |                                             |                                              | Polarizing Guide Socket       | Kit: Shell & A-F Hardware Unassembled<br>Kit: Shell & N-Z Hardware Unassembled |         | GPRB2HD3N               | 1738274-1      |
|      |                                             |                                              | Jacknut                       | Kit: Shell & A-F Hardware Unassembled<br>Kit: Shell & N-Z Hardware Unassembled |         | GPRB2HD22N              | 1738275-1      |
|      |                                             | Rear Panel Mount, with two 4-40 UNC holes    | Polarizing Guide Socket       | Kit: Shell & A-F Hardware Unassembled<br>Kit: Shell & N-Z Hardware Unassembled |         | GPRB2HD23N              | 1738276-1      |
|      |                                             |                                              | Jacknut                       | Kit: Shell & A-F Hardware Unassembled<br>Kit: Shell & N-Z Hardware Unassembled |         | GPRB2HD52N              | 1738277-1      |
|      |                                             |                                              | Polarizing Guide Socket       | Kit: Shell & A-F Hardware Unassembled<br>Kit: Shell & N-Z Hardware Unassembled |         | GPRB2HD53N              | 1738278-1      |
|      |                                             |                                              | Jacknut                       | Kit: Shell & A-F Hardware Unassembled<br>Kit: Shell & N-Z Hardware Unassembled |         | GPRB2HL3N               | 1738279-1      |
|      |                                             | No mounting holes                            | N/A                           | N/A                                                                            |         | GPRB2HL22N              | 1738280-1      |
|      |                                             |                                              | Jacknut                       | Kit: Shell & A-F Hardware Unassembled<br>Kit: Shell & N-Z Hardware Unassembled |         | GPRB2HL23N              | 1738281-1      |
|      |                                             |                                              | Polarizing Guide Socket       | Kit: Shell & A-F Hardware Unassembled<br>Kit: Shell & N-Z Hardware Unassembled |         | GPRB2HL52N              | 1738282-1      |
|      |                                             |                                              | Jacknut                       | Kit: Shell & A-F Hardware Unassembled<br>Kit: Shell & N-Z Hardware Unassembled |         | GPRB2HL53N              | 1738283-1      |
|      |                                             | Connector with two thru-holes [3.10 mm Dia.] | N/A                           | N/A                                                                            |         | GPRB2HF3N               | 1738279-2      |
|      |                                             |                                              | Jacknut                       | Kit: Shell & A-F Hardware Unassembled<br>Kit: Shell & N-Z Hardware Unassembled |         | GPRB2HF22N              | 1738280-2      |
|      |                                             |                                              | Polarizing Guide Socket       | Kit: Shell & A-F Hardware Unassembled<br>Kit: Shell & N-Z Hardware Unassembled |         | GPRB2HF23N              | 1738281-2      |
|      |                                             |                                              | Jacknut                       | Kit: Shell & A-F Hardware Unassembled<br>Kit: Shell & N-Z Hardware Unassembled |         | GPRB2HF52N              | 1738282-2      |
|      | Receptacle, with Flange & Grounding Springs | No mounting holes                            | Polarizing Guide Socket       | Kit: Shell & A-F Hardware Unassembled<br>Kit: Shell & N-Z Hardware Unassembled |         | GPRB2HF53N              | 1738283-2      |
|      |                                             |                                              | Jacknut                       | Kit: Shell & A-F Hardware Unassembled<br>Kit: Shell & N-Z Hardware Unassembled |         | GPRB2LB3N               | 1738284-1      |
|      |                                             |                                              | Polarizing Guide Socket       | Kit: Shell & A-F Hardware Unassembled<br>Kit: Shell & N-Z Hardware Unassembled |         | GPRB2LB22N              | 1738285-1      |
|      |                                             |                                              | Jacknut                       | Kit: Shell & A-F Hardware Unassembled<br>Kit: Shell & N-Z Hardware Unassembled |         | GPRB2LB23N              | 1738286-1      |
|      |                                             | Connector with two thru-holes [3.10 mm Dia.] | Polarizing Guide Socket       | Kit: Shell & A-F Hardware Unassembled<br>Kit: Shell & N-Z Hardware Unassembled |         | GPRB2LB52N              | 1738287-1      |
|      |                                             |                                              | Jacknut                       | Kit: Shell & A-F Hardware Unassembled<br>Kit: Shell & N-Z Hardware Unassembled |         | GPRB2LB53N              | 1738288-1      |
|      |                                             |                                              | Polarizing Guide Socket       | Kit: Shell & A-F Hardware Unassembled<br>Kit: Shell & N-Z Hardware Unassembled |         | GPRB2LD3N               | 1738289-1      |
|      |                                             |                                              | Jacknut                       | Kit: Shell & A-F Hardware Unassembled<br>Kit: Shell & N-Z Hardware Unassembled |         | GPRB2LD22N              | 1738290-1      |
|      |                                             | Mount, with two 4-40 UNC holes               | Polarizing Guide Socket       | Kit: Shell & A-F Hardware Unassembled<br>Kit: Shell & N-Z Hardware Unassembled |         | GPRB2LD23N              | 1738291-1      |
|      |                                             |                                              | Jacknut                       | Kit: Shell & A-F Hardware Unassembled<br>Kit: Shell & N-Z Hardware Unassembled |         | GPRB2LD52N              | 1738292-1      |
|      |                                             |                                              | Polarizing Guide Socket       | Kit: Shell & A-F Hardware Unassembled<br>Kit: Shell & N-Z Hardware Unassembled |         | GPRB2LD53N              | 1738293-1      |
|      |                                             |                                              | Jacknut                       | Kit: Shell & A-F Hardware Unassembled<br>Kit: Shell & N-Z Hardware Unassembled |         | GPRB2LL3N               | 1738294-1      |
|      |                                             | Rear Panel Mount, with two 6-32 UNC holes    | N/A                           | N/A                                                                            |         | GPRB2LL22N              | 1738295-1      |
|      |                                             |                                              | Jacknut                       | Kit: Shell & A-F Hardware Unassembled<br>Kit: Shell & N-Z Hardware Unassembled |         | GPRB2LL23N              | 1738296-1      |
|      |                                             |                                              | Polarizing Guide Socket       | Kit: Shell & A-F Hardware Unassembled<br>Kit: Shell & N-Z Hardware Unassembled |         | GPRB2LL52N              | 1738297-1      |
|      |                                             |                                              | Jacknut                       | Kit: Shell & A-F Hardware Unassembled<br>Kit: Shell & N-Z Hardware Unassembled |         | GPRB2LL53N              | 1738298-1      |
|      |                                             | No mounting holes                            | N/A                           | N/A                                                                            |         | GPRB2LF3N               | 1738294-2      |
|      |                                             |                                              | Jacknut                       | Kit: Shell & A-F Hardware Unassembled<br>Kit: Shell & N-Z Hardware Unassembled |         | GPRB2LF22N              | 1738295-2      |
|      |                                             |                                              | Polarizing Guide Socket       | Kit: Shell & A-F Hardware Unassembled<br>Kit: Shell & N-Z Hardware Unassembled |         | GPRB2LF23N              | 1738296-2      |
|      |                                             |                                              | Jacknut                       | Kit: Shell & A-F Hardware Unassembled<br>Kit: Shell & N-Z Hardware Unassembled |         | GPRB2LF52N              | 1738297-2      |
|      |                                             | Rear Panel Mount, with two 6-32 UNC holes    | Polarizing Guide Socket       | Kit: Shell & A-F Hardware Unassembled<br>Kit: Shell & N-Z Hardware Unassembled |         | GPRB2LF53N              | 1738298-2      |
|      |                                             |                                              | Jacknut                       | Kit: Shell & A-F Hardware Unassembled<br>Kit: Shell & N-Z Hardware Unassembled |         |                         |                |
|      |                                             |                                              | Polarizing Guide Socket       | Kit: Shell & A-F Hardware Unassembled<br>Kit: Shell & N-Z Hardware Unassembled |         |                         |                |
|      |                                             |                                              | Jacknut                       | Kit: Shell & A-F Hardware Unassembled<br>Kit: Shell & N-Z Hardware Unassembled |         |                         |                |

**GPRB2 (Horizontal) Shell Descriptive Part Number Format (Continued)**

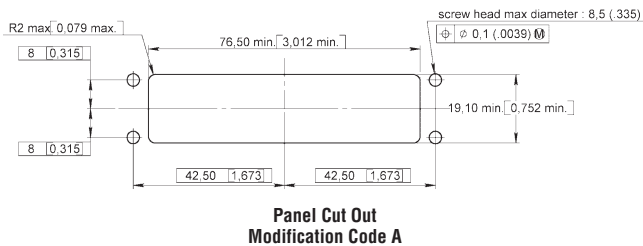
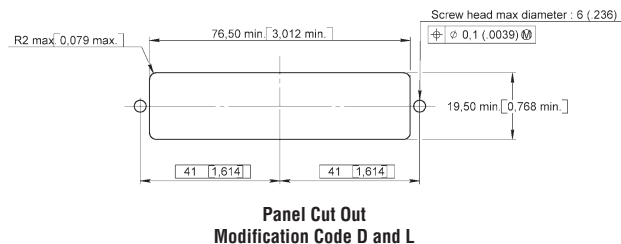
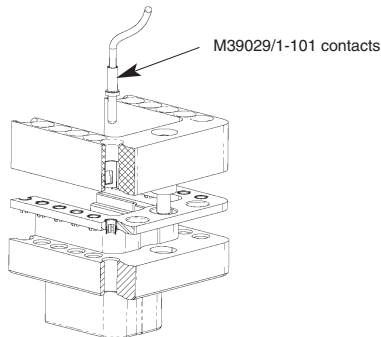
| Size | Style                                                | Modification                               | Locking & Polarization Device | Polarization Hardware                 | Plating | Descriptive Part Number | TE Part Number |
|------|------------------------------------------------------|--------------------------------------------|-------------------------------|---------------------------------------|---------|-------------------------|----------------|
| 2    | Receptacle, with Grounding Block & Grounding Springs | No mounting holes                          | N/A                           | N/A                                   | Nickel  | GPRB2ZB3N               | 1738299-1      |
|      |                                                      |                                            | Jacknut                       | Kit: Shell & A-F Hardware Unassembled |         | GPRB2ZB22N              | 1738300-1      |
|      |                                                      |                                            |                               | Kit: Shell & N-Z Hardware Unassembled |         | GPRB2ZB23N              | 1738301-1      |
|      |                                                      |                                            | Polarizing Guide Socket       | Kit: Shell & A-F Hardware Unassembled |         | GPRB2ZB52N              | 1738302-1      |
|      |                                                      |                                            |                               | Kit: Shell & N-Z Hardware Unassembled |         | GPRB2ZB53N              | 1738303-1      |
|      |                                                      | Rear Panel Mount, with four 6-32 UNC holes | N/A                           | N/A                                   |         | GPRB2ZA3N               | 1738304-1      |
|      |                                                      |                                            | Jacknut                       | Kit: Shell & A-F Hardware Unassembled |         | GPRB2ZA22N              | 1738305-1      |
|      |                                                      |                                            |                               | Kit: Shell & N-Z Hardware Unassembled |         | GPRB2ZA23N              | 1738306-1      |
|      |                                                      |                                            | Polarizing Guide Socket       | Kit: Shell & A-F Hardware Unassembled |         | GPRB2ZA52N              | 1738307-1      |
|      |                                                      |                                            |                               | Kit: Shell & N-Z Hardware Unassembled |         | GPRB2ZA53N              | 1738308-1      |

## GPRB2 (Horizontal) Shell Dimensions



### Grounding Block

A solution for high-intensity radiated electromagnetic frequencies. The patented design provides a direct grounding to the shell.



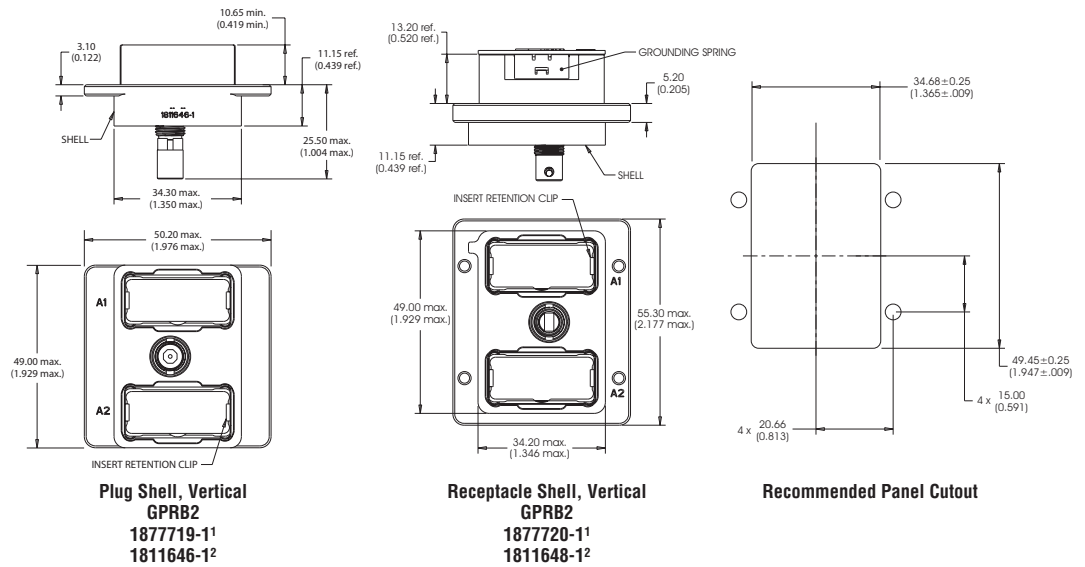
**Note 1:** Maximum dimension for inserts with grommets (Part Number GPRBE and GPRBH)

## GPRB2 Vertical (Square) Shell and Strain Relief Dimensions

### Shell Kits with Two Cavities for Key-A Inserts

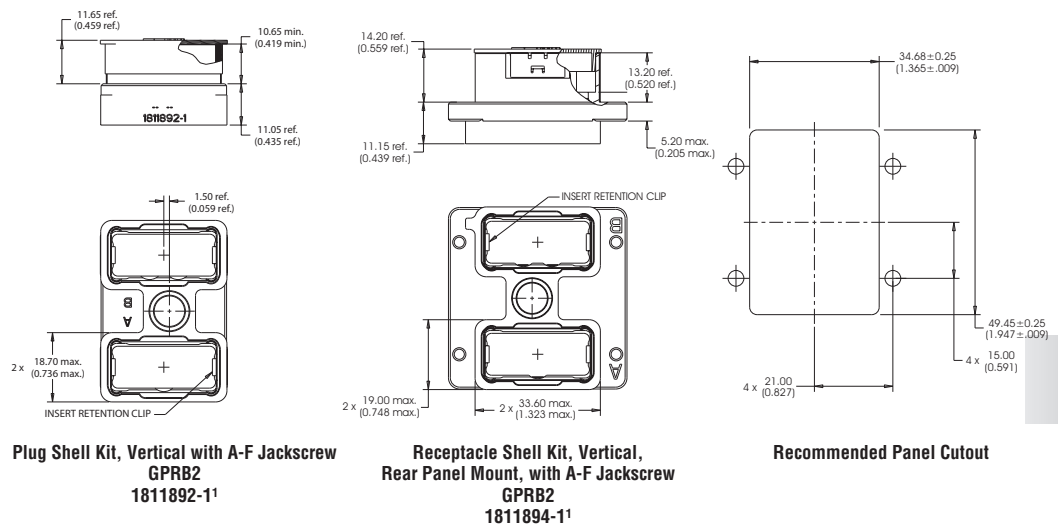
<sup>1</sup>Kit: Shell & A-F hardware unassembled

<sup>2</sup>Assembly: Hardware assembled in polarization position E

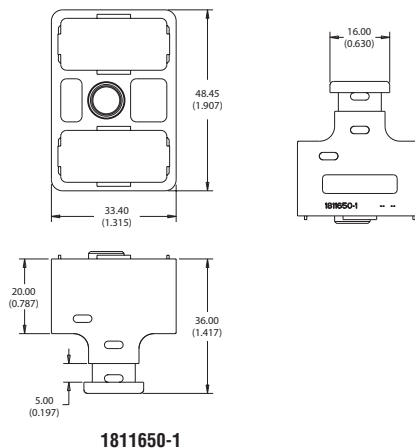


### Shell Kits with Two Cavities for Key-A and Key-B Inserts

<sup>1</sup>Kit: Shell & A-F hardware unassembled



### Strain Relief Kit, Vertical GPRB2



## Insert Descriptive Part Number Format

### Descriptive Part Numbering System

Use this guide to construct descriptive part numbers for GPRA & B inserts. Refer to pages 8-16 to 8-19 for the corresponding TE Part Number.

|                                                                                                                                                                                                                                                                                                                                                                                   | GPRA | E | 20 | P | A |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|---|----|---|---|
| <b>GPRA Series</b><br>Inserts for GPRA1 shells (see note 1 and 3)                                                                                                                                                                                                                                                                                                                 |      |   |    |   |   |
| <b>Class</b><br>E — Environmental with rear grommet and interfacial seal for pin inserts<br>Environmental with rear grommet for socket inserts<br>N — Non environmental (no rear grommet, no interfacial seal)<br>H — Inserts for pin contacts with a rear grommet and without interfacial seal<br>T* — Inserts for pin contacts without a rear grommet and with interfacial seal |      |   |    |   |   |
| <b>Contact arrangement</b><br>00 - 1C1 - 04 - 09 - 14 - 14M - 17 - 20 - F5                                                                                                                                                                                                                                                                                                        |      |   |    |   |   |
| <b>Contact Type</b><br>P — Pin<br>S — Socket                                                                                                                                                                                                                                                                                                                                      |      |   |    |   |   |
| <b>Insert Keying</b><br>A keying only                                                                                                                                                                                                                                                                                                                                             |      |   |    |   |   |

|                                                                                                                                                                                                                                                                                                                                                                                   | GPRB | E | 40 | P | B |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|---|----|---|---|
| <b>GPRB Series</b><br>Inserts for GPRB1 and GPRB2 shells (see note 1 and 3)                                                                                                                                                                                                                                                                                                       |      |   |    |   |   |
| <b>Class</b><br>E — Environmental with rear grommet and interfacial seal for pin inserts<br>Environmental with rear grommet for socket inserts<br>N — Non environmental (no rear grommet, no interfacial seal)<br>H — Inserts for pin contacts with a rear grommet and without interfacial seal<br>T* — Inserts for pin contacts without a rear grommet and with interfacial seal |      |   |    |   |   |
| <b>Contact arrangement</b><br>00 - 06 - C3 - P3 - 10Q2 - 3Q3 - 12F6 - 13C1 - 13P1 - 14 - 17 - 20C1 - 20P1 - 22 - 22V - 25P1 - 25Q1 - 28 - 30 - 34 - 40 - F12 - F12C - M2                                                                                                                                                                                                          |      |   |    |   |   |
| <b>Contact Type</b><br>P — Pin<br>S — Socket                                                                                                                                                                                                                                                                                                                                      |      |   |    |   |   |
| <b>Insert Keying</b><br>A — Insert with keying A (see note 2)<br>B — Insert with keying B (see note 2)                                                                                                                                                                                                                                                                            |      |   |    |   |   |

- Notes: 1. Inserts are designed for rear release contacts.  
2. For GPRB2 shells, use one insert keyed A and one insert keyed B.  
For GPRB1 shells, use one insert keyed A only.  
3. Pin and socket inserts can be installed in either plug or receptacle shell.

\*Contact TE

### Insert Descriptive Part Number Format (Continued)

#### GPRA Insert Part Numbers

| Series | Contact Arrangement | Contact Type      | Classification                                      | Keying | Descriptive Part Number | TE Part Number |
|--------|---------------------|-------------------|-----------------------------------------------------|--------|-------------------------|----------------|
| A      | 00                  | N/A               | Dummy Insert                                        | N/A    | GPRAE1C1PA              | 1738049-1      |
|        | 1C1                 | Pin               | Environmental, with Rear Grommet & Interfacial Seal | A      | GPRAH1C1PA              | 1738050-1      |
|        |                     |                   | Insert with Rear Grommet, without Interfacial Seal  |        | GPRAH1C1PA              | 1738051-1      |
|        |                     |                   | Non-environmental (no Grommet or Seal)              |        | GPRAH1C1PA              | 1738052-1      |
|        |                     | Socket            | Environmental, with Rear Grommet                    |        | GPRAE1C1SA              | 1738053-1      |
|        |                     |                   | Non-environmental (no Grommet or Seal)              |        | GPRAE1C1SA              | 1738054-1      |
|        |                     |                   | Environmental, with Rear Grommet & Interfacial Seal |        | GPRAE04PA               | 1738055-1      |
|        | 04                  | Pin               | Insert with Rear Grommet, without Interfacial Seal  |        | GPRAH04PA               | 1738056-1      |
|        |                     |                   | Non-environmental (no Grommet or Seal)              |        | GPRAH04PA               | 1738057-1      |
|        |                     |                   | Environmental, with Rear Grommet                    |        | GPRAE04SA               | 1738058-1      |
|        |                     | Socket            | Non-environmental (no Grommet or Seal)              |        | GPRAE04SA               | 1738059-1      |
|        |                     |                   | Environmental, with Rear Grommet & Interfacial Seal |        | GPRAE09PA               | 1738060-1      |
|        |                     |                   | Insert with Rear Grommet, without Interfacial Seal  |        | GPRAH09PA               | 1738061-1      |
|        | 09                  | Pin               | Non-environmental (no Grommet or Seal)              |        | GPRAH09PA               | 1738062-1      |
|        |                     |                   | Environmental, with Rear Grommet                    |        | GPRAE09SA               | 1738063-1      |
|        |                     |                   | Non-environmental (no Grommet or Seal)              |        | GPRAE09SA               | 1738064-1      |
|        |                     | Socket            | Environmental, with Rear Grommet & Interfacial Seal |        | GPRAE14PA               | 1738065-1      |
|        |                     |                   | Insert with Rear Grommet, without Interfacial Seal  |        | GPRAH14PA               | 1738066-1      |
|        |                     |                   | Non-environmental (no Grommet or Seal)              |        | GPRAH14PA               | 1738067-1      |
|        | 14                  | Pin               | Environmental, with Rear Grommet                    |        | GPRAE14SA               | 1738068-1      |
|        |                     |                   | Non-environmental (no Grommet or Seal)              |        | GPRAE14SA               | 1738069-1      |
|        |                     |                   | Environmental, with Rear Grommet & Interfacial Seal |        | GPRAE14MPA              | 1738070-1      |
|        |                     | Socket            | Insert with Rear Grommet, without Interfacial Seal  |        | GPRAH14MPA              | 1738071-1      |
|        |                     |                   | Non-environmental (no Grommet or Seal)              |        | GPRAH14MPA              | 1738072-1      |
|        |                     |                   | Environmental, with Rear Grommet                    |        | GPRAE14MSA              | 1738073-1      |
|        | 14M                 | Pin               | Non-environmental (no Grommet or Seal)              |        | GPRAE14MSA              | 1738074-1      |
|        |                     |                   | Environmental, with Rear Grommet & Interfacial Seal |        | GPRAE17PA               | 1738075-1      |
|        |                     |                   | Insert with Rear Grommet, without Interfacial Seal  |        | GPRAH17PA               | 1738076-1      |
|        |                     | Socket            | Non-environmental (no Grommet or Seal)              |        | GPRAH17PA               | 1738077-1      |
|        |                     |                   | Environmental, with Rear Grommet                    |        | GPRAE17SA               | 1738078-1      |
|        |                     |                   | Non-environmental (no Grommet or Seal)              |        | GPRAE17SA               | 1738079-1      |
|        | 17                  | Pin               | Environmental, with Rear Grommet & Interfacial Seal |        | GPRAE20PA               | 1738080-1      |
|        |                     |                   | Insert with Rear Grommet, without Interfacial Seal  |        | GPRAH20PA               | 1738081-1      |
|        |                     |                   | Non-environmental (no Grommet or Seal)              |        | GPRAH20PA               | 1738082-1      |
|        |                     | Socket            | Environmental, with Rear Grommet                    |        | GPRAE20SA               | 1738083-1      |
|        |                     |                   | Non-environmental (no Grommet or Seal)              |        | GPRAE20SA               | 1738084-1      |
|        |                     |                   | Environmental, without Sleeve Holder                |        | GPRAEF5PA               | 1954043-1      |
|        | F5                  | ARINC 801 Termini | Environmental, with Sleeve Holder                   |        | GPRAEF5SA               | 1954044-1      |



### Insert Descriptive Part Number Format (Continued)

#### GPRB Insert Part Numbers

| Series | Contact Arrangement | Contact Type | Classification                                      | Keying | Descriptive Part Number | TE Part Number |
|--------|---------------------|--------------|-----------------------------------------------------|--------|-------------------------|----------------|
| B      | 00                  | N/A          | Dummy Insert                                        | N/A    | GPRBN00                 | 1738085-1      |
|        |                     |              | Environmental, with Rear Grommet & Interfacial Seal | A      | GPRBEC3PA               | 1738086-1      |
|        |                     |              | Environmental, with Rear Grommet & Interfacial Seal | B      | GPRBEC3PB               | 1738091-1      |
|        |                     |              | Insert with Rear Grommet, without Interfacial Seal  | A      | GPRBHC3PA               | 1738087-1      |
|        |                     |              | Insert with Rear Grommet, without Interfacial Seal  | B      | GPRBHC3PB               | 1738092-1      |
|        | C3                  | Pin          | Non-environmental (no Grommet or Seal)              | A      | GPRBNC3PA               | 1738088-1      |
|        |                     |              | Non-environmental (no Grommet or Seal)              | B      | GPRBNC3PB               | 1738093-1      |
|        |                     | Socket       | Environmental, with Rear Grommet                    | A      | GPRBEC3SA               | 1738089-1      |
|        |                     |              | Environmental, with Rear Grommet                    | B      | GPRBEC3SB               | 1738094-1      |
|        |                     |              | Non-environmental (no Grommet or Seal)              | A      | GPRBNC3SA               | 1738090-1      |
|        |                     |              | Non-environmental (no Grommet or Seal)              | B      | GPRBNC3SB               | 1738095-1      |
|        | P3                  | Pin          | Environmental, with Rear Grommet & Interfacial Seal | A      | GPRBEP3PA               | 1954321-1      |
|        |                     |              | Environmental, with Rear Grommet & Interfacial Seal | B      | GPRBEP3PB               | 1954322-1      |
|        |                     |              | Insert with Rear Grommet, without Interfacial Seal  | A      | GPRBHP3PA               | 1954724-1      |
|        |                     |              | Insert with Rear Grommet, without Interfacial Seal  | B      | GPRBHP3PB               | 1954739-1      |
|        |                     | Socket       | Non-environmental (no Grommet or Seal)              | A      | GPRBNP3PA               | 1954325-1      |
|        |                     |              | Non-environmental (no Grommet or Seal)              | B      | GPRBNP3PB               | 1954326-1      |
|        |                     |              | Environmental, with Rear Grommet                    | A      | GPRBEP3SA               | 1954327-1      |
|        |                     |              | Environmental, with Rear Grommet                    | B      | GPRBEP3SB               | 1954328-1      |
|        |                     |              | Non-environmental (no Grommet or Seal)              | A      | GPRBNP3SA               | 1954329-1      |
|        |                     |              | Non-environmental (no Grommet or Seal)              | B      | GPRBNP3SB               | 1954330-1      |
|        | 06                  | Pin          | Environmental, with Rear Grommet & Interfacial Seal | A      | GPRBE06PA               | 1738096-1      |
|        |                     |              | Environmental, with Rear Grommet & Interfacial Seal | B      | GPRBE06PB               | 1738101-1      |
|        |                     |              | Insert with Rear Grommet, without Interfacial Seal  | A      | GPRBH06PA               | 1738096-2      |
|        |                     |              | Insert with Rear Grommet, without Interfacial Seal  | B      | GPRBH06PB               | 1738101-3      |
|        |                     | Socket       | Non-environmental (no Grommet or Seal)              | A      | GPRBN06PA               | 1738096-3      |
|        |                     |              | Non-environmental (no Grommet or Seal)              | B      | GPRBN06PB               | 1738101-4      |
|        |                     |              | Environmental, with Rear Grommet                    | A      | GPRBE06SA               | 1738099-1      |
|        |                     |              | Environmental, with Rear Grommet                    | B      | GPRBE06SB               | 1738104-1      |
|        |                     |              | Non-environmental (no Grommet or Seal)              | A      | GPRBN06SA               | 1738099-2      |
|        |                     |              | Non-environmental (no Grommet or Seal)              | B      | GPRBN06SB               | 1738104-2      |
|        | 13C1                | Pin          | Environmental, with Rear Grommet & Interfacial Seal | A      | GPRBE13C1PA             | 1738106-1      |
|        |                     |              | Environmental, with Rear Grommet & Interfacial Seal | B      | GPRBE13C1PB             | 1738111-1      |
|        |                     |              | Insert with Rear Grommet, without Interfacial Seal  | A      | GPRBH13C1PA             | 1738107-1      |
|        |                     |              | Insert with Rear Grommet, without Interfacial Seal  | B      | GPRBH13C1PB             | 1738112-1      |
|        |                     | Socket       | Non-environmental (no Grommet or Seal)              | A      | GPRBN13C1PA             | 1738108-1      |
|        |                     |              | Non-environmental (no Grommet or Seal)              | B      | GPRBN13C1PB             | 1738113-1      |
|        |                     |              | Environmental, with Rear Grommet                    | A      | GPRBE13C1SA             | 1738109-1      |
|        |                     |              | Environmental, with Rear Grommet                    | B      | GPRBE13C1SB             | 1738114-1      |
|        |                     |              | Non-environmental (no Grommet or Seal)              | A      | GPRBN13C1SA             | 1738110-1      |
|        |                     |              | Non-environmental (no Grommet or Seal)              | B      | GPRBN13C1SB             | 1738115-1      |
|        | 13P1                | Pin          | Environmental, with Rear Grommet & Interfacial Seal | A      | GPRBE13P1PA             | 1954331-1      |
|        |                     |              | Environmental, with Rear Grommet & Interfacial Seal | B      | GPRBE13P1PB             | 1954332-1      |
|        |                     |              | Insert with Rear Grommet, without Interfacial Seal  | A      | GPRBH13P1PA             | 1954333-1      |
|        |                     |              | Insert with Rear Grommet, without Interfacial Seal  | B      | GPRBH13P1PB             | 1954334-1      |
|        |                     | Socket       | Non-environmental (no Grommet or Seal)              | A      | GPRBN13P1PA             | 1954335-1      |
|        |                     |              | Non-environmental (no Grommet or Seal)              | B      | GPRBN13P1PB             | 1954336-1      |
|        |                     |              | Environmental, with Rear Grommet                    | A      | GPRBE13P1SA             | 1954337-1      |
|        |                     |              | Environmental, with Rear Grommet                    | B      | GPRBE13P1SB             | 1954338-1      |
|        |                     |              | Non-environmental (no Grommet or Seal)              | A      | GPRBN13P1SA             | 1954339-1      |
|        |                     |              | Non-environmental (no Grommet or Seal)              | B      | GPRBN13P1SB             | 1954340-1      |

### Insert Descriptive Part Number Format (Continued)

#### GPRB Insert Part Numbers (Continued)

| Series | Contact Arrangement | Contact Type | Classification                                      | Keying | Descriptive Part Number | TE Part Number |
|--------|---------------------|--------------|-----------------------------------------------------|--------|-------------------------|----------------|
| B      | 14                  | Pin          | Environmental, with Rear Grommet & Interfacial Seal | A      | GPRBE14PA               | 1738116-1      |
|        |                     |              |                                                     | B      | GPRBE14PB               | 1738121-1      |
|        |                     |              | Insert with Rear Grommet, without Interfacial Seal  | A      | GPRBH14PA               | 1738117-1      |
|        |                     |              |                                                     | B      | GPRBH14PB               | 1738122-1      |
|        |                     | Socket       | Non-environmental (no Grommet or Seal)              | A      | GPRBN14PA               | 1738118-1      |
|        |                     |              |                                                     | B      | GPRBN14PB               | 1738123-1      |
|        |                     |              | Environmental, with Rear Grommet                    | A      | GPRBE14SA               | 1738119-1      |
|        |                     |              |                                                     | B      | GPRBE14SB               | 1738124-1      |
|        |                     |              | Non-environmental (no Grommet or Seal)              | A      | GPRBN14SA               | 1738120-1      |
|        |                     |              |                                                     | B      | GPRBN14SB               | 1738125-1      |
|        | 17                  | Pin          | Environmental, with Rear Grommet & Interfacial Seal | A      | GPRBE17PA               | 1738126-1      |
|        |                     |              |                                                     | B      | GPRBE17PB               | 1738131-1      |
|        |                     |              | Insert with Rear Grommet, without Interfacial Seal  | A      | GPRBH17PA               | 1738127-1      |
|        |                     |              |                                                     | B      | GPRBH17PB               | 1738132-1      |
|        |                     | Socket       | Non-environmental (no Grommet or Seal)              | A      | GPRBN17PA               | 1738128-1      |
|        |                     |              |                                                     | B      | GPRBN17PB               | 1738133-1      |
|        |                     |              | Environmental, with Rear Grommet                    | A      | GPRBE17SA               | 1738129-1      |
|        |                     |              |                                                     | B      | GPRBE17SB               | 1738134-1      |
|        |                     |              | Non-environmental (no Grommet or Seal)              | A      | GPRBN17SA               | 1738130-1      |
|        |                     |              |                                                     | B      | GPRBN17SB               | 1738135-1      |
|        | 20C1                | Pin          | Environmental, with Rear Grommet & Interfacial Seal | A      | GPRBE20C1PA             | 1738136-1      |
|        |                     |              |                                                     | B      | GPRBE20C1PB             | 1738141-1      |
|        |                     |              | Insert with Rear Grommet, without Interfacial Seal  | A      | GPRBH20C1PA             | 1738137-1      |
|        |                     |              |                                                     | B      | GPRBH20C1PB             | 1738142-1      |
|        |                     | Socket       | Non-environmental (no Grommet or Seal)              | A      | GPRBN20C1PA             | 1738138-1      |
|        |                     |              |                                                     | B      | GPRBN20C1PB             | 1738143-1      |
|        |                     |              | Environmental, with Rear Grommet                    | A      | GPRBE20C1SA             | 1738139-1      |
|        |                     |              |                                                     | B      | GPRBE20C1SB             | 1738144-1      |
|        |                     |              | Non-environmental (no Grommet or Seal)              | A      | GPRBN20C1SA             | 1738140-1      |
|        |                     |              |                                                     | B      | GPRBN20C1SB             | 1738145-1      |
|        | 20P1                | Pin          | Environmental, with Rear Grommet & Interfacial Seal | A      | GPRBE20P1PA             | 1954341-1      |
|        |                     |              |                                                     | B      | GPRBE20P1PB             | 1954342-1      |
|        |                     |              | Insert with Rear Grommet, without Interfacial Seal  | A      | GPRBH20P1PA             | 1954723-1      |
|        |                     |              |                                                     | B      | GPRBH20P1PB             | 1954344-1      |
|        |                     | Socket       | Non-environmental (no Grommet or Seal)              | A      | GPRBN20P1PA             | 1954345-1      |
|        |                     |              |                                                     | B      | GPRBN20P1PB             | 1954346-1      |
|        |                     |              | Environmental, with Rear Grommet                    | A      | GPRBE20P1SA             | 1954347-1      |
|        |                     |              |                                                     | B      | GPRBE20P1SB             | 1954348-1      |
|        |                     |              | Non-environmental (no Grommet or Seal)              | A      | GPRBN20P1SA             | 1954349-1      |
|        |                     |              |                                                     | B      | GPRBN20P1SB             | 1954350-1      |
|        | 22                  | Pin          | Environmental, with Rear Grommet & Interfacial Seal | A      | GPRBE22PA               | 1738146-1      |
|        |                     |              |                                                     | B      | GPRBE22PB               | 1738151-1      |
|        |                     |              | Insert with Rear Grommet, without Interfacial Seal  | A      | GPRBH22PA               | 1738146-2      |
|        |                     |              |                                                     | B      | GPRBH22PB               | 1738151-2      |
|        |                     | Socket       | Non-environmental (no Grommet or Seal)              | A      | GPRBN22PA               | 1738146-3      |
|        |                     |              |                                                     | B      | GPRBN22PB               | 1738151-3      |
|        |                     |              | Environmental, with Rear Grommet                    | A      | GPRBE22SA               | 1738149-1      |
|        |                     |              |                                                     | B      | GPRBE22SB               | 1738154-1      |
|        |                     |              | Non-environmental (no Grommet or Seal)              | A      | GPRBN22SA               | 1738149-2      |
|        |                     |              |                                                     | B      | GPRBN22SB               | 1738154-2      |
|        | 22V                 | Pin          | Environmental, with Rear Grommet & Interfacial Seal | A      | GPRBE22VPA              | 2033990-1      |
|        |                     |              |                                                     | B      | GPRBE22VPB              | 2033995-1      |
|        |                     | Socket       | Environmental, with Rear Grommet                    | A      | GPRBE22VSA              | 2000126-1      |
|        |                     |              |                                                     | B      | GPRVE22VSB              | 2033996-1      |

### Insert Descriptive Part Number Format (Continued)

#### GPRB Insert Part Numbers (Continued)

| Series | Contact Arrangement | Contact Type | Classification                                      | Keying | Descriptive Part Number | TE Part Number |
|--------|---------------------|--------------|-----------------------------------------------------|--------|-------------------------|----------------|
| B      | 28                  | Pin          | Environmental, with Rear Grommet & Interfacial Seal | A      | GPRBE28PA               | 1738156-1      |
|        |                     |              |                                                     | B      | GPRBE28PB               | 1738161-1      |
|        |                     |              | Insert with Rear Grommet, without Interfacial Seal  | A      | GPRBH28PA               | 1738157-1      |
|        |                     |              |                                                     | B      | GPRBH28PB               | 1738162-1      |
|        |                     |              | Non-environmental (no Grommet or Seal)              | A      | GPRBN28PA               | 1738158-1      |
|        |                     |              |                                                     | B      | GPRBN28PB               | 1738163-1      |
|        |                     | Socket       | Environmental, with Rear Grommet                    | A      | GPRBE28SA               | 1738159-1      |
|        |                     |              |                                                     | B      | GPRBE28SB               | 1738164-1      |
|        |                     |              | Non-environmental (no Grommet or Seal)              | A      | GPRBN28SA               | 1738160-1      |
|        |                     |              |                                                     | B      | GPRBN28SB               | 1738165-1      |
|        |                     | 30           | Pin                                                 | A      | GPRBE30PA               | 1738166-1      |
|        |                     |              |                                                     | B      | GPRBE30PB               | 1738171-1      |
|        |                     |              | Insert with Rear Grommet, without Interfacial Seal  | A      | GPRBH30PA               | 1738167-1      |
|        |                     |              |                                                     | B      | GPRBH30PB               | 1738172-1      |
|        |                     |              | Non-environmental (no Grommet or Seal)              | A      | GPRBN30PA               | 1738168-1      |
|        |                     |              |                                                     | B      | GPRBN30PB               | 1738173-1      |
|        |                     |              | Socket                                              | A      | GPRBE30SA               | 1738169-1      |
|        |                     |              |                                                     | B      | GPRBE30SB               | 1738174-1      |
|        |                     |              | Non-environmental (no Grommet or Seal)              | A      | GPRBN30SA               | 1738170-1      |
|        |                     |              |                                                     | B      | GPRBN30SB               | 1738175-1      |
|        |                     | 34           | Pin                                                 | A      | GPRBE34PA               | 1738176-1      |
|        |                     |              |                                                     | B      | GPRBE34PB               | 1738181-1      |
|        |                     |              | Insert with Rear Grommet, without Interfacial Seal  | A      | GPRBH34PA               | 1738177-1      |
|        |                     |              |                                                     | B      | GPRBH34PB               | 1738182-1      |
|        |                     |              | Non-environmental (no Grommet or Seal)              | A      | GPRBN34PA               | 1738178-1      |
|        |                     |              |                                                     | B      | GPRBN34PB               | 1738183-1      |
|        |                     |              | Socket                                              | A      | GPRBE34SA               | 1738179-1      |
|        |                     |              |                                                     | B      | GPRBE34SB               | 1738184-1      |
|        |                     |              | Non-environmental (no Grommet or Seal)              | A      | GPRBN34SA               | 1738180-1      |
|        |                     |              |                                                     | B      | GPRBN34SB               | 1738185-1      |
|        |                     | 40           | Pin                                                 | A      | GPRBE40PA               | 1738186-1      |
|        |                     |              |                                                     | B      | GPRBE40PB               | 1738191-1      |
|        |                     |              | Insert with Rear Grommet, without Interfacial Seal  | A      | GPRBH40PA               | 1738186-2      |
|        |                     |              |                                                     | B      | GPRBH40PB               | 1738191-2      |
|        |                     |              | Non-environmental (no Grommet or Seal)              | A      | GPRBN40PA               | 1738186-3      |
|        |                     |              |                                                     | B      | GPRBN40PB               | 1738191-3      |
|        |                     |              | Socket                                              | A      | GPRBE40SA               | 1738189-1      |
|        |                     |              |                                                     | B      | GPRBE40SB               | 1738194-1      |
|        |                     |              | Non-environmental (no Grommet or Seal)              | A      | GPRBN40SA               | 1738189-2      |
|        |                     |              |                                                     | B      | GPRBN40SB               | 1738194-2      |
|        |                     | 48           | Pin                                                 | A      | GPRBE48PA               | 2102227-1      |
|        |                     |              |                                                     | B      | GPRBE48PB               | 2102227-2      |
|        |                     |              | Insert with Rear Grommet, without Interfacial Seal  | A      | GPRBH48PA               | 2102227-3      |
|        |                     |              |                                                     | B      | GPRBH48PB               | 2102227-4      |
|        |                     |              | Insert with Interfacial Seal Only                   | A      | GPRBT48PA               | 2102228-1      |
|        |                     |              |                                                     | B      | GPRBT48PB               | 2102228-2      |
|        |                     |              | Non-environmental (no Grommet or Seal)              | A      | GPRBN48PA               | 2102229-1      |
|        |                     |              |                                                     | B      | GPRBN48PB               | 2102229-2      |
|        |                     |              | Socket                                              | A      | GPRBE48SA               | 2102229-3      |
|        |                     |              |                                                     | B      | GPRBE48SB               | 2102229-4      |
|        |                     |              | Non-environmental (no Grommet or Seal)              | A      | GPRBN48SA               | 2102230-1      |
|        |                     |              |                                                     | B      | GPRBN48SB               | 2102230-2      |

### Insert Descriptive Part Number Format (Continued)

#### GPRB Insert Part Numbers (Continued)

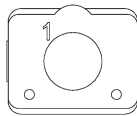
| Series | Contact Arrangement | Contact Type       | Classification                                      | Keying | Descriptive Part Number | TE Part Number |
|--------|---------------------|--------------------|-----------------------------------------------------|--------|-------------------------|----------------|
| B      | 25P1                | Pin                | Environmental, with Rear Grommet & Interfacial Seal | A      | GPRBE25P1PA             | 2000108-1      |
|        |                     |                    |                                                     | B      | GPRBE25P1PB             | 2033997-1      |
|        |                     | Socket             | Environmental, with Rear Grommet                    | A      | GPRBE25P1SA             | 2033989-1      |
|        |                     |                    |                                                     | B      | GPRBE25P1SB             | 2033998-1      |
|        | 25Q1                | Pin                | Environmental, with Rear Grommet & Interfacial Seal | A      | GPRBE25Q1PA             | 1811121-1      |
|        |                     |                    |                                                     | B      | GPRBE25Q1PB             | 1877567-1      |
|        |                     | Socket             | Environmental, with Rear Grommet                    | A      | GPRBE25Q1SA             | 1811122-1      |
|        |                     |                    |                                                     | B      | GPRBE25Q1SB             | 1877568-1      |
|        | 10Q2                | Pin                | Environmental, with Rear Grommet & Interfacial Seal | A      | GPRBE10Q2PA             | 1877702-1      |
|        |                     |                    | Non-environmental (no Grommet or Seal)              | B      | GPRBE10Q2PB             | 1877706-1      |
|        |                     |                    | Environmental, with Rear Grommet                    | A      | GPRBN10Q2PA             | 2000143-1      |
|        |                     |                    |                                                     | B      | GPRBE10Q2SA             | 1877704-1      |
|        |                     | Socket             | Non-environmental (no Grommet or Seal)              | B      | GPRBE10Q2SB             | 1877708-1      |
|        |                     |                    |                                                     | A      | GPRBN10Q2SA             | 1954067-1      |
|        | 3Q3                 | Pin                | Environmental, with Rear Grommet & Interfacial Seal | A      | GPRBE3Q3PA              | 1877694-1      |
|        |                     |                    |                                                     | B      | GPRBE3Q3PB              | 1877698-1      |
|        |                     | Socket             | Environmental, with Rear Grommet                    | A      | GPRBE3Q3SA              | 1877696-1      |
|        |                     |                    |                                                     | B      | GPRBE3Q3SB              | 1877700-1      |
|        | F12                 | ARINC 801 Termini  | Environmental, without Sleeve Holder                | A      | GPRBEF12PA              | 1738805-1      |
|        |                     |                    | Environmental, with Sleeve Holder                   | B      | GPRBEF12PB              | 1738806-1      |
|        |                     |                    | Environmental, without Sleeve Holder                | A      | GPRBEF12SA              | 1738807-1      |
|        |                     |                    |                                                     | B      | GPRBEF12SB              | 1738808-1      |
|        | F12C                | ARINC 801 Termini  | Environmental, without Sleeve Holder                | A      | GPRBEF12CPA             | 2000856-1      |
|        |                     |                    | Environmental, with Sleeve Holder                   | B      | GPRBEF12CPB             | 2000857-1      |
|        |                     |                    | Environmental, without Sleeve Holder                | A      | GPRBEF12CSA             | 2000858-1      |
|        |                     |                    |                                                     | B      | GPRBEF12CSB             | 2000859-1      |
|        | 12F6                | ARINC 801 Termini  | Environmental, without Sleeve Holder                | A      | GPRBE12F6PA             | 2000860-1      |
|        |                     |                    | Environmental, with Sleeve Holder                   | B      | GPRBE12F6PB             | 2000861-1      |
|        |                     |                    | Environmental, without Sleeve Holder                | A      | GPRBE12F6SA             | 2000862-1      |
|        |                     |                    |                                                     | B      | GPRBE12F6SB             | 2000863-1      |
|        | M2                  | Mini-Expanded Beam | Spring-loaded Half                                  | A      | GPRBEM2PA               | 1445162-1      |
|        |                     |                    |                                                     | B      | GPRBEM2PB               | 2000189-1      |
|        |                     |                    | Fixed Half                                          | A      | GPRBEM2SA               | 1445163-1      |
|        |                     |                    |                                                     | B      | GPRBEM2SB               | 2000190-1      |

## Insert Arrangements

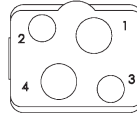
### GPRA Inserts<sup>1</sup>



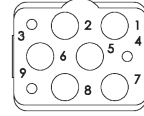
**00**  
Dummy Insert



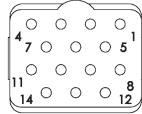
**1C1**  
1 x Size 5 Contacts



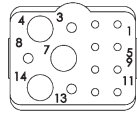
**04**  
2 x Size 15 or 16 Contacts  
2 x Size 12 Contacts



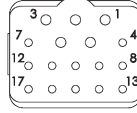
**09**  
3 x Size 20 Contacts  
6 x Size 15 or 16 Contacts



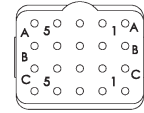
**14**  
14 x Size 20 Contacts



**14M**  
8 x Size 22 Contacts  
3 x Size 20 Contacts  
3 x Size 15 or 16 Contacts



**17**  
12 x Size 22 Contacts  
5 x Size 20 Contacts



**20**  
20 x Size 22 Contacts

#### Note

<sup>1</sup> Pin inserts: Mating faces shown above.

<sup>2</sup> In a GPRB2 shell, one insert must be "A" keyed and the other one must be "B" keyed (See at right).

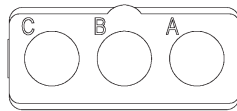
<sup>3</sup> Size 8 cavity applicable for use with ARINC 600 Quadrax or Twinax contacts.

## Insert Arrangements (Continued)

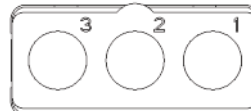
### GPRB Inserts<sup>1, 2</sup>



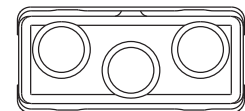
**00**  
Dummy Insert



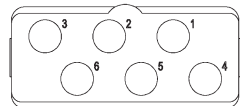
**C3**  
3 x Size 5 Coax Contacts



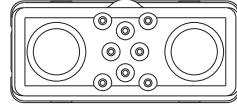
**P3**  
3 x Size 5 Power Contacts



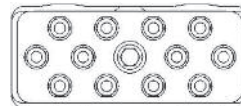
**3Q3<sup>3</sup>**  
3 x Size 8 Quadrx Contacts



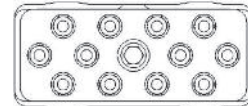
**06**  
6 x Size 12 Contacts



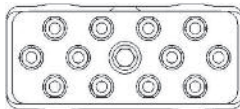
**10Q2<sup>3</sup>**  
8 x Size 20 Contacts  
2 x Size 8 Quadrx Contacts



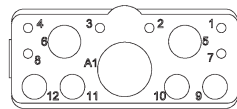
**12F6**  
6 x size 16 Optical ARINC 801 terminations  
6 size 16 special electrical contacts



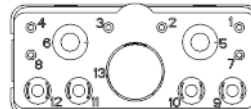
**F12C**  
(high grade thermoplastic)  
12 x size 16  
Optical ARINC 801 terminations



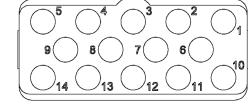
**F12 (aluminum)**  
12 x size 16  
Optical ARINC 801 terminations



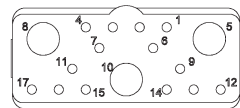
**13C1**  
2 x Size 12 Contacts  
4 x Size 15 or 16 Contacts  
6 x Size 20 Contacts  
1 x Size 5 Coax Contacts



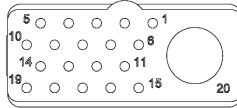
**13P1**  
2 x Size 12 Contacts  
4 x Size 15 or 16 Contacts  
6 x Size 20 Contacts  
1 x Size 5 Power Contacts



**14**  
14 x Size 15 or 16 Contacts



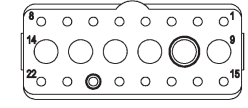
**17**  
14 x Size 20 Contacts  
3 x Size 12 Contacts



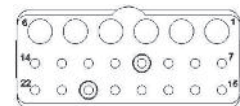
**20C1**  
19 x Size 20 Contacts  
1 x Size 5 Coax Contacts



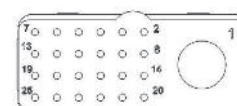
**20P1**  
19 x Size 20 Contacts  
1 x Size 5 Power Contacts



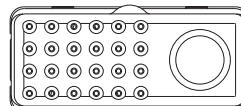
**22**  
16 x Size 20 Contacts  
6 x Size 15 or 16 Contacts



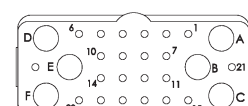
**22V**  
16 x size 20 contacts  
6 x size 16 contacts



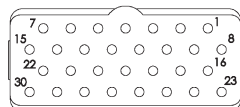
**25P1**  
24 x size 22 contacts  
1 x size 8 power contacts



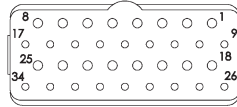
**25Q1<sup>3</sup>**  
24 x Size 22 Contacts  
1 x Size 8 Quadrx Contacts



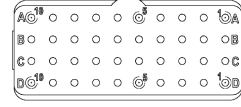
**28**  
22 x Size 22 Contacts  
6 x Size 15 or 16 Contacts



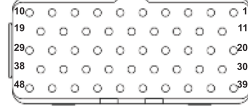
**30**  
30 x Size 20 Contacts



**34**  
18 x Size 22 Contacts  
16 x Size 20 Contacts



**40**  
40 x Size 22 Contacts



**48**  
48 x Size 22 Contacts

Busbed inserts available for arrangements 13, 30, and 40.  
Contact TE Connectivity.  
Mini Expanded Beam inserts - see page 8-25

#### Note

<sup>1</sup> Pin inserts: Mating faces shown above.

<sup>2</sup> In a GPRB2 shell, one insert must be "A" keyed and the other one must be "B" keyed (See at right).

<sup>3</sup> Size 8 cavity applicable for use with ARINC 600 Quadrx or Twinax contacts.

#### Keying:



## Insert Assemblies for High Speed Applications

### F12, F12C & 12F6 ARINC 801 Insert Assemblies



#### Product Facts

- F12C inserts now available in composite material
- ARINC 801 approved
- Optical termini for use with GPR, ARINC 600, circular MIL-DTL-38999 connectors.
- Industry Standard 1.25 mm ceramic ferrule
- Compatible with 1.5-2.2 mm tight jacket and loose tube cable construction:
- MT - Tight jacket cable
- ML – Loose tube cable
- Single mode (SM) and Multimode (MM) versions
- ARINC 801 termini part numbers: 1828199-1 MM/ML  
Version 1828200-1 MM/MT  
Version 1918614-1 SM/ML  
Version 1918616-1 SM/ML  
Version APC1918615-1  
SM/MT Version 1918617-1  
SM/MT Version - APC

#### Materials:

**Housings** – Nickel Plated Copper

**Ferrule** – Zirconia

**Spring** – Stainless Steel

**Crimp Sleeve** – Nickel Plated Copper

**Protective Cover** – Silicone

#### Optical Performance

**Single mode**, 1310 nm/1550 nm (UPC)

**Attenuation, Mean** – 0.15 dB

**Return Loss** – >50 dB

**Multimode**, 850 nm, 1310 nm

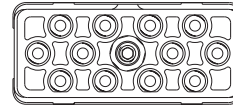
**Attenuation, Mean** – 0.10 dB

**Return Loss** – >20 dB

#### Assembly Capabilities

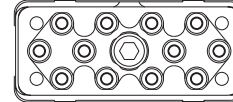
TE has extensive Rugged Optic Harness capabilities. Please consult your local TE Sales Representative for assistance.

Insert Assembly, without Sleeve Holder,  
Environmental  
Aluminum Housings, F12  
Key A 1738805-1  
Key B 1738806-1



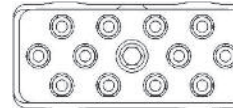
Composite Housings, F12C  
Key A 2000856-1  
Key B 2000857-1

Insert Assembly, with Sleeve Holder,  
Environmental,  
Aluminum Housings, F12  
GPRB  
Key A 1738807-1  
Key B 1738808-1



Composite Housings, F12C  
Key A 2000858-1  
Key B 2000859-1

Insert Assembly, without Sleeve Holder,  
Environmental, 12F6  
GPRB  
Key A 2000860-1  
Key B 2000861-1



Insert Assembly, with Sleeve Holder,  
Environmental, 12F6  
Key A 2000862-1  
Key B 2000863-1

#### ARINC 801 Cavity Reducers

| Size 8 Quadrax                                                         | Part Number | ARINC 801 Cavity Reducer                            |
|------------------------------------------------------------------------|-------------|-----------------------------------------------------|
| Pin Quadrax adapter for ARINC 801 termini in Quadrax FR type cavity    | 1757727-1   | Quadrax cavity reducer (FR/FR) for receptacle shell |
| Pin Quadrax adapter for ARINC 801 termini in Quadrax RR type cavity    | 1757710-1   | Quadrax cavity reducer (RR/RR) for receptacle shell |
| Socket Quadrax adapter for ARINC 801 termini in Quadrax RR type cavity | 1757711-1   | Quadrax cavity reducer (RR/RR) for plug shell       |

#### ARINC 801 Optical Termini Part Numbers

| Cable Dia.    | Cable Structure<br>ML (loose & tight)<br>MT (ultra tight) | S/M Fiber<br>125.3 µm<br>PC/UPC | S/M Fiber<br>125.3 µm<br>APC | M/M Fiber<br>128 µm<br>PC |
|---------------|-----------------------------------------------------------|---------------------------------|------------------------------|---------------------------|
| 0.9 mm Buffer | —                                                         | *                               | *                            | *                         |
| 1.5 - 2.2 mm  | ML                                                        | 1918614-1                       | 1918616-1                    | 1828199-1                 |
| 1.5 - 2.2 mm  | MT                                                        | 1918615-1                       | 1918617-1                    | 1828200-1                 |

Consult your local TE Sales Representative for additional options.

\* Contact TE for availability.



## Insert Assemblies for High Speed Applications (Continued)

### M2 Mini-Expanded Beam Insert Holders

#### Product Facts

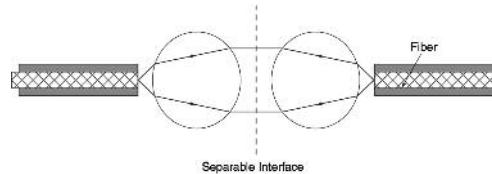
- No wear on fiber optic interface; Very vibration resistant
- Easy to handle, easy to clean. Durable connection that is highly resistant to dirt/debris.
- Singlemode or multimode
- Common 850/1300 dual wavelength, 1310 nm, or 1550 nm wavelengths
- Easy alignment for low-loss repeatable performance
- Consistent overall optical "link budget" assured
- Low sensitivity to thermal fluctuations and interface contamination
- Repeatable low-loss performance in harsh environments.

#### Expanded Beam Products

- Ball lens expands cross-sectional area of light over 200 times for multimode and over 2000 times for singlemode
- Rugged hermaphroditic construction (i.e., same insert mates to each other)
- Physically non-contacting mating conditions; no wear, installed fiber ferrule protected by ball lens
- PRO BEAM Mini Connector field deployable interconnects
- Insert/holder blocks designed for Mini-Expanded Beam
- Common insert for 1- through 4-channels
- Unique Modular Design, for use with multimode and singlemode fiber.
- Cable assembly and termination services

#### Expanded Beam Insert

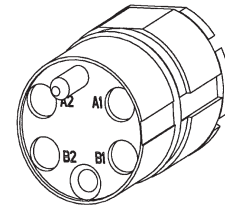
- Mini-Expanded Beam insert for multi-channel small form factor – the smallest expanded beam multi-channel insert in the industry a TE Connectivity exclusive.



Expanded Beam Principle

Fiber Optic interconnect/cable system using Expanded Beam technology, which physically expands and collimates the transmission signal into an optical beam over 14 times its original diameter (the cross sectional area of the light beam increases over 200 times for multimode optical signals). For singlemode signals, the collimated beam is over 45 times its original diameter

(the cross-sectional area of the light beam increases over 2,000 times). It is then refocused back down onto the core of the receiving fiber. This approach provides ease of alignment and low sensitivity to thermal changes and contamination. High strength, precision connector housings enhance a durable connection, optimizing low loss and repeatable performance.



Expanded Beam Inserts

Suitable for aerospace, avionics, field-deployable communications, marine ship-to-shore applications, security systems, mobile diagnostic units, oil and gas exploration and other harsh environment applications demanding strength, durability and reliable performance in conditions of multiple couplings/decouplings, blindmate situations, and high vibration.

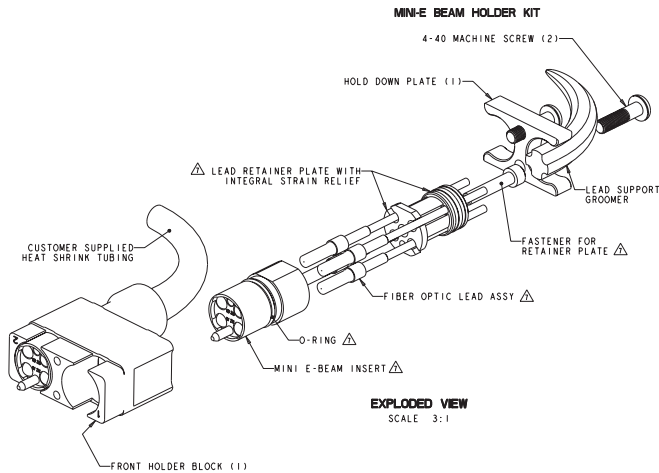
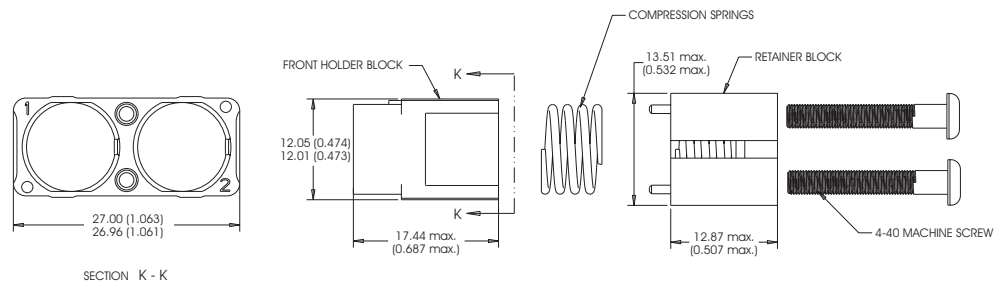
#### Assembly Capabilities

TE has extensive Rugged Optic Harness capabilities. Please consult your local TE Sales Representative for assistance.

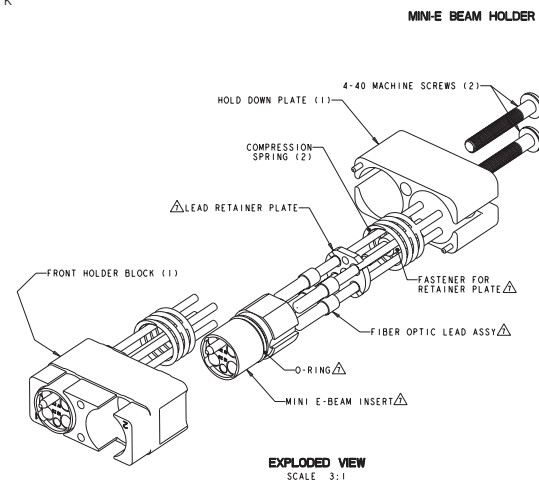
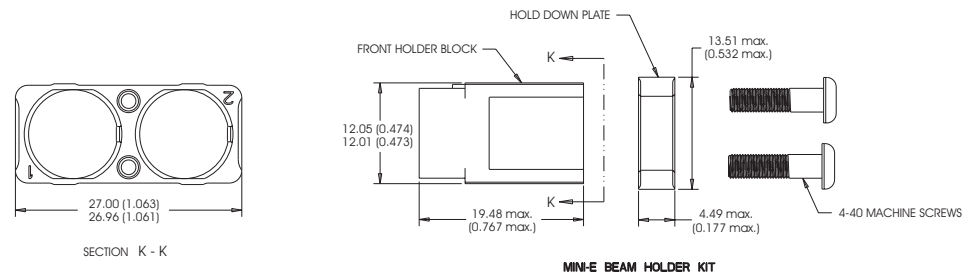
## Insert Assemblies for High Speed Applications (Continued)

### M2 Mini-Expanded Beam Insert Holders (Continued)

**Holder Kit, Pin (Spring-Loaded),  
Mini-Expanded Beam**  
Key A – GPRB-1445162-1  
Key B – GPRB-2000189-1



**Holder Kit, Socket (Fixed),  
Mini-Expanded Beam,**  
Key A – GPRB-1445163-1  
Key B – GPRB-2000190-1



Insert Assemblies for High Speed Applications (Continued)

## 24 Position Fiber Optic Connector

for use with ARINC 801 termini

### Application Specification:

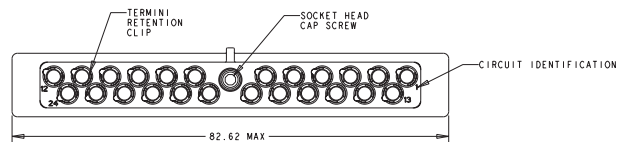
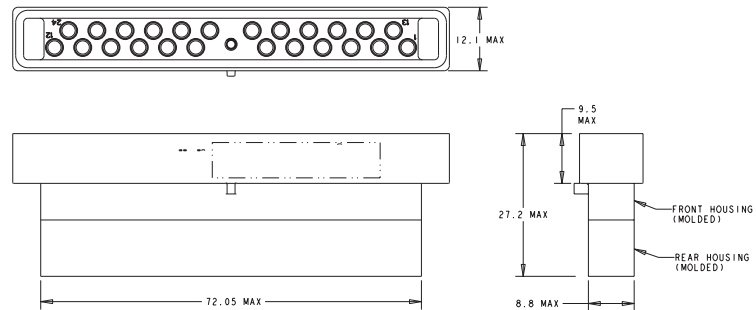
114-13192

### Product Specification:

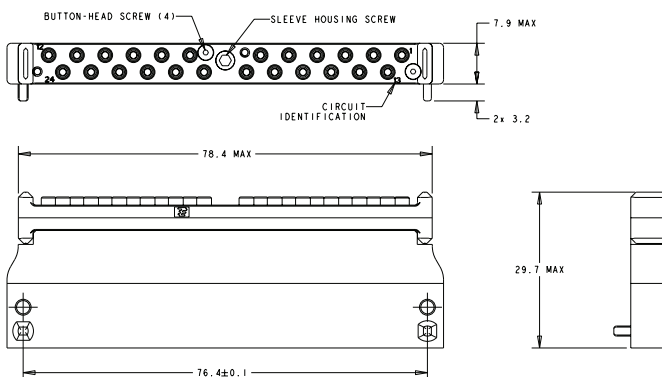
108-2247

### Qualification Test Report:

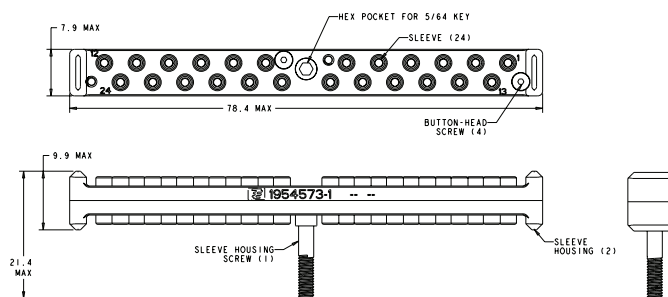
501-680



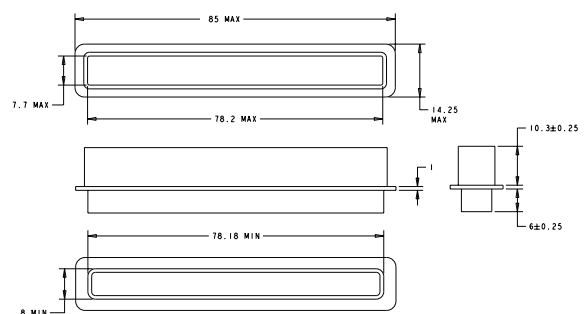
Backplane Connector Kit  
1738969-1



Module Connector  
1738960-2



Sleeve Holder Assembly  
1954573-1



Dust Cover  
1877519-1

## Contact and Application Tool Part Numbers

| Form                                      | Contact Size                      | Wire Size                      | Type                       | Contacts<br>TE P/N         | Contact Crimp Tools & Positioners |                                |                      |                       | Contact<br>Insertion/Removal Tools |                                                         |                                 |                              |          |                                           |  |
|-------------------------------------------|-----------------------------------|--------------------------------|----------------------------|----------------------------|-----------------------------------|--------------------------------|----------------------|-----------------------|------------------------------------|---------------------------------------------------------|---------------------------------|------------------------------|----------|-------------------------------------------|--|
|                                           |                                   |                                |                            |                            | Crimp Tool<br>TE P/N              | Crimp Tool<br>MIL P/N          | Positioner<br>TE P/N | Positioner<br>MIL P/N | TE<br>Part Number                  |                                                         |                                 |                              |          |                                           |  |
|                                           |                                   |                                |                            |                            |                                   |                                |                      |                       | MIL<br>Part Number                 |                                                         |                                 |                              |          |                                           |  |
| Crimp<br>Contacts                         | 22                                | 22 - 24 - 26                   | Pin                        | 1738007-1                  | 601966-1                          | M22520/2-01                    | 601966-8             | M22520/2-23           | 91066-1                            | M81969/1-01                                             |                                 |                              |          |                                           |  |
|                                           |                                   |                                | Socket                     | 1738008-1                  |                                   |                                |                      |                       |                                    |                                                         |                                 |                              |          |                                           |  |
|                                           |                                   |                                | Socket*                    | 1954077-2                  |                                   |                                |                      |                       |                                    |                                                         |                                 |                              |          |                                           |  |
|                                           | 22 - Reduced<br>Crimp Barrel      | 28 - 30                        | Pin                        | 1738009-1                  |                                   |                                | 601966-5             | M22520/2-08           | 91067-2                            | M81969/1-02                                             |                                 |                              |          |                                           |  |
|                                           |                                   |                                | Socket                     | 1738010-1                  |                                   |                                |                      |                       |                                    |                                                         |                                 |                              |          |                                           |  |
|                                           | 20                                | 20 - 22 - 24                   | Pin                        | 1738011-1                  |                                   |                                |                      |                       |                                    |                                                         |                                 |                              |          |                                           |  |
|                                           |                                   |                                | Socket                     | 1738012-1                  |                                   |                                |                      |                       |                                    |                                                         |                                 |                              |          |                                           |  |
|                                           | 16                                | 16 - 18 - 20                   | Pin                        | 1738013-1                  | 601967-1                          | M22520/1-01                    | 601967-2             | M22520/1-02           | 91066-3                            | M81969/1-03                                             |                                 |                              |          |                                           |  |
|                                           |                                   |                                | Socket                     | 1738014-1                  |                                   |                                |                      |                       |                                    |                                                         |                                 |                              |          |                                           |  |
|                                           | 16 - Reduced<br>Crimp Barrel      | 20 - 22 - 24                   | Pin                        | 1738015-1                  |                                   |                                |                      |                       |                                    |                                                         |                                 |                              |          |                                           |  |
|                                           |                                   |                                | Socket                     | 1738016-1                  |                                   |                                |                      |                       |                                    |                                                         |                                 |                              |          |                                           |  |
|                                           | 12                                | 12 - 14                        | Pin                        | 1738017-1                  |                                   |                                |                      |                       | 1738327-1                          | M81969/28-02                                            |                                 |                              |          |                                           |  |
|                                           |                                   |                                | Socket                     | 1738018-1                  |                                   |                                |                      |                       |                                    |                                                         |                                 |                              |          |                                           |  |
|                                           | 8                                 | 8 - 10                         | Pin                        | 1996474-1                  | N/A                               | M22520/23-01 &<br>M22520/23-02 | Locator<br>1738331-1 | N/A                   | 58284-1                            | M81969/28-03                                            |                                 |                              |          |                                           |  |
|                                           |                                   |                                | Socket                     | 1996475-1                  |                                   |                                |                      |                       |                                    |                                                         |                                 |                              |          |                                           |  |
|                                           | 5                                 | 8 - 10                         | Pin                        | 1738019-1                  |                                   |                                |                      |                       | 91074-1                            | M81969/28-01                                            |                                 |                              |          |                                           |  |
|                                           |                                   |                                | Socket                     | 1954722-1                  |                                   |                                |                      |                       |                                    |                                                         |                                 |                              |          |                                           |  |
|                                           | 16 -Mating End<br>20-Crimp Barrel | 20 - 22 - 24                   | Ground<br>Block<br>Contact | 2-592404-1<br>M39029/1-101 |                                   |                                |                      |                       | 601966-1                           | M22520/2-01                                             | N/A                             | M22520/2-02<br>or /2-11      | 592105-1 | M81969/14-11<br>or /14-02                 |  |
|                                           | Form                              | Contact Size                   | Wire Size                  | Type                       |                                   |                                |                      |                       | Contacts<br>TE P/N                 | Center Conductor /<br>Contact Crimp Tools & Positioners |                                 |                              |          | Outer Conductor<br>Crimp Tools & Die Sets |  |
| Crimp Tool<br>TE P/N                      |                                   |                                |                            |                            | Crimp Tool<br>MIL P/N             |                                |                      |                       |                                    | Positioner<br>TE P/N<br>MIL P/N                         | Crimp Tool<br>TE P/N<br>MIL P/N | Die Set<br>TE P/N<br>MIL P/N | TE P/N   | MIL P/N                                   |  |
| Coaxial<br>Crimp<br>Contacts              | 5                                 | RG142<br>RG223<br>KX23         | Pin                        | 1738021-1                  | 601966-1                          | M22520/2-01                    | 1738332-1<br>N/A     | 608650-1              | 1738336-1                          | 91074-1                                                 | M81969/28-01                    |                              |          |                                           |  |
|                                           |                                   |                                | Socket                     | 1738022-1                  |                                   |                                |                      |                       |                                    |                                                         |                                 |                              |          |                                           |  |
|                                           | 5                                 | RG174<br>RG316<br>KX22         | Pin                        | 1738023-1                  |                                   |                                | 1738333-1<br>N/A     | 601963-1              | 1738337-1                          | 91066-3                                                 | M81969/1-03                     |                              |          |                                           |  |
|                                           |                                   |                                | Socket                     | 1738024-1                  |                                   |                                |                      |                       |                                    |                                                         |                                 |                              |          |                                           |  |
|                                           | 15                                | RG174<br>RG179<br>RG316 - KX22 | Pin                        | 1738025-1                  |                                   |                                | 1738333-1<br>N/A     | 601963-1              | 1738337-1                          | 91066-3                                                 | M81969/1-03                     |                              |          |                                           |  |
|                                           |                                   |                                | Socket                     | 1738026-1                  |                                   |                                |                      |                       |                                    |                                                         |                                 |                              |          |                                           |  |
|                                           | 15                                | RG178<br>KX21 ST               | Pin                        | 1738027-1                  |                                   |                                | 1738333-1<br>N/A     | 601963-1              | 1738337-1                          | 91066-3                                                 | M81969/1-03                     |                              |          |                                           |  |
|                                           |                                   |                                | Socket                     | 1738028-1                  |                                   |                                |                      |                       |                                    |                                                         |                                 |                              |          |                                           |  |
|                                           | 15                                | KX21 DT                        | Pin                        | 1738029-1                  |                                   |                                | 1738333-1<br>N/A     | 601963-1              | 1738337-1                          | 91066-3                                                 | M81969/1-03                     |                              |          |                                           |  |
|                                           |                                   |                                | Socket                     | 1738030-1                  |                                   |                                |                      |                       |                                    |                                                         |                                 |                              |          |                                           |  |
| 15                                        | UT .047                           | Pin                            | 1738031-1                  | 1738333-1<br>N/A           | 601963-1                          | 1738337-1                      | 91066-3              | M81969/1-03           |                                    |                                                         |                                 |                              |          |                                           |  |
|                                           |                                   | Socket                         | 1738032-1                  |                            |                                   |                                |                      |                       |                                    |                                                         |                                 |                              |          |                                           |  |
| Concentric<br>Twinax<br>Crimp<br>Contacts | 5                                 | PAN61421<br>M17/176-0002       | Pin                        | 1738033-1                  | 608650-1                          | M22520/5-01                    | 1738338-1<br>N/A     | 608650-1              | 1738336-1                          | 91074-1                                                 | M81969-28-01                    |                              |          |                                           |  |
|                                           |                                   |                                | Socket                     | 1738034-1                  |                                   |                                |                      |                       |                                    |                                                         |                                 |                              |          |                                           |  |

\* Economy socket

### Contact and Application Tool Part Numbers (Continued)

| Form                                 | Contact Size | Hex Crimp Number | Reference Cables                                                                                              | Type          | Contacts PN | Contact Insertion/Extraction |
|--------------------------------------|--------------|------------------|---------------------------------------------------------------------------------------------------------------|---------------|-------------|------------------------------|
| ARINC 600<br>QUADRAX<br>Contacts     | 8            | 0.218            | Tensolite NF24Q100, NF26Q100, 24443/03130X-4 (LD),<br>2443/P025X-4 (LD), Raychem CEC-RWC-18687, CEC-RWC-18664 | Pin           | 1445692-1   | 58284-1<br><br>M81969/28-03  |
|                                      |              |                  |                                                                                                               | Socket        | 1445693-1   |                              |
|                                      |              | 0.231            | DRAKA F4703-3, F4704-4                                                                                        | Pin           | 1445692-6   |                              |
|                                      |              |                  |                                                                                                               | Socket        | 1445693-6   |                              |
|                                      | 8            | 0.231            | Tensolite 26473/02006X-4 (LD),<br>Raychem CEC-RWC-18684, CEC-RWC-18680                                        | Pin           | 1877039-1   |                              |
|                                      |              |                  |                                                                                                               | Socket        | 1877040-1   |                              |
|                                      |              | —                | —                                                                                                             | Seal Assembly | 1877626-2   |                              |
|                                      |              |                  |                                                                                                               | Pin           | 1811865-1   |                              |
| Differential Pair<br>TWINAX Contacts | 8            | —                | Raychem 100 ohm Twinaxial 0024T1426                                                                           | Socket        | 1811866-1   |                              |
|                                      |              |                  |                                                                                                               | Seal Assembly | 1954046-1   |                              |
|                                      |              |                  |                                                                                                               | Pin           | 1811865-3   |                              |
| Differential Pair<br>TWINAX Contacts | 8            | —                | Raychem 120 ohm Twinaxial 1726A1424                                                                           | Socket        | 1811866-3   |                              |
|                                      |              |                  |                                                                                                               | Seal Assembly | 1954046-1   |                              |
|                                      |              |                  |                                                                                                               | Pin           | 1811865-3   |                              |

### ARINC 801 Optical Termini Part Numbers

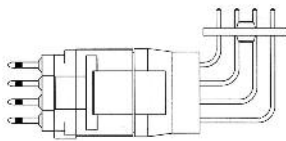
| Cable Dia.   | Cable Structure<br>ML (loose & tight)<br>MT (ultra tight) | S/M Fiber<br>125.3 µm<br>PC/UPC | S/M Fiber<br>125.3 µm<br>APC | M/M Fiber<br>128 µm<br>PC |
|--------------|-----------------------------------------------------------|---------------------------------|------------------------------|---------------------------|
| 0.9mm Buffer | —                                                         | *                               | *                            | *                         |
| 1.5 - 2.2mm  | ML                                                        | 1918614-1                       | 1918616-1                    | 1828199-1                 |
| 1.5 - 2.2mm  | MT                                                        | 1918615-1                       | 1918617-1                    | 1828200-1                 |

Consult your local TE Sales Representative for additional options.

\* Contact TE for availability.

### PC Tail Contacts

Inserts pre-assembled with PC tail contacts with straight or right-angle termination are available — Consult TE.



#### Posted Contacts – Rear Release/Remove

| Form               | Contact Size | Type | Tail Diameter | Tail Length | Part Number |
|--------------------|--------------|------|---------------|-------------|-------------|
| Posted<br>Contacts | 22           | Pin  | 0.63          | 12.6        | 1738709-1   |
|                    | 20           | Pin  | 0.63          | 13.35       | 1738710-1   |
|                    | 16           | Pin  | 1.32          | 14.45       | 1996452-2   |
|                    | 12           | Pin  | 2.03          | 13.60       | 1738711-1   |
|                    | 8            | Pin  | 4.04          | 26.63       | 2000499-1   |
|                    | 5            | Pin  | 4.55          | 26.66       | 2000500-1   |

#### Right Angle Posted Pin Contact / Insert Assemblies

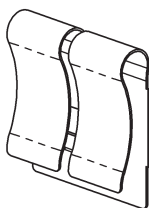
| Form                                                                                                      | Insert Arrangement | Part Number |
|-----------------------------------------------------------------------------------------------------------|--------------------|-------------|
| Insert assemblies with<br>right-angle pin contacts<br>installed; insert assy. also<br>includes pin spacer | 06 GPRBE06PA       | 1996453-1   |
|                                                                                                           | GPRBE06PB          | 1996453-2   |
|                                                                                                           | 40 GPRBE40PA       | 1996454-1   |
|                                                                                                           | GPRBE40PB          | 1996454-2   |
|                                                                                                           | 25Q1* GPRBE25Q1PA  | 1996481-1   |
|                                                                                                           | GPRBE25Q1PB        | 1996481-2   |

\*with Twinax contact installed in Size 8 cavity

Other insert arrangements available upon request.

## Spare Parts and Tools

### Spare Parts



Grounding Spring  
Part Number 1738199-1

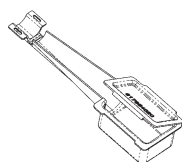
### GPRA and GPRB Series

| Part Number | Description                             | To Be Used With                      |
|-------------|-----------------------------------------|--------------------------------------|
| 1738199-1   | Grounding Spring                        | GPRA                                 |
| 1738200-1   | Dust Cap – Plug Shell                   | GPRA                                 |
| 1738201-1   | Dust Cap – Receptacle Shell             | GPRA                                 |
| 1738203-1   | Jacknut – A/B/C/D/E/F                   | GPRB2                                |
| 1738204-1   | Jacknut – N/R/W/X/Y/Z                   | GPRB2                                |
| 1738205-1   | Jackscrew – A/B/C/D/E/F                 | GPRB2                                |
| 1738206-1   | Jackscrew – N/R/W/X/Y/Z                 | GPRB2                                |
| 1738207-1   | Polarizing Guide Socket – A/B/C/D/E/F   | GPRB2 Rack & Panel application       |
| 1738208-1   | Polarizing Guide Socket– N/R/W/X/Y/Z    | GPRB2 Rack & Panel application       |
| 1738209-1   | Polarizing Guide Post – A/B/C/D/E/F     | GPRB2 Rack & Panel application       |
| 1738210-1   | Polarizing Guide Post – N/R/W/X/Y/Z     | GPRB2 Rack & Panel application       |
| 1738213-1   | Dust Cap – Plug Shell                   | GPRB1                                |
| 1738214-1   | Dust Cap – Receptacle Shell             | GPRB1                                |
| 1738211-1   | Dust Cap – Plug Shell                   | GPRB2                                |
| 1738212-1   | Dust Cap – Receptacle Shell             | GPRB2                                |
| 1877328-1   | Anti-Static Dust Cap – Plug Shell       | GPRB2                                |
| 1877329-1   | Anti-Static Dust Cap – Receptacle Shell | GPRB2                                |
| 1738400-1   | Grounding Spring                        | GPRB1 & B2                           |
| 1738428-1   | Polarization Key, Male                  | GPRA & legacy GPRB1                  |
| 1738429-1   | Polarization Key, Female                | GPRA & legacy GPRB1                  |
| 1738440-1   | Key Retention Plate Assembly            | GPRA & legacy GPRB1                  |
| 1877985-1   | Polarization Key, Pin                   | GPRB1 (for flexible sidewall design) |
| 1877986-1   | Polarization Key, Socket                | GPRB1 (for flexible sidewall design) |

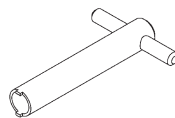
### Tools

### GPRA and GPRB Series

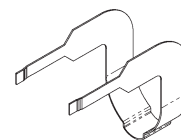
| Part Number | Description                                          | To Be Used With  |
|-------------|------------------------------------------------------|------------------|
| 1738215-1   | Insert extraction tool                               | GPRA             |
| 1738216-1   | Allen wrench locking system                          | GPRA, GPRB1      |
| 1738217-1   | Insert handling case                                 | GPRA, GPRB1 & B2 |
| 1738218-1   | Insert extraction tool                               | GPRB1 & B2       |
| 1738219-1   | Right-angle insert extraction tool                   | GPRB1 & B2       |
| 1738220-1   | Spanner wrench for locking device w/1/4 inch adapter | GPRB2            |
| 1738221-1   | Spanner wrench for locking device w/handle           | GPRB2            |



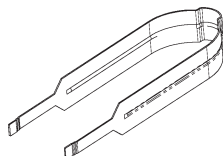
Insert Handling Case  
Part Number 1738217-1



Spanner Wrench for Locking Device  
with Handle  
Part Number 1738221-1



Right-Angle Insert Extraction Tool  
Part Number 1738219-1



Insert Extraction Tool  
Part Number 1738218-1



Stainless steel testing tools are available to check the wiring of the inserts without the shell — Consult TE.

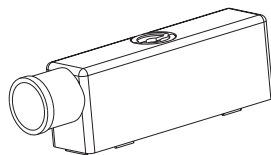
## EMI Backshells and Strain Reliefs

### GPRB Series

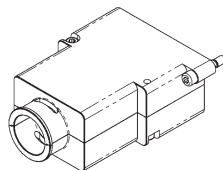
| Part Number | Description                                | Used With      |
|-------------|--------------------------------------------|----------------|
| 1738310-1   | Straight strain relief                     | GPRB1          |
| 1738311-1   | 45° strain relief                          | GPRB1          |
| 1738312-1   | Straight backshell                         | GPRB1          |
| 1738313-1   | Straight strain relief                     | GPRB2          |
| 1738314-1   | Backshell for shielded termination         | GPRB2          |
| 1738315-1   | Backshell for screened twisted-pair cables | GPRB2          |
| 1738316-1   | Backshell for large sized wire harnesses   | GPRB2          |
| 1811650-1   | Straight Strain Relief                     | GPRB2-Vertical |

### GPRA Series

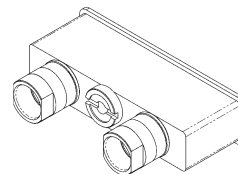
| Part Number | Description            |
|-------------|------------------------|
| 1738317-1   | Straight strain relief |
| 1738318-1   | 45° strain relief      |
| 1738319-1   | Straight backshell     |



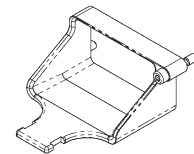
Backshell Kit, 90° Exit  
Contact TE



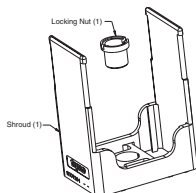
Straight Backshell  
Part Number 1738312-1



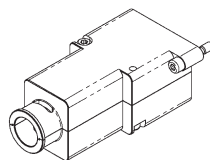
Backshell for  
Shielded Termination  
Part Number 1738314-1



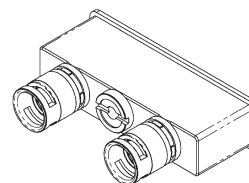
Straight Strain Relief  
Part Number 1738310-1



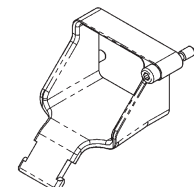
Vertical Strain Relief Kit, Fiber Optic  
Part Number 1877736-1



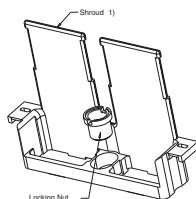
Straight Backshell  
Part Number 1738319-1



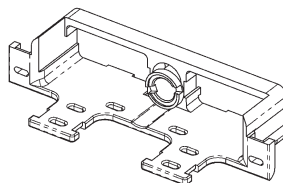
Backshell for Screened  
Twisted Pair Cables  
Part Number 1738315-1



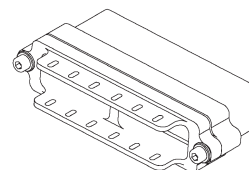
45° Strain Relief  
Part Number 1738318-1



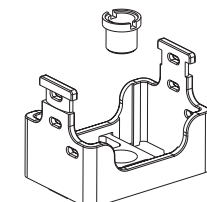
Horizontal Strain Relief Kit, Fiber Optic  
Part Number 1877888-1



Straight Strain Relief  
Part Number 1738313-1



Backshell for Large Sized  
Wire Harnesses  
Part Number 1738316-1



GPRB2 Vertical Strain Relief  
Part Number 1811650-1



## Galley Insert (GAIN) Connectors

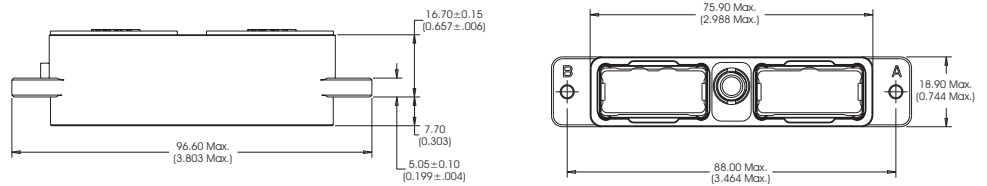


### Product Facts

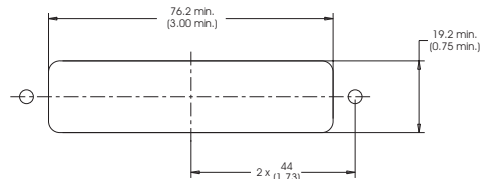
- Designed for ARINC 810 – standard interfaces for Galley Insert (GAIN) Equipment
- Spring-Loaded, float-mounting plug shell design allows  $\pm 1$  mm variation in the mating direction
- Blind mating guide pin & socket accept  $\pm 2$  mm/  $2^\circ$  lateral misalignment
- Product incorporates:
  - Size 22 signal contacts
  - Size 12 power contacts
  - Size 8 twinax contacts
- 500 mating cycles durability

### Application Specification:

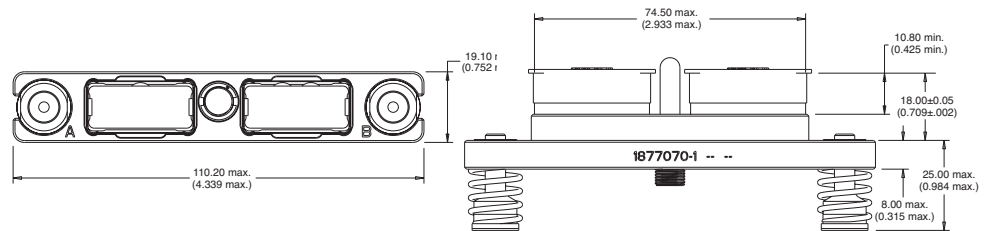
114-13220



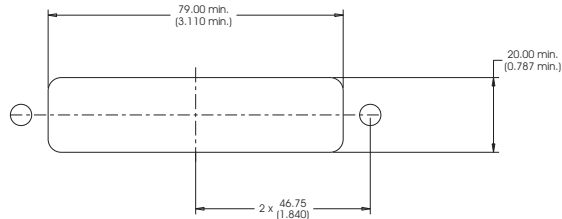
**Receptacle Shell, Front Panel Mount, with Guide Socket**  
**GPRB2**  
**1811119-1**



**Recommended Panel Cutout**



**Plug Shell, Spring-Loaded, Float-Mounting**  
**GPRB2**  
**1877070-1**



**Recommended Panel Cutout**

| Description                  | Part Number | Ref. Catalog Page |
|------------------------------|-------------|-------------------|
| Fully Assembled Receptacle   | 1877652-1   | 8-32              |
| Fully Assembled Plug         | 1877646-1   | 8-32              |
| Receptacle Shell Assembly    | 1811119-1   | 8-32              |
| Plug Shell Assembly          | 1877070-1   | 8-32              |
| 25Q1 Pin Insert Assembly     | 1811121-1   | 8-20, 8-32        |
| 25Q1 Socket Insert Assembly  | 1811122-1   | 8-20, 8-32        |
| 06 Pin Insert Assembly       | 1738101-1   | 8-18, 8-32        |
| 06 Socket Insert Assembly    | 1738104-1   | 8-18, 8-32        |
| Size 22 Pin Contact          | 1738007-1   | 8-28, 8-32        |
| Size 22 Socket Contact       | 1738008-1   | 8-28, 8-32        |
| Size 12 Pin Contact          | 1738017-1   | 8-28, 8-32        |
| Size 12 Socket Contact       | 1738018-1   | 8-28, 8-32        |
| Size 8 Twinax Pin Contact    | 1811865-3   | 8-28, 8-31        |
| Size 8 Twinax Socket Contact | 1811866-3   | 8-29, 8-32        |
| Size 22 Sealing Plug         | 592104-4    | 8-32              |
| Strain Relief (Straight)     | 1738313-1   | 8-31, 8-32        |
| Dust Cap, Plug               | 1738211-1   | 8-30, 8-32        |
| Dust Cap, Receptacle         | 1738212-1   | 8-30, 8-32        |
| Seal Assembly, Size 8, GPR   | 1954046-1   | 8-29, 8-32        |
| 120 Ohm Twinaxial Cable      | 1726A1424   | 8-29              |

## Custom Shells

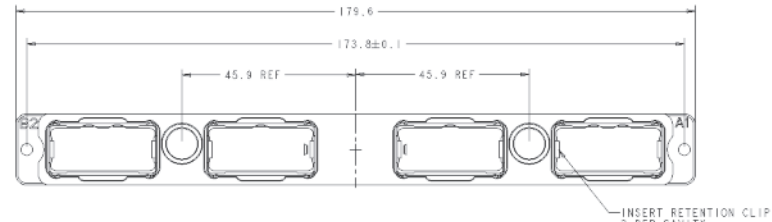
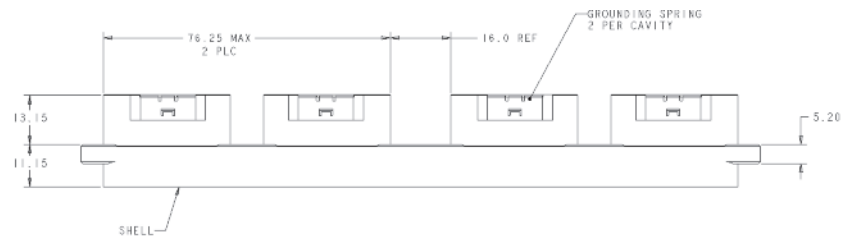
### Custom Shells

This custom 4-cavity receptacle shell was developed and serves as the rear panel of the customer's enclosure.

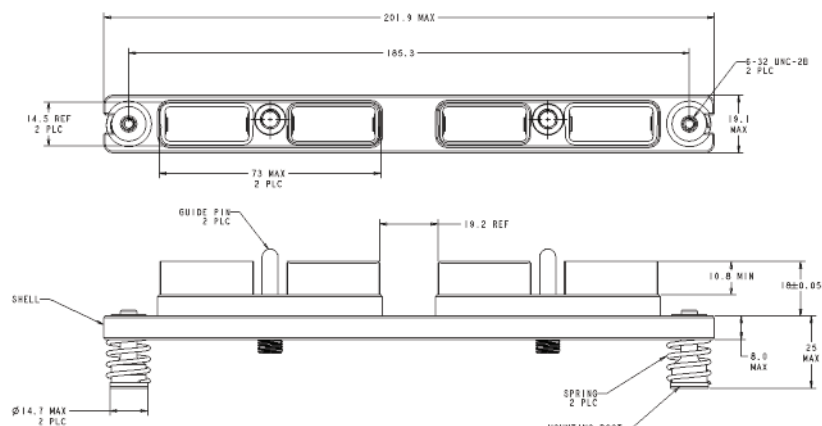


### GPRB4 (Horizontal) Shell Dimensions

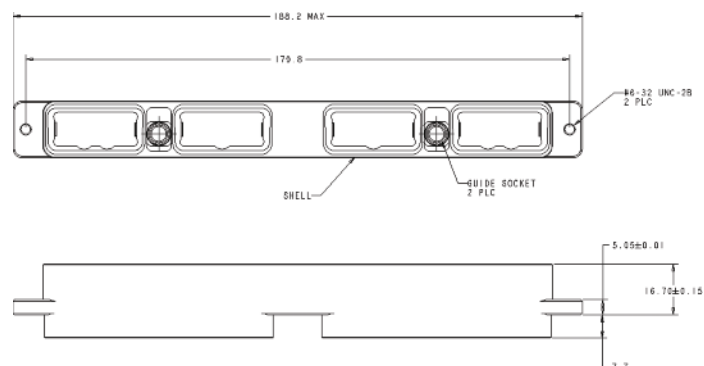
### Shell Kits with Four Cavities



Receptacle, w/(2) thru holes  
1996487-1



Plug, w/ spring loaded float mount  
1996488-1



Receptacle, front panel mount, w/ (2) 6-32 holes

## Custom Solutions and In Development Products

The GPRA & B Connector Series offers a comprehensive range of standard components that allows the user to build a connector to meet his requirements. However, standard shells might not be compatible with the user's application;

alternate solutions are available to meet the customer's specific requirements with limited investment by using standard inserts and contacts. Some of these are shown below.

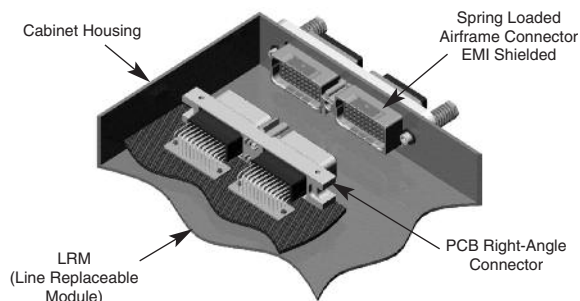
### Multicavity Racked Shells

GPRB shells can be built in any format from 4 to 20 cavities for either panel or rack applications and with or without grounding blocks. These shells accommodate standard inserts.



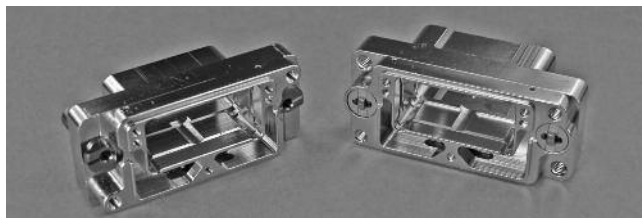
### Solution for IMA (Integrated Modular Avionics)

A right-angle contact printed circuit board connector which allows direct mating with an airframe connector has been developed. It is fitted with special rack features: spring loaded shell, EMI shield frame and 4 polarization posts with 256 combinations.



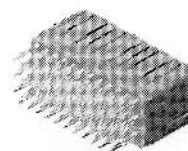
### Composite Shells (in development)

Low weight, Skydrol® resistant composite shells have been developed.



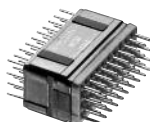
### High Density Insert - 48 Position

To save space and weight and to accommodate density demand in electronic equipment.



### Custom Inserts

Inserts are available with PC Tail contacts pre-assembled, such as this 40-position pin assembly.



SKYDROL is a registered trademark of Solutia Inc.

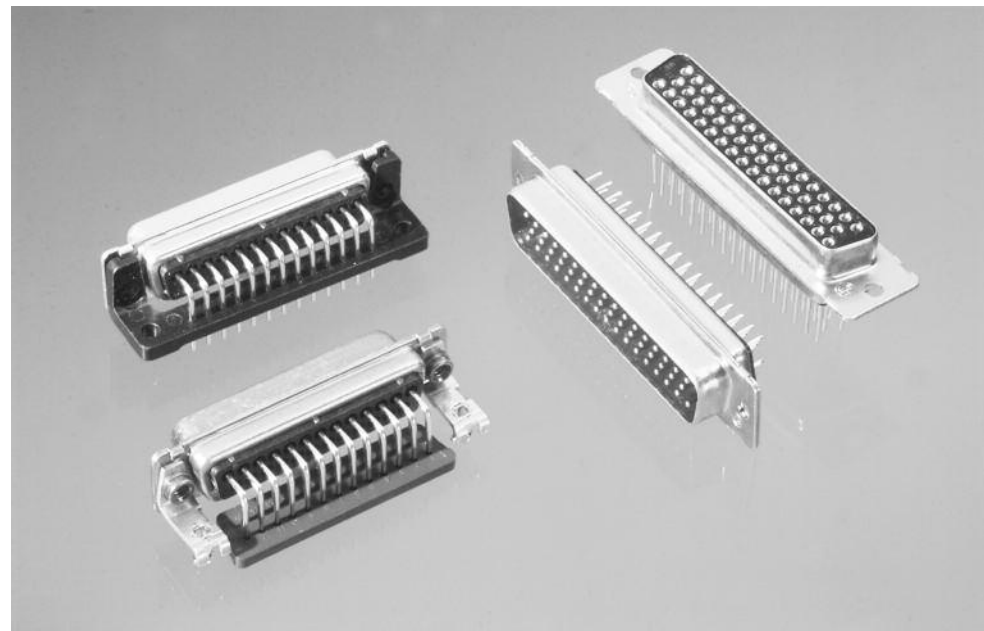
## AMPLIMITE Subminiature Connectors

### Introduction

#### Product Facts

- Military qualified connectors conform to the latest amendments of MIL-DTL-24308
- Industrial versions available that use the same manufacturing process of MIL-C-24308 connectors
- Non-magnetic versions available per NASA spec, or with rubber grommet on rear of NASA-type connector
- ULTRA-LITE AMPLIMITE non-magnetic connectors save weight and improve EMI shielding vs. brass shell NASA-style connectors
- AS39029 contacts offer reliability and economies of high speed termination by automatic machine
- Connector savers (feed-through) preserve permanently mounted connectors in high use applications
- Choice of sizes — Size 1 through 5 for Series 109, standard density with 9, 15, 25, 37 and 50 contacts; Size 1 through 6 for Series 90, high density with 15, 26, 44, 62, 78 and 104 contacts
- Series 109 standard density connectors are available with cavities for power or coaxial contacts mixed with size 20 signal contacts
- Right-angle and straight PC board connectors in Series 109, standard density
- Preloaded, straight-posted connectors available in Series 90, high density
- Preloaded, solder cup connectors available in Series 109, standard density
- Produced under a Quality Management System certified to ISO 9001

A copy of the certificate is available upon request



AMPLIMITE Military Subminiature D Connectors are compact pin and socket connectors especially designed for high density applications such as military equipment, ground support devices, computer peripheral equipment, modems and industrial instrumentation.

In addition to the complete selection of standard military subminiature D-type connectors, TE Connectivity offers special application versions such as connectors which mix power/coax cavities with size 20 signal contacts; feed-through connectors which provide a disposable interface for high use applications; and special non-magnetic connectors with a rubber grommet on the rear, for strain relief.

Series 109 and Series 90 military connectors conform

to the latest amendments of the MIL-DTL-24308 specification and thus are interchangeable with similar connectors in the same sizes from other manufacturers. A broad range of connectors is included in this catalog, complemented by a variety of commercial cable clamps and mating hardware, which can be found in catalog 1307612.

Each AMPLIMITE crimp connector has metal clips which retain the pins and sockets after they are loaded into the inserts from the rear.

Series 109 connectors accept size 20 contacts, while Series 90 connectors accept size 22 contacts. Cavity spacing conforms to military specifications.

Size 20 and size 22 pins and sockets are designed for an 8-indent crimp. They are supplied loose-piece for

crimping in a standard M22520/2 hand operated tool or tape-mounted for high speed application by an AMP-TAPEMATIC Stripper/Crimper Machine.

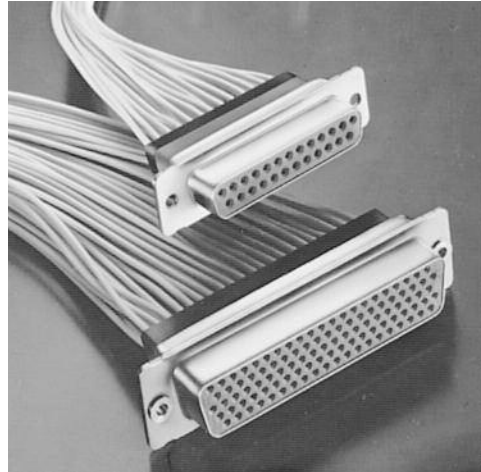
Series 90 and Series 109 connectors preloaded with contacts are available for printed circuit board mounting.

Special Series 109 connectors with power/coax cavities accept power contacts for 18 through 8 AWG [0.8-8 mm<sup>2</sup>] wire or coaxial contacts for RG/U 174, 188A and 316 cable, in combination with standard size 20 signal contacts.

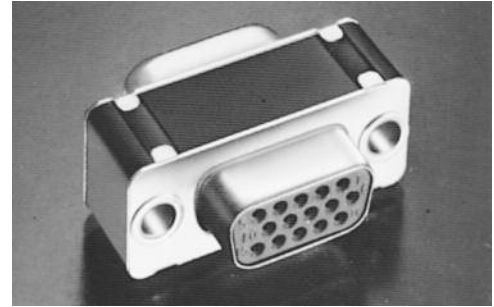
A complete range of non-military AMPLIMITE subminiature D connectors, contacts and accessories are shown in catalog 1307612, available on request from TE.

## AMPLIMITE Subminiature Connectors (Continued)

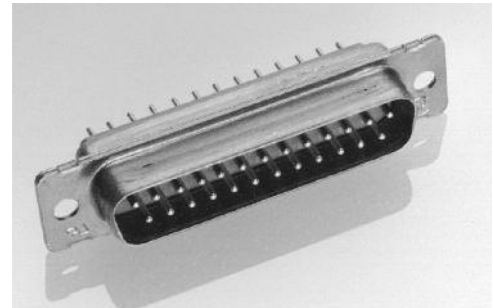
### Introduction (Continued)



Connectors for crimp, snap-in contacts are available in both series, standard shells and non-magnetic, plus non-magnetic with rear rubber grommet.



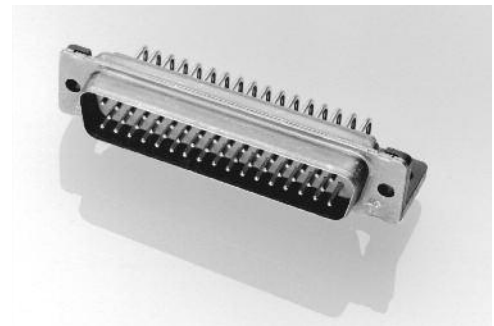
Connector savers extend life in high-use applications.



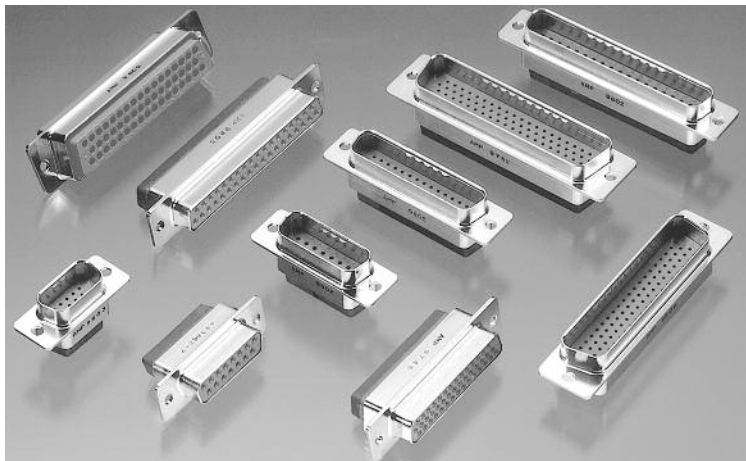
Straight posted versions available in both (Series 109) standard density and (Series 90) high density connectors.



Coax or power contacts can be mixed with signal contacts.



Right-angle board mount connectors for Series 109, standard density connections.



**ULTRA-LITE AMPLIMITE** Connectors for state-of-the-art weight savings and EMI performance.



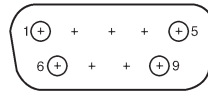
The Series 109 and 90 Blindmate Plug connectors are designed to prevent butting of contacts during mating.



## AMPLIMITE Connectors, Series 109

### Series 109 Connectors (Standard Density)

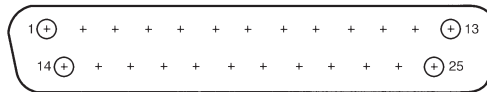
#### Insert Arrangements



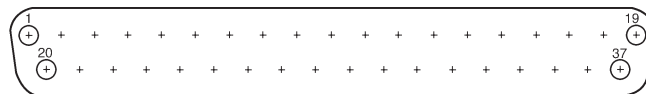
**9 Position  
(Shell Size 1)  
MS 18273-1**



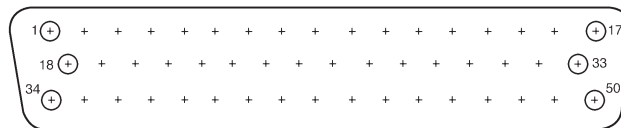
**15 Position  
(Shell Size 2)  
MS 18274-1**



**25 Position  
(Shell Size 3)  
MS 18275-1**



**37 Position  
(Shell Size 4)  
MS 18276-1**



**50 Position  
(Shell Size 5)  
MS 18277-1**

**Note:** Mating face of plug shown; receptacle is mirror image.

#### Performance Specifications

All Series 109 AMPLIMITE military connectors conform to the latest amendments of military specification MIL-DTL-24308. For more detailed information refer to MIL-DTL-24308.

All Series 109 Connectors are designed for a -67°F to 257°F [-55°C to +125°C] temperature range.

Series 109 contact current rating for Crimp Snap Connectors for MIL-C-39029 7.5 amps in free air.

Series 109 contact current rating for PCB Mount Connectors 5.0 amps per 108-1770.

#### Technical Documents List

The following technical documents cover the application and performance of AMPLIMITE Series 109 Connectors, contacts, tooling and accessories.

#### Military Specifications

|               |                                                                                                          |
|---------------|----------------------------------------------------------------------------------------------------------|
| MIL-DTL-24308 | Connectors, Electric, Rectangular, Miniature Polarized Shell, Rack and Panel, General Specifications for |
| AS39029       | Contacts, Electrical Connector, General Specification for                                                |

#### NASA Specification

|                |                                                    |
|----------------|----------------------------------------------------|
| GSFC-S-311-P-4 | Non-Magnetic Connectors, General Specification for |
|----------------|----------------------------------------------------|

#### Instruction Sheets

|            |                                                                    |
|------------|--------------------------------------------------------------------|
| 408-7516   | Application Tooling for MIL-C-39029 Contacts                       |
| 408-7634   | Application and Maintenance for Hand Crimping Tool 90302-1         |
| 408-7694-1 | Application and Maintenance for Hand Crimping Tool 90312-1         |
| 408-7954   | Application and Maintenance for Hand Crimping Tool 90374-1         |
| 408-7508   | Insertion/Extraction Tools 91067-1, 91067-2 and 91067-3            |
| 408-7837   | Female Screwlock Kit 205817-1 and Male Screw/Retainer Kit 211883-5 |

## AMPLIMITE Connectors, Series 109 (Continued)

### Size 20 Crimp Contacts for Series 109 Connectors (AS39029)

#### Size 20 Crimp, Snap-In Contacts .040 [1.02] Pin Diameter

##### Material and Finish

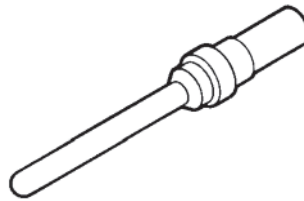
###### Pin and Socket Body —

**Pin** — Copper alloy, gold flash .000050–.000100 [0.00127–0.00254] thick nickel underplate.

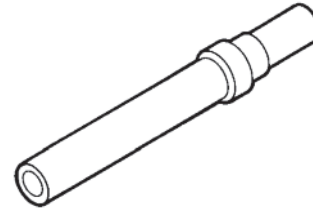
**Socket** — Copper alloy, plated gold .000050 min thick over .000050–.000100 [0.00127–0.00254] thick nickel underplate.

**Contact Body & Mating Area** — Copper alloy, plated gold .000050–.000100 [0.00127–0.00254] thick over .000050–.000100 [0.00127–0.00254] thick nickel underplate.

**Socket Hood** — Passivated stainless steel.



**Pin**  
**M39029/64-369**  
(Supersedes M24308/11-1)



**Socket**  
**M39029/63-368**  
(Supersedes M24308/10-1)

| Wire Size Range |         | Ins. Dia.<br>(Max.) | Contact Configuration | Tape Mounted Contacts<br>Part Number | Loose Piece Contacts           |                         | Hand Tool             |                             | Contact Color Band  |
|-----------------|---------|---------------------|-----------------------|--------------------------------------|--------------------------------|-------------------------|-----------------------|-----------------------------|---------------------|
|                 |         |                     |                       |                                      | Military Part No.<br>(M39029/) | AMP Part No.            | Tool No.<br>(M22520/) | Positioner No.<br>(M22520/) |                     |
| 20-24           | 0.6-0.2 | .072<br>1.83        | Pin                   | 205089-2 <sup>a</sup>                | 64-369                         | 205089-1 <sup>a</sup>   | 02-01                 | 02-08                       | orange, blue, white |
|                 |         |                     | Socket                | 205090-2 <sup>a</sup>                | 63-368                         | 205090-1 <sup>a</sup>   | 02-01                 | 02-08                       | orange, blue, gray  |
| 20-24           | 0.6-0.2 | .072<br>1.83        | Pin                   | 1-205089-3 <sup>b</sup>              | 64-369                         | 1-205089-2 <sup>b</sup> | 02-01                 | 02-08                       | orange, blue, white |
|                 |         |                     | Socket                | 1-205090-0 <sup>b</sup>              | 63-368                         | 205090-9 <sup>b</sup>   | 02-01                 | 02-08                       | orange, blue, gray  |

Tape mounted contacts are used in the AMP-TAPEMATIC Stripper/Crimper Machine Part Number **599406-7** (page 8-89).

**Notes:** 1. These contacts are used in Series 109 military connectors.

2. Insertion/Extraction Tool Part Number **91067-2** (Military Part Number **M81969/1-02**) is used to install and remove pin and socket contacts.

3. See Instruction Sheet 408-7516 for wire length, tool and selector settings.

4. Color bands are read in the direction of terminal (wire barrel) end to mating end.

### Size 20 Crimp Contacts for Series 109 Connectors (Industrial Grade)

#### Size 20 Crimp, Snap-In Contacts .040 [1.02] Pin Diameter

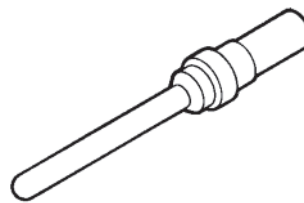
##### Material and Finish

###### Pin and Socket Body —

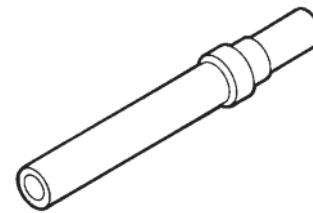
**Pin Body** — Brass, plated gold .000030 [0.00076] min thick over .000050–.000150 [0.00127–0.00381] thick nickel underplate.

**Socket Body** — Brass, plated gold .000010 [0.00025] min thick over .000050–.000150 [0.00127–0.00381] thick nickel underplate.

**Socket Clip** — Copper alloy, plated gold .000050 [0.00013] min thick over .000050–.000150 [0.00127–0.00381] thick nickel underplate.



**Pin**



**Socket**

| Wire Size Range |         | Ins. Dia.<br>(Max.) | Contact Configuration | Tape Mounted Contacts<br>Part Number | Loose Piece Contacts<br>Part Number | Hand Tool             |                             |
|-----------------|---------|---------------------|-----------------------|--------------------------------------|-------------------------------------|-----------------------|-----------------------------|
| AWG             | [mm²]   |                     |                       |                                      |                                     | Tool No.<br>(M22520/) | Positioner No.<br>(M22520/) |
| 20-24           | 0.6-0.2 | .072<br>1.83        | Pin                   | 1218266-4                            | 1218266-3                           | 02-01                 | 02-08                       |
|                 |         |                     | Socket                | 1218267-4                            | 1218267-3                           | 02-01                 | 02-08                       |
| 18              | 0.8     | .083<br>2.11        | Pin                   | 1218266-2                            | 1218266-1                           | 02-01                 | 02-08                       |
|                 |         |                     | Socket                | 1218267-2                            | 1218267-1                           | 02-01                 | 02-08                       |

Tape mounted contacts are used in the AMP-TAPEMATIC Stripper/Crimper Machine Part Number **599406-7** (page 8-89).

**Notes:** 1. These contacts are used in Series 109 connectors.

2. Insertion/Extraction Tool Part Number **91067-2** (Military Part Number **M81969/1-02**) is used to install and remove pin and socket contacts.

3. See Instruction Sheet 408-7516 for wire length, tool and selector settings.



## AMPLIMITE Connectors, Series 109 (Continued)

### Size 20 Posted Contacts for Series 109 Connectors

#### Material and Finish

##### Pin and Socket Body —

Leaded nickel copper or beryllium copper, plated per chart below

##### Socket Hood —

See chart below



**Pin and Socket  
Insertion/Extraction Tool**

AMP Part Number 91067-2 or

MIL Number M81969/1-02

Insertion tip, for replacement

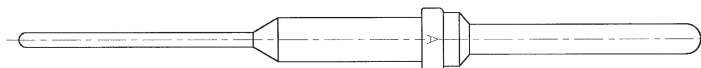
Part Number 126195-3

Extraction tip, for replacement

Part Number 126195-4

#### Notes:

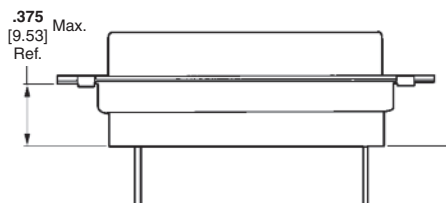
1. Contacts on this page can be used with connectors on pages 8-43 to 8-48, 8-62, 8-63 and 8-84.
2. Mating End of pin and socket complies with MIL-C-39029.
3. See page 8-91 for PCB layouts.



**Pin**  
(See Drawing Number 212565 for  
Latest Configuration)



**Socket**  
(See Drawing Number 208778 for  
Latest Configuration)



**Post Extension When Used in a  
Standard Connector**

| Post<br>Diameter<br>± .002 [± .050] | Post<br>Extension<br>C ± .025 [± 0.63] | Part Numbers |            | Contact<br>Plating                                                                                                | Socket Hood<br>Material and Finish |
|-------------------------------------|----------------------------------------|--------------|------------|-------------------------------------------------------------------------------------------------------------------|------------------------------------|
|                                     |                                        | Pin          | Socket     |                                                                                                                   |                                    |
| .018<br>0.46                        | .325<br>8.25                           | 1-212565-0   | 1-208778-0 | Gold .000050-.000100 [0.00127-0.00254]<br>thick over .000150-.000250<br>[0.00381-0.00635] thick copper underplate | Passivated Stainless Steel         |
| .018<br>0.46                        | .325<br>8.25                           | —            | 1-208778-1 | Gold .000050-.000100 [0.00127-0.00254]<br>thick over .000050-.000150<br>[0.00127-0.00381] thick nickel underplate | Passivated Stainless Steel         |
| .018<br>0.46                        | .240<br>6.10                           | —            | 1-208778-2 | Gold .000050-.000100 [0.00127-0.00254]<br>thick over .000150-.000250<br>[0.00381-0.00635] thick copper underplate | Passivated Stainless Steel         |

## AMPLIMITE Connectors, Series 109 (Continued)

### Size 20 Posted Contacts for Series 109 Connectors (High Current Upgrade Program)

The High Current Size 20 contact has been designed to fit into the Series 109 AMPLIMITE Connectors per MIL-C-24308.

#### Material

**Body** — Copper Alloy

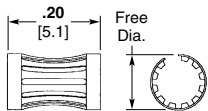
**Louvertac Band** — Beryllium Copper

#### Finish

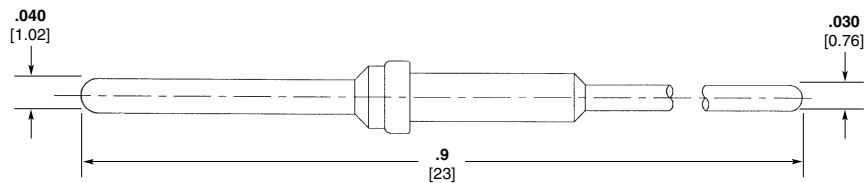
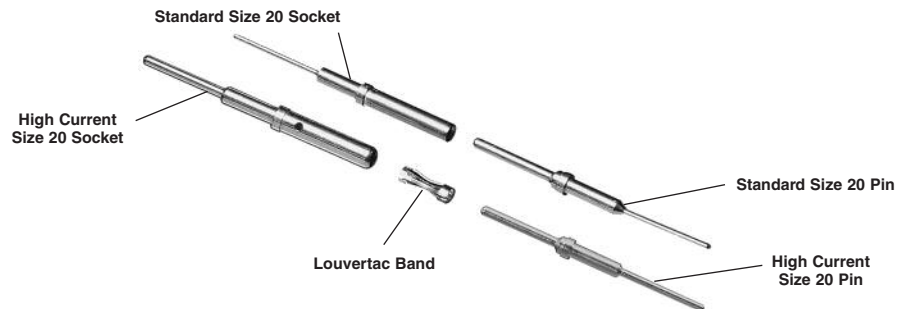
**Body** — Gold

**Louvertac Band** — Gold

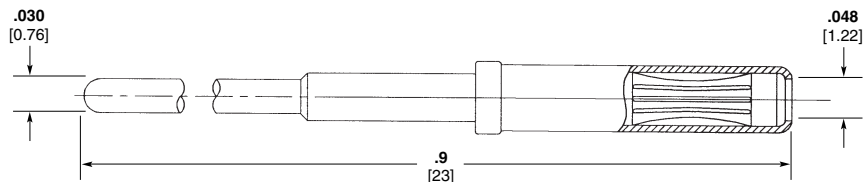
**Current-Carrying Capacity.** The High Current Size 20 contact with a 20 gage wire attached to the .030 [.762] diameter solder tail acquired an initial 86°F [30°C] T-Rise of 11.85 amps in free air.



Multiple contact point due to hyperbolic shape.



Pin Part Number 194081-1



Socket Part Number 194083-1

The contacts can be sold loose piece or installed into any of the MIL Standard connectors.

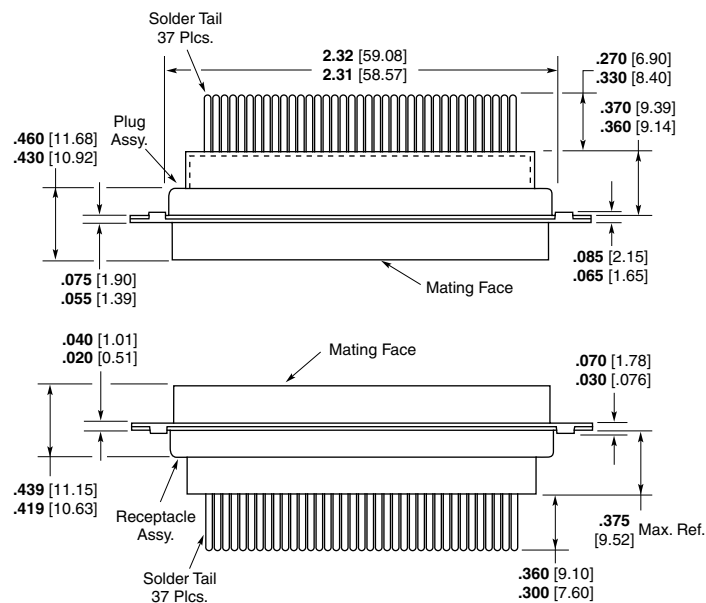


Pin and Socket  
Insertion/Extraction Tool

Part Number 91067-2 or MIL number M81969/1-02

Insertion tip, for replacement  
Part Number 126195-3

Extraction tip, for replacement  
Part Number 126195-4



Typical Fully-Loaded 37 Position  
Plug and Receptacle

**Note: 1. High Current contacts with Louvertac bands are NOT intermateable with any other contact.**

## AMPLIMITE Connectors, Series 109 (Continued)

### Crimp, Series 109, Standard Density Connectors (MIL Qualified)

#### Material and Finish

**Shell** — Steel, cadmium plated

**Insert** — Approved material per MIL-DTL-24308

**Retention Clips** — Stainless steel

#### Related Product Data

**Cavity Identification** — page 8-39

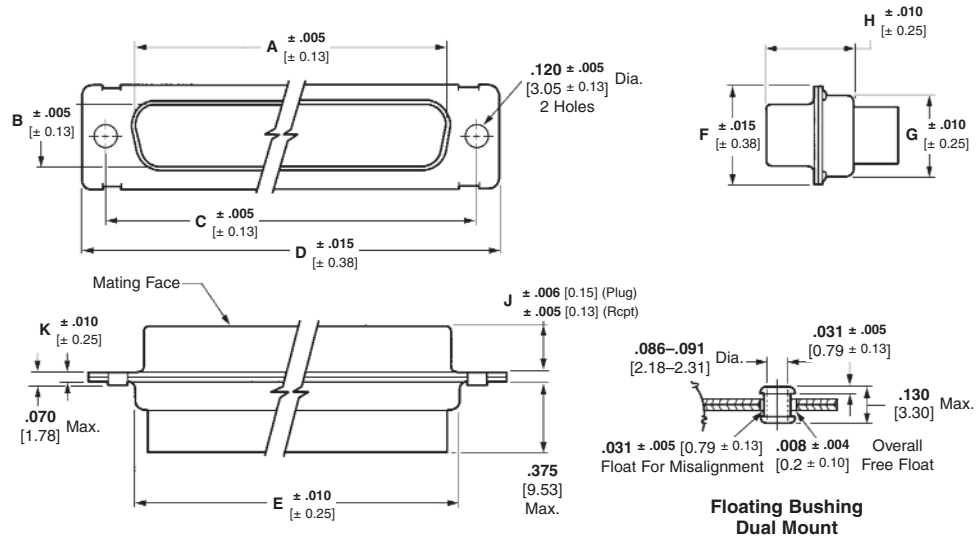
**Contacts** — pages 8-40 to 8-42

**Mounting, Mating Specifications** — page 8-90

**Accessories** — pages 8-95 to 8-97

#### Attention: Connector Marking

Connector marking may differ from package marking. All connectors marked per MIL-DTL-24308.



### Series 109 Plugs per MIL-DTL-24308

| No. of Contact Pos. (Shell Size) | Dimensions     |              |                |                |                |               |               |               |              |              | Standard Mount            |              | Floating Bushing Mount    |              | Description    |
|----------------------------------|----------------|--------------|----------------|----------------|----------------|---------------|---------------|---------------|--------------|--------------|---------------------------|--------------|---------------------------|--------------|----------------|
|                                  | A (Inside)     | B (Inside)   | C              | D              | E              | F             | G             | H             | J            | K            | Military Part No. M24308/ | AMP Part No. | Military Part No. M24308/ | AMP Part No. |                |
| 9 (1)                            | .666<br>16.92  | .329<br>8.36 | .984<br>24.99  | 1.213<br>30.81 | .759<br>19.28  | .494<br>12.55 | .422<br>10.72 | .422<br>10.72 | .235<br>5.97 | .030<br>0.76 | 4-259F                    | 205162-1     | 4-324F                    | 205412-1     | Plug only      |
| 15 (2)                           | .994<br>25.25  | .329<br>8.36 | 1.312<br>33.32 | 1.541<br>39.14 | 1.083<br>27.51 | .494<br>12.55 | .422<br>10.72 | .422<br>10.72 | .235<br>5.97 | .030<br>0.76 | 4-260F                    | 205164-1     | 4-325F                    | 205408-1     | Plug only      |
| 25 (3)                           | 1.534<br>38.96 | .329<br>8.36 | 1.852<br>47.04 | 2.088<br>53.04 | 1.625<br>41.3  | .494<br>12.55 | .422<br>10.72 | .426<br>10.82 | .230<br>5.84 | .039<br>0.99 | 4-261F                    | 205166-1     | 4-326F                    | 205413-1     | Plug only      |
| 37 (4)                           | 2.182<br>55.42 | .329<br>8.36 | 2.500<br>63.5  | 2.729<br>69.32 | 2.272<br>57.71 | .494<br>12.55 | .422<br>10.72 | .426<br>10.82 | .230<br>5.84 | .039<br>0.99 | 4-262F                    | 205168-1     | 4-327F                    | 205414-1     | Plug only      |
| 50 (5)                           | 2.079<br>52.81 | .441<br>11.2 | 2.406<br>61.11 | 2.635<br>66.93 | 2.178<br>55.32 | .605<br>15.37 | .534<br>13.56 | .426<br>10.82 | .230<br>5.84 | .039<br>0.99 | 4-263F                    | 205170-1     | 4-328F                    | 205415-1     | Plug only      |
|                                  |                |              |                |                |                |               |               |               |              |              | 4-5F                      | 205564-2     | 4-306F                    | 205431-2     | Plug with pins |

### Series 109 Receptacles per MIL-DTL-24308

| No. of Contact Pos. (Shell Size) | Dimensions     |               |                |                |                |               |               |              |              |              | Standard Mount            |              | Floating Bushing Mount    |              | Description          |
|----------------------------------|----------------|---------------|----------------|----------------|----------------|---------------|---------------|--------------|--------------|--------------|---------------------------|--------------|---------------------------|--------------|----------------------|
|                                  | A (Outside)    | B (Outside)   | C              | D              | E              | F             | G             | H            | J            | K            | Military Part No. M24308/ | AMP Part No. | Military Part No. M24308/ | AMP Part No. |                      |
| 9 (1)                            | .643<br>16.33  | .311<br>7.9   | .984<br>24.99  | 1.213<br>30.81 | .759<br>19.28  | .494<br>12.55 | .422<br>10.72 | .429<br>10.9 | .243<br>6.17 | .030<br>0.76 | 2-281F                    | 205161-1     | 2-292F                    | 205416-1     | Recept. only         |
| 15 (2)                           | .971<br>24.66  | .311<br>7.9   | 1.312<br>33.32 | 1.541<br>39.14 | 1.083<br>27.51 | .494<br>12.55 | .422<br>10.72 | .429<br>10.9 | .243<br>6.17 | .030<br>0.76 | 2-282F                    | 205163-1     | 2-293F                    | 205417-1     | Recept. only         |
| 25 (3)                           | 1.511<br>38.38 | .311<br>7.9   | 1.852<br>47.04 | 2.088<br>53.04 | 1.625<br>41.3  | .494<br>12.55 | .422<br>10.72 | .429<br>10.9 | .243<br>6.17 | .039<br>0.99 | 2-283F                    | 205165-1     | 2-294F                    | 205418-1     | Recept. only         |
| 37 (4)                           | 2.159<br>54.84 | .311<br>7.9   | 2.500<br>63.5  | 2.729<br>69.32 | 2.272<br>57.71 | .494<br>12.55 | .422<br>10.72 | .429<br>10.9 | .243<br>6.17 | .039<br>0.99 | 2-284F                    | 205167-1     | 2-295F                    | 205419-1     | Recept. only         |
| 50 (5)                           | 2.064<br>52.43 | .423<br>10.74 | 2.406<br>61.11 | 2.635<br>66.93 | 2.178<br>55.32 | .605<br>15.37 | .534<br>13.56 | .429<br>10.9 | .243<br>6.17 | .039<br>0.99 | 2-285F                    | 205169-1     | 2-296F                    | 205420-1     | Recept. only         |
|                                  |                |               |                |                |                |               |               |              |              |              | 2-5F                      | 205563-2     | 2-27F                     | 205432-2     | Recept. with sockets |

- Notes:** 1. Size 20 contacts supplied with connectors are loose piece.  
2. "F" is stamped on connectors following M24308 Part Number as required. -"F" designates cadmium shell plating.  
3. See pages 8-99 through 8-103 (Military to AMP Part Number cross reference) for additional part numbers.

## AMPLIMITE Connectors, Series 109 (Continued)

### Crimp, Series 109, Standard Density Connectors (MIL Qualified) — Zinc Plated RoHS Compliant

#### Material and Finish

**Shell** — Steel, zinc plated

**Insert** — Approved material per  
MIL-DTL-24308

**Retention Clips** — Stainless steel

#### Related Product Data:

**Cavity Identification** — page 8-39

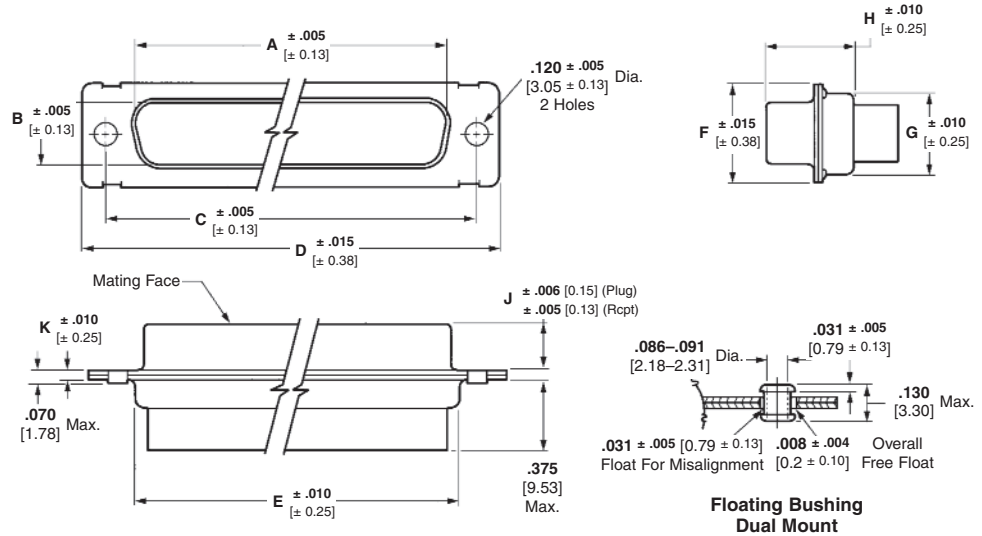
**Contacts** — pages 8-40 to 8-42

**Mounting, Mating Specifications** —  
page 8-90

**Accessories** — pages 8-95 to 8-97

#### Attention: Connector Marking

Connector marking may differ from  
package marking. All connectors marked  
per MIL-DTL-24308.



### Series 109 Plugs per MIL-DTL-24308

| No. of<br>Contact<br>Pos.<br>(Shell<br>Size) | Dimensions     |               |                |                |                |               |               |               |              |              | Standard Mount                  |                 | Floating<br>Bushing Mount       |                 | Description    |
|----------------------------------------------|----------------|---------------|----------------|----------------|----------------|---------------|---------------|---------------|--------------|--------------|---------------------------------|-----------------|---------------------------------|-----------------|----------------|
|                                              | A<br>(Inside)  | B<br>(Inside) | C              | D              | E              | F             | G             | H             | J            | K            | Military<br>Part No.<br>M24308/ | AMP<br>Part No. | Military<br>Part No.<br>M24308/ | AMP<br>Part No. |                |
| 9<br>(1)                                     | .666<br>16.92  | .329<br>8.36  | .984<br>24.99  | 1.213<br>30.81 | .759<br>19.28  | .494<br>12.55 | .422<br>10.72 | .422<br>10.72 | .235<br>5.97 | .030<br>0.76 | 4-259                           | 1757819-1       | 4-324                           | 1757821-1       | Plug only      |
| 15<br>(2)                                    | .994<br>25.25  | .329<br>8.36  | 1.312<br>33.32 | 1.541<br>39.14 | 1.083<br>27.51 | .494<br>12.55 | .422<br>10.72 | .422<br>10.72 | .235<br>5.97 | .030<br>0.76 | 4-1                             | 1757819-6       | 4-302                           | 1757821-6       | Plug with pins |
| 25<br>(3)                                    | 1.534<br>38.96 | .329<br>8.36  | 1.852<br>47.04 | 2.088<br>53.04 | 1.625<br>41.3  | .494<br>12.55 | .422<br>10.72 | .426<br>10.82 | .230<br>5.84 | .039<br>0.99 | 4-260                           | 1757819-2       | 4-325                           | 1757821-2       | Plug only      |
| 37<br>(4)                                    | 2.182<br>55.42 | .329<br>8.36  | 2.500<br>63.5  | 2.729<br>69.32 | 2.272<br>57.71 | .494<br>12.55 | .422<br>10.72 | .426<br>10.82 | .230<br>5.84 | .039<br>0.99 | 4-2                             | 1757819-7       | 4-303                           | 1757821-7       | Plug with pins |
| 50<br>(5)                                    | 2.079<br>52.81 | .441<br>11.2  | 2.406<br>61.11 | 2.635<br>66.93 | 2.178<br>55.32 | .605<br>15.37 | .534<br>13.56 | .426<br>10.82 | .230<br>5.84 | .039<br>0.99 | 4-261                           | 1757819-3       | 4-326                           | 1757821-3       | Plug only      |
|                                              |                |               |                |                |                |               |               |               |              |              | 4-3                             | 1757819-8       | 4-304                           | 1757821-8       | Plug with pins |
|                                              |                |               |                |                |                |               |               |               |              |              | 4-262                           | 1757819-4       | 4-327                           | 1757821-4       | Plug only      |
|                                              |                |               |                |                |                |               |               |               |              |              | 4-4                             | 1757819-9       | 4-305                           | 1757821-9       | Plug with pins |
|                                              |                |               |                |                |                |               |               |               |              |              | 4-263                           | 1757819-5       | 4-328                           | 1757821-5       | Plug only      |
|                                              |                |               |                |                |                |               |               |               |              |              | 4-5                             | 1-1757819-0     | 4-306                           | 1-1757821-0     | Plug with pins |

### Series 109 Receptacles per MIL-DTL-24308

| No. of<br>Contact<br>Pos.<br>(Shell<br>Size) | Dimensions     |                |                |                |                |               |               |              |              |              | Standard Mount                  |                 | Floating<br>Bushing Mount       |                 | Description          |
|----------------------------------------------|----------------|----------------|----------------|----------------|----------------|---------------|---------------|--------------|--------------|--------------|---------------------------------|-----------------|---------------------------------|-----------------|----------------------|
|                                              | A<br>(Outside) | B<br>(Outside) | C              | D              | E              | F             | G             | H            | J            | K            | Military<br>Part No.<br>M24308/ | AMP<br>Part No. | Military<br>Part No.<br>M24308/ | AMP<br>Part No. |                      |
| 9<br>(1)                                     | .643<br>16.33  | .311<br>7.9    | .984<br>24.99  | 1.213<br>30.81 | .759<br>19.28  | .494<br>12.55 | .422<br>10.72 | .429<br>10.9 | .243<br>6.17 | .030<br>0.76 | 2-281                           | 1757820-1       | 2-292                           | 1757822-1       | Recept. only         |
| 15<br>(2)                                    | .971<br>24.66  | .311<br>7.9    | 1.312<br>33.32 | 1.541<br>39.14 | 1.083<br>27.51 | .494<br>12.55 | .422<br>10.72 | .429<br>10.9 | .243<br>6.17 | .030<br>0.76 | 2-1                             | 1757820-6       | 2-23                            | 1757822-6       | Recept. with sockets |
| 25<br>(3)                                    | 1.511<br>38.38 | .311<br>7.9    | 1.852<br>47.04 | 2.088<br>53.04 | 1.625<br>41.3  | .494<br>12.55 | .422<br>10.72 | .429<br>10.9 | .243<br>6.17 | .039<br>0.99 | 2-282                           | 1757820-2       | 2-293                           | 1757822-2       | Recept. only         |
| 37<br>(4)                                    | 2.159<br>54.84 | .311<br>7.9    | 2.500<br>63.5  | 2.729<br>69.32 | 2.272<br>57.71 | .494<br>12.55 | .422<br>10.72 | .429<br>10.9 | .243<br>6.17 | .039<br>0.99 | 2-2                             | 1757820-7       | 2-24                            | 1757822-7       | Recept. with sockets |
| 50<br>(5)                                    | 2.064<br>52.43 | .423<br>10.74  | 2.406<br>61.11 | 2.635<br>66.93 | 2.178<br>55.32 | .605<br>15.37 | .534<br>13.56 | .429<br>10.9 | .243<br>6.17 | .039<br>0.99 | 2-283                           | 1757820-3       | 2-294                           | 1757822-3       | Recept. only         |
|                                              |                |                |                |                |                |               |               |              |              |              | 2-3                             | 1757820-8       | 2-25                            | 1757822-8       | Recept. with sockets |
|                                              |                |                |                |                |                |               |               |              |              |              | 2-284                           | 1757820-4       | 2-295                           | 1757822-4       | Recept. only         |
|                                              |                |                |                |                |                |               |               |              |              |              | 2-4                             | 1757820-9       | 2-26                            | 1757822-9       | Recept. with sockets |
|                                              |                |                |                |                |                |               |               |              |              |              | 2-285                           | 1757820-5       | 2-296                           | 1757822-5       | Recept. only         |
|                                              |                |                |                |                |                |               |               |              |              |              | 2-5                             | 1-1757820-0     | 2-27                            | 1-1757822-0     | Recept. with sockets |

**Notes:** 1. Size 20 contacts supplied with connectors are loose piece.  
2. See pages 8-99 through 8-103 (Military to AMP Part Number cross reference) for additional part numbers.

## AMPLIMITE Connectors, Series 109 (Continued)

### Crimp, Series 109, Standard Density Connectors (Industrial Grade)

#### Material and Finish

**Shell** — Steel, zinc plated

**Insert** — Approved material per MIL-DTL-24308

**Retention Clips** — Stainless steel

#### Related Product Data

**Cavity Identification** — page 8-39

**Contacts** — pages 8-40 to 8-42

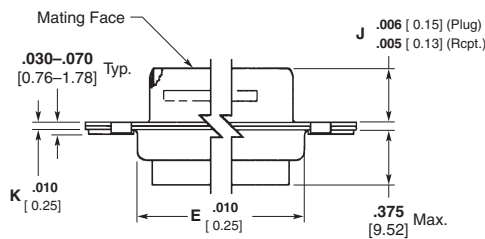
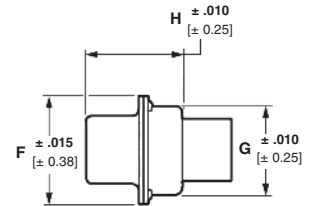
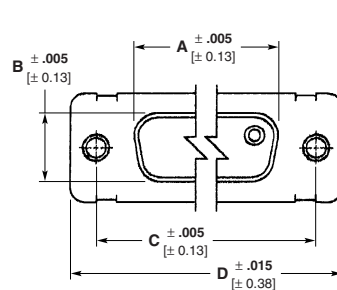
**Mounting, Mating Specifications** — page 8-90

**Accessories** — pages 8-95 to 8-97

#### Attention: Connector Marking

Connector marking may differ from package marking.

**Note:** Meets requirements of MIL-DTL-24308



Clinch Nut Mount

### Series 109 Plugs

| No. of Contact Pos. (Shell Size) | Dimensions     |              |                |                |                |               |               |               |              |              | Standard Mount Part Number | Description |
|----------------------------------|----------------|--------------|----------------|----------------|----------------|---------------|---------------|---------------|--------------|--------------|----------------------------|-------------|
|                                  | A (Inside)     | B (Inside)   | C              | D              | E              | F             | G             | H             | J            | K            |                            |             |
| 9 (1)                            | .666<br>16.92  | .329<br>8.36 | .984<br>24.99  | 1.213<br>30.81 | .759<br>19.28  | .494<br>12.55 | .422<br>10.72 | .422<br>10.72 | .235<br>5.97 | .030<br>0.76 | 1218748-1                  | Plug only   |
| 15 (2)                           | .994<br>25.25  | .329<br>8.36 | 1.312<br>33.32 | 1.541<br>39.14 | 1.083<br>27.51 | .494<br>12.55 | .422<br>10.72 | .422<br>10.72 | .235<br>5.97 | .030<br>0.76 | 1218748-2                  | Plug only   |
| 25 (3)                           | 1.534<br>38.96 | .329<br>8.36 | 1.852<br>47.04 | 2.088<br>53.04 | 1.625<br>41.3  | .494<br>12.55 | .422<br>10.72 | .426<br>10.82 | .230<br>5.84 | .039<br>0.99 | 1218748-3                  | Plug only   |
| 37 (4)                           | 2.182<br>55.42 | .329<br>8.36 | 2.500<br>63.5  | 2.729<br>69.32 | 2.272<br>57.71 | .494<br>12.55 | .422<br>10.72 | .426<br>10.82 | .230<br>5.84 | .039<br>0.99 | 1218748-4                  | Plug only   |
| 50 (5)                           | 2.079<br>52.81 | .441<br>11.2 | 2.406<br>61.11 | 2.635<br>66.93 | 2.178<br>55.32 | .605<br>15.37 | .534<br>13.56 | .426<br>10.82 | .230<br>5.84 | .039<br>0.99 | 1218748-5                  | Plug. only  |

Clinch Nut Mount available, contact TE.

### Series 109 Receptacles

| No. of Contact Pos. (Shell Size) | Dimensions     |               |                |                |                |               |               |              |              |              | Clinch Nut Mount Part Number | Description  |
|----------------------------------|----------------|---------------|----------------|----------------|----------------|---------------|---------------|--------------|--------------|--------------|------------------------------|--------------|
|                                  | A (Inside)     | B (Inside)    | C              | D              | E              | F             | G             | H            | J            | K            |                              |              |
| 9 (1)                            | .643<br>16.33  | .311<br>7.9   | .984<br>24.99  | 1.213<br>30.81 | .759<br>19.28  | .494<br>12.55 | .422<br>10.72 | .429<br>10.9 | .243<br>6.17 | .030<br>0.76 | 1218749-1                    | Recept. only |
| 15 (2)                           | .971<br>24.66  | .311<br>7.9   | 1.312<br>33.32 | 1.541<br>39.14 | 1.083<br>27.51 | .494<br>12.55 | .422<br>10.72 | .429<br>10.9 | .243<br>6.17 | .030<br>0.76 | 1218749-2                    | Recept. only |
| 25 (3)                           | 1.511<br>38.38 | .311<br>7.9   | 1.852<br>47.04 | 2.088<br>53.04 | 1.625<br>41.3  | .494<br>12.55 | .422<br>10.72 | .429<br>10.9 | .243<br>6.17 | .039<br>0.99 | 1218749-3                    | Recept. only |
| 37 (4)                           | 2.159<br>54.84 | .311<br>7.9   | 2.500<br>63.5  | 2.729<br>69.32 | 2.272<br>57.71 | .494<br>12.55 | .422<br>10.72 | .429<br>10.9 | .243<br>6.17 | .039<br>0.99 | 1218749-4                    | Recept. only |
| 50 (5)                           | 2.064<br>52.43 | .423<br>10.74 | 2.406<br>61.11 | 2.635<br>66.93 | 2.178<br>55.32 | .605<br>15.37 | .534<br>13.56 | .429<br>10.9 | .243<br>6.17 | .039<br>0.99 | 1218749-5                    | Recept. only |

Standard Mount available, contact TE.

## AMPLIMITE Connectors, Series 109 (Continued)

### Non-Magnetic Crimp Plugs, Series 109, Standard Density Connectors (NASA Qualified)

#### Connector Material and Finish

**Shell** — Brass, gold plated

**Insert** — Approved material per MIL-DTL-24308

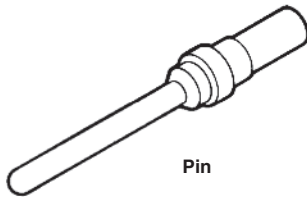
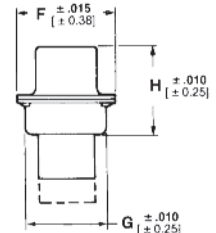
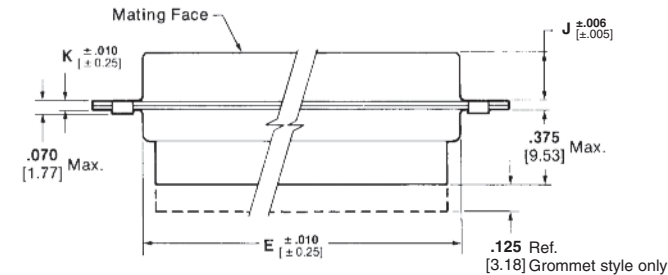
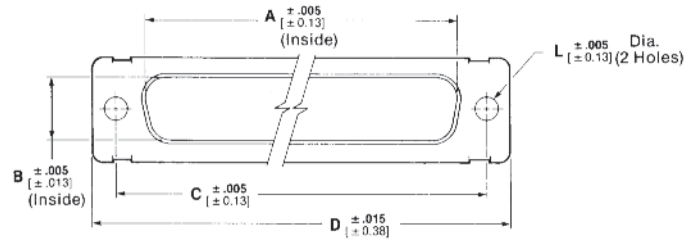
**Retention Clips** — Copper alloy

#### Related Product Data

**Cavity Identification** — page 8-39

**Mounting, Mating Specifications** — page 8-90

**Accessories** — pages 8-95 to 8-97



Pin

#### Pin Contact

| Wire Size Range    | AMP Part No. / NASA No. |
|--------------------|-------------------------|
| 26-28<br>0.15-0.08 | 206794-2<br>—           |
| 20-24<br>0.6-0.2   | 205089-4<br>G-10-P1     |

Strip length .140 [3.56]

Max. insulation diameter .072 [1.83]

Hand tool M22520/2-01 or AMP Part Number 601966-1

Positioner M22520/2-08 or AMP Part Number 601966-5

#### Contact Material and Finish

Copper alloy plated gold

.000050-.000100 [0.00127-.00254]

thick over .000100-.000150

[0.00254-.00381] copper underplate

### Non-Magnetic Plugs per NASA Specification

| No. of Contact Pos. (Shell Size) | Dimensions |       |       |       |       |       |       |       |      |      |      | NASA Number     | AMP Part Number |
|----------------------------------|------------|-------|-------|-------|-------|-------|-------|-------|------|------|------|-----------------|-----------------|
|                                  | A          | B     | C     | D     | E     | F     | G     | H     | J    | K    | L    |                 |                 |
| 9<br>(1)                         | .666       | .329  | .984  | 1.213 | .759  | .494  | .422  | .422  | .235 | .030 | .154 | 311P409-1P-B-15 | 207252-1        |
|                                  | 16.92      | 8.36  | 24.99 | 30.81 | 19.28 | 12.55 | 10.72 | 10.72 | 5.97 | 0.76 | 3.91 |                 |                 |
|                                  |            |       |       |       |       |       |       |       |      |      | .120 | 311P409-1P-B-12 | 207252-2        |
|                                  |            |       |       |       |       |       |       |       |      |      | 3.05 |                 |                 |
| 15<br>(2)                        | .994       | .329  | 1.312 | 1.541 | 1.083 | .494  | .422  | .422  | .235 | .030 | .154 | 311P409-2P-B-15 | 206798-1        |
|                                  | 25.25      | 8.36  | 33.32 | 39.14 | 27.51 | 12.55 | 10.72 | 10.72 | 5.97 | 0.76 | 3.91 |                 |                 |
|                                  |            |       |       |       |       |       |       |       |      |      | .120 | 311P409-2P-B-12 | 206798-2        |
|                                  |            |       |       |       |       |       |       |       |      |      | 3.05 |                 |                 |
| 25<br>(3)                        | 1.534      | .329  | 1.852 | 2.088 | 1.625 | .494  | .422  | .426  | .230 | .039 | .154 | 311P409-3P-B-15 | 206800-1        |
|                                  | 38.96      | 8.36  | 47.04 | 53.04 | 41.3  | 12.55 | 10.72 | 10.82 | 5.84 | 0.99 | 3.91 |                 |                 |
|                                  |            |       |       |       |       |       |       |       |      |      | .120 | 311P409-3P-B-12 | 206800-2        |
|                                  |            |       |       |       |       |       |       |       |      |      | 3.05 |                 |                 |
| 37<br>(4)                        | 2.182      | .329  | 2.500 | 2.729 | 2.272 | .494  | .422  | .426  | .230 | .039 | .154 | 311P409-4P-B-15 | 206802-1        |
|                                  | 55.42      | 8.36  | 63.5  | 69.32 | 57.71 | 12.55 | 10.72 | 10.82 | 5.84 | 0.99 | 3.91 |                 |                 |
|                                  |            |       |       |       |       |       |       |       |      |      | .120 | 311P409-4P-B-12 | 206802-2        |
|                                  |            |       |       |       |       |       |       |       |      |      | 3.05 |                 |                 |
| 50<br>(5)                        | 2.079      | .441  | 2.406 | 2.635 | 2.178 | .605  | .534  | .426  | .230 | .039 | .154 | 311P409-5P-B-15 | 206804-1        |
|                                  | 52.81      | 11.20 | 61.11 | 66.93 | 55.32 | 15.37 | 13.56 | 10.82 | 5.84 | 0.99 | 3.91 |                 |                 |
|                                  |            |       |       |       |       |       |       |       |      |      | .120 | 311P409-5P-B-12 | 206804-2        |
|                                  |            |       |       |       |       |       |       |       |      |      | 3.05 |                 |                 |



Pin and Socket Insertion/Extraction Tool

AMP Part Number 91067-2 or MIL Number M81969/1-02

Insertion tip, for replacement Part Number 126195-3

Extraction tip, for replacement Part Number 126195-4

### Non-Magnetic Plugs With Silicone Rubber Rear Grommet<sup>1</sup>

| No. of<br>Contact<br>Pos.<br>(Shell<br>Size) | Dimensions     |               |                |                |                |               |               |               |              |              |              | Part Number |
|----------------------------------------------|----------------|---------------|----------------|----------------|----------------|---------------|---------------|---------------|--------------|--------------|--------------|-------------|
|                                              | A              | B             | C              | D              | E              | F             | G             | H             | J            | K            | L            |             |
| 9<br>(1)                                     | .666<br>16.92  | .329<br>8.36  | .984<br>24.99  | 1.213<br>30.81 | .759<br>19.28  | .494<br>12.55 | .422<br>10.72 | .422<br>10.72 | .235<br>5.97 | .030<br>0.76 | .120<br>3.05 | 211638-4    |
| 15<br>(2)                                    | .994<br>25.25  | .329<br>8.36  | 1.312<br>33.32 | 1.541<br>39.14 | 1.083<br>27.51 | .494<br>12.55 | .422<br>10.72 | .422<br>10.72 | .235<br>5.97 | .030<br>0.76 | .120<br>3.05 | 211639-4    |
| 25<br>(3)                                    | 1.534<br>38.96 | .329<br>8.36  | 1.852<br>47.04 | 2.088<br>53.04 | 1.625<br>41.3  | .494<br>12.55 | .422<br>10.72 | .426<br>10.82 | .230<br>5.84 | .039<br>0.99 | .120<br>3.05 | 211640-4    |
| 37<br>(4)                                    | 2.182<br>55.42 | .329<br>8.36  | 2.500<br>63.5  | 2.729<br>69.32 | 2.272<br>57.71 | .494<br>12.55 | .422<br>10.72 | .426<br>10.82 | .230<br>5.84 | .039<br>0.99 | .120<br>3.05 | 211641-4    |
| 50<br>(5)                                    | 2.079<br>52.81 | .441<br>11.20 | 2.406<br>61.11 | 2.635<br>66.93 | 2.178<br>55.32 | .605<br>15.37 | .534<br>13.56 | .426<br>10.82 | .230<br>5.84 | .039<br>0.99 | .120<br>3.05 | 211642-4    |

<sup>1</sup> Grommet provided for cable strain relief.



## AMPLIMITE Connectors, Series 109 (Continued)

### Non-Magnetic Crimp Receptacles, Series 109, Standard Density Connectors (NASA Qualified)

#### Connector Material and Finish

**Shell** — Brass, gold plated

**Insert** — Approved material per MIL-DTL-24308

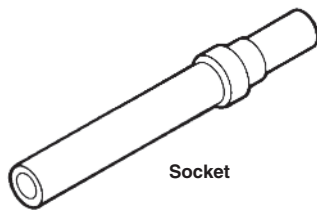
**Retention Clips** — Copper alloy

#### Related Product Data

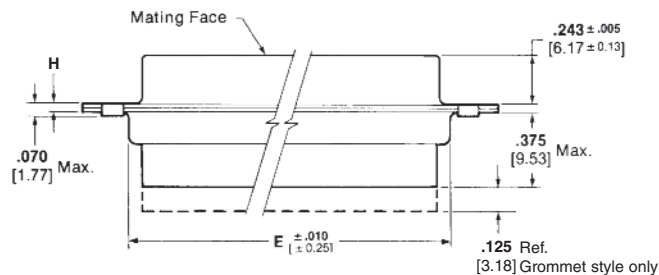
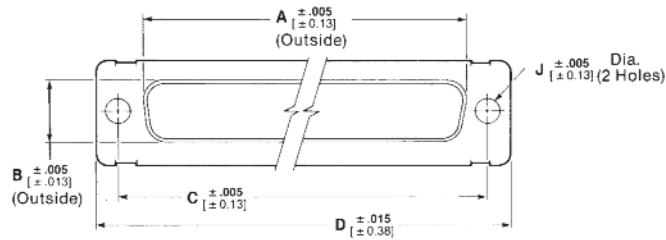
**Cavity Identification** — page 8-39

**Mounting, Mating Specifications** — page 8-90

**Accessories** — pages 8-95 to 8-97



Socket



### Non-Magnetic Receptacles per NASA Specification

| Socket Contact     |                         |
|--------------------|-------------------------|
| Wire Size Range    | AMP Part No. / NASA No. |
| 26-28<br>0.15-0.08 | 206795-1                |
| 20-24<br>0.6-0.2   | 206793-1<br>G-10-S1     |

Strip length .140 [3.56]  
Max. insulation diameter .072 [1.83]  
Hand tool M22520/2-01 or AMP  
Part Number 601966-1  
Positioner M22520/2-08 or AMP  
Part Number 601966-5

#### Contact Material and Finish

Copper alloy plated gold  
.000050-.000100 [0.00127-.00254]  
thick over .000100-.000150  
[0.00254-.00381] copper underplate

| No. of Contact Pos. (Shell Size) | Dimensions     |               |                |                |                |               |               |              |              | NASA Number     | AMP Part Number |
|----------------------------------|----------------|---------------|----------------|----------------|----------------|---------------|---------------|--------------|--------------|-----------------|-----------------|
|                                  | A              | B             | C              | D              | E              | F             | G             | H            | J            |                 |                 |
| 9<br>(1)                         | .643<br>16.33  | .311<br>7.9   | .984<br>24.99  | 1.213<br>30.81 | .759<br>19.28  | .494<br>12.55 | .422<br>10.72 | .030<br>0.76 | .154<br>3.91 | 311P409-1S-B-15 | 207253-1        |
|                                  |                |               |                |                |                |               |               |              | .120<br>3.05 | 311P409-1S-B-12 | 207253-2        |
| 15<br>(2)                        | .971<br>24.66  | .311<br>7.9   | 1.312<br>33.32 | 1.541<br>39.14 | 1.083<br>27.51 | .494<br>12.55 | .422<br>10.72 | .030<br>0.76 | .154<br>3.91 | 311P409-2S-B-15 | 206799-1        |
|                                  |                |               |                |                |                |               |               |              | .120<br>3.05 | 311P409-2S-B-12 | 206799-2        |
| 25<br>(3)                        | 1.511<br>38.38 | .311<br>7.9   | 1.852<br>47.04 | 2.088<br>53.04 | 1.625<br>41.3  | .494<br>12.55 | .422<br>10.72 | .039<br>0.99 | .154<br>3.91 | 311P409-3S-B-15 | 206801-1        |
|                                  |                |               |                |                |                |               |               |              | .120<br>3.05 | 311P409-3S-B-12 | 206801-2        |
| 37<br>(4)                        | 2.159<br>55.42 | .311<br>7.9   | 2.500<br>63.5  | 2.729<br>69.32 | 2.272<br>57.71 | .494<br>12.55 | .422<br>10.72 | .039<br>0.99 | .154<br>3.91 | 311P409-4S-B-15 | 206803-1        |
|                                  |                |               |                |                |                |               |               |              | .120<br>3.05 | 311P409-4S-B-12 | 206803-2        |
| 50<br>(5)                        | 2.064<br>52.43 | .423<br>10.74 | 2.406<br>61.11 | 2.635<br>66.93 | 2.178<br>55.32 | .605<br>15.37 | .534<br>13.56 | .039<br>0.99 | .154<br>3.91 | 311P409-5S-B-15 | 206805-1        |
|                                  |                |               |                |                |                |               |               |              | .120<br>3.05 | 311P409-5S-B-12 | 206805-2        |

### Non-Magnetic Receptacles With Silicone Rubber Rear Grommet<sup>1</sup>



Pin and Socket Insertion/Extraction Tool

AMP Part Number 91067-2 or  
MIL Number M81969/1-02  
Insertion tip, for replacement  
Part Number 126195-3  
Extraction tip, for replacement  
Part Number 126195-4

| No. of<br>Contact<br>Pos.<br>(Shell<br>Size) | Dimensions     |               |                |                |                |               |               |              |              | Part Number |
|----------------------------------------------|----------------|---------------|----------------|----------------|----------------|---------------|---------------|--------------|--------------|-------------|
|                                              | A              | B             | C              | D              | E              | F             | G             | H            | J            |             |
| 9<br>(1)                                     | .643<br>16.33  | .311<br>7.9   | .984<br>24.99  | 1.213<br>30.81 | .759<br>19.28  | .494<br>12.55 | .422<br>10.72 | .030<br>0.76 | .120<br>3.05 | 211633-4    |
| 15<br>(2)                                    | .971<br>24.66  | .311<br>7.9   | 1.312<br>33.32 | 1.541<br>39.14 | 1.083<br>27.51 | .494<br>12.55 | .422<br>10.72 | .030<br>0.76 | .120<br>3.05 | 211634-4    |
| 25<br>(3)                                    | 1.511<br>38.38 | .311<br>7.9   | 1.852<br>47.04 | 2.088<br>53.04 | 1.625<br>41.3  | .494<br>12.55 | .422<br>10.72 | .039<br>0.99 | .120<br>3.05 | 211635-4    |
| 37<br>(4)                                    | 2.159<br>54.84 | .311<br>7.9   | 2.500<br>63.5  | 2.729<br>69.32 | 2.272<br>57.71 | .494<br>12.55 | .422<br>10.72 | .039<br>0.99 | .120<br>3.05 | 211636-4    |
| 50<br>(5)                                    | 2.064<br>52.43 | .423<br>10.74 | 2.406<br>61.11 | 2.635<br>66.93 | 2.178<br>55.32 | .605<br>15.37 | .534<br>13.56 | .039<br>0.99 | .120<br>3.05 | 211637-4    |

<sup>1</sup> Grommet provided for cable strain relief.



## AMPLIMITE Connectors, Series 109 (Continued)

### Crimp, Blindmate Plugs, Series 109, Standard Density Connectors

#### Materials and Finish

**1 Shell, Front** — Aluminum alloy, cadmium plated with yellow chromate

**2 Shell, Front** — Aluminum alloy, zinc plated with yellow trichromate

**1 Shell, Rear** — Steel, cadmium plated with yellow chromate

**2 Shell, Rear** — Steel, zinc plated with yellow trichromate

**Insert Assembly** — Approved material per MIL-DTL-24308

**Retention Clips** — Stainless steel

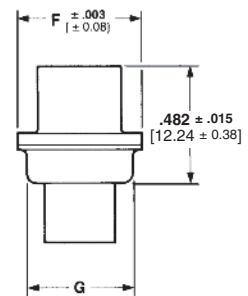
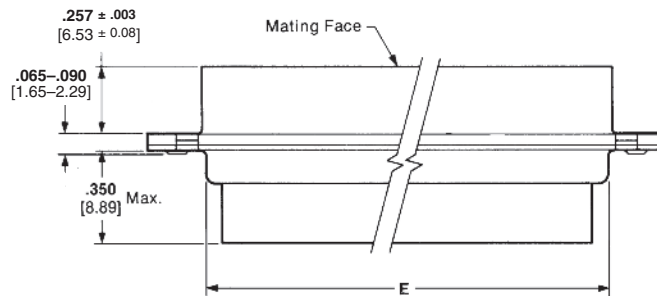
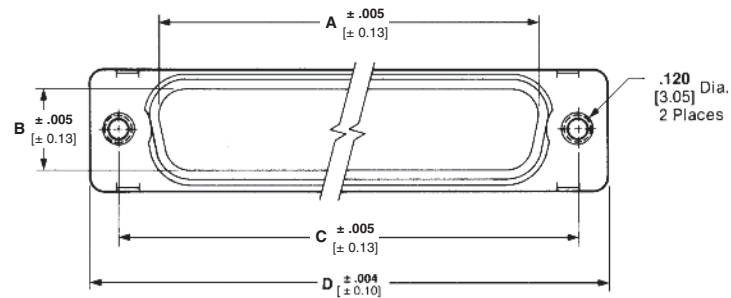
#### Related Product Data

**Cavity Identification** — page 8-39

**Contacts** — pages 8-40 to 8-42

**Mounting Specifications** — page 8-90

Mating information contained on page 8-90 does not pertain to Blindmate design. Flange to flange spacing can be a max. of .270 [6.86].



| No. of Contact Pos. (Shell Size) | Dimensions |       |       |       |             |       |             | Part Number             |
|----------------------------------|------------|-------|-------|-------|-------------|-------|-------------|-------------------------|
|                                  | A          | B     | C     | D     | E           | F     | G           |                         |
| 9                                | .656       | .324  | .984  | 1.224 | .769/.750   | .506  | .432/.413   | 445005-1 <sup>1</sup>   |
| (1)                              | 16.66      | 8.23  | 24.99 | 31.09 | 19.53/19.05 | 12.85 | 10.97/10.49 | 5-445005-1 <sup>2</sup> |
| 15                               | .984       | .324  | 1.312 | 1.552 | 1.093/1.074 | .506  | .432/.413   | 445006-1 <sup>1</sup>   |
| (2)                              | 25.0       | 8.23  | 33.32 | 39.42 | 27.76/27.28 | 12.85 | 10.97/10.49 | 5-445006-1 <sup>2</sup> |
| 25                               | 1.524      | .324  | 1.852 | 2.099 | 1.635/1.616 | .506  | .432/.413   | 445007-1 <sup>1</sup>   |
| (3)                              | 38.71      | 8.23  | 47.04 | 53.31 | 41.53/41.05 | 12.85 | 10.97/10.49 | 5-445007-1 <sup>2</sup> |
| 37                               | 2.172      | .324  | 2.500 | 2.740 | 2.282/2.263 | .506  | .432/.413   | 445008-1 <sup>1</sup>   |
| (4)                              | 55.17      | 8.23  | 63.5  | 69.60 | 57.96/57.48 | 12.85 | 10.97/10.49 | 5-445008-1 <sup>2</sup> |
| 50                               | 2.082      | .444  | 2.406 | 2.646 | 2.188/2.167 | .617  | .544/.525   | 445009-1 <sup>1</sup>   |
| (5)                              | 52.88      | 11.28 | 61.11 | 67.21 | 55.58/55.04 | 15.67 | 13.82/13.34 | 5-445009-1 <sup>2</sup> |

<sup>1</sup> See Material and Finish above.

<sup>2</sup> See Material and Finish for RoHS compliant Part Numbers above.

**Note:** See page 5-182 for Blindmate coax/signal combinations.

## AMPLIMITE Connectors, Series 109 (Continued)

### Straight PCB, Series 109, Standard Density Connectors (MIL Qualified)

#### Material and Finish

**Shell** — Steel, cadmium plated

**Insert** — Approved material per MIL-DTL-24308

**Contact** — Copper alloy plated gold over nickel underplate\*

**Spacer** — Aluminum alloy, Iridite finish

#### Related Product Data

**Cavity Identification** — page 8-39

**Mounting, Mating Specifications** — page 8-90

**Accessories** — pages 8-95 to 8-97

**PCB Layouts** — See page 7-91 or TE Connectivity customer drawing.

**\*Socket Body** — .000050 [0.00127] min. gold over .000050 [0.00127] min. nickel

**Mating Area** — .000050 [0.00127] min. gold over .000050 [0.00127] min. nickel

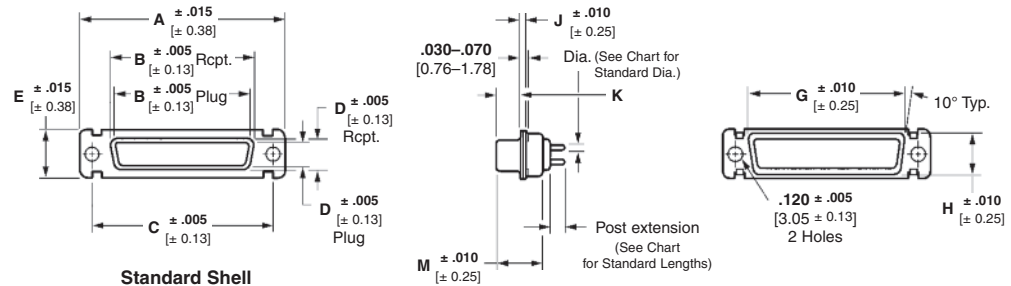
**Plug Body** — .000050 [0.00127] min. gold over .000050 [0.00127] min. nickel



Spacer

#### Receptacle Assemblies

| Shell Size | No. Pos. | Post Dia.    | Post Ext. ± .020 [± 0.51] | Zinc Plated Shells        |           | Cadmium Plated Shells     |          |
|------------|----------|--------------|---------------------------|---------------------------|-----------|---------------------------|----------|
|            |          |              |                           | Military Part No. M24308/ | Part No.  | Military Part No. M24308/ | Part No. |
| 1          | 9        | .030<br>0.76 | .156<br>3.96              | 23-1                      | 1757828-1 | 23-1F                     | 443975-1 |
| 2          | 15       | .030<br>0.76 | .156<br>3.96              | 23-2                      | 1757828-2 | 23-2F                     | 443975-2 |
| 3          | 25       | .030<br>0.76 | .156<br>3.96              | 23-3                      | 1757828-3 | 23-3F                     | 443975-3 |
| 4          | 37       | .030<br>0.76 | .156<br>3.96              | 23-4                      | 1757828-4 | 23-4F                     | 443975-4 |
| 5          | 50       | .030<br>0.76 | .156<br>3.96              | 23-5                      | 1757828-5 | 23-5F                     | 443975-5 |
| 1          | 9        | .030<br>0.76 | .188<br>4.78              | 23-7                      | 1757830-1 | 23-7F                     | 443976-1 |
| 2          | 15       | .030<br>0.76 | .188<br>4.78              | 23-8                      | 1757830-2 | 23-8F                     | 443976-2 |
| 3          | 25       | .030<br>0.76 | .188<br>4.78              | 23-9                      | 1757830-3 | 23-9F                     | 443976-3 |
| 4          | 37       | .030<br>0.76 | .188<br>4.78              | 23-10                     | 1757830-4 | 23-10F                    | 443976-4 |
| 5          | 50       | .030<br>0.76 | .188<br>4.78              | 23-11                     | 1757830-5 | 23-11F                    | 443976-5 |
| 1          | 9        | .040<br>1.02 | .156<br>3.96              | 23-13                     | 1757832-1 | 23-13F                    | 443977-1 |
| 2          | 15       | .040<br>1.02 | .156<br>3.96              | 23-14                     | 1757832-2 | 23-14F                    | 443977-2 |
| 3          | 25       | .040<br>1.02 | .156<br>3.96              | 23-15                     | 1757832-3 | 23-15F                    | 443977-3 |
| 4          | 37       | .040<br>1.02 | .156<br>3.96              | 23-16                     | 1757832-4 | 23-16F                    | 443977-4 |
| 5          | 50       | .040<br>1.02 | .156<br>3.96              | 23-17                     | 1757832-5 | 23-17F                    | 443977-5 |
| 1          | 9        | .040<br>1.02 | .188<br>4.78              | 23-19                     | 1757834-1 | 23-19F                    | 443978-1 |
| 2          | 15       | .040<br>1.02 | .188<br>4.78              | 23-20                     | 1757834-2 | 23-20F                    | 443978-2 |
| 3          | 25       | .040<br>1.02 | .188<br>4.78              | 23-21                     | 1757834-3 | 23-21F                    | 443978-3 |
| 4          | 37       | .040<br>1.02 | .188<br>4.78              | 23-22                     | 1757834-4 | 23-22F                    | 443978-4 |
| 5          | 50       | .040<br>1.02 | .188<br>4.78              | 23-23                     | 1757834-5 | 23-23F                    | 443978-5 |



| MS Shell Size | Connector Style | Dimensions     |                |                |               |               |                |               |              |                        |               |
|---------------|-----------------|----------------|----------------|----------------|---------------|---------------|----------------|---------------|--------------|------------------------|---------------|
|               |                 | A              | B              | C              | D             | E             | G              | H             | J            | K                      | M             |
| 1             | Plug            | 1.213<br>30.81 | .666<br>16.92  | .984<br>24.99  | .329<br>8.36  | .494<br>12.55 | .759<br>19.28  | .422<br>10.72 | .030<br>0.76 | .238/.229<br>6.04/5.81 | .422<br>10.72 |
|               | Receptacle      | 1.213<br>30.81 | .643<br>16.33  | .984<br>24.99  | .311<br>7.90  | .494<br>12.55 | .759<br>19.28  | .422<br>10.72 | .030<br>0.76 | .248/.238<br>6.29/6.04 | .429<br>10.90 |
| 2             | Plug            | 1.541<br>39.14 | .994<br>25.25  | 1.312<br>33.32 | .329<br>8.36  | .494<br>12.55 | 1.083<br>27.51 | .422<br>10.72 | .030<br>0.76 | .238/.229<br>6.04/5.81 | .422<br>10.72 |
|               | Receptacle      | 1.541<br>39.14 | .971<br>24.66  | 1.312<br>33.32 | .311<br>7.90  | .494<br>12.55 | 1.083<br>27.51 | .422<br>10.72 | .030<br>0.76 | .248/.238<br>6.29/6.04 | .429<br>10.90 |
| 3             | Plug            | 2.088<br>53.04 | 1.534<br>38.96 | 1.852<br>47.04 | .329<br>8.36  | .494<br>12.55 | 1.625<br>41.28 | .422<br>10.72 | .039<br>0.99 | .236/.224<br>5.99/5.68 | .426<br>10.82 |
|               | Receptacle      | 2.088<br>53.04 | 1.511<br>38.38 | 1.852<br>47.04 | .311<br>7.90  | .494<br>12.55 | 1.625<br>41.28 | .422<br>10.72 | .030<br>0.76 | .248/.238<br>6.29/6.04 | .429<br>10.90 |
| 4             | Plug            | 2.729<br>69.32 | 2.182<br>55.42 | 2.500<br>63.5  | .329<br>8.36  | .494<br>12.55 | 2.272<br>57.71 | .422<br>10.72 | .039<br>0.99 | .236/.224<br>5.99/5.68 | .426<br>10.82 |
|               | Receptacle      | 2.729<br>69.32 | 2.159<br>54.84 | 2.500<br>63.5  | .311<br>7.90  | .494<br>12.55 | 2.272<br>57.71 | .422<br>10.72 | .030<br>0.76 | .248/.238<br>6.29/6.04 | .429<br>10.90 |
| 5             | Plug            | 2.635<br>66.93 | 2.079<br>52.81 | 2.406<br>61.11 | .441<br>11.20 | .605<br>15.37 | 2.178<br>55.32 | .534<br>13.56 | .039<br>0.99 | .236/.224<br>5.99/5.68 | .426<br>10.82 |
|               | Receptacle      | 2.635<br>66.93 | 2.064<br>52.43 | 2.406<br>61.11 | .423<br>10.74 | .605<br>15.37 | 2.178<br>55.32 | .534<br>13.55 | .030<br>0.76 | .248/.238<br>6.29/6.04 | .429<br>10.90 |

#### Plug Assemblies

| Shell Size | No. Pos. | Post Dia.    | Post Ext. ± .020 [± 0.51] | Zinc Plated Shells        |           | Cadmium Plated Shells     |           |
|------------|----------|--------------|---------------------------|---------------------------|-----------|---------------------------|-----------|
|            |          |              |                           | Military Part No. M24308/ | Part No.  | Military Part No. M24308/ | Part No.  |
| 1          | 9        | .030<br>0.76 | .156<br>3.96              | 24-1                      | 1757827-1 | 24-1F                     | 1218124-1 |
| 2          | 15       | .030<br>0.76 | .156<br>3.96              | 24-2                      | 1757827-2 | 24-2F                     | 1218124-2 |
| 3          | 25       | .030<br>0.76 | .156<br>3.96              | 24-3                      | 1757827-3 | 24-3F                     | 1218124-3 |
| 4          | 37       | .030<br>0.76 | .156<br>3.96              | 24-4                      | 1757827-4 | 24-4F                     | 1218124-4 |
| 5          | 50       | .030<br>0.76 | .156<br>3.96              | 24-5                      | 1757827-5 | 24-5F                     | 1218124-5 |
| 1          | 9        | .030<br>0.76 | .188<br>4.78              | 24-7                      | 1757829-1 | 24-7F                     | 1218125-1 |
| 2          | 15       | .030<br>0.76 | .188<br>4.78              | 24-8                      | 1757829-2 | 24-8F                     | 1218125-2 |
| 3          | 25       | .030<br>0.76 | .188<br>4.78              | 24-9                      | 1757829-3 | 24-9F                     | 1218125-3 |
| 4          | 37       | .030<br>0.76 | .188<br>4.78              | 24-10                     | 1757829-4 | 24-10F                    | 1218125-4 |
| 5          | 50       | .030<br>0.76 | .188<br>4.78              | 24-11                     | 1757829-5 | 24-11F                    | 1218125-5 |
| 1          | 9        | .040<br>1.02 | .156<br>3.96              | 24-13                     | 1757831-1 | 24-13F                    | 1218126-1 |
| 2          | 15       | .040<br>1.02 | .156<br>3.96              | 24-14                     | 1757831-2 | 24-14F                    | 1218126-2 |
| 3          | 25       | .040<br>1.02 | .156<br>3.96              | 24-15                     | 1757831-3 | 24-15F                    | 1218126-3 |
| 4          | 37       | .040<br>1.02 | .156<br>3.96              | 24-16                     | 1757831-4 | 24-16F                    | 1218126-4 |
| 5          | 50       | .040<br>1.02 | .156<br>3.96              | 24-17                     | 1757831-5 | 24-17F                    | 1218126-5 |
| 1          | 9        | .040<br>1.02 | .188<br>4.78              | 24-19                     | 1757833-1 | 24-19F                    | 1218127-1 |
| 2          | 15       | .040<br>1.02 | .188<br>4.78              | 24-20                     | 1757833-2 | 24-20F                    | 1218127-2 |
| 3          | 25       | .040<br>1.02 | .188<br>4.78              | 24-21                     | 1757833-3 | 24-21F                    | 1218127-3 |
| 4          | 37       | .040<br>1.02 | .188<br>4.78              | 24-22                     | 1757833-4 | 24-22F                    | 1218127-4 |
| 5          | 50       | .040<br>1.02 | .188<br>4.78              | 24-23                     | 1757833-5 | 24-23F                    | 1218127-5 |

## AMPLIMITE Connectors, Series 109 (Continued)

### Straight PCB, Series 109, Standard Density Connectors (Industrial Grade)

#### Material and Finish

**Shell** — Steel, cadmium or zinc plated

**Insert** — Approved material per MIL-DTL-24308

**Contact** — Copper alloy plated gold over nickel underplate\*

**Spacer** — Aluminum alloy, Iridite finish

#### Related Product Data

**Cavity Identification** — page 8-39

**Mounting, Mating Specifications** — page 8-90

**Accessories** — pages 8-95 to 8-97

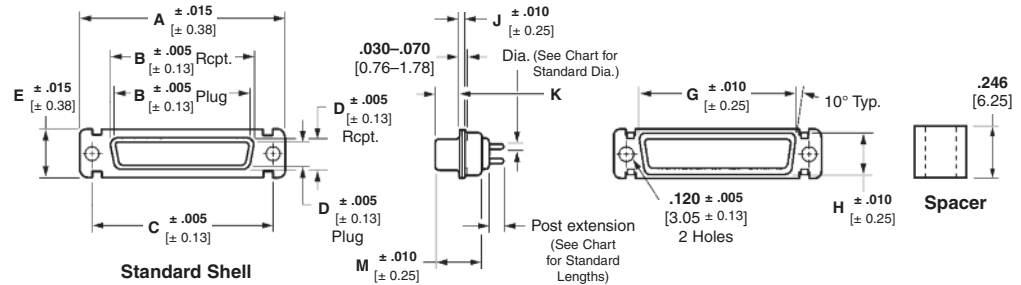
**PCB Layouts** — See page 8-91 or TE Connectivity customer drawing.

**\*aSocket Body and Mating Area** — .000050 [0.00127] min. gold over .000050 [0.00127] min. nickel

**Plug Body and Mating Area** — .000050 [0.00127] min. gold over .000050 [0.00127] min. nickel

**bMating Area** — Copper alloy with .000030 [0.00076] min. gold plate over .000050 [0.00127] min. nickel underplate

**Product Specification** — 108-1770



| MS Shell Size | Connector Style | Dimensions     |                |                |               |               |                |               |              |                        |               |
|---------------|-----------------|----------------|----------------|----------------|---------------|---------------|----------------|---------------|--------------|------------------------|---------------|
|               |                 | A              | B              | C              | D             | E             | G              | H             | J            | K                      | M             |
| 1             | Plug            | 1.213<br>30.81 | .666<br>16.92  | .984<br>24.99  | .329<br>8.36  | .494<br>12.55 | .759<br>19.28  | .422<br>10.72 | .030<br>0.76 | .238/.229<br>6.04/5.81 | .422<br>10.72 |
|               | Receptacle      | 1.213<br>30.81 | .643<br>16.33  | .984<br>24.99  | .311<br>7.90  | .494<br>12.55 | .759<br>19.28  | .422<br>10.72 | .030<br>0.76 | .248/.238<br>6.29/6.04 | .429<br>10.90 |
| 2             | Plug            | 1.541<br>39.14 | .994<br>25.25  | 1.312<br>33.32 | .329<br>8.36  | .494<br>12.55 | 1.083<br>27.51 | .422<br>10.72 | .030<br>0.76 | .236/.229<br>6.04/5.81 | .422<br>10.72 |
|               | Receptacle      | 1.541<br>39.14 | .971<br>24.66  | 1.312<br>33.32 | .311<br>7.90  | .494<br>12.55 | 1.083<br>27.51 | .422<br>10.72 | .030<br>0.76 | .248/.238<br>6.29/6.04 | .429<br>10.90 |
| 3             | Plug            | 2.088<br>53.04 | 1.534<br>38.96 | 1.852<br>47.04 | .329<br>8.36  | .494<br>12.55 | 1.625<br>41.28 | .422<br>10.72 | .039<br>0.99 | .236/.224<br>5.99/5.68 | .426<br>10.82 |
|               | Receptacle      | 2.088<br>53.04 | 1.511<br>38.38 | 1.852<br>47.04 | .311<br>7.90  | .494<br>12.55 | 1.625<br>41.28 | .422<br>10.72 | .030<br>0.76 | .248/.238<br>6.29/6.04 | .429<br>10.90 |
| 4             | Plug            | 2.729<br>69.32 | 2.182<br>55.42 | 2.500<br>63.5  | .329<br>8.36  | .494<br>12.55 | 2.272<br>57.71 | .422<br>10.72 | .039<br>0.99 | .236/.224<br>5.99/5.68 | .426<br>10.82 |
|               | Receptacle      | 2.729<br>69.32 | 2.159<br>54.84 | 2.500<br>63.5  | .311<br>7.90  | .494<br>12.55 | 2.272<br>57.71 | .422<br>10.72 | .030<br>0.76 | .248/.238<br>6.29/6.04 | .429<br>10.90 |
| 5             | Plug            | 2.635<br>66.93 | 2.079<br>52.81 | 2.406<br>61.11 | .441<br>11.20 | .605<br>15.37 | 2.178<br>55.32 | .534<br>13.56 | .039<br>0.99 | .236/.224<br>5.99/5.68 | .426<br>10.82 |
|               | Receptacle      | 2.635<br>66.93 | 2.064<br>52.43 | 2.406<br>61.11 | .423<br>10.74 | .605<br>15.37 | 2.178<br>55.32 | .534<br>13.55 | .030<br>0.76 | .248/.238<br>6.29/6.04 | .429<br>10.90 |

## AMPLIMITE Connectors, Series 109 (Continued)

### Straight PCB, Series 109, Standard Density Connectors (Industrial Grade) (Continued)

#### Material and Finish

**Shell** — Steel, see below

#### <sup>1</sup> Tin Plated RoHS Compliant

**Finish** — Tin .000400–.000550  
[0.01020–0.01400] thick over copper  
.000050 [0.00127] min. thick

#### <sup>2</sup> Zinc Plated RoHS Compliant

**Finish** — Zinc .000200–.000400  
[0.00508–0.01016] thick, yellow trivalent  
chromate

**Insert** — Approved material per  
MIL-DTL-24308

**Contact** — Copper alloy plated gold  
over nickel underplate\*

**Spacer** — Aluminum alloy, Iridite finish

#### Related Product Data

**Cavity Identification** — page 8-39

**Mounting, Mating Specifications** —  
page 8-90

**Accessories** — pages 8-95 to 8-97

**PCB Layouts** — See page 8-91 or  
TE Connectivity customer drawing.

#### \*<sup>a</sup>Socket Body and Mating Area —

.000050 [0.00127] min. gold over  
.000050 [0.00127] min. nickel

#### Plug Body and Mating Area —

.000050 [0.00127] min. gold over  
.000050 [0.00127] min. nickel

#### <sup>b</sup>Mating Area — Copper alloy with

.000030 [0.00076] min. gold plate  
over .000050 [0.00127] min. nickel  
underplate

**Product Specification** — 108-1770

| Shell<br>Size | No.<br>Pos. | Post<br>Dia. | Post<br>Ext.<br>± .020 [± 0.51] | Receptacle Part Number            |                                   |                                           |
|---------------|-------------|--------------|---------------------------------|-----------------------------------|-----------------------------------|-------------------------------------------|
|               |             |              |                                 | Tin Plated<br>Shells <sup>a</sup> | Tin Plated<br>Shells <sup>b</sup> | Zinc Plated<br>RoHS Shells <sup>a,2</sup> |
| 1             | 9           | .030<br>0.76 | .156<br>3.96                    | 1218826-1 <sup>1</sup>            | 1218293-1 <sup>1</sup>            | 1218289-1                                 |
| 2             | 15          | .030<br>0.76 | .156<br>3.96                    | 1218826-2 <sup>1</sup>            | 1218293-2 <sup>1</sup>            | 1218289-2                                 |
| 3             | 25          | .030<br>0.76 | .156<br>3.96                    | 1218826-3 <sup>1</sup>            | 1218293-3 <sup>1</sup>            | 1218289-3                                 |
| 4             | 37          | .030<br>0.76 | .156<br>3.96                    | 1218826-4 <sup>1</sup>            | 1218293-4 <sup>1</sup>            | 1218289-4                                 |
| 5             | 50          | .030<br>0.76 | .156<br>3.96                    | 1218826-5 <sup>1</sup>            | 1218293-5 <sup>1</sup>            | 1218289-5                                 |
| 1             | 9           | .030<br>0.76 | .188<br>4.78                    | 1218827-1 <sup>1</sup>            | 1218294-1 <sup>1</sup>            | 1218290-1                                 |
| 2             | 15          | .030<br>0.76 | .188<br>4.78                    | 1218827-2 <sup>1</sup>            | 1218294-2 <sup>1</sup>            | 1218290-2                                 |
| 3             | 25          | .030<br>0.76 | .188<br>4.78                    | 1218827-3 <sup>1</sup>            | 1218294-3 <sup>1</sup>            | 1218290-3                                 |
| 4             | 37          | .030<br>0.76 | .188<br>4.78                    | 1218827-4 <sup>1</sup>            | 1218294-4 <sup>1</sup>            | 1218290-4                                 |
| 5             | 50          | .030<br>0.76 | .188<br>4.78                    | 1218827-5 <sup>1</sup>            | 1218294-5 <sup>1</sup>            | 1218290-5                                 |
| 1             | 9           | .040<br>1.02 | .156<br>3.96                    | —                                 | —                                 | 1218291-1                                 |
| 2             | 15          | .040<br>1.02 | .156<br>3.96                    | —                                 | —                                 | 1218291-2                                 |
| 3             | 25          | .040<br>1.02 | .156<br>3.96                    | —                                 | —                                 | 1218291-3                                 |
| 4             | 37          | .040<br>1.02 | .156<br>3.96                    | —                                 | —                                 | 1218291-4                                 |
| 5             | 50          | .040<br>1.02 | .156<br>3.96                    | —                                 | —                                 | 1218291-5                                 |
| 1             | 9           | .040<br>1.02 | .188<br>4.78                    | 1218829-1 <sup>1</sup>            | —                                 | 1218292-1                                 |
| 2             | 15          | .040<br>1.02 | .188<br>4.78                    | 1218829-2 <sup>1</sup>            | —                                 | 1218292-2                                 |
| 3             | 25          | .040<br>1.02 | .188<br>4.78                    | 1218829-3 <sup>1</sup>            | —                                 | 1218292-3                                 |
| 4             | 37          | .040<br>1.02 | .188<br>4.78                    | 1218829-4 <sup>1</sup>            | —                                 | 1218292-4                                 |
| 5             | 50          | .040<br>1.02 | .188<br>4.78                    | 1218829-5 <sup>1</sup>            | —                                 | 1218292-5                                 |

<sup>1</sup> See Tin Plated RoHS compliant finish above.

<sup>2</sup> See Zinc Plated RoHS compliant finish above.

| Shell<br>Size | No.<br>Pos. | Post<br>Dia. | Post<br>Ext.<br>± .020 [± 0.51] | Plug Part Number                  |                                           |
|---------------|-------------|--------------|---------------------------------|-----------------------------------|-------------------------------------------|
|               |             |              |                                 | Tin Plated<br>Shells <sup>a</sup> | Zinc Plated<br>RoHS Shells <sup>a,2</sup> |
| 1             | 9           | .030<br>0.76 | .156<br>3.96                    | 1218374-1 <sup>1</sup>            | 1218378-1                                 |
| 2             | 15          | .030<br>0.76 | .156<br>3.96                    | 1218374-2 <sup>1</sup>            | 1218378-2                                 |
| 3             | 25          | .030<br>0.76 | .156<br>3.96                    | 1218374-3 <sup>1</sup>            | 1218378-3                                 |
| 4             | 37          | .030<br>0.76 | .156<br>3.96                    | 1218374-4 <sup>1</sup>            | 1218378-4                                 |
| 5             | 50          | .030<br>0.76 | .156<br>3.96                    | 1218374-5 <sup>1</sup>            | 1218378-5                                 |
| 1             | 9           | .030<br>0.76 | .188<br>4.78                    | 1218375-1 <sup>1</sup>            | 1218379-1                                 |
| 2             | 15          | .030<br>0.76 | .188<br>4.78                    | 1218375-2 <sup>1</sup>            | 1218379-2                                 |
| 3             | 25          | .030<br>0.76 | .188<br>4.78                    | 1218375-3 <sup>1</sup>            | 1218379-3                                 |
| 4             | 37          | .030<br>0.76 | .188<br>4.78                    | 1218375-4 <sup>1</sup>            | 1218379-4                                 |
| 5             | 50          | .030<br>0.76 | .188<br>4.78                    | 1218375-5 <sup>1</sup>            | 1218379-5                                 |
| 1             | 9           | .040<br>1.02 | .156<br>3.96                    | —                                 | 1218380-1                                 |
| 2             | 15          | .040<br>1.02 | .156<br>3.96                    | —                                 | 1218380-2                                 |
| 3             | 25          | .040<br>1.02 | .156<br>3.96                    | —                                 | 1218380-3                                 |
| 4             | 37          | .040<br>1.02 | .156<br>3.96                    | —                                 | 1218380-4                                 |
| 5             | 50          | .040<br>1.02 | .156<br>3.96                    | —                                 | 1218380-5                                 |
| 1             | 9           | .040<br>1.02 | .188<br>4.78                    | 1218377-1 <sup>1</sup>            | 1218381-1                                 |
| 2             | 15          | .040<br>1.02 | .188<br>4.78                    | 1218377-2 <sup>1</sup>            | 1218381-2                                 |
| 3             | 25          | .040<br>1.02 | .188<br>4.78                    | 1218377-3 <sup>1</sup>            | 1218381-3                                 |
| 4             | 37          | .040<br>1.02 | .188<br>4.78                    | 1218377-4 <sup>1</sup>            | 1218381-4                                 |
| 5             | 50          | .040<br>1.02 | .188<br>4.78                    | 1218377-5 <sup>1</sup>            | 1218381-5                                 |

<sup>2</sup> See Tin Plated RoHS compliant finish above.

<sup>3</sup> See Zinc Plated RoHS compliant finish above.

## AMPLIMITE Connectors, Series 109 (Continued)

### Straight PCB, Series 109, Make First/Break Last Sub-D Connectors (Industrial Grade)

#### Material and Finish

**Shell** — Steel, cadmium or tin plated

**Insert** — Polyester per MIL-M-24519

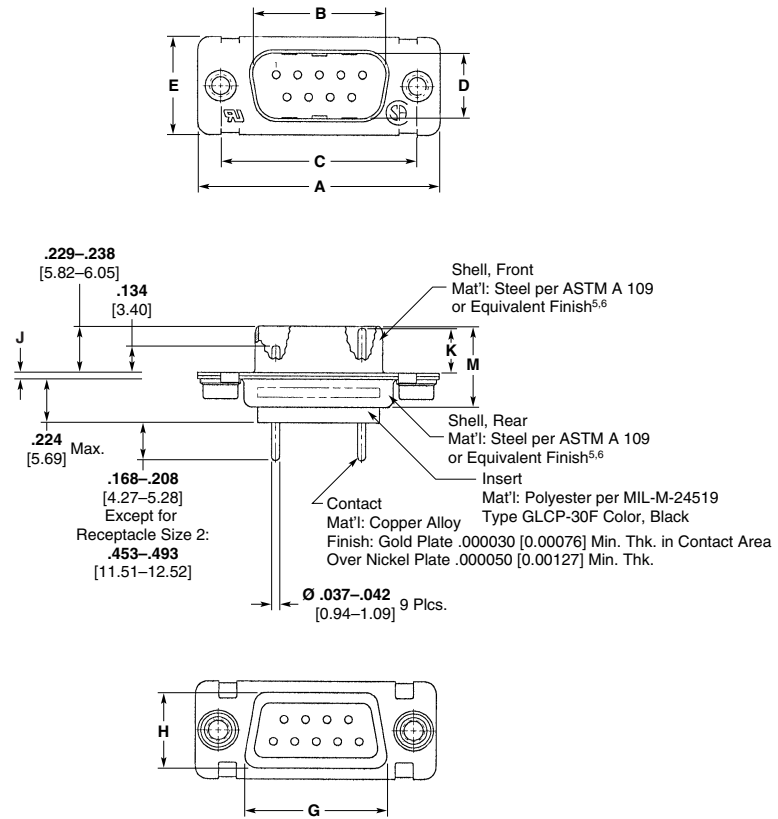
**Contact** — Copper alloy with .000030 [0.00076] min. gold plate over .000050 [0.00127] min. nickel underplate

**3 Regular Length Contact Location:**  
1, 6, and 9

**4 Short Length Contact Location:**  
2 thru 5, 7, and 8

**5 Finish** — Cadmium per QQ-P-416

**6 Finish** — Tin plated per MIL-T-10727



| MS Shell Size | Connector Style | Dimensions     |                |                |              |               |                |               |                        |              |                          |
|---------------|-----------------|----------------|----------------|----------------|--------------|---------------|----------------|---------------|------------------------|--------------|--------------------------|
|               |                 | A              | B              | C              | D            | E             | G              | H             | J                      | K            | M                        |
| 1             | Plug            | 1.213<br>30.81 | .666<br>16.92  | .984<br>24.99  | .329<br>8.36 | .494<br>12.55 | .759<br>19.28  | .422<br>10.72 | .020/.040<br>0.51/1.02 | .223<br>5.66 | .412/.432<br>10.46/10.97 |
|               | Receptacle      | 1.213<br>30.81 | .643<br>16.33  | .984<br>24.99  | .311<br>7.90 | .494<br>12.55 | .759<br>19.28  | .422<br>10.72 | .238/.248<br>6.05/6.30 | .178<br>4.52 | .419/.439<br>10.64/11.15 |
| 2             | Receptacle      | 1.541<br>39.14 | .971<br>24.66  | 1.312<br>33.32 | .311<br>7.90 | .494<br>12.55 | 1.083<br>27.51 | .422<br>10.72 | .238/.248<br>6.05/6.30 | .178<br>4.52 | .419/.439<br>10.64/11.15 |
| 3             | Plug            | 2.088<br>53.04 | 1.534<br>38.96 | 1.852<br>47.04 | .329<br>8.36 | .494<br>12.55 | 1.625<br>41.28 | .422<br>10.72 | .029/.049<br>0.74/1.24 | .217<br>5.51 | .416/.435<br>10.57/11.07 |

#### Plug Assemblies

| Shell Size | No. Pos. | Post Dia.              | Plug Part Number  |                       |
|------------|----------|------------------------|-------------------|-----------------------|
|            |          |                        | Tin Plated Shells | Cadmium Plated Shells |
| 1          | 9        | .037/.043<br>0.94/1.09 | 443638-2          | 443638-1              |
| 3          | 25       | .037/.043<br>0.94/1.09 | 443631-2          | 443631-1              |

#### Receptacle Assemblies

| Shell Size | No. Pos. | Post Dia.              | Plug Part Number  |                       |
|------------|----------|------------------------|-------------------|-----------------------|
|            |          |                        | Tin Plated Shells | Cadmium Plated Shells |
| 1          | 9        | .037/.043<br>0.94/1.09 | 443637-2          | 443637-1              |
| 2          | 15       | .037/.043<br>0.94/1.09 | 443646-2          | 443646-1              |

## AMPLIMITE Connectors, Series 109 (Continued)

### Right-Angle, PCB Plugs, Series 109, Standard Density Connectors (MIL Qualified)

#### Material and Finish

**Shell** — Steel, cadmium plated

**Insert and Post Spacer** — Approved material per MIL-DTL-24308

**Contact** — Copper alloy with .000050 [0.00127] min. gold plate over .000050 [0.00127] min. nickel underplate

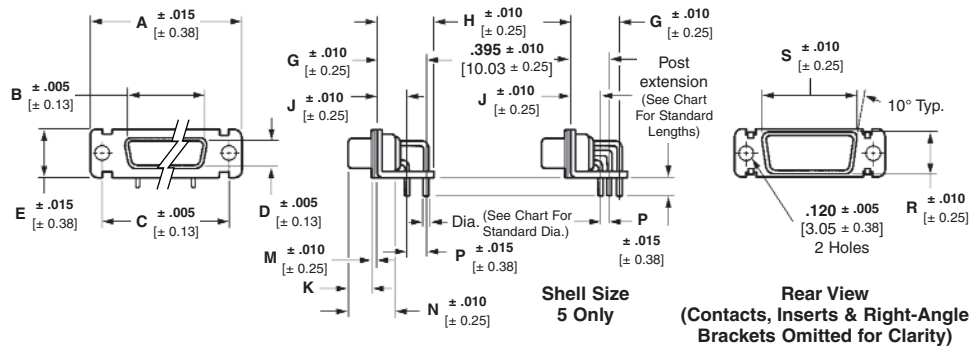
#### Related Product Data

**Cavity Identification** — page 8-39

**Mounting, Mating Specifications** — page 8-90

**Accessories** — pages 8-95 to 8-97

**PCB Layouts** — See page 8-91 or TE Connectivity customer drawing.



| MS<br>Shell<br>Size | Connector<br>Style | Dimensions     |                |                |               |               |               |               |              |                        |              |               |              |               |                |
|---------------------|--------------------|----------------|----------------|----------------|---------------|---------------|---------------|---------------|--------------|------------------------|--------------|---------------|--------------|---------------|----------------|
|                     |                    | A              | B              | C              | D             | E             | G             | H             | J            | K                      | M            | N             | P            | R             | S              |
| 1                   | Plug               | 1.213<br>30.81 | .666<br>16.92  | .984<br>24.99  | .329<br>8.36  | .494<br>12.55 | .395<br>10.03 | .484<br>12.29 | .283<br>7.19 | .238/.229<br>6.04/5.81 | .030<br>0.76 | .422<br>10.72 | .112<br>2.84 | .422<br>10.72 | .759<br>19.28  |
| 2                   | Plug               | 1.541<br>39.14 | .994<br>25.25  | 1.312<br>33.33 | .329<br>8.36  | .494<br>12.55 | .395<br>10.03 | .484<br>12.29 | .283<br>7.19 | .238/.229<br>6.04/5.81 | .030<br>0.76 | .422<br>10.72 | .112<br>2.84 | .422<br>10.72 | 1.083<br>27.51 |
| 3                   | Plug               | 2.088<br>53.04 | 1.534<br>38.96 | 1.852<br>47.04 | .329<br>8.36  | .494<br>12.55 | .395<br>10.03 | .484<br>12.29 | .283<br>7.19 | .236/.224<br>5.99/5.68 | .039<br>0.99 | .426<br>10.82 | .112<br>2.84 | .422<br>10.72 | 1.625<br>29.59 |
| 4                   | Plug               | 2.729<br>69.32 | 2.182<br>55.42 | 2.500<br>63.5  | .329<br>8.36  | .494<br>12.55 | .395<br>10.03 | .484<br>12.29 | .283<br>7.19 | .236/.224<br>5.99/5.68 | .039<br>0.99 | .426<br>10.82 | .112<br>2.84 | .422<br>10.72 | 2.272<br>57.71 |
| 5                   | Plug               | 2.635<br>66.93 | 2.079<br>52.81 | 2.406<br>61.11 | .441<br>10.44 | .605<br>15.37 | .507<br>12.88 | .594<br>15.09 | .283<br>7.19 | .236/.224<br>5.99/5.68 | .039<br>0.99 | .426<br>10.82 | .112<br>2.84 | .534<br>13.56 | 2.178<br>55.32 |

#### Plug Assemblies — .030 [0.76] Post Dia.

| Shell<br>Size | No.<br>Pos. | Post<br>Ext.<br>± .020 [± 0.51] | Zinc Plated Shells              |           | Cadmium<br>Plated Shells        |           |
|---------------|-------------|---------------------------------|---------------------------------|-----------|---------------------------------|-----------|
|               |             |                                 | Military<br>Part No.<br>M24308/ | Part No.  | Military<br>Part No.<br>M24308/ | Part No.  |
| 1             | 9           | .125<br>3.18                    | 24-25                           | 1757835-1 | 24-25F                          | 1218440-1 |
| 2             | 15          | .125<br>3.18                    | 24-26                           | 1757835-2 | 24-26F                          | 1218440-2 |
| 3             | 25          | .125<br>3.18                    | 24-27                           | 1757835-3 | 24-27F                          | 1218440-3 |
| 4             | 37          | .125<br>3.18                    | 24-28                           | 1757835-4 | 24-28F                          | 1218440-4 |
| 5             | 50          | .125<br>3.18                    | 24-29                           | 1757835-5 | 24-29F                          | 1218440-5 |
| 1             | 9           | .156<br>3.96                    | 24-31                           | 1757837-1 | 24-31F                          | 1218441-1 |
| 2             | 15          | .156<br>3.96                    | 24-32                           | 1757837-2 | 24-32F                          | 1218441-2 |
| 3             | 25          | .156<br>3.96                    | 24-33                           | 1757837-3 | 24-33F                          | 1218441-3 |
| 4             | 37          | .156<br>3.96                    | 24-34                           | 1757837-4 | 24-34F                          | 1218441-4 |
| 5             | 50          | .156<br>3.96                    | 24-35                           | 1757837-5 | 24-35F                          | 1218441-5 |
| 1             | 9           | .188<br>4.78                    | 24-49                           | 1757839-1 | 24-49F                          | 1218444-1 |
| 2             | 15          | .188<br>4.78                    | 24-50                           | 1757839-2 | 24-50F                          | 1218444-2 |
| 3             | 25          | .188<br>4.78                    | 24-51                           | 1757839-3 | 24-51F                          | 1218444-3 |
| 4             | 37          | .188<br>4.78                    | 24-52                           | 1757839-4 | 24-52F                          | 1218444-4 |
| 5             | 50          | .188<br>4.78                    | 24-53                           | 1757839-5 | 24-53F                          | 1218444-5 |

**Note:** The suffix "F" on M24308 part numbers designates cadmium shell plating.

#### Plug Assemblies — .040 [1.02] Post Dia.

| Shell<br>Size | No.<br>Pos. | Post<br>Ext.<br>± .020 [± 0.51] | Zinc Plated Shells              |           | Cadmium<br>Plated Shells        |           |
|---------------|-------------|---------------------------------|---------------------------------|-----------|---------------------------------|-----------|
|               |             |                                 | Military<br>Part No.<br>M24308/ | Part No.  | Military<br>Part No.<br>M24308/ | Part No.  |
| 1             | 9           | .125<br>3.18                    | 24-37                           | 1757841-1 | 24-37F                          | 1218442-1 |
| 2             | 15          | .125<br>3.18                    | 24-38                           | 1757841-2 | 24-38F                          | 1218442-2 |
| 3             | 25          | .125<br>3.18                    | 24-39                           | 1757841-3 | 24-39F                          | 1218442-3 |
| 4             | 37          | .125<br>3.18                    | 24-40                           | 1757841-4 | 24-40F                          | 1218442-4 |
| 5             | 50          | .125<br>3.18                    | 24-41                           | 1757841-5 | 24-41F                          | 1218442-5 |
| 1             | 9           | .156<br>3.96                    | 24-43                           | 1757843-1 | —                               | —         |
| 2             | 15          | .156<br>3.96                    | 24-44                           | 1757843-2 | —                               | —         |
| 3             | 25          | .156<br>3.96                    | 24-45                           | 1757843-3 | —                               | —         |
| 4             | 37          | .156<br>3.96                    | 24-46                           | 1757843-4 | —                               | —         |
| 5             | 50          | .156<br>3.96                    | 24-47                           | 1757843-5 | —                               | —         |
| 1             | 9           | .188<br>4.78                    | 24-55                           | 1757845-1 | 24-55F                          | 1218445-1 |
| 2             | 15          | .188<br>4.78                    | 24-56                           | 1757845-2 | 24-56F                          | 1218445-2 |
| 3             | 25          | .188<br>4.78                    | 24-57                           | 1757845-3 | 24-57F                          | 1218445-3 |
| 4             | 37          | .188<br>4.78                    | 24-58                           | 1757845-4 | 24-58F                          | 1218445-4 |
| 5             | 50          | .188<br>4.78                    | 24-59                           | 1757845-5 | 24-59F                          | 1218445-5 |

## AMPLIMITE Connectors, Series 109 (Continued)

### Right-Angle, PCB Receptacles, Series 109, Standard Density Connectors (MIL Qualified)

#### Material and Finish

**Shell** — Steel, cadmium or zinc plated

**Insert and Post Spacer** — Approved material per MIL-DTL-24308

#### Contacts

**Socket Body** — Copper alloy with

.000050 [0.00127] min. gold plate over

.000050 [0.00127] min. nickel underplate

**Mating Area** — Copper alloy with

.000050 [0.00127] min. gold plate over

.000050 [0.00127] min. nickel underplate

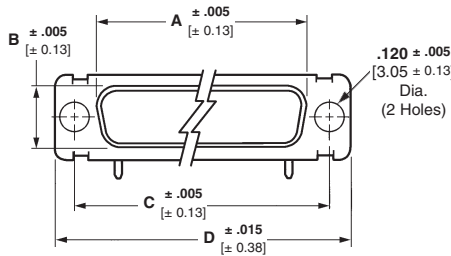
#### Related Product Data

**Cavity Identification** — page 8-39

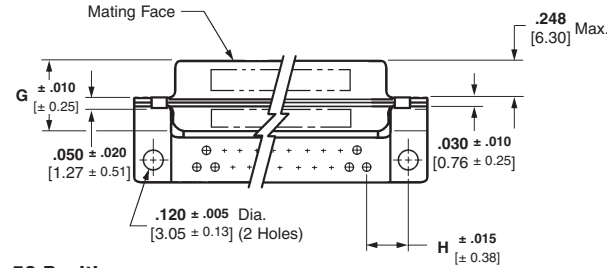
**Mounting, Mating Specifications** — page 8-90

**Accessories** — pages 8-95 to 8-97

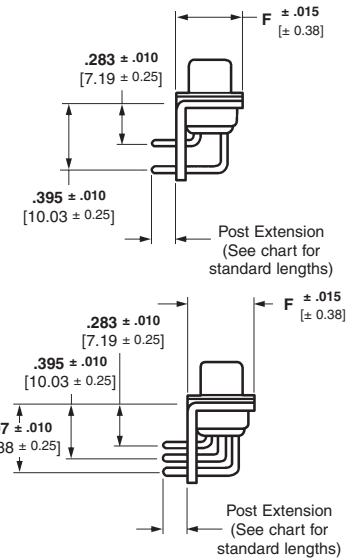
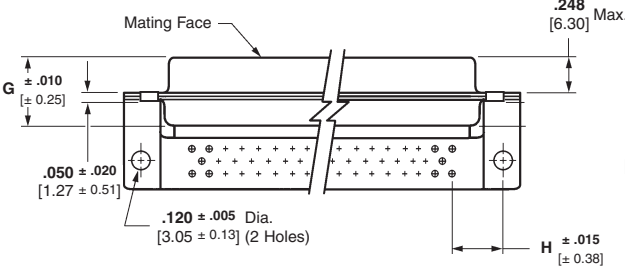
**PCB Layouts** — See page 8-91 or TE Connectivity customer drawing.



### 9, 15, 25 and 37 Positions



### 50 Positions



### Receptacle Assemblies

| No. of Contact Pos. (Shell Size) | Dimensions     |               |                |                |               |              |
|----------------------------------|----------------|---------------|----------------|----------------|---------------|--------------|
|                                  | A (Outside)    | B (Outside)   | C              | D              | F             | H            |
| 9 (1)                            | .643<br>16.33  | .311<br>7.9   | .984<br>24.99  | 1.213<br>30.81 | .494<br>12.55 | .276<br>7.01 |
| 15 (2)                           | .971<br>24.66  | .311<br>7.9   | 1.312<br>33.32 | 1.541<br>39.14 | .494<br>12.55 | .278<br>7.06 |
| 25 (3)                           | 1.511<br>38.38 | .311<br>7.9   | 1.852<br>47.04 | 2.088<br>53.04 | .494<br>12.55 | .274<br>6.96 |
| 37 (4)                           | 2.159<br>54.84 | .311<br>7.9   | 2.500<br>63.5  | 2.729<br>69.32 | .494<br>12.55 | .272<br>6.91 |
| 50 (5)                           | 2.064<br>52.43 | .423<br>10.74 | 2.406<br>61.11 | 2.635<br>66.93 | .605<br>15.37 | .333<br>8.46 |

### Receptacle Assemblies — .030 [0.76] Post Dia.

| Shell Size | No. Pos. | Post Ext. ±.020 [±0.51] | Zinc Plated Shells        |           | Cadmium Plated Shells     |           |
|------------|----------|-------------------------|---------------------------|-----------|---------------------------|-----------|
|            |          |                         | Military Part No. M24308/ | Part No.  | Military Part No. M24308/ | Part No.  |
| 1          | 9        | .125<br>3.18            | 23-25                     | 1757836-1 | 23-25F                    | 1218434-1 |
| 2          | 15       | .125<br>3.18            | 23-26                     | 1757836-2 | 23-26F                    | 1218434-2 |
| 3          | 25       | .125<br>3.18            | 23-27                     | 1757836-3 | 23-27F                    | 1218434-3 |
| 4          | 37       | .125<br>3.18            | 23-28                     | 1757836-4 | 23-28F                    | 1218434-4 |
| 5          | 50       | .125<br>3.18            | 23-29                     | 1757836-5 | 23-29F                    | 1218434-5 |
| 1          | 9        | .156<br>3.96            | 23-31                     | 1757838-1 | 23-31F                    | 1218408-1 |
| 2          | 15       | .156<br>3.96            | 23-32                     | 1757838-2 | 23-32F                    | 1218408-2 |
| 3          | 25       | .156<br>3.96            | 23-33                     | 1757838-3 | 23-33F                    | 1218408-3 |
| 4          | 37       | .156<br>3.96            | 23-34                     | 1757838-4 | 23-34F                    | 1218408-4 |
| 5          | 50       | .156<br>3.96            | 23-35                     | 1757838-5 | 23-35F                    | 1218408-5 |
| 1          | 9        | .188<br>4.78            | 23-49                     | 1757840-1 | 23-49F                    | 1218437-1 |
| 2          | 15       | .188<br>4.78            | 23-50                     | 1757840-2 | 23-50F                    | 1218437-2 |
| 3          | 25       | .188<br>4.78            | 23-51                     | 1757840-3 | 23-51F                    | 1218437-3 |
| 4          | 37       | .188<br>4.78            | 23-52                     | 1757840-4 | 23-52F                    | 1218437-4 |
| 5          | 50       | .188<br>4.78            | 23-53                     | 1757840-5 | 23-53F                    | 1218437-5 |

### Receptacle Assemblies — .040 [1.02] Post Dia.

| Shell Size | No. Pos. | Post Ext. ±.020 [±0.51] | Zinc Plated Shells        |           | Cadmium Plated Shells     |           |
|------------|----------|-------------------------|---------------------------|-----------|---------------------------|-----------|
|            |          |                         | Military Part No. M24308/ | Part No.  | Military Part No. M24308/ | Part No.  |
| 1          | 9        | .125<br>3.18            | 23-37                     | 1757842-1 | 23-37F                    | 1218435-1 |
| 2          | 15       | .125<br>3.18            | 23-38                     | 1757842-2 | 23-38F                    | 1218435-2 |
| 3          | 25       | .125<br>3.18            | 23-39                     | 1757842-3 | 23-39F                    | 1218435-3 |
| 4          | 37       | .125<br>3.18            | 23-40                     | 1757842-4 | 23-40F                    | 1218435-4 |
| 5          | 50       | .125<br>3.18            | 23-41                     | 1757842-5 | 23-41F                    | 1218435-5 |
| 1          | 9        | .156<br>3.96            | 23-43                     | 1757844-1 | 23-43F                    | 1218436-1 |
| 2          | 15       | .156<br>3.96            | 23-44                     | 1757844-2 | 23-44F                    | 1218436-2 |
| 3          | 25       | .156<br>3.96            | 23-45                     | 1757844-3 | 23-45F                    | 1218436-3 |
| 4          | 37       | .156<br>3.96            | 23-46                     | 1757844-4 | 23-46F                    | 1218436-4 |
| 5          | 50       | .156<br>3.96            | 23-47                     | 1757844-5 | 23-47F                    | 1218436-5 |
| 1          | 9        | .188<br>4.78            | 23-55                     | 1757846-1 | 23-55F                    | 1218438-1 |
| 2          | 15       | .188<br>4.78            | 23-56                     | 1757846-2 | 23-56F                    | 1218438-2 |
| 3          | 25       | .188<br>4.78            | 23-57                     | 1757846-3 | 23-57F                    | 1218438-3 |
| 4          | 37       | .188<br>4.78            | 23-58                     | 1757846-4 | 23-58F                    | 1218438-4 |
| 5          | 50       | .188<br>4.78            | 23-59                     | 1757846-5 | 23-59F                    | 1218438-5 |

**Note:** The suffix "F" on M24308 part numbers designates cadmium shell plating.



## AMPLIMITE Connectors, Series 109 (Continued)

### Right-Angle, PCB Plugs, Series 109, Standard Density Connectors (Industrial Grade)

#### Material and Finish

**Shell** — Steel, see below

**1 Tin Plated RoHS Compliant**

**Finish** — Tin .000400–.000550 [0.01020–0.01400] thick over copper .000050 [0.00127] min. thick

**2 Zinc Plated RoHS Compliant**

**Finish** — Zinc .000200–.000400 [0.00508–0.01016] thick, yellow trivalent chromate

**Insert and Post Spacer** — Approved material per MIL-DTL-24308

**Contact** — Copper alloy with .000050 [0.00127] min. gold plate over .000050 [0.00127] min. nickel underplate

#### Related Product Data

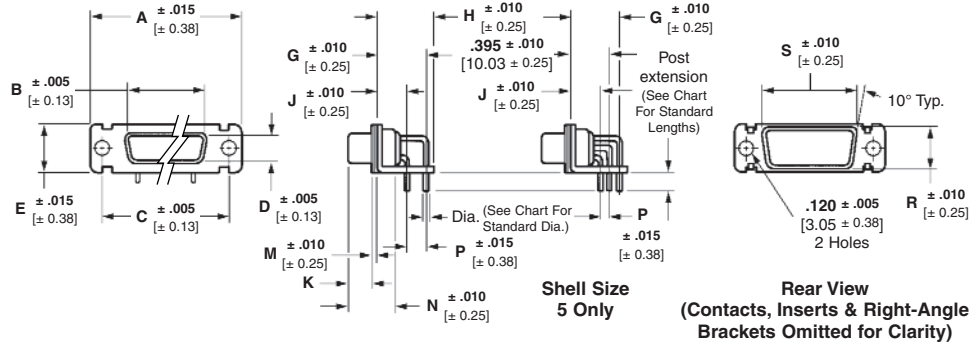
**Cavity Identification** — page 8-39

**Mounting, Mating Specifications** — page 8-90

**Accessories** — pages 8-95 to 8-97

**PCB Layouts** — See page 8-91 or TE Connectivity customer drawing.

**Product Specification** — 108-1770



| MS<br>Shell<br>Size | Connector<br>Style | Dimensions     |                |                |               |               |               |               |              |                        |              |               |              |               |                |
|---------------------|--------------------|----------------|----------------|----------------|---------------|---------------|---------------|---------------|--------------|------------------------|--------------|---------------|--------------|---------------|----------------|
|                     |                    | A              | B              | C              | D             | E             | G             | H             | J            | K                      | M            | N             | P            | R             | S              |
| 1                   | Plug               | 1.213<br>30.81 | .666<br>16.92  | .984<br>24.99  | .329<br>8.36  | .494<br>12.55 | .395<br>10.03 | .484<br>12.29 | .283<br>7.19 | .238/.229<br>6.04/5.81 | .030<br>0.76 | .422<br>10.72 | .112<br>2.84 | .422<br>10.72 | .759<br>19.28  |
| 2                   | Plug               | 1.541<br>39.14 | .994<br>25.25  | 1.312<br>33.33 | .329<br>8.36  | .494<br>12.55 | .395<br>10.03 | .484<br>12.29 | .283<br>7.19 | .238/.229<br>6.04/5.81 | .030<br>0.76 | .422<br>10.72 | .112<br>2.84 | .422<br>10.72 | 1.083<br>27.51 |
| 3                   | Plug               | 2.088<br>53.04 | 1.534<br>38.96 | 1.852<br>47.04 | .329<br>8.36  | .494<br>12.55 | .395<br>10.03 | .484<br>12.29 | .283<br>7.19 | .236/.224<br>5.99/5.68 | .039<br>0.99 | .426<br>10.82 | .112<br>2.84 | .422<br>10.72 | 1.625<br>29.59 |
| 4                   | Plug               | 2.729<br>69.32 | 2.182<br>55.42 | 2.500<br>63.5  | .329<br>8.36  | .494<br>12.55 | .395<br>10.03 | .484<br>12.29 | .283<br>7.19 | .236/.224<br>5.99/5.68 | .039<br>0.99 | .426<br>10.82 | .112<br>2.84 | .422<br>10.72 | 2.272<br>57.71 |
| 5                   | Plug               | 2.635<br>66.93 | 2.079<br>52.81 | 2.406<br>61.11 | .441<br>10.44 | .605<br>15.37 | .507<br>12.88 | .594<br>15.09 | .283<br>7.19 | .236/.224<br>5.99/5.68 | .039<br>0.99 | .426<br>10.82 | .112<br>2.84 | .534<br>13.56 | 2.178<br>55.32 |

#### Plug Assemblies — .030 [0.76] Post Dia.

| Shell Size | No. Pos. | Post Ext.<br>± .020 [± 0.51] | Part Number                    |                                      |
|------------|----------|------------------------------|--------------------------------|--------------------------------------|
|            |          |                              | Tin Plated Shells <sup>1</sup> | Zinc Plated RoHS Shells <sup>2</sup> |
| 1          | 9        | .125<br>3.18                 | 1218830-1                      | 1218831-1                            |
| 2          | 15       | .125<br>3.18                 | 1218830-2                      | 1218831-2                            |
| 3          | 25       | .125<br>3.18                 | 1218830-3                      | 1218831-3                            |
| 4          | 37       | .125<br>3.18                 | 1218830-4                      | 1218831-4                            |
| 5          | 50       | .125<br>3.18                 | 1218830-5                      | 1218831-5                            |
| 1          | 9        | .156<br>3.96                 | 1218832-1                      | 1218833-1                            |
| 2          | 15       | .156<br>3.96                 | 1218832-2                      | 1218833-2                            |
| 3          | 25       | .156<br>3.96                 | 1218832-3                      | 1218833-3                            |
| 4          | 37       | .156<br>3.96                 | 1218832-4                      | 1218833-4                            |
| 5          | 50       | .156<br>3.96                 | 1218832-5                      | 1218833-5                            |
| 1          | 9        | .188<br>4.78                 | 1218838-1                      | 1218839-1                            |
| 2          | 15       | .188<br>4.78                 | 1218838-2                      | 1218839-2                            |
| 3          | 25       | .188<br>4.78                 | 1218838-3                      | 1218839-3                            |
| 4          | 37       | .188<br>4.78                 | 1218838-4                      | 1218839-4                            |
| 5          | 50       | .188<br>4.78                 | 1218838-5                      | 1218839-5                            |

#### Plug Assemblies — .040 [1.02] Post Dia.

| Shell Size | No. Pos. | Post Ext.<br>± .020 [± 0.51] | Part Number                    |                                      |
|------------|----------|------------------------------|--------------------------------|--------------------------------------|
|            |          |                              | Tin Plated Shells <sup>1</sup> | Zinc Plated RoHS Shells <sup>2</sup> |
| 1          | 9        | .125<br>3.18                 | 1218834-1                      | 1218835-1                            |
| 2          | 15       | .125<br>3.18                 | 1218834-2                      | 1218835-2                            |
| 3          | 25       | .125<br>3.18                 | 1218834-3                      | 1218835-3                            |
| 4          | 37       | .125<br>3.18                 | 1218834-4                      | 1218835-4                            |
| 5          | 50       | .125<br>3.18                 | 1218834-5                      | 1218835-5                            |
| 1          | 9        | .156<br>3.96                 | —                              | 1218837-1                            |
| 2          | 15       | .156<br>3.96                 | —                              | 1218837-2                            |
| 3          | 25       | .156<br>3.96                 | —                              | 1218837-3                            |
| 4          | 37       | .156<br>3.96                 | —                              | 1218837-4                            |
| 5          | 50       | .156<br>3.96                 | —                              | 1218837-5                            |
| 1          | 9        | .188<br>4.78                 | 1218840-1                      | 1218841-1                            |
| 2          | 15       | .188<br>4.78                 | 1218840-2                      | 1218841-2                            |
| 3          | 25       | .188<br>4.78                 | 1218840-3                      | 1218841-3                            |
| 4          | 37       | .188<br>4.78                 | 1218840-4                      | 1218841-4                            |
| 5          | 50       | .188<br>4.78                 | 1218840-5                      | 1218841-5                            |

3 See Zinc Plated RoHS compliant finish above.

2 See Tin Plated RoHS compliant finish above.

3 See Zinc Plated RoHS compliant finish above.

## AMPLIMITE Connectors, Series 109 (Continued)

### Right-Angle, PCB Receptacles, Series 109, Standard Density Connectors (Industrial Grade)

#### Material and Finish

**Shell** — Steel, see below for finish options

#### Tin Plated RoHS Compliant

**Finish** — Tin .000400–.000550 [0.01020–0.01400] thick over copper .000050 [0.00127] min. thick

#### Zinc Plated RoHS Compliant

— Zinc .000200–.000400 [0.00508–0.01016] thick, yellow trivalent chromate

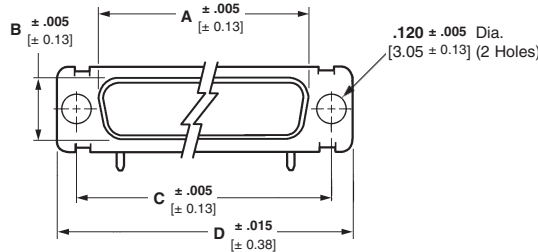
**Insert and Post Spacer** — Approved material per MIL-DTL-24308

#### Contacts —

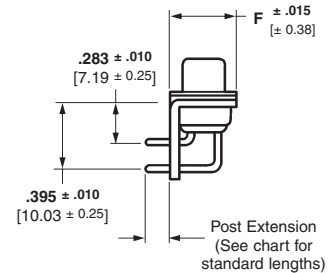
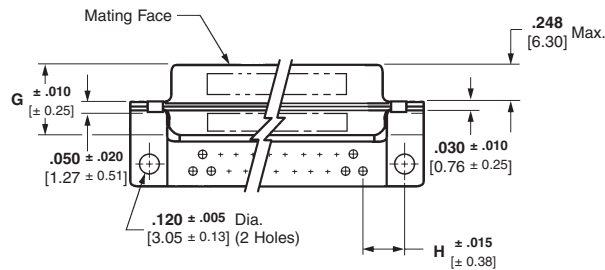
**Socket Body** — Copper alloy with .000050 [0.00127] min. gold plate over .000050 [0.00127] min. nickel under-plate

**Mating Area** — Copper alloy with .000050 [0.00127] min. gold plate over .000050 [0.00127] min. nickel under-plate

**Mating Area** — Copper alloy with .000030 [0.00076] min. gold plate over .000050 [0.00127] min. nickel under-plate



### 9, 15, 25 and 37 Positions



#### Related Product Data

**Cavity Identification** — page 8-39

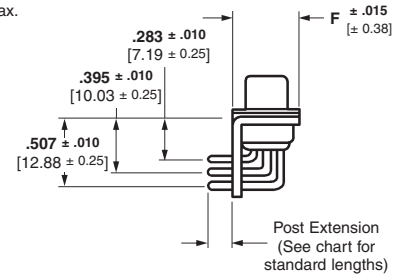
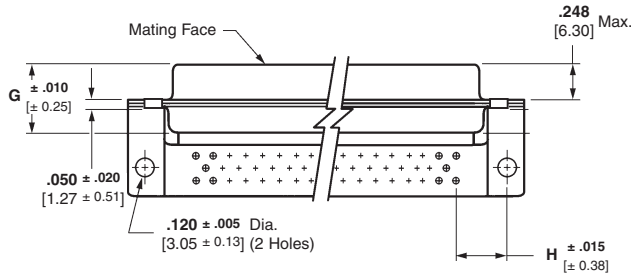
**Mounting, Mating Specifications** — page 8-90

**Accessories** — pages 8-95 to 8-97

**PCB Layouts** — See page 8-91 or TE Connectivity customer drawing.

**Product Specification** — 108-1770

### 50 Positions



### Receptacle Assemblies

| No. of Contact Pos. (Shell Size) | Dimensions     |               |                |                |               |               |              |
|----------------------------------|----------------|---------------|----------------|----------------|---------------|---------------|--------------|
|                                  | A (Outside)    | B (Outside)   | C              | D              | F             | G             | H            |
| 9<br>(1)                         | .643<br>16.33  | .311<br>7.9   | .984<br>24.99  | 1.213<br>30.81 | .494<br>12.55 | .429<br>10.97 | .276<br>7.01 |
| 15<br>(2)                        | .971<br>24.66  | .311<br>7.9   | 1.312<br>33.32 | 1.541<br>39.14 | .494<br>12.55 | .429<br>10.97 | .278<br>7.06 |
| 25<br>(3)                        | 1.511<br>38.38 | .311<br>7.9   | 1.852<br>47.04 | 2.088<br>53.04 | .494<br>12.55 | .429<br>10.97 | .274<br>6.96 |
| 37<br>(4)                        | 2.159<br>54.84 | .311<br>7.9   | 2.500<br>63.5  | 2.729<br>69.32 | .494<br>12.55 | .429<br>10.97 | .272<br>6.91 |
| 50<br>(5)                        | 2.064<br>52.43 | .423<br>10.74 | 2.406<br>61.11 | 2.635<br>66.93 | .605<br>15.37 | .429<br>10.97 | .333<br>8.46 |

**AMPLIMITE Connectors, Series 109** (Continued)

**Right-Angle, PCB Receptacles, Series 109, Standard Density Connectors (Industrial Grade)** (Continued)

**Material and Finish**
**Shell** — Steel

**Insert and Post Spacer** — Approved material per MIL-DTL-24308

**Contacts** —

**Socket Body** — Copper alloy with .000050 [0.00127] min. gold plate over .000050 [0.00127] min. nickel under-plate

**Mating Area** — Copper alloy with .000050 [0.00127] min. gold plate over .000050 [0.00127] min. nickel under-plate

**Mating Area** — Copper alloy with .000030 [0.00076] min. gold plate over .000050 [0.00127] min. nickel under-plate

**Related Product Data**
**Cavity Identification** — page 8-39

**Mounting, Mating Specifications** — page 8-90

**Accessories** — pages 8-95 to 8-97

**PCB Layouts** — See page 8-91 or TE Connectivity customer drawing.

**Product Specification** — 108-1770

**Receptacle Assemblies — .030 [0.76] Post Dia.**

| Shell Size | No. Pos. | Post Ext.<br>± .020 [± 0.51] | Part Number                    |                                |                                 |
|------------|----------|------------------------------|--------------------------------|--------------------------------|---------------------------------|
|            |          |                              | Tin Plated Shells <sup>b</sup> | Tin Plated Shells <sup>a</sup> | Zinc Plated Shells <sup>a</sup> |
| 1          | 9        | .125<br>3.18                 | 1218842-1                      | 1218844-1                      | 1218843-1                       |
| 2          | 15       | .125<br>3.18                 | 1218842-2                      | 1218844-2                      | 1218843-2                       |
| 3          | 25       | .125<br>3.18                 | 1218842-3                      | 1218844-3                      | 1218843-3                       |
| 4          | 37       | .125<br>3.18                 | 1218842-4                      | 1218844-4                      | 1218843-4                       |
| 5          | 50       | .125<br>3.18                 | 1218842-5                      | 1218844-5                      | 1218843-5                       |
| 1          | 9        | .156<br>3.96                 | 1218845-1                      | 1218847-1                      | 1218846-1                       |
| 2          | 15       | .156<br>3.96                 | 1218845-2                      | 1218847-2                      | 1218846-2                       |
| 3          | 25       | .156<br>3.96                 | 1218845-3                      | 1218847-3                      | 1218846-3                       |
| 4          | 37       | .156<br>3.96                 | 1218845-4                      | 1218847-4                      | 1218846-4                       |
| 5          | 50       | .156<br>3.96                 | 1218845-5                      | 1218847-5                      | 1218846-5                       |
| 1          | 9        | .188<br>4.78                 | 1218854-1                      | 1218856-1                      | 1218855-1                       |
| 2          | 15       | .188<br>4.78                 | 1218854-2                      | 1218856-2                      | 1218855-2                       |
| 3          | 25       | .188<br>4.78                 | 1218854-3                      | 1218856-3                      | 1218855-3                       |
| 4          | 37       | .188<br>4.78                 | 1218854-4                      | 1218856-4                      | 1218855-4                       |
| 5          | 50       | .188<br>4.78                 | 1218854-5                      | 1218856-5                      | 1218855-5                       |

**Receptacle Assemblies — .040 [1.02] Post Dia.**

| Shell Size | No. Pos. | Post Ext.<br>± .020 [± 0.51] | Part Number                    |                                |                                 |
|------------|----------|------------------------------|--------------------------------|--------------------------------|---------------------------------|
|            |          |                              | Tin Plated Shells <sup>b</sup> | Tin Plated Shells <sup>a</sup> | Zinc Plated Shells <sup>a</sup> |
| 1          | 9        | .125<br>3.18                 | 1218848-1                      | 1218850-1                      | 1218849-1                       |
| 2          | 15       | .125<br>3.18                 | 1218848-2                      | 1218850-2                      | 1218849-2                       |
| 3          | 25       | .125<br>3.18                 | 1218848-3                      | 1218850-3                      | 1218849-3                       |
| 4          | 37       | .125<br>3.18                 | 1218848-4                      | 1218850-4                      | 1218849-4                       |
| 5          | 50       | .125<br>3.18                 | 1218848-5                      | 1218850-5                      | 1218849-5                       |
| 1          | 9        | .156<br>3.96                 | —                              | —                              | 1218852-1                       |
| 2          | 15       | .156<br>3.96                 | —                              | —                              | 1218852-2                       |
| 3          | 25       | .156<br>3.96                 | —                              | —                              | 1218852-3                       |
| 4          | 37       | .156<br>3.96                 | —                              | —                              | 1218852-4                       |
| 5          | 50       | .156<br>3.96                 | —                              | —                              | 1218852-5                       |
| 1          | 9        | .188<br>4.78                 | 1218857-1                      | 1218859-1                      | 1218858-1                       |
| 2          | 15       | .188<br>4.78                 | 1218857-2                      | 1218859-2                      | 1218858-2                       |
| 3          | 25       | .188<br>4.78                 | 1218857-3                      | 1218859-3                      | 1218858-3                       |
| 4          | 37       | .188<br>4.78                 | 1218857-4                      | 1218859-4                      | 1218858-4                       |
| 5          | 50       | .188<br>4.78                 | 1218857-5                      | 1218859-5                      | 1218858-5                       |

## AMPLIMITE Connectors, Series 109 (Continued)

### Right-Angle, PCB Plugs, Series 109, with One Piece Insert (Industrial Grade)

#### Material and Finish

**Shell** — Steel, see below

**1 Tin Plated Finish** — Tin

.000400–.000550 [0.01020–0.01400]  
thick over copper .000050 [0.00127]  
min. thick

**2 Zinc Plated RoHS Compliant**

**Finish** — Zinc .000200–.000400  
[0.00508–0.01016] thick, yellow trivalent  
chromate

**Insert** — Thermoplastic

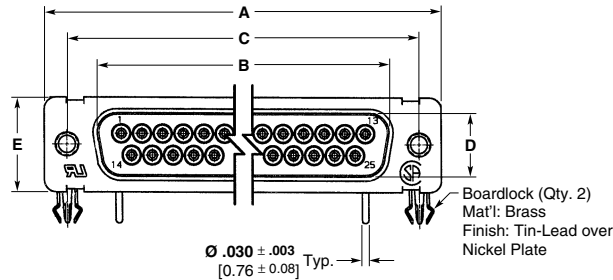
**Contact Material** — Brass or  
Beryllium copper

**Contact Finish** — Gold with .000010

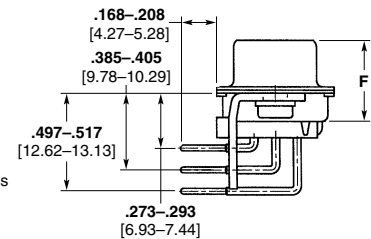
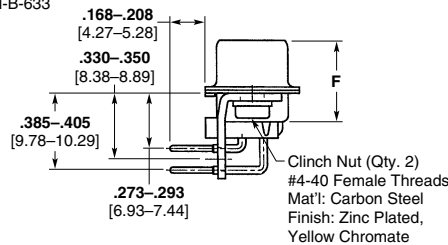
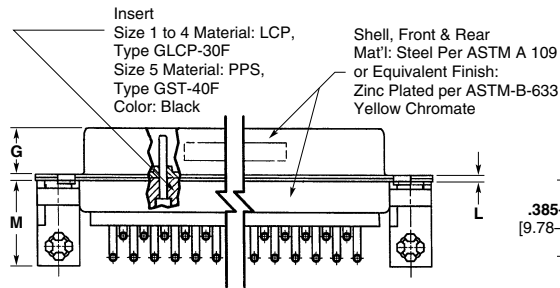
[0.00025] min. gold plate over .000050

[0.00127] min. nickel underplate

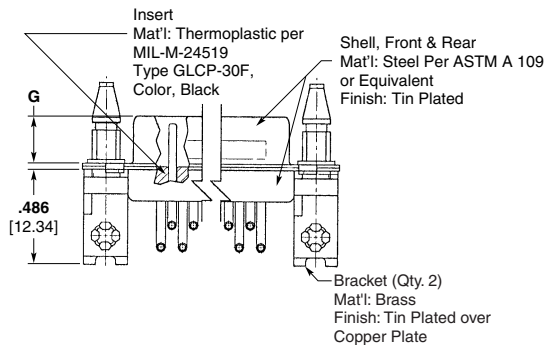
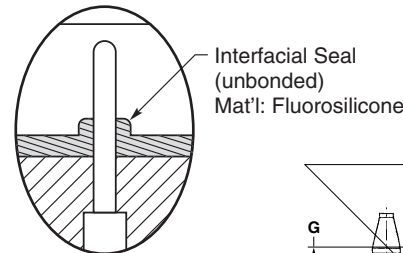
**Interfacial Seal** — Fluorosilicone



3 and 5 Positions (with Interfacial Seal)



9 Position (with Locking Post)



\*Signal Contacts are solder dipped with SnPb 63/37 to meet the requirements of MIL-DTL-24308, method 208.

| MS Shell Size | Connector Style | Dimensions                 |                            |                            |                          |                          |                          |                        |                            |                          |                        |                          |
|---------------|-----------------|----------------------------|----------------------------|----------------------------|--------------------------|--------------------------|--------------------------|------------------------|----------------------------|--------------------------|------------------------|--------------------------|
|               |                 | A                          | B                          | C                          | D                        | E                        | F                        | G                      | H                          | J                        | L                      | M                        |
| 1             | Plug            | 1.198/1.228<br>30.43/31.19 | .661/.671<br>16.21/16.46   | .979/.989<br>24.87/25.12   | .324/.334<br>8.23/8.48   | .479/.509<br>12.17/12.93 | .412/.432<br>10.46/10.97 | .229/.238<br>5.82/6.05 | .749/.769<br>19.02/19.53   | .412/.432<br>10.46/10.97 | .020/.040<br>0.51/1.02 | —                        |
| 3             | Plug            | 2.073/2.103<br>52.65/53.42 | 1.529/1.539<br>38.25/38.51 | 1.847/1.857<br>46.91/47.17 | .324/.334<br>8.23/8.48   | .479/.509<br>12.17/12.93 | .416/.436<br>10.57/11.07 | .224/.236<br>5.69/5.99 | 1.615/1.635<br>41.02/41.53 | .412/.432<br>10.46/10.97 | .029/.049<br>0.74/1.24 | .435/.443<br>11.05/11.25 |
| 5             | Plug            | 2.620/2.650<br>66.55/67.31 | 2.074/2.084<br>52.30/52.55 | 2.401/2.411<br>60.99/61.24 | .436/.446<br>11.07/11.33 | .590/.620<br>14.99/15.75 | .416/.436<br>10.57/11.07 | .224/.236<br>5.69/5.99 | 2.168/2.188<br>55.07/55.58 | .524/.544<br>13.31/13.82 | .029/.049<br>0.74/1.24 | .490/.498<br>12.45/12.65 |

### Plug Assemblies — .030 [0.76] Post Dia.

| Shell Size | No. Pos. | With Interfacial Seal | Part Number                    |                                      |
|------------|----------|-----------------------|--------------------------------|--------------------------------------|
|            |          |                       | Tin Plated Shells <sup>1</sup> | Zinc Plated RoHS Shells <sup>2</sup> |
| 1          | 9        | No                    | 1218606-6                      | —                                    |
| 3          | 25       | Yes                   | —                              | 1218538-3                            |
| 5          | 50       | Yes                   | —                              | 1218538-5                            |

<sup>1</sup> See Material and Finish above.

<sup>2</sup> See RoHS compliant Material and Finish above.

## AMPLIMITE Connectors, Series 109 (Continued)

### Right-Angle, PCB Receptacles, Series 109, with One Piece Insert (Industrial Grade)

#### Material and Finish

**Shell** — Steel, tin plated

**1 Tin Plated RoHS Compliant**

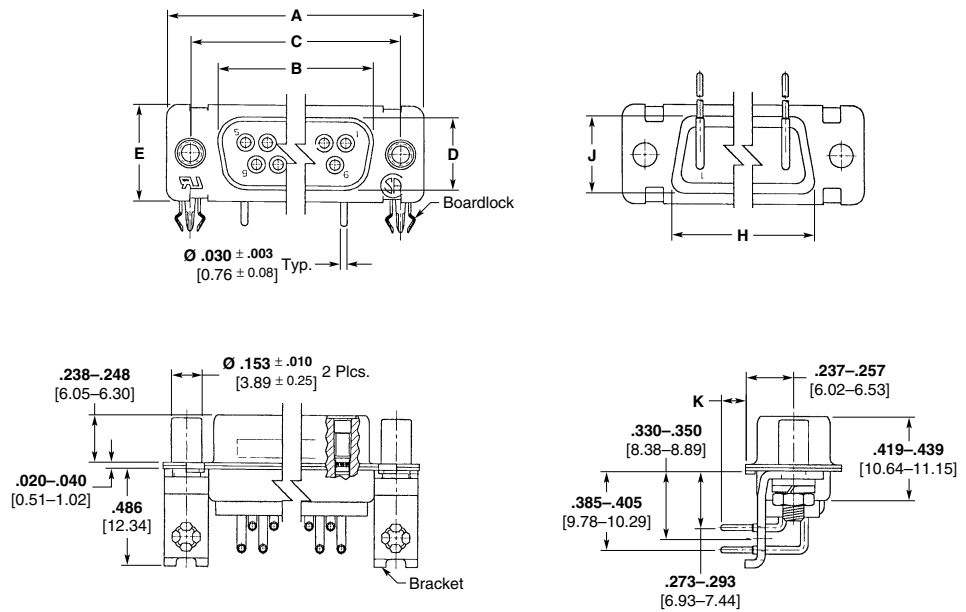
**Finish** — Tin .000400-.000550  
[0.01020-0.01400] thick over copper  
.000050 [0.00127] min. thick

**Insert** — Thermoplastic

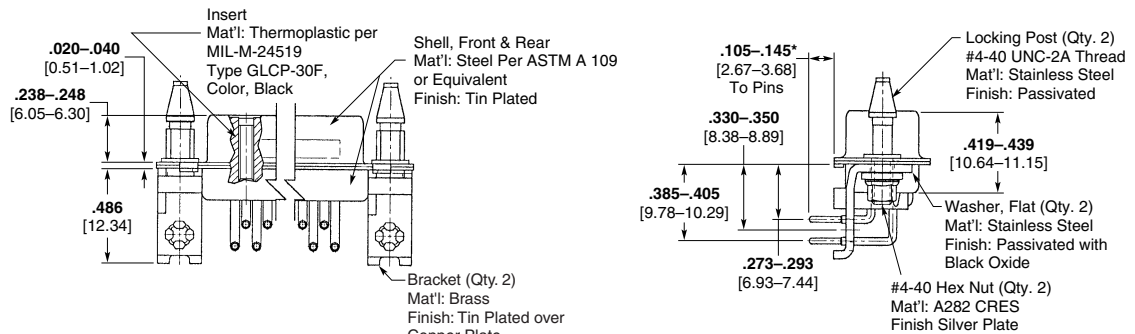
**Contact Material** — Brass or  
Beryllium copper

**Contact Finish** — Gold with .000010  
[0.00025] min. gold over .000050  
[0.00127] min. nickel underplate

#### 9 Position



#### 9 Position (with Locking Post)



\*Signal Contacts are solder dipped with SnPb 63/37 to meet the requirements of MIL-DTL-24308, method 208.

| MS Shell Size | Connector Style | Dimensions                 |                          |                          |                        |                          |                          |                          | Part Number            |
|---------------|-----------------|----------------------------|--------------------------|--------------------------|------------------------|--------------------------|--------------------------|--------------------------|------------------------|
|               |                 | A                          | B                        | C                        | D                      | E                        | H                        | J                        |                        |
| 1             | Receptacle      | 1.198/1.228<br>30.43/31.19 | .638/.648<br>16.21/16.46 | .979/.989<br>24.87/25.12 | .306/.316<br>7.77/8.03 | .479/.509<br>12.17/12.93 | .749/.769<br>19.02/19.53 | .412/.432<br>10.46/10.97 | 1218665-1 <sup>1</sup> |
|               |                 |                            |                          |                          |                        |                          |                          | .105/.145<br>2.67/3.68   | 1218665-6 <sup>1</sup> |
|               |                 |                            |                          |                          |                        |                          |                          | .136/.176<br>3.45/4.47   | 1218607-6 <sup>1</sup> |

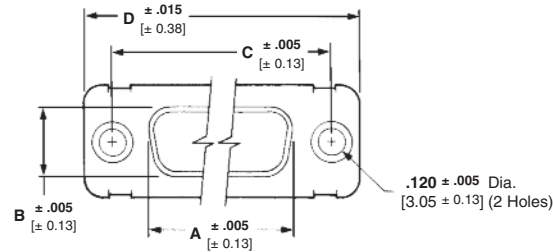
<sup>1</sup> See Material and Finish above.

<sup>2</sup> See RoHS compliant Material and Finish above.

## AMPLIMITE Connectors, Series 109 (Continued)

### Connector Savers, Series 109, Standard Density

Connector savers prolong the life of permanently installed connectors which would otherwise be subjected to repeated cycles of mating and unmating, in applications such as test interfaces or on testing devices.



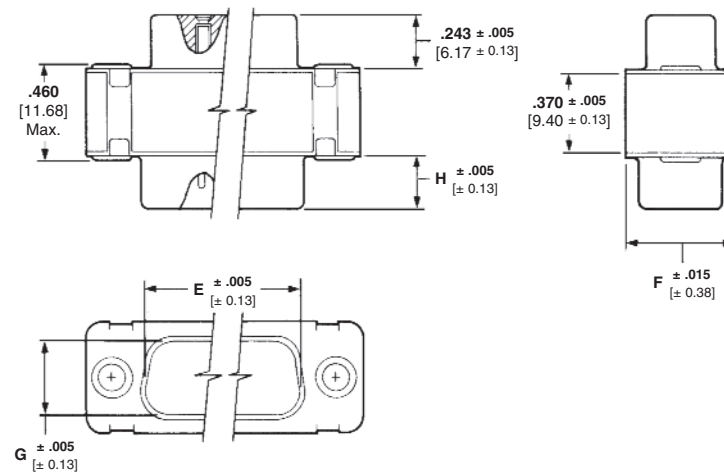
### Material and Finish

#### Standard —

**Shell** — Steel, cadmium plated  
**Contact Body** — Beryllium copper with .000050 [0.00127] min. gold plate over .000050 [0.00127] min. nickel underplate  
**Socket Hood** — Passivated stainless steel  
**Insert** — Glass filled polyester  
**Spacer** — Black nylon

#### Non Magnetic —

**Shell** — Brass, gold plated  
**Contact Body** — Beryllium copper with .000050 [0.00127] min. gold plate over .000100 [0.00254] min. copper underplate  
**Socket Hood** — Brass with .000050 [0.00127] min. gold over .000100 [0.00254] min. copper underplate  
**Insert** — Glass filled polyester  
**Spacer** — Black nylon



| No. of Contact Pos. (Shell Size) | Dimensions     |               |                |                |                |               |               |              |
|----------------------------------|----------------|---------------|----------------|----------------|----------------|---------------|---------------|--------------|
|                                  | A (outside)    | B (outside)   | C              | D              | E (inside)     | F             | G (inside)    | H            |
| 9 (1)                            | .643<br>16.33  | .311<br>7.9   | .984<br>24.99  | 1.213<br>30.81 | .666<br>16.92  | .494<br>12.55 | .329<br>8.36  | .235<br>5.97 |
| 15 (2)                           | .971<br>24.66  | .311<br>7.9   | 1.312<br>33.32 | 1.541<br>39.14 | .994<br>25.25  | .494<br>12.55 | .329<br>8.36  | .235<br>5.97 |
| 25 (3)                           | 1.511<br>38.38 | .311<br>7.9   | 1.852<br>47.04 | 2.088<br>53.04 | 1.534<br>38.96 | .494<br>12.55 | .329<br>8.36  | .230<br>5.84 |
| 37 (4)                           | 2.159<br>54.84 | .311<br>7.9   | 2.500<br>63.5  | 2.729<br>69.32 | 2.182<br>55.42 | .494<br>12.55 | .329<br>8.36  | .230<br>5.84 |
| 50 (5)                           | 2.064<br>52.43 | .423<br>10.74 | 2.406<br>61.11 | 2.635<br>66.93 | 2.079<br>52.81 | .605<br>15.37 | .441<br>11.20 | .230<br>5.84 |

| No. of Contact Pos. (Shell Size) | Standard (Cadmium Plated Steel Shell) | Non-Magnetic (Gold Plated Brass Shell) |
|----------------------------------|---------------------------------------|----------------------------------------|
| 9 (1)                            | 212559-1                              | 212559-2                               |
| 15 (2)                           | 212560-1                              | 212560-2                               |
| 25 (3)                           | 212561-1                              | 212561-2                               |
| 37 (4)                           | 212562-1                              | 212562-2                               |
| 50 (5)                           | 212563-1                              | 212563-2                               |

## AMPLIMITE Connectors, Series 109 Cross Reference

### Material and Finish

**Shell** — Steel, tin plated per ASTM-B-545, .000400–.000550 [0.01016–0.01397] thick.

**Insert** — Approved material per MIL-DTL-24308.

**Retention Clips** — Stainless steel or copper alloy.

### Related Product Data

**Series 109 Connectors** — page 8-43

### Attention: Connector Marking

Connector marking may differ from package marking.

**Note:** Meets 48 hr. salt spray requirements of MIL-DTL-24308.

### Series 109 Connectors

| No. of Contact Pos.<br>(Shell Size) | Part Number | Description                      | Dimensions         |
|-------------------------------------|-------------|----------------------------------|--------------------|
| 9<br>(1)                            | 205162-6    | Plug Only                        | Refer to page 8-43 |
|                                     | 205162-5    | Plug Only with Grounding Indents |                    |
|                                     | 205161-5    | Receptacle Only                  |                    |
| 15<br>(2)                           | 205164-6    | Plug Only                        | Refer to page 8-43 |
|                                     | 205164-5    | Plug Only with Grounding Indents |                    |
|                                     | 205163-5    | Receptacle Only                  |                    |
|                                     | 205166-5    | Plug Only                        |                    |
| 25<br>(3)                           | 205166-4    | Plug Only with Grounding Indents | Refer to page 8-43 |
|                                     | 205165-4    | Receptacle Only                  |                    |
|                                     | 205168-7    | Plug Only                        |                    |
| 37<br>(4)                           | 205168-6    | Plug Only with Grounding Indents | Refer to page 8-43 |
|                                     | 205167-5    | Receptacle Only                  |                    |
|                                     | 205170-5    | Plug Only                        |                    |
| 50<br>(5)                           | 205170-4    | Plug Only with Grounding Indents | Refer to page 8-43 |
|                                     | 205169-4    | Receptacle Only                  |                    |



## AMPLIMITE Connectors, Coax Mix

### Crimp, Power/Coax/Signal Combination Standard Density, Series 109 Connectors

|                                                                                                                    |                  |      |      |      |
|--------------------------------------------------------------------------------------------------------------------|------------------|------|------|------|
| <b>Shell Size</b><br><b>Contact Arrangement</b><br><b>No. of Signal Contacts</b><br><b>No. of Coaxial Contacts</b> |                  |      |      |      |
|                                                                                                                    | 2                | 2    | 3    | 3    |
|                                                                                                                    | 3C3 <sup>5</sup> | 11C1 | 5C5  | 9C4  |
|                                                                                                                    | 0                | 10   | 0    | 5    |
| <b>Shell Size</b><br><b>Contact Arrangement</b><br><b>No. of Signal Contacts</b><br><b>No. of Coaxial Contacts</b> |                  |      |      |      |
|                                                                                                                    | 3                | 3    | 3    | 4    |
|                                                                                                                    | 13C3             | 17C2 | 21C1 | 8C8  |
|                                                                                                                    | 10               | 15   | 20   | 0    |
| <b>Shell Size</b><br><b>Contact Arrangement</b><br><b>No. of Signal Contacts</b><br><b>No. of Coaxial Contacts</b> |                  |      |      |      |
|                                                                                                                    | 4                | 4    | 4    | 4    |
|                                                                                                                    | 27C2             | 17C5 | 21C4 | 25C3 |
|                                                                                                                    | 25               | 12   | 17   | 22   |
| <b>Shell Size</b><br><b>Contact Arrangement</b><br><b>No. of Signal Contacts</b><br><b>No. of Coaxial Contacts</b> |                  |      |      |      |
|                                                                                                                    | 5                | 5    |      |      |
|                                                                                                                    | 24C7             | 36C4 |      |      |
|                                                                                                                    | 17               | 32   |      |      |
| <b>Shell Size</b><br><b>Contact Arrangement</b><br><b>No. of Signal Contacts</b><br><b>No. of Coaxial Contacts</b> |                  |      |      |      |
|                                                                                                                    |                  |      | 5    |      |
|                                                                                                                    |                  |      | 36C4 |      |
|                                                                                                                    |                  |      | 4    |      |

#### Material and Finish

**Shell** — Steel or copper alloy  
a .000200 [.0000079] min. thick plating.  
b .000400 [.0000157] min. thick plating.  
**Plating** — Cadmium, tin, gold or zinc

**Insert** — Approved material per MIL-DTL-24308

**Retention Clips** — Stainless steel or copper alloy

#### Contact Selection

**Standard:**  
Size 8 coax: Table I, page 8-66  
Size 8 power: page 8-65  
Size 20 signal: pages 8-40 to 8-42, 8-46 and 8-47

| Insert Arrangement | Standard                                    |                     |                                                |                     |                                                            |                     |                                             |                     |                                             |                     |
|--------------------|---------------------------------------------|---------------------|------------------------------------------------|---------------------|------------------------------------------------------------|---------------------|---------------------------------------------|---------------------|---------------------------------------------|---------------------|
|                    | Cad Plated Steel Shell (.120 Mounting Hole) |                     | RoHS Zinc Plated Steel Shell (.120 Mntg. Hole) |                     | RoHS Tin Plated Steel Shell (.120 Mntg. Hole) <sup>a</sup> |                     | NASA Gold Plated Brass (.120 Mounting Hole) |                     | NASA Gold Plated Brass (.154 Mounting Hole) |                     |
|                    | Plug (Pin)                                  | Receptacle (Socket) | Plug (Pin)                                     | Receptacle (Socket) | Plug <sup>6</sup> (Pin)                                    | Receptacle (Socket) | Plug (Pin)                                  | Receptacle (Socket) | Plug (Pin)                                  | Receptacle (Socket) |
| 3C3                | 448153-1                                    | 445705-4            | 5-448153-1                                     | 5-445705-4          | 448153-4 <sup>6</sup>                                      | 445705-1            | 448153-2                                    | 445705-2            | 448153-3                                    | 445705-3            |
| 11C1               | 211111-1                                    | 211112-1            | 5-211111-1                                     | 5-211112-1          | 211111-4 <sup>6</sup>                                      | 211112-4            | 211111-2                                    | 211112-2            | 211111-3                                    | 211112-3            |
| 5C5                | 212491-1                                    | 212059-1            | 5-212491-1                                     | 5-212059-1          | 212491-3 <sup>6</sup>                                      | 212059-3            | 212491-6                                    | 212059-2            | 212491-7                                    | 212059-6            |
| 9C4                | 212498-1                                    | 212502-1            | 5-212498-1                                     | 5-212502-1          | 212498-4 <sup>6</sup>                                      | 212502-5            | 212498-2                                    | 212502-2            | 212498-3                                    | 212502-3            |
| 13C3               | 208810-1                                    | 208811-1            | 5-208810-1                                     | 5-208811-1          | 208810-2 <sup>6</sup>                                      | 208811-2            | 208810-3                                    | 208811-3            | 208810-4                                    | 208811-4            |
| 17C2               | 212506-1                                    | 212510-1            | 5-212506-1                                     | 5-212510-1          | 212506-5 <sup>6</sup>                                      | 212510-4            | 212506-2                                    | 212510-2            | 212506-4                                    | 212510-3            |
| 21C1               | 212522-1                                    | 212526-1            | 5-212522-1                                     | 5-212526-1          | 212522-2 <sup>6</sup>                                      | 212526-2            | 212522-3                                    | 212526-3            | 212522-4                                    | 212526-4            |
| 8C8                | 446405-1                                    | 445730-1            | 5-446405-1                                     | 5-445730-1          | 446405-4 <sup>6</sup>                                      | 445730-5            | 446405-2                                    | 445730-3            | 446405-3                                    | 445730-4            |
| 27C2               | 212538-1                                    | 212542-1            | 5-212538-1                                     | 5-212542-1          | 212538-4 <sup>6</sup>                                      | 212542-4            | 212538-2                                    | 212542-2            | 212538-3                                    | 212542-3            |
| 17C5               | 212514-1                                    | 212518-1            | 5-212514-1                                     | 5-212518-1          | 212514-5 <sup>6</sup>                                      | 212518-5            | 212514-3                                    | 212518-3            | 212514-4                                    | 212518-4            |
| 21C4               | 212530-1                                    | 212534-1            | 5-212530-1                                     | 5-212534-1          | 212530-4 <sup>6</sup>                                      | 212534-4            | 212530-2                                    | 212534-2            | 212530-3                                    | 212534-3            |
| 25C3               | 208742-1                                    | 208551-1            | 5-208742-1                                     | 5-208551-1          | 208742-4 <sup>6</sup>                                      | 208551-4            | 208742-2                                    | 208551-2            | 208742-3                                    | 208551-3            |
| 24C7               | 208743-1                                    | 208552-1            | 5-208743-1                                     | 5-208552-1          | 208743-4 <sup>6</sup>                                      | 208552-4            | 208743-2                                    | 208552-2            | 208743-3                                    | 208552-3            |
| 36C4               | 208744-1                                    | 208550-1            | 5-208744-1                                     | 5-208550-1          | 208744-5 <sup>6</sup>                                      | 208550-4            | 208744-3                                    | 208550-2            | 208744-4                                    | 208550-3            |

#### Notes:

- NASA connectors listed above are qualified to NASA specification 311-P-405. See pages 8-104 and 8-105 for NASA cross reference.
- Plug insert arrangements shown. Receptacle arrangement is mirror image.
- Cable clamp/strain relief hardware cannot be used with these arrangements.
- See pages 8-93 and 8-94 for PCB layouts.
- The 3C3 arrangement can be mated 180°. Contact TE Connectivity or call Technical Support for keyed Part Numbers, 1218654-1 and 1218655-1.
- Tin plated plugs only include grounding indents.

## AMPLIMITE Connectors, Coax Mix (Continued)

### Crimp, Power/Coax/Signal Combination Standard Density, Series 109 Connectors

(Continued)

#### Material and Finish

**Shell** — Steel or copper alloy  
**a** .000200 [.0000079] min. thick plating.  
**b** .000400 [.0000157] min. thick plating.

**Plating** — Cadmium, tin-lead, tin,  
gold or zinc

**Insert** — Approved material per  
MIL-DTL-24308

**Retention Clips** — Stainless steel or  
copper alloy

#### Contact Selection

##### Blindmate:

Size 8 coax: Table II, page 8-67  
Size 8 power: page 8-65  
Size 20 signal: pages 8-40 to  
8-42, 8-46 and 8-47

| Insert<br>Arrange-<br>ment | Blindmate                                      |                        |                                                   |                        |
|----------------------------|------------------------------------------------|------------------------|---------------------------------------------------|------------------------|
|                            | Cad Plated Steel Shell<br>(.120 Mounting Hole) |                        | RoHS Zinc Plated Steel<br>Shell (.120 Mntg. Hole) |                        |
|                            | Plug<br>(Pin)                                  | Receptacle<br>(Socket) | Plug<br>(Pin)                                     | Receptacle<br>(Socket) |
| 3C3                        | 447717-1                                       | 447718-1               | 5-447717-1                                        | 5-447718-1             |
| 11C1                       | 447721-1                                       | 447722-1               | 5-447721-1                                        | 5-447722-1             |
| 5C5                        | 446630-1                                       | 212049-3               | —                                                 | 5-212049-3             |
| 9C4                        | 445701-1                                       | 212051-2               | —                                                 | —                      |
| 13C3                       | 447723-1                                       | 212057-2               | 5-447723-1                                        | 5-212057-2             |
| 17C2                       | 447724-1                                       | 212053-3               | 5-447724-1                                        | 5-212053-3             |
| 21C1                       | 447727-1                                       | 212055-2               | —                                                 | —                      |
| 8C8                        | 447719-1                                       | 447720-1               | 5-447719-1                                        | 5-447720-1             |
| 27C2                       | 447732-1                                       | 447733-1               | —                                                 | —                      |
| 17C5                       | 447725-1                                       | 447726-1               | —                                                 | —                      |
| 21C4                       | 447728-1                                       | 445726-1               | —                                                 | 5-445726-1             |
| 25C3                       | 447730-1                                       | 447731-1               | —                                                 | —                      |
| 24C7                       | 446631-1                                       | 445000-2               | —                                                 | —                      |
| 36C4                       | 446710-1                                       | 446711-1               | 5-446710-1                                        | 5-446711-1             |

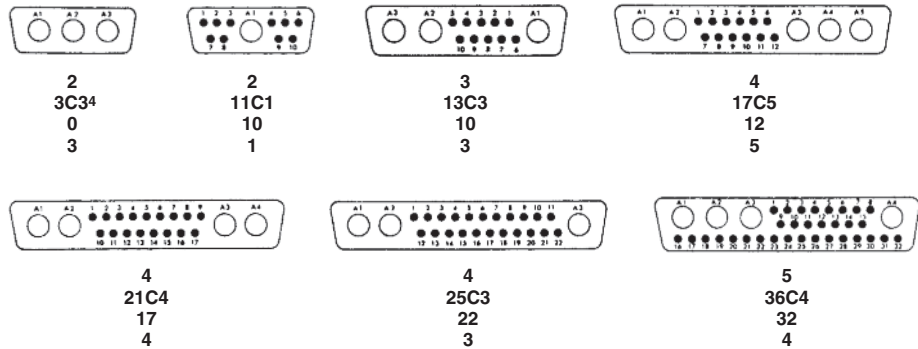
##### Notes:

1. Plug insert arrangements shown. Receptacle arrangement is mirror image.
2. Cable clamp/strain relief hardware cannot be used with these arrangements.
3. See pages 8-93 and 8-94 for PCB layouts.
4. **Blindmate** plugs feature a chamfered lead-in on the front shell, which is constructed of aluminum alloy. See page 8-48 for shell dimensions. **Blindmate** receptacles feature float bushings installed in the mounting holes. See pages 8-43 and 8-44 for shell dimensions.
5. The 3C3 arrangement can be mated 180°. Contact TE Connectivity or call Technical Support for keyed Part Numbers, 1218654-1 and 1218655-1.
6. All connector plugs with grounding indents except the cadmium plated.

## AMPLIMITE Connectors, Coax Mix (Continued)

### Boardmount Power/Coax/ Signal/Combination Standard Density, Series 109 Connectors

Shell Size  
Contact Arrangement  
No. of Signal Contacts  
No. of Coaxial Contacts



### Material and Finish

Shell — Steel or copper alloy

Plating — Cadmium or tin

<sup>a</sup> Tin Plated Finish — Tin

.000400–.000550 [0.01020–0.01400]  
thick over .000050 [0.00127] copper  
min.

<sup>b</sup> Tin Plated RoHS Compliant

Finish — Tin .000200–.000400  
[0.00508–0.01016] thick over .000100–  
.000200 [0.00254–0.00508] copper

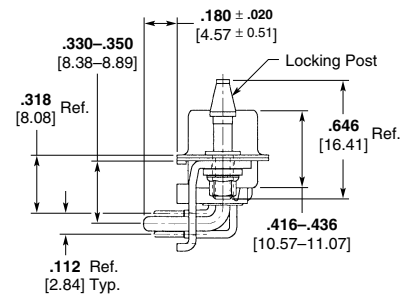
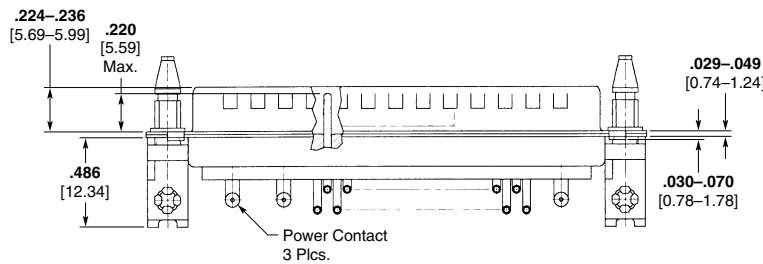
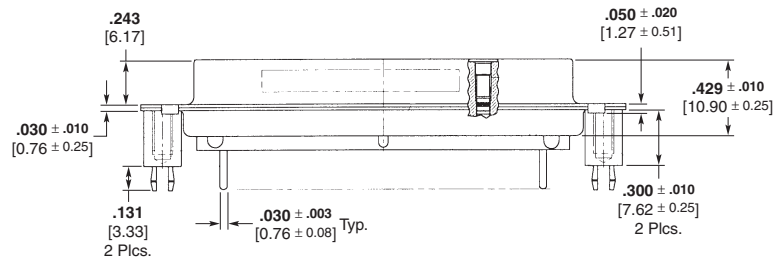
Insert — Approved material per  
MIL-DTL-24308

### Contact Selection

Standard (If not shown with  
connector):

Size 8 coax: Table I, page 8-66

Size 8 power: page 8-65



| Contact Config. | Shell Plating | Style            | Hardware Options |            | 4-40 Standoff |               |               | Contacts |      | Spacers | Part Number                |
|-----------------|---------------|------------------|------------------|------------|---------------|---------------|---------------|----------|------|---------|----------------------------|
|                 |               |                  | Screwlocks       | Boardlocks | Clinchnuts    | w/ Boardlocks | Locking Posts | Power    | Coax |         |                            |
| 3C3             | Tin           | Vertical Recept. | No               | No         | No            | Yes           | No            | No       | No   | No      | 1218896-1a                 |
| 11C1            | Cad.          | Vertical Plug    | No               | No         | No            | No            | No            | No       | Yes  | Yes     | 1218128-1a                 |
| 11C1            | Cad.          | Vertical Recept. | No               | No         | No            | No            | No            | No       | Yes  | Yes     | 1218129-1a                 |
| 13C3            | Tin           | Vertical Plug    | No               | No         | No            | Yes           | No            | No       | No   | No      | 1218816-1a                 |
| 17C5            | Tin           | Right-Angle Plug | Yes              | Yes        | No            | No            | No            | Yes      | No   | No      | 1218939-1a                 |
| 21C4            | Tin           | Vertical Recept. | No               | No         | No            | Yes           | No            | No       | No   | No      | 1218887-1a                 |
| 25C3            | Tin           | Right-Angle Plug | No               | Yes        | No            | No            | Yes           | Yes      | No   | No      | 1218611-1a                 |
| 36C4            | Tin           | Vertical Recept. | No               | Yes        | No            | Yes           | No            | No       | No   | No      | 1218807-1a<br>5-1218807-1b |

### Notes:

1. Plug insert arrangements shown. Receptacle arrangement is mirror image.

2. See TE Connectivity customer drawing for PCB layouts.

3. The 3C3 arrangement can be mated 180°. Contact your TE Sales Engineer or call Technical Support for keyed Part Numbers.

<sup>a</sup> See Tin Plated finish above.

<sup>b</sup> See Tin Plated RoHS compliant finish above.

## AMPLIMITE Connectors, Coax Mix (Continued)

### Size 8 Contacts (Power) for Standard Density, Series 109 Power/Coax/Signal Connectors

#### Crimp Contacts

#### Material and Finish

Copper alloy, plated gold over nickel underplate

**Retention Clips** — Stainless steel or phosphor bronze

**Note:** clip may differ from view shown

#### Product Specification

**For Crimp Contacts** — 108-10045 (current rating and wire size)

**For PCB Contacts** — 108-10045-1

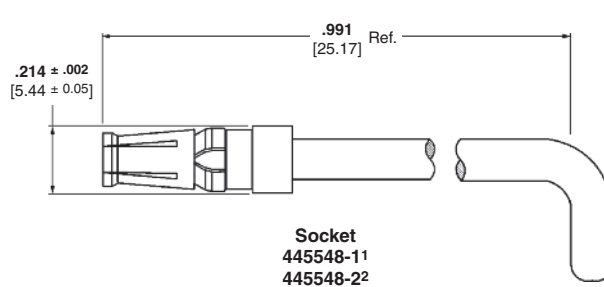
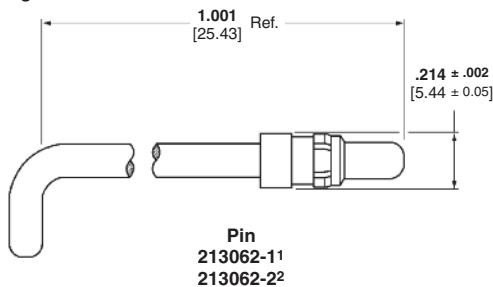
**Hand Crimp Tool** — AMP 608651-1 with positioner AMP 608651-2

**Extraction Tool** — 318813-1

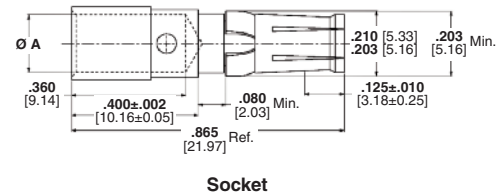
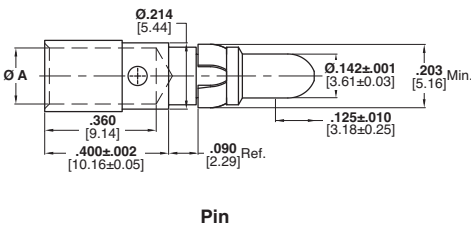
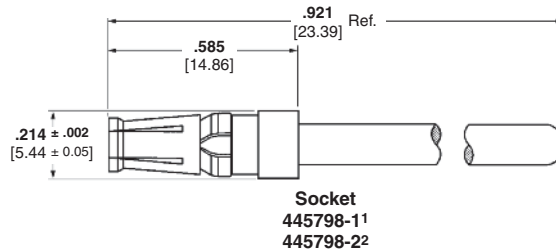
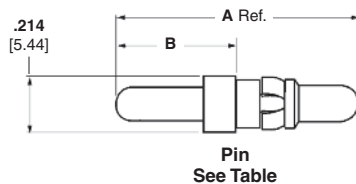
#### Printed Circuit Board Contacts

(Use these contacts only with the **Standard** connectors on pages 8-62 and 8-63. Do not use with **Blindmate** connectors.)

#### Right-Angle



#### Vertical



| Wire Size Range | Dim. A  | Part Numbers              |                           |                       |                       |                        |                        |
|-----------------|---------|---------------------------|---------------------------|-----------------------|-----------------------|------------------------|------------------------|
|                 |         | 50 Gold Pins <sup>3</sup> | 30 Gold Pins <sup>3</sup> | 50 Gold Sockets       | 30 Gold Sockets       | Blindmate 50 Gold Pins | 30 Blindmate Gold Pins |
| 8 <sup>2</sup>  | 8       | .230<br>5.84              | 211159-1                  | 211159-3              | 211161-1              | 211161-3               | 1218385-1              |
| 10 <sup>2</sup> | 5       | .185<br>4.69              | 211159-2                  | 211159-4              | 211161-2              | 211161-4               | —                      |
| 12-14           | 2-3     | .150<br>3.81              | 212007-1                  | 212007-2              | 212008-1              | 212008-2               | 1218483-1              |
| 16-18           | 0.8-1.4 | .102<br>2.59              | 212013-1 <sup>1</sup>     | 212013-2 <sup>1</sup> | 212014-1 <sup>1</sup> | 212014-2 <sup>1</sup>  | —                      |

**Notes:** 1. 16-18 size use 608668-1 with Positioner 608668-2.

2. Retention clip shown is for 12-14, 16-18 AWG. See TE Connectivity customer drawing for 8, 10 AWG Retention Clip.

3. Use these contacts only with the **Standard** connectors on pages 8-62 and 8-63. Do not use with **Blindmate** connectors.

| Part Number | Dim A           | Dim B           |
|-------------|-----------------|-----------------|
| 449379-11   | .931<br>[23.65] | .461<br>[11.71] |
| 449379-21   | .845<br>[21.46] | .375<br>[9.52]  |
| 1-449379-02 | .931<br>[23.65] | .461<br>[11.71] |
| 1-449379-12 | .845<br>[21.46] | .375<br>[9.52]  |

**Note:** 1. Standard connector, .000050 [0.00127] gold plating.

2. Standard connector, .000030 [0.00076] gold plating.

## AMPLIMITE Connectors, Coax Mix (Continued)

### RF Contacts for Standard Density, Series 109 Power/Coax/Signal Connectors

#### Performance Characteristics

**Frequency Range** — 0 to 500 MHz

**Operating Voltage, Max.** —  
275 vac rms @ sea level

**Termination Resistance, Max.** —  
Center Contact — 6.0 milliohms  
Outer Contact — 3.0 milliohms

**Insulation Resistance, Min.** —  
5,000 megohms @ 500 vdc

**Dielectric Withstanding Voltage** —  
Sea Level — 800 Volts rms  
30,000 ft [9,144 m] — 525 volts rms  
70,000 ft [21,336m] — 275 volts rms

**VSWR to 500MHz, Max.**

| Pin/Socket              | VSWR |
|-------------------------|------|
| Straight/Straight       | 1.30 |
| Right-Angle/Straight    | 1.35 |
| Right-Angle/Right-Angle | 1.40 |

**RF Crosstalk** — 90dB @ 5-500 MHz

**Mating Force, Max.** — 4.0 lb  
[17.8 N]

**Unmating Force, Min.** — 2.0 oz  
[0.556 N]

**Contact Retention** — 20 lb [89 N]

**Contact Durability** — 500 cycles

| Cable<br>RG/U                     | Force |       |
|-----------------------------------|-------|-------|
|                                   | lb    | [N]   |
| 316, 188, 174,<br>179, 179A, 179B | 20    | 89    |
| 188-type<br>Double-Braid          | 35    | 155.8 |
| 142, 142A, 142B                   | 50    | 222.5 |

**Operating Temperature** —

131°F to 257°F [55°C to +125°C]

**Thermal Shock** — 131°F to 257°F  
[55°C to +125°C] per MIL-STD-1344,  
Method 1003, Cond. A

**Physical Shock** — 50 G's per MIL-  
STD-1344, Method 2004, Cond. A

**Vibration** — MIL-STD-1344, Method  
2005, Cond. II

**Moisture Resistance** — 240 hours  
per MIL-STD-1344, Method 1002,  
Cond. II

**Salt Fog** — 48 hours per MIL-STD-  
1344, Method 1001, Cond. B

**Extraction Tool Numbers**

**Subminiature D Housings** —  
58095-1 AMPLIMITE Connector

**AMP-HDI Connector Housings** —  
58095-2

#### Material and Finish

**Brass** — per QQ-B-626 and MIL-C-50

**Phosphor Bronze** — per QQ-B-750

**Beryllium Copper** — per QQ-C-530

**PTFE** — per MIL-P-19468

**Nylon** — per MIL-M-20693

#### Finish

**a Bright Tin-Lead Plating** — per  
ASTM-B-571

**b Bright Tin Plating** — per  
ASTM-B-545

**Copper Plating** — per MIL-C-14550

**Gold Plating** — per MIL-G-45204

**Nickel Plating** — per QQ-N-290

**Extraction Tool** — 318813-1

**Hand Crimp Tool** — 69710-1

**Pneu. Crimp Tool** — 69365-8

**Dies for Crimp Tools** — See table

**Instruction Sheet** —

408-6755 Size 8 Coaxial RF 50-Ohm  
and Non-Impedance  
Matched Pin and Socket  
Contact Kits

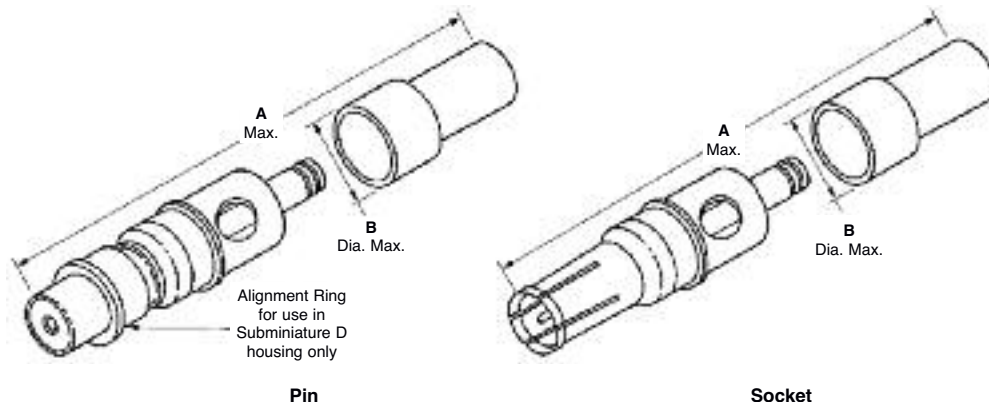


Table I - Standard

| RG/U<br>Cable                                    | Dimensions     |              | Contact Part Numbers                             |                                                  |          |           | Die Insert<br>for Tools |
|--------------------------------------------------|----------------|--------------|--------------------------------------------------|--------------------------------------------------|----------|-----------|-------------------------|
|                                                  |                |              | Non-Impedance<br>Matched                         |                                                  | 50 Ohm   |           |                         |
|                                                  | A              | B            | Pin                                              | Socket                                           | Pin      | Socket    |                         |
| 178, 178A, 178B<br>196, 196A                     | .950<br>24.13  | .235<br>5.94 | 228618-5 <sup>a</sup><br>5-228618-5 <sup>b</sup> | —                                                | —        | —         | 59993-1                 |
| 174, 316<br>188, 188A                            | .956<br>24.28  | .234<br>5.94 | 228618-1 <sup>a</sup><br>5-228618-1 <sup>b</sup> | 228596-1 <sup>a</sup><br>5-228596-1 <sup>b</sup> | 221980-1 | 1883630-1 | 59993-1                 |
| 179, 179A, 179B<br>187, 187A, 161<br>Belden 9221 | .956<br>24.28  | .234<br>5.94 | 228618-2 <sup>a</sup><br>5-228618-2 <sup>b</sup> | 228596-2 <sup>a</sup><br>5-228596-2 <sup>b</sup> | 221980-3 | —         | 59993-1                 |
| 188-Type<br>Double Braid                         | .956<br>24.28  | .234<br>5.94 | 228618-3                                         | 228596-3                                         | —        | —         | 59993-1                 |
| 142, 142A, 142B<br>400, Belden 9246              | 1.080<br>27.43 | .255<br>6.48 | 228618-4 <sup>a</sup><br>5-228618-4 <sup>b</sup> | 228596-4 <sup>a</sup><br>5-228596-4 <sup>b</sup> | —        | —         | 58212-1                 |

#### Notes:

1. Non Impedance Matched contacts and 50 ohm contacts are not intermateable.

2. Use these contacts only with the **Standard** connectors on pages 8-62 and 8-64.

<sup>a</sup> See Material and Finish above.

<sup>b</sup> See Material and Finish for RoHS compliant Part Numbers above.

## AMPLIMITE Connectors, Coax Mix (Continued)

### RF Contacts for Standard Density, Series 109 Power/Coax/Signal Connectors

(Continued)

#### Material and Finish

**Center Contacts**—Beryllium Copper or Brass per QQ-B-626, per QQ-C-530, gold plated

**Outer Contacts**—Beryllium copper per QQ-C-530, gold plated

**Plugs**—Beryllium copper per QQ-C-530, gold plated

**Jack**—Stainless steel per ASTM-A-582, gold plated

**Shells**—Stainless steel per ASTM-A-582, passivated

**Panel Shells**—Brass per QQ-B-626, nickel plated

**Dielectrics**—PTFE per ASTM-D-1457

**Grip Rings**—Brass per MIL-C-50 or Beryllium Copper per QQ-C-530, nickel plated

**Springs**—Steel wire per QQ-W-470

**Bushings**—Stainless steel per ASTM-A-582, passivated

**Retention Springs**—Beryllium Copper per QQ-C-530, Tin-Lead Plated

#### Finishes

Passivate per QQ-P-35

Gold per MIL-G-45204

Nickel per QQ-N-290

Tin-Lead per ASTM-B-545

#### Performance Characteristics

##### Electrical Characteristics

**Nominal Impedance**—50 ohms

**Frequency Range**—

2.8 mm: 0 to 26.5 GHz

2.8 mm for size 8 cavities: 0 to 40 GHz

**Operating Voltage**—

RG-402/U Cable (3.58 [.141] O.D.)

500 volts rms at 60 Hz (sea level)

125 volts rms at 60 Hz

(21 336 m [70,000 ft])

RG-405/U Cable (2.18 [.086] O.D.)

335 volts rms at 60 Hz (sea level)

85 volts rms at 60 Hz

70,000 ft [21,336 m]

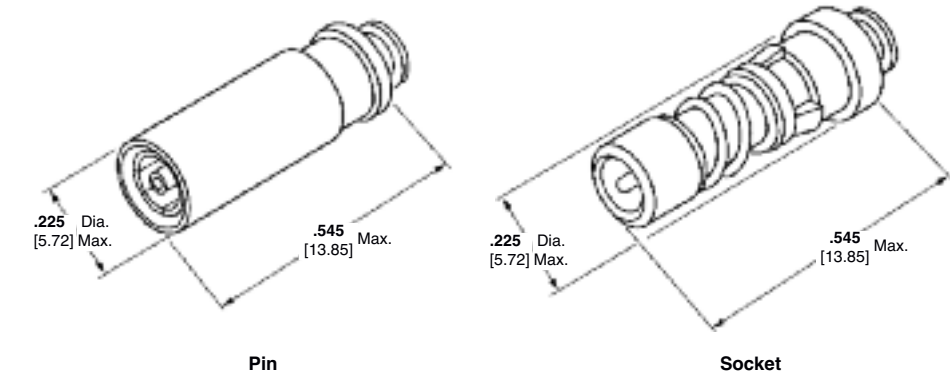


Table II - 2.8 mm Blindmate

| RG/U Cable                    | Contact Type  | Part Number | Crimp Tool | Die Set  | Locator  | Insertion Tool | Extraction Tool |
|-------------------------------|---------------|-------------|------------|----------|----------|----------------|-----------------|
| 405 Semi-Rigid<br>.086 [2.18] | Pin (Plug)    | 413242-1    | 59980-1    | 312253-2 | 852113-1 | 852115-1       | 2-305183-0      |
|                               | Socket (Jack) | 413249-1    | 59980-1    | 312253-2 | 852114-1 | —              | 318813-1        |

#### Note:

1. Use these contacts only with the **Blindmate** connectors on page 8-63.

##### Mechanical Characteristics

**Cable Retention**—

RG-402/U Cable (3.58 [.141] O.D.)—

60 lb [266.9 N], min.

RG-405/U Cable (2.18 [.086] O.D.)—

30 lb [133.4 N], min.

**Connector Mating Force**—

2.8 mm: 3 lbs Max.

##### Environmental Characteristics

**Temperature Range**—

–85°F to +221°F [–65°C to +105°C]

##### Technical Documents

**Instruction Sheet**—

408-9582 Insertion tool 852115-1 for blindmate 2.8mm plug contact 413242-1

408-9585 Blindmate 2.8mm contacts for semi-rigid .086 in. coaxial cable

## AMPLIMITE Connectors, Coax Mix Cross Reference

### Material and Finish

**Shell** — Steel, tin plated per ASTM-B-545, .000400–.000550 [0.01016–0.01397] thick.

**Insert** — Approved material per MIL-DTL-24308.

**Retention Clips** — Stainless steel or copper alloy.

### Related Product Data

**Coax Mix Connectors** — page 8-62

### Attention: Connector Marking

Connector marking may differ from package marking.

**Note:** Meets 48 hr. salt spray requirements of MIL-DTL-24308.

### Coax Mix Connectors

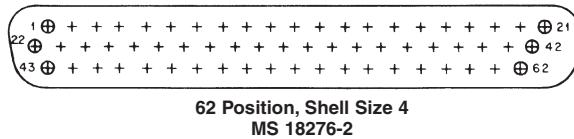
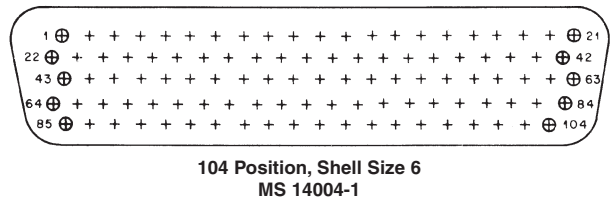
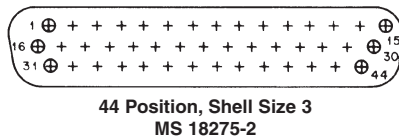
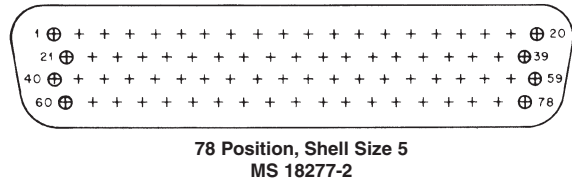
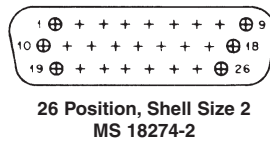
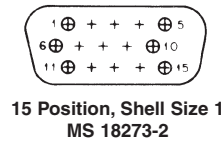
| Insert Arrangement<br>(Shell Size) | Part Number | Description                      | Dimensions         |
|------------------------------------|-------------|----------------------------------|--------------------|
| 11C1<br>(2)                        | —           | Plug Only                        | Refer to page 8-43 |
|                                    | 211111-6    | Plug Only with Grounding Indents |                    |
|                                    | 211112-6    | Receptacle Only                  |                    |
| 21C1<br>(3)                        | 212522-7    | Plug Only                        | Refer to page 8-43 |
|                                    | 212522-6    | Plug Only with Grounding Indents |                    |
|                                    | 212526-6    | Receptacle Only                  |                    |
| 5C5<br>(3)                         | 1-212491-0  | Plug Only                        | Refer to page 8-43 |
|                                    | 212491-9    | Plug Only with Grounding Indents |                    |
|                                    | 1-212059-0  | Receptacle Only                  |                    |
| 21C4<br>(4)                        | 212530-6    | Plug Only                        | Refer to page 8-43 |
|                                    | 212530-5    | Plug Only with Grounding Indents |                    |
|                                    | 212534-5    | Receptacle Only                  |                    |
| 24C7<br>(5)                        | 208743-5    | Plug Only                        | Refer to page 8-43 |
|                                    | 208743-7    | Plug Only with Grounding Indents |                    |
|                                    | 208552-6    | Receptacle Only                  |                    |



## AMPLIMITE Connectors, Series 90

### Series 90 Connectors

#### Insert Arrangements



**Note:** Mating face of plug shown: receptacle is mirror image.

#### Performance Specifications

All Series 90 AMPLIMITE military connectors conform to the latest amendments of military specification MIL-DTL-24308. For more detailed information, refer to MIL-DTL-24308.

All Series 90 connectors are designed for a -67°F to 257°F [-55°C to +125°C] temperature range.

#### Technical Documents List

The following is a list of technical documents that cover the application and performance of AMPLIMITE Series 90 military connectors, contacts, tooling and accessories.

##### Military Specifications

|               |                                                                                                          |
|---------------|----------------------------------------------------------------------------------------------------------|
| MIL-DTL-24308 | Connectors, Electric, Rectangular, Miniature Polarized Shell, Rack and Panel, General Specifications for |
| MIL-C-39029   | Contacts, Electrical Connector, General Specification for                                                |

##### NASA Specification

|                |                                                    |
|----------------|----------------------------------------------------|
| GSFC-S-311-P-4 | Non-Magnetic Connectors, General Specification for |
|----------------|----------------------------------------------------|

##### Instruction Sheets

|          |                                                                    |
|----------|--------------------------------------------------------------------|
| 408-7516 | Application Tooling for MIL-C-39029 Contacts                       |
| 408-7610 | Application and Maintenance for Hand Crimping Tool 90294-1         |
| 408-7508 | Insertion/Extraction Tools 91067-1, 91067-2 and 91067-3            |
| 408-7837 | Female Screwlock Kit 205817-8 and Male Screw/Retainer Kit 211883-5 |

## AMPLIMITE Connectors, Series 90 (Continued)

### Size 22 Crimp Contacts for Series 90 Connectors (AS39029)

#### Snap-In Contacts .030 [0.76] Pin Diameter

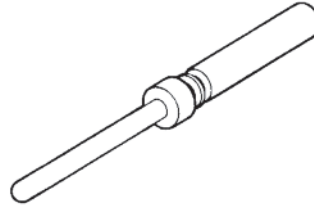
##### Material and Finish

**a Contact Body** — Copper alloy plated gold .000005 [0.000127] min. thick. over nickel underplate

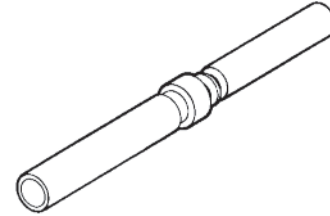
**a Mating Area** — Gold .00005 [0.00127] min. thick. over nickel underplate

**b Contact Body and Mating Area** — Gold min. .00005 [0.00127] min. thick. over nickel underplate

**Socket Hood** — Passivated stainless steel



**Pin**  
**M39029/58-360**  
(Supersedes M24308/13-1)



**Socket**  
**M39029/57-354**  
(Supersedes M24308/12-1)

| Wire Size Range |                    | Ins. Dia. (Max.) | Contact Configuration | Tape Mounted Contacts <sup>1</sup><br>AMP Part No. | Loose Piece Contacts         |                         | Hand Tool          |                          | Contact Color Bands   |
|-----------------|--------------------|------------------|-----------------------|----------------------------------------------------|------------------------------|-------------------------|--------------------|--------------------------|-----------------------|
| AWG             | [mm <sup>2</sup> ] |                  |                       |                                                    | Military Part No. (AS39029/) | AMP Part No.            | Tool No. (M22520/) | Positioner No. (M22520/) |                       |
| 22-28           | 0.4-0.8            | .054<br>1.38     | Pin                   | 204370-5 <sup>a</sup>                              | 58-360                       | 204370-2 <sup>a</sup>   | 02-01              | 02-09                    | orange, blue, black   |
|                 |                    |                  | Socket                | 204351-2 <sup>a</sup>                              | 57-354                       | 204351-1 <sup>a</sup>   | 02-01              | 02-06                    | orange, green, yellow |
| 22-28           | 0.4-0.8            | .054<br>1.38     | Pin                   | 1-204370-2 <sup>b</sup>                            | 58-360                       | 1-204370-3 <sup>b</sup> | 02-01              | 02-09                    | orange, blue, black   |
|                 |                    |                  | Socket                | 204351-6 <sup>b</sup>                              | 57-354                       | 204351-5 <sup>b</sup>   | 02-01              | 02-06                    | orange, green, yellow |

<sup>1</sup>Tape mounted contacts are used in the AMP-TAPEMATIC Stripper/Crimper Machine Part Number **599406-7** (page 8-89).

**Notes:** 1. These contacts are used in Series 90 military connectors.

2. Insertion/Extraction Tool Part Number **91067-1** (Military Part Number **M81969/1-04**) is used to install and remove pin and socket contacts.

3. See Instruction Sheet 408-7516 for wire length, tool and selector settings.

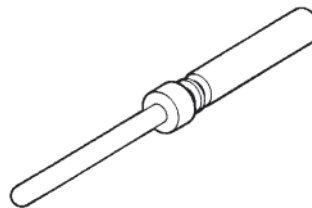
4. Color bands are read in the direction of terminal (wire barrel) end to mating end.

### Size 22 Crimp Contacts for Series 90 Connectors (Industrial Grade)

#### Snap-In Contacts .030 [0.76] Pin Diameter

##### Material and Finish

**Pin Body** — Copper alloy with .000050–.000100 [0.00127–0.00254] gold plate over .000050–.000150 [0.00127–0.00381] nickel underplate



**Pin**

| Wire Size Range |                    | Ins. Dia. (Max.) | Contact Configuration | Tape Mounted Contacts <sup>1</sup><br>Part Number | Loose Piece Contacts<br>Part Number | Hand Tool          |                          |
|-----------------|--------------------|------------------|-----------------------|---------------------------------------------------|-------------------------------------|--------------------|--------------------------|
| AWG             | [mm <sup>2</sup> ] |                  |                       |                                                   |                                     | Tool No. (M22520/) | Positioner No. (M22520/) |
| 22-28           | 0.4-0.8            | .054<br>1.38     | Pin                   | 1218699-2                                         | 1218699-1                           | 02-01              | 02-09                    |
|                 |                    |                  | Socket                | —                                                 | —                                   | —                  | —                        |

<sup>1</sup>Tape mounted contacts are used in the AMP-TAPEMATIC Stripper/Crimper Machine Part Number **599406-7** (page 8-89).

**Notes:** 1. These contacts are used in Series 90 connectors.

2. Insertion/Extraction Tool Part Number **91067-1** (Military Part Number **M81969/1-04**) is used to install and remove pin and socket contacts.

3. See Instruction Sheet 408-7516 for wire length, tool and selector settings.

## AMPLIMITE Connectors, Series 90 (Continued)

### Size 22 Posted Contacts for Series 90 Connectors

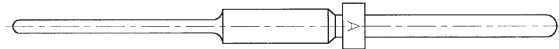
#### Material and Finish

**Pin and Socket Body** — Leaded nickel copper or beryllium copper

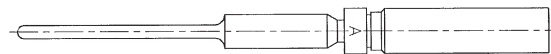
**Socket Hood** — See chart below



**Pin and Socket  
Insertion/Extraction Tool**



**Pin**  
(See Drawing Number 207683  
for Latest Configurations)



**Socket**  
(See Drawing Number 207684  
for Latest Configurations)

AMP Part Number 91067-1 or  
MIL Part Number M81969/1-04

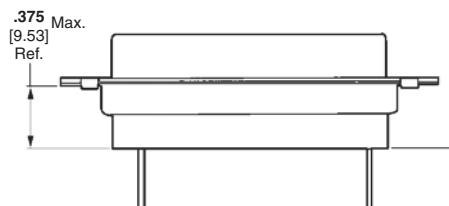
Insertion tip, for replacement  
Part Number 126237-1

Extraction tip, for replacement  
Part Number 126195-2

#### Notes:

1. Contacts on this page can be used with connectors on pages 8-72 to 8-78, 8-85. See page 8-92 for PCB layouts.
2. Mating End of pin and socket complies with MIL-C-39029.

| Post<br>Diameter<br>± .002 [± .050] | Post<br>Extension<br>C ± .025 [± 0.63] | Part Numbers |          | Contact<br>Plating                                                                                                                | Socket Hood<br>Material and Finish                                                                                                   |
|-------------------------------------|----------------------------------------|--------------|----------|-----------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|
|                                     |                                        | Pin          | Socket   |                                                                                                                                   |                                                                                                                                      |
| .018<br>0.46                        | .175<br>4.45                           | 207683-6     | 207684-3 | Pin<br>.000050-.000100 [0.00127-0.00254]<br>thick gold plate over<br>.000100-.000150 [0.00254-0.00381]<br>thick copper underplate | Socket<br>.000050-.000100 [0.00127-0.00254]<br>thick gold plate over<br>.000100-.000250 [0.00254-0.00635]<br>thick copper underplate |
|                                     | .275<br>6.99                           | 207683-2     | 207684-1 |                                                                                                                                   | Brass or Beryllium copper with<br>thick gold plate over<br>thick copper underplate                                                   |
|                                     | .525<br>13.34                          | 207683-4     | 207684-2 |                                                                                                                                   |                                                                                                                                      |
|                                     |                                        |              |          |                                                                                                                                   |                                                                                                                                      |
| .025<br>0.64                        | .275<br>6.99                           | 207683-8     | 207684-4 | .000050-.000100 [0.00127-0.00254]<br>thick gold plate over<br>.000050-.000150 [0.00127-0.00381]<br>thick nickel underplate        | Passivated Stainless Steel                                                                                                           |
|                                     | .275<br>6.99                           | —            | 207684-5 | .000050-.000100 [0.00127-0.00254]<br>thick gold plate over<br>.000050-.000150 [0.00127-0.00381]<br>thick nickel underplate        | Passivated Stainless Steel                                                                                                           |
|                                     | .525<br>13.34                          | 207683-9     | —        |                                                                                                                                   |                                                                                                                                      |
|                                     |                                        |              |          |                                                                                                                                   |                                                                                                                                      |
| .018<br>0.46                        | .175<br>4.45                           | 1-207683-1   | —        | .000050-.000100 [0.00127-0.00254]<br>thick gold plate over<br>.000200-.000250 [0.00508-0.00635]<br>thick nickel underplate        | —                                                                                                                                    |
|                                     |                                        |              |          |                                                                                                                                   |                                                                                                                                      |



**Post Extension When Used in a Standard Connector**

## AMPLIMITE Connectors, Series 90 (Continued)

### Crimp Plugs, Series 90, High Density Connectors

#### (MIL Qualified)

##### Material and Finish

**Shell** — Steel, cadmium plated, yellow chromate

**Insert** — Approved material per MIL-DTL-24308

**Retention Clips** — Stainless steel or copper alloy

#### (Industrial Grade)

##### Material and Finish

**Shell** — Steel, zinc plated, yellow trivalent chromate or tin plated with grounding indents (not shown)

**Insert** — Polyphenylene Sulfide (PPS)

**Retention Clips** — Stainless steel or copper alloy

#### Related Product Data

**Cavity Identification** — page 8-69

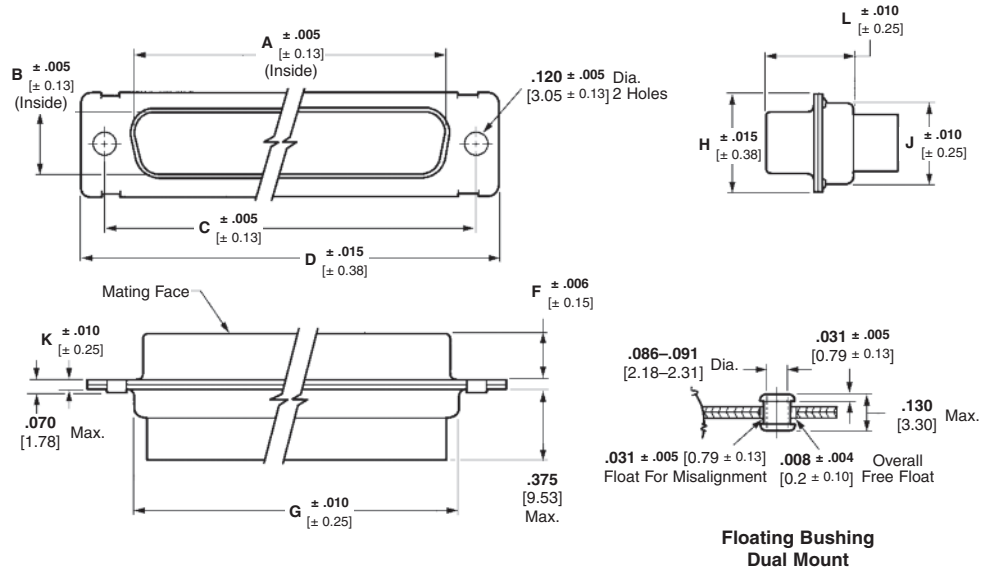
**Contacts** — pages 8-70 and 8-71

**Mounting, Mating Dimensions** — page 8-90

**Accessories** — pages 8-95 to 8-97

#### Attention: MIL Qualified Connector Marking

Connector marking may differ from package marking. All connectors marked per MIL-DTL-24308.



| No. of Contact Pos. (Shell Size) | Dimensions     |               |                |                |              |                |               |               |              |               |                                        | MIL Qualified  |                           |                        |                             | Description                         | Industrial Grade <sup>3</sup> Standard Mount RoHS Part No. |
|----------------------------------|----------------|---------------|----------------|----------------|--------------|----------------|---------------|---------------|--------------|---------------|----------------------------------------|----------------|---------------------------|------------------------|-----------------------------|-------------------------------------|------------------------------------------------------------|
|                                  |                |               |                |                |              |                |               |               |              |               |                                        | Standard Mount |                           | Floating Bushing Mount |                             |                                     |                                                            |
|                                  | A              | B             | C              | D              | F            | G              | H             | J             | K            | L             | Military Part No. <sup>2</sup> M24308/ | AMP Part No.   | Military Part No. M24308/ | AMP Part No.           |                             |                                     |                                                            |
| 15 (1)                           | .666<br>16.92  | .329<br>8.36  | .984<br>24.99  | 1.213<br>30.81 | .235<br>5.97 | .759<br>19.28  | .494<br>12.55 | .422<br>10.72 | .030<br>0.76 | .422<br>10.72 | 4-264F                                 | 204501-1       | 4-329F                    | 204525-1               | Plug only                   | 1218746-14<br>204501-5 <sup>5</sup> |                                                            |
|                                  |                |               |                |                |              |                |               |               |              |               | 4-11F                                  | 204513-2       | 4-307F                    | 204537-2               | Plug with pins <sup>1</sup> | —                                   |                                                            |
| 26 (2)                           | .994<br>25.25  | .329<br>8.36  | 1.312<br>33.32 | 1.541<br>39.14 | .235<br>5.97 | 1.083<br>27.51 | .494<br>12.55 | .422<br>10.72 | .030<br>0.76 | .422<br>10.72 | 4-265F                                 | 204503-1       | 4-330F                    | 204527-1               | Plug only                   | 1218746-24<br>204503-4 <sup>5</sup> |                                                            |
|                                  |                |               |                |                |              |                |               |               |              |               | 4-12F                                  | 204515-2       | 4-308F                    | 204539-2               | Plug with pins <sup>1</sup> | —                                   |                                                            |
| 44 (3)                           | 1.534<br>38.96 | .329<br>8.36  | 1.852<br>47.04 | 2.088<br>53.04 | .230<br>5.84 | 1.625<br>41.3  | .494<br>12.55 | .422<br>10.72 | .039<br>0.99 | .426<br>10.82 | 4-266F                                 | 204505-1       | 4-331F                    | 204529-1               | Plug only                   | 1218746-34<br>204505-5 <sup>5</sup> |                                                            |
|                                  |                |               |                |                |              |                |               |               |              |               | 4-13F                                  | 204517-2       | 4-309F                    | 204541-2               | Plug with pins <sup>1</sup> | —                                   |                                                            |
| 62 (4)                           | 2.182<br>55.42 | .329<br>8.36  | 2.500<br>63.5  | 2.729<br>69.32 | .230<br>5.84 | 2.272<br>57.7  | .494<br>12.55 | .422<br>10.72 | .039<br>0.99 | .426<br>10.82 | 4-267F                                 | 204507-1       | 4-332F                    | 204531-1               | Plug only                   | 1218746-44<br>204507-5 <sup>5</sup> |                                                            |
|                                  |                |               |                |                |              |                |               |               |              |               | 4-14F                                  | 204519-2       | 4-310F                    | 204543-2               | Plug with pins <sup>1</sup> | —                                   |                                                            |
| 78 (5)                           | 2.079<br>52.81 | .441<br>11.2  | 2.406<br>61.11 | 2.635<br>66.93 | .230<br>5.84 | 2.178<br>55.32 | .605<br>15.37 | .534<br>13.56 | .039<br>0.99 | .426<br>10.82 | 4-268F                                 | 204509-1       | 4-333F                    | 204533-1               | Plug only                   | 1218746-54<br>204509-7 <sup>5</sup> |                                                            |
|                                  |                |               |                |                |              |                |               |               |              |               | 4-15F                                  | 204521-2       | 4-311F                    | 204545-2               | Plug with pins <sup>1</sup> | —                                   |                                                            |
| 104 (6)                          | 2.212<br>56.18 | .503<br>12.78 | 2.500<br>63.5  | 2.729<br>69.32 | .230<br>5.84 | 2.302<br>58.47 | .668<br>16.97 | .596<br>15.14 | .039<br>0.99 | .426<br>10.82 | 4-269F                                 | 204511-1       | 4-334F                    | 204535-1               | Plug only                   | 1218746-64                          |                                                            |
|                                  |                |               |                |                |              |                |               |               |              |               | 4-16F                                  | 204523-2       | 4-312F                    | 204547-2               | Plug with pins <sup>1</sup> | —                                   |                                                            |

**Notes:** See pages 8-99 through 8-103 (military to AMP Part Number cross reference) for additional part numbers.

<sup>1</sup> Size 22 contacts supplied with connectors are loose piece.

<sup>2</sup> "F" is stamped on connectors following M24308 part number as required. "F" designates cadmium shell plating.

<sup>3</sup> Meets requirements of MIL-DTL-24308.

<sup>4</sup> Zinc plated.

<sup>5</sup> Tin plated.

## AMPLIMITE Connectors, Series 90 (Continued)

### Crimp Plugs, Series 90, High Density Connectors — Zinc Plated, RoHS Compliant

#### (MIL Qualified)

##### Material and Finish

**Shell** — Steel, zinc plated

**Insert** — Approved material per  
MIL-DTL-24308

**Retention Clips** — Stainless steel  
or copper alloy

#### (Industrial Grade)

##### Material and Finish

**Shell** — Steel, zinc plated

**Insert** — Polyphenylene Sulfide (PPS)

**Retention Clips** — Stainless steel or  
copper alloy

#### Related Product Data

**Cavity Identification** — page 8-69

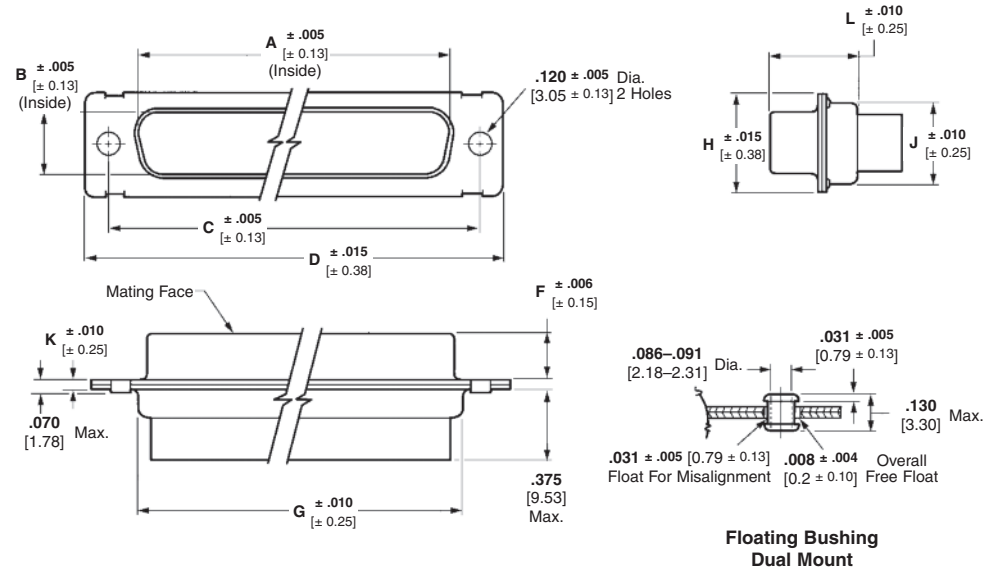
**Contacts** — pages 8-70 and 8-71

**Mounting, Mating Dimensions** —  
page 8-90

**Accessories** — pages 8-95 to 8-97

#### Attention: MIL Qualified Connector Marking

Connector marking may differ from  
package marking. All connectors marked  
per MIL-DTL-24308.



| No. of<br>Contact<br>Pos.<br>(Shell<br>Size) | Dimensions |       |       |       |      |       |       |       |      |       | MIL Qualified                   |                 |                                 |                 |
|----------------------------------------------|------------|-------|-------|-------|------|-------|-------|-------|------|-------|---------------------------------|-----------------|---------------------------------|-----------------|
|                                              | A          | B     | C     | D     | F    | G     | H     | J     | K    | L     | Standard Mount                  |                 | Floating<br>Bushings Mount      |                 |
|                                              |            |       |       |       |      |       |       |       |      |       | Military<br>Part No.<br>M24308/ | AMP<br>Part No. | Military<br>Part No.<br>M24308/ | AMP<br>Part No. |
| 15                                           | .666       | .329  | .984  | 1.213 | .235 | .759  | .494  | .422  | .030 | .422  | 4-264                           | 1757823-1       | 4-329                           | 1757825-1       |
| (1)                                          | 16.92      | 8.36  | 24.99 | 30.81 | 5.97 | 19.28 | 12.55 | 10.72 | 0.76 | 10.72 | 4-11                            | 1757823-7       | 4-307                           | 1757825-7       |
| 26                                           | .994       | .329  | 1.312 | 1.541 | .235 | 1.083 | .494  | .422  | .030 | .422  | 4-265                           | 1757823-2       | 4-330                           | 1757825-2       |
| (2)                                          | 25.25      | 8.36  | 33.32 | 39.14 | 5.97 | 27.51 | 12.55 | 10.72 | 0.76 | 10.72 | 4-12                            | 1757823-8       | 4-308                           | 1757825-8       |
| 44                                           | 1.534      | .329  | 1.852 | 2.088 | .230 | 1.625 | .494  | .422  | .039 | .426  | 4-266                           | 1757823-3       | 4-331                           | 1757825-3       |
| (3)                                          | 38.96      | 8.36  | 47.04 | 53.04 | 5.84 | 4.13  | 12.55 | 10.72 | 0.99 | 10.82 | 4-13                            | 1757823-9       | 4-309                           | 1757825-9       |
| 62                                           | 2.182      | .329  | 2.500 | 2.729 | .230 | 2.272 | .494  | .422  | .039 | .426  | 4-267                           | 1757823-4       | 4-332                           | 1757825-4       |
| (4)                                          | 55.42      | 8.36  | 63.5  | 69.32 | 5.84 | 57.7  | 12.55 | 10.72 | 0.99 | 10.82 | 4-14                            | 1-1757823-0     | 4-310                           | 1-1757825-0     |
| 78                                           | 2.079      | .441  | 2.406 | 2.635 | .230 | 2.178 | .605  | .534  | .039 | .426  | 4-268                           | 1757823-5       | 4-333                           | 1757825-5       |
| (5)                                          | 52.81      | 11.2  | 61.11 | 66.93 | 5.84 | 55.32 | 15.37 | 13.56 | 0.99 | 10.82 | 4-15                            | 1-1757823-1     | 4-311                           | 1-1757825-1     |
| 104                                          | 2.212      | .503  | 2.500 | 2.729 | .230 | 2.302 | .668  | .596  | .039 | .426  | 4-269                           | 1757823-6       | 4-334                           | 1757825-6       |
| (6)                                          | 56.18      | 12.78 | 63.5  | 69.32 | 5.84 | 58.47 | 16.97 | 15.14 | 0.99 | 10.82 | 4-16                            | 1-1757823-2     | 4-312                           | 1-1757825-2     |

**Notes:** See pages 8-99 through 8-103 (military to AMP Part Number cross reference) for additional part numbers.

# AMPLIMITE Connectors, Series 90 (Continued)

## Crimp Receptacles, Series 90, High Density Connectors

### (MIL Qualified)

#### Material and Finish

**Shell** — Steel, cadmium plated

**Insert** — Approved material per MIL-DTL-24308

**Retention Clips** — Stainless steel or copper alloy

### (Industrial Grade)

#### Material and Finish

**Shell** — Steel, zinc plated, yellow trivalent chromate or tin plated

**Insert** — Polyphenylene Sulfide (PPS)

**Retention Clips** — Stainless steel or copper alloy

### Related Product Data

**Cavity Identification** — page 8-69

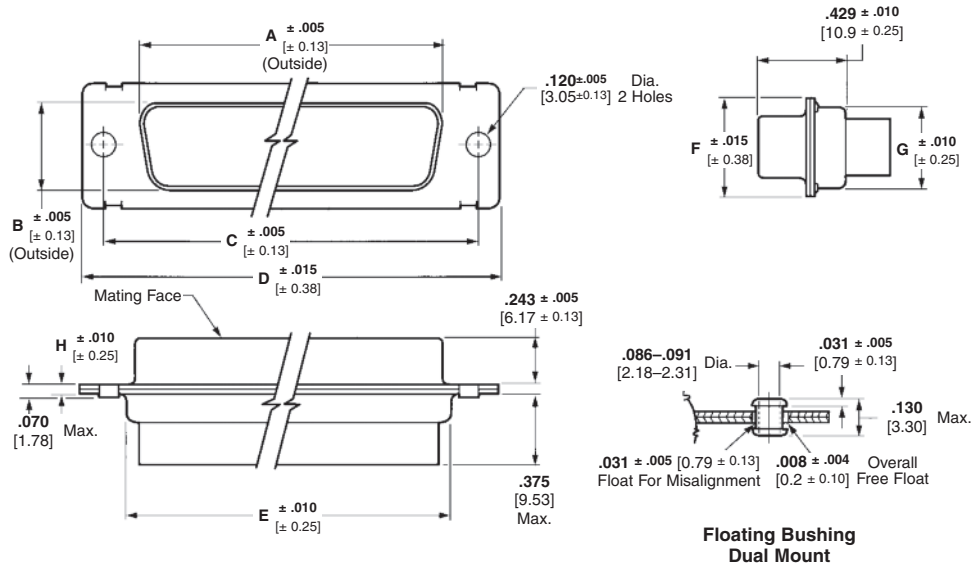
**Contacts** — pages 8-70 and 8-71

**Mounting, Mating Dimensions** — page 8-90

**Accessories** — pages 8-95 to 8-97

### Attention: Connector Marking

Connector marking may differ from package marking. All connectors marked per MIL-DTL-24308.



Clinch Nut Mount

| No. of<br>Contact<br>Pos.<br>(Shell<br>Size) |                |               |                |                |                |               |               |              | MIL Qualified                                |                 |                                 |                 | Description                       | Industrial<br>Grade <sup>3</sup><br>RoHS<br>Part No. |
|----------------------------------------------|----------------|---------------|----------------|----------------|----------------|---------------|---------------|--------------|----------------------------------------------|-----------------|---------------------------------|-----------------|-----------------------------------|------------------------------------------------------|
|                                              |                |               |                |                |                |               |               |              | Standard Mount                               |                 | Floating<br>Bushing Mount       |                 |                                   |                                                      |
|                                              | A              | B             | C              | D              | E              | F             | G             | H            | Military<br>Part No. <sup>2</sup><br>M24308/ | AMP<br>Part No. | Military<br>Part No.<br>M24308/ | AMP<br>Part No. |                                   |                                                      |
|                                              |                |               |                |                |                |               |               |              |                                              |                 |                                 |                 |                                   |                                                      |
| 15<br>(1)                                    | .643<br>16.33  | .311<br>7.9   | .984<br>24.99  | 1.213<br>30.81 | .759<br>19.28  | .494<br>12.55 | .422<br>10.72 | .030<br>0.76 | 2-286F                                       | 204500-1        | 2-297F                          | 204524-1        | Recept. only                      | 1218747-14<br>204500-45                              |
|                                              |                |               |                |                |                |               |               |              | 2-11F                                        | 204512-2        | 2-28F                           | 204536-2        | Recept. with sockets <sup>1</sup> | —                                                    |
| 26<br>(2)                                    | .971<br>24.66  | .311<br>7.9   | 1.312<br>33.32 | 1.541<br>39.14 | 1.083<br>27.51 | .494<br>12.55 | .422<br>10.72 | .030<br>0.76 | 2-287F                                       | 204502-1        | 2-298F                          | 204526-1        | Recept. only                      | 1218747-24<br>204502-45                              |
|                                              |                |               |                |                |                |               |               |              | 2-12F                                        | 204514-2        | 2-29F                           | 204538-2        | Recept. with sockets <sup>1</sup> | —                                                    |
| 44<br>(3)                                    | 1.511<br>38.38 | .311<br>7.9   | 1.852<br>47.04 | 2.088<br>53.04 | 1.625<br>41.3  | .494<br>12.55 | .422<br>10.72 | .039<br>0.99 | 2-288F                                       | 204504-1        | 2-299F                          | 204528-1        | Recept. only                      | 1218747-34<br>204504-55                              |
|                                              |                |               |                |                |                |               |               |              | 2-13F                                        | 204516-2        | 2-30F                           | 204540-2        | Recept. with sockets <sup>1</sup> | —                                                    |
| 62<br>(4)                                    | 2.159<br>54.84 | .311<br>8.36  | 2.500<br>63.5  | 2.729<br>69.32 | 2.272<br>57.7  | .494<br>12.55 | .422<br>10.72 | .039<br>0.99 | 2-289F                                       | 204506-1        | 2-300F                          | 204530-1        | Recept. only                      | 1218747-44                                           |
|                                              |                |               |                |                |                |               |               |              | 2-14F                                        | 204518-2        | 2-31F                           | 204542-2        | Recept. with sockets <sup>1</sup> | —                                                    |
| 78<br>(5)                                    | 2.064<br>52.43 | .423<br>10.74 | 2.406<br>61.11 | 2.635<br>66.93 | 2.178<br>55.32 | .605<br>15.37 | .534<br>13.56 | .039<br>0.99 | 2-290F                                       | 204508-1        | 2-301F                          | 204532-1        | Recept. only                      | 1218747-54                                           |
|                                              |                |               |                |                |                |               |               |              | 2-15F                                        | 204520-2        | 2-32F                           | 204544-2        | Recept. with sockets <sup>1</sup> | —                                                    |
| 104<br>(6)                                   | 2.189<br>55.6  | .485<br>12.32 | 2.500<br>63.5  | 2.729<br>69.32 | 2.302<br>58.47 | .668<br>16.97 | .596<br>15.14 | .039<br>0.99 | 2-291F                                       | 204510-1        | 2-302F                          | 204534-1        | Recept. only                      | 1218747-64                                           |
|                                              |                |               |                |                |                |               |               |              | 2-16F                                        | 204522-2        | 2-33F                           | 204546-2        | Recept. with sockets <sup>1</sup> | —                                                    |

**Notes:** See pages 8-99 through 8-103 (military to AMP Part Number cross reference) for additional part numbers.

<sup>1</sup> Size 22 contacts supplied with connectors are loose piece.

<sup>2</sup> "F" is stamped on connectors following M24308 part number as required. "F" designates cadmium shell plating.

<sup>3</sup> Meets requirements of MIL-DTL-24308.

<sup>4</sup> Clinch Nut Mount, Zinc plated.

<sup>5</sup> Standard Mount, Tin plated.

## AMPLIMITE Connectors, Series 90 (Continued)

### Crimp Receptacles, Series 90, High Density Connectors — Zinc Plated, RoHS Compliant

#### (MIL Qualified)

##### Material and Finish

**Shell** — Steel, zinc plated

**Insert** — Approved material per  
MIL-DTL-24308

**Retention Clips** — Stainless steel or  
copper alloy

#### (Industrial Grade)

##### Material and Finish

**Shell** — Steel, zinc plated

**Insert** — Polyphenylene Sulfide (PPS)

**Retention Clips** — Stainless steel or  
copper alloy

#### Related Product Data

**Cavity Identification** — page 8-69

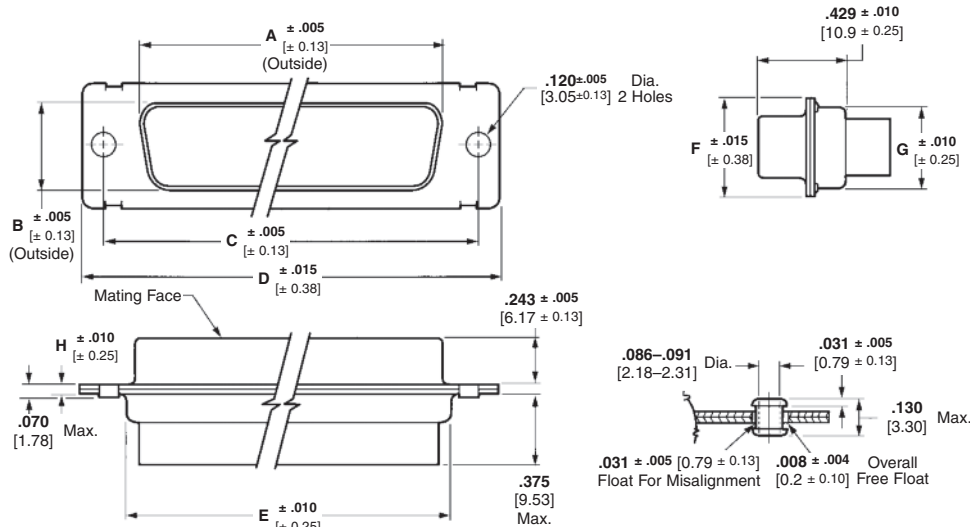
**Contacts** — pages 8-70 and 8-71

**Mounting, Mating Dimensions** —  
page 8-90

**Accessories** — pages 8-95 to 8-97

#### Attention: Connector Marking

Connector marking may differ from  
package marking. All connectors marked  
per MIL-DTL-24308.



**Floating Bushing  
Dual Mount**



**Clinch Nut Mount**

| No. of<br>Contact<br>Pos.<br>(Shell<br>Size) | Dimensions     |               |                |                |                |               |               |              | MIL Qualified                   |                          |                                 |                          | Description                                       |
|----------------------------------------------|----------------|---------------|----------------|----------------|----------------|---------------|---------------|--------------|---------------------------------|--------------------------|---------------------------------|--------------------------|---------------------------------------------------|
|                                              |                |               |                |                |                |               |               |              | Standard Mount                  |                          | Floating<br>Bushing Mount       |                          |                                                   |
|                                              | A              | B             | C              | D              | E              | F             | G             | H            | Military<br>Part No.<br>M24308/ | AMP<br>Part No.          | Military<br>Part No.<br>M24308/ | AMP<br>Part No.          |                                                   |
| 15<br>(1)                                    | .643<br>16.33  | .311<br>7.9   | .984<br>24.99  | 1.213<br>30.81 | .759<br>19.28  | .494<br>12.55 | .422<br>10.72 | .030<br>0.76 | 2-286<br>2-11                   | 1757824-1<br>1757824-7   | 2-297<br>2-28                   | 1757826-1<br>1757826-7   | Recept. only<br>Recept. with sockets <sup>1</sup> |
| 26<br>(2)                                    | .971<br>24.66  | .311<br>7.9   | 1.312<br>33.32 | 1.541<br>39.14 | 1.083<br>27.51 | .494<br>12.55 | .422<br>10.72 | .030<br>0.76 | 2-287<br>2-12                   | 1757824-2<br>1757824-8   | 2-298<br>2-29                   | 1757826-2<br>1757826-8   | Recept. only<br>Recept. with sockets <sup>1</sup> |
| 44<br>(3)                                    | 1.511<br>38.38 | .311<br>7.9   | 1.852<br>47.04 | 2.088<br>53.04 | 1.625<br>41.3  | .494<br>12.55 | .422<br>10.72 | .039<br>0.99 | 2-288<br>2-13                   | 1757824-3<br>1757824-9   | 2-299<br>2-30                   | 1757826-3<br>1757826-9   | Recept. only<br>Recept. with sockets <sup>1</sup> |
| 62<br>(4)                                    | 2.159<br>54.84 | .311<br>8.36  | 2.500<br>63.5  | 2.729<br>69.32 | 2.272<br>57.7  | .494<br>12.55 | .422<br>10.72 | .039<br>0.99 | 2-289<br>2-14                   | 1757824-4<br>1-1757824-0 | 2-300<br>2-31                   | 1757826-4<br>1-1757826-0 | Recept. only<br>Recept. with sockets <sup>1</sup> |
| 78<br>(5)                                    | 2.064<br>52.43 | .423<br>10.74 | 2.406<br>61.11 | 2.635<br>66.93 | 2.178<br>55.32 | .605<br>15.37 | .534<br>13.56 | .039<br>0.99 | 2-290<br>2-15                   | 1757824-5<br>1-1757824-1 | 2-301<br>2-32                   | 1757826-5<br>1-1757826-1 | Recept. only<br>Recept. with sockets <sup>1</sup> |
| 104<br>(6)                                   | 2.189<br>55.6  | .485<br>12.32 | 2.500<br>63.5  | 2.729<br>69.32 | 2.302<br>58.47 | .668<br>16.97 | .596<br>15.14 | .039<br>0.99 | 2-291<br>2-16                   | 1757824-6<br>1-1757824-2 | 2-302<br>2-33                   | 1757826-6<br>1-1757826-2 | Recept. only<br>Recept. with sockets <sup>1</sup> |

**Notes:** See pages 8-99 through 8-103 (military to AMP Part Number cross reference) for additional part numbers.



## AMPLIMITE Connectors, Series 90 (Continued)

### Non-Magnetic Crimp Plugs, Series 90, High Density Connectors (NASA Qualified)

#### Connector Material and Finish

**Shell** — Brass, gold plated

**Insert** — Approved material per MIL-DTL-24308

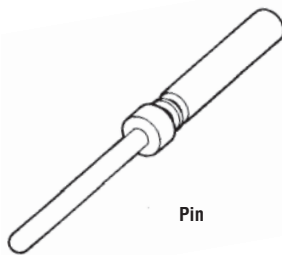
**Retention Clips** — Copper alloy

#### Related Product Data

Cavity Identification — page 8-69

**Mounting, Mating Specifications** — page 8-90

**Accessories** — pages 8-95 to 8-97



Pin

| Wire Size Range    | AMP Part No. / NASA No. |
|--------------------|-------------------------|
| 22-28<br>0.4-0.08  | 204370-8<br>G-08-P1     |
| 26-28<br>0.15-0.08 | 206495-3<br>—           |

Max. insulation diameter .054 [1.38]

Hand tool AMP Part Number 601966-1

or MIL Part Number M22520/2-01

Positioner AMP Part Number 601966-6  
or MIL Part Number M22520/2-09

#### Contact Material and Finish

Copper alloy, .000050-.000100

[0.00127-0.0254] thick gold plate over

.000100-.000150 [0.0254-0.00381]

thick copper underplate

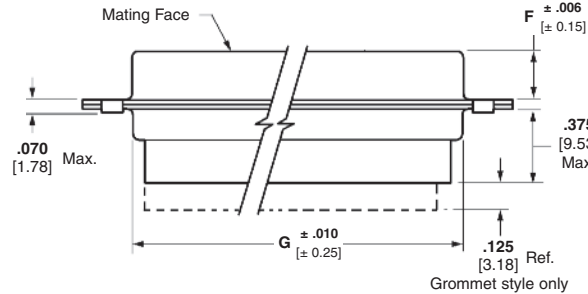
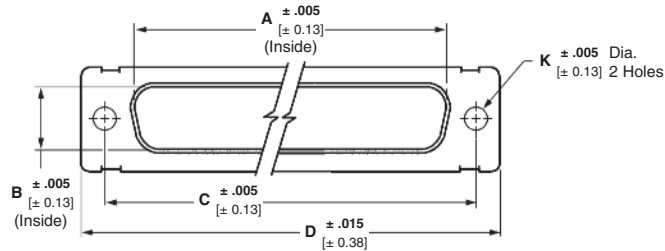


Pin and Socket  
Insertion/Extraction Tool

AMP Part Number 91067-1 or  
MIL Part Number M81969/1-04

Insertion tip, for replacement  
Part Number 126237-1

Extraction tip, for replacement  
Part Number 126195-2



### Non-Magnetic Plugs per NASA Specification

| No. of Contact Pos. (Shell Size) | Dimensions     |               |                |                |              |                |               |               |               |                              | NASA Part Number                   | AMP Part Number      |
|----------------------------------|----------------|---------------|----------------|----------------|--------------|----------------|---------------|---------------|---------------|------------------------------|------------------------------------|----------------------|
|                                  | A              | B             | C              | D              | F            | G              | H             | J             | L             | K                            |                                    |                      |
| 15<br>(1)                        | .666<br>16.92  | .329<br>8.36  | .984<br>24.99  | 1.213<br>30.81 | .235<br>5.97 | .759<br>19.28  | .494<br>12.55 | .422<br>10.72 | .422<br>10.72 | .154<br>3.91<br>.120<br>3.05 | 311P407-1P-B-15                    | 206498-1             |
| 26<br>(2)                        | .994<br>25.25  | .329<br>8.36  | 1.312<br>33.32 | 1.541<br>39.14 | .235<br>5.97 | 1.083<br>27.51 | .494<br>12.55 | .422<br>10.72 | .422<br>10.72 | .154<br>3.91<br>.120<br>3.05 | 311P407-2P-B-15<br>311P407-2P-B-12 | 206500-1<br>206500-4 |
| 44<br>(3)                        | 1.534<br>38.96 | .329<br>8.36  | 1.852<br>47.04 | 2.088<br>53.04 | .230<br>5.84 | 1.625<br>41.3  | .494<br>12.55 | .422<br>10.72 | .426<br>10.82 | .154<br>3.91<br>.120<br>3.05 | 311P407-3P-B-15<br>311P407-3P-B-12 | 206063-2<br>206063-4 |
| 62<br>(4)                        | 2.182<br>55.42 | .329<br>8.36  | 2.500<br>63.5  | 2.729<br>69.32 | .230<br>5.84 | 2.272<br>57.7  | .494<br>12.55 | .422<br>10.72 | .426<br>10.82 | .154<br>3.91<br>.120<br>3.05 | 311P407-4P-B-15<br>311P407-4P-B-12 | 206502-1<br>206502-4 |
| 78<br>(5)                        | 2.079<br>52.81 | .441<br>11.20 | 2.406<br>61.11 | 2.635<br>66.93 | .230<br>5.84 | 2.178<br>55.32 | .605<br>15.37 | .534<br>13.56 | .426<br>10.82 | .154<br>3.91<br>.120<br>3.05 | 311P407-5P-B-15<br>311P407-5P-B-12 | 206504-1<br>206504-4 |
| 104<br>(6)                       | 2.212<br>56.18 | .503<br>12.78 | 2.500<br>63.5  | 2.729<br>69.32 | .230<br>5.84 | 2.302<br>58.47 | .668<br>16.97 | .596<br>15.14 | .426<br>10.82 | .154<br>3.91<br>.120<br>3.05 | 311P407-6P-B-15<br>311P407-6P-B-12 | 206066-2<br>206066-4 |

### Non-Magnetic Plugs With Silicone Rubber Rear Grommet<sup>1</sup>

| No. of Contact Pos. (Shell Size) | Dimensions     |               |                |                |              |                |               |               |              |               | AMP Part Number |
|----------------------------------|----------------|---------------|----------------|----------------|--------------|----------------|---------------|---------------|--------------|---------------|-----------------|
|                                  | A              | B             | C              | D              | F            | G              | H             | J             | K            | L             |                 |
| 15<br>(1)                        | .666<br>16.92  | .329<br>8.36  | .984<br>24.99  | 1.213<br>30.81 | .235<br>5.97 | .759<br>19.28  | .494<br>12.55 | .422<br>10.72 | .120<br>3.05 | .422<br>10.72 | 211673-4        |
| 26<br>(2)                        | .994<br>25.25  | .329<br>8.36  | 1.312<br>33.32 | 1.541<br>39.14 | .235<br>5.97 | 1.083<br>27.51 | .494<br>12.55 | .422<br>10.72 | .120<br>3.05 | .422<br>10.72 | 211674-4        |
| 44<br>(3)                        | 1.534<br>38.96 | .329<br>8.36  | 1.852<br>47.04 | 2.088<br>53.04 | .230<br>5.84 | 1.625<br>41.3  | .494<br>12.55 | .422<br>10.72 | .120<br>3.05 | .426<br>10.82 | 211675-4        |
| 62<br>(4)                        | 2.182<br>55.42 | .329<br>8.36  | 2.500<br>63.5  | 2.729<br>69.32 | .230<br>5.84 | 2.272<br>57.7  | .494<br>12.55 | .422<br>10.72 | .120<br>3.05 | .426<br>10.82 | 211676-4        |
| 78<br>(5)                        | 2.079<br>52.81 | .441<br>11.20 | 2.406<br>61.11 | 2.635<br>66.93 | .230<br>5.84 | 2.178<br>55.32 | .605<br>15.37 | .534<br>13.56 | .120<br>3.05 | .426<br>10.82 | 211677-4        |
| 104<br>(6)                       | 2.212<br>56.18 | .503<br>12.78 | 2.500<br>63.5  | 2.729<br>69.32 | .230<br>5.84 | 2.302<br>58.47 | .668<br>16.97 | .596<br>15.14 | .120<br>3.05 | .426<br>10.82 | 211678-4        |

<sup>1</sup> Grommet provided for cable strain relief.

## AMPLIMITE Connectors, Series 90 (Continued)

### Non-Magnetic Crimp Receptacles, Series 90, High Density Connectors (NASA Qualified)

#### Connector Material and Finish

**Shell** — Brass, gold plated

**Insert** — Approved material per MIL-DTL-24308

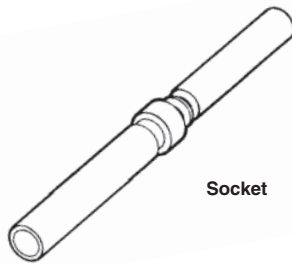
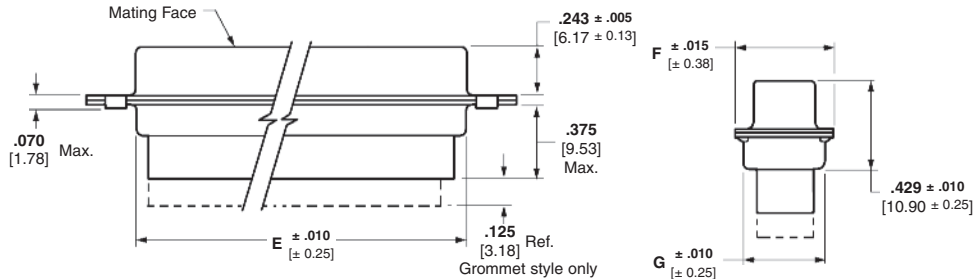
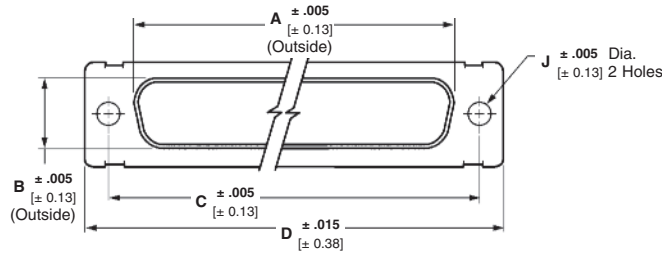
**Retention Clips** — Copper alloy

#### Related Product Data

**Cavity Identification** — page 8-69

**Mounting, Mating Specifications** — page 8-90

**Accessories** — pages 8-95 to 8-97



Socket

| Wire Size Range    | AMP Part No. / NASA No. |
|--------------------|-------------------------|
| 22-28<br>0.4-0.08  | 206071-1<br>G-08-S1     |
| 26-28<br>0.15-0.08 | 206496-1<br>—           |

Max. insulation diameter .054 [1.38]  
Hand tool AMP Part Number 601966-1  
or MIL Part Number M22520/2-01  
Positioner AMP Part Number 601966-4  
or MIL Part Number M22520/2-06

#### Contact and Hood Material and Finish

Copper alloy, .000050-.000100  
[0.00127-.00254] thick gold plate over  
.000100-.000150 [0.00254-.00381]  
thick copper underplate

#### Non-Magnetic Receptacles per NASA Specification

| No. of Contact Pos. (Shell Size) | Dimensions     |               |                |                |                |               |               |                              | NASA Part Number | AMP Part Number |
|----------------------------------|----------------|---------------|----------------|----------------|----------------|---------------|---------------|------------------------------|------------------|-----------------|
|                                  | A              | B             | C              | D              | E              | F             | G             | J                            |                  |                 |
| 15<br>(1)                        | .643<br>16.33  | .311<br>7.9   | .984<br>24.99  | 1.213<br>30.81 | .759<br>19.28  | .494<br>12.55 | .422<br>10.72 | .154<br>3.91<br>.120<br>3.05 | 311P407-1S-B-15  | 206499-1        |
| 26<br>(2)                        | .971<br>24.66  | .311<br>7.9   | 1.312<br>33.32 | 1.541<br>39.14 | 1.083<br>27.51 | .494<br>12.55 | .422<br>10.72 | .154<br>3.91<br>.120<br>3.05 | 311P407-2S-B-15  | 206501-1        |
| 44<br>(3)                        | 1.511<br>38.38 | .311<br>7.9   | 1.852<br>47.04 | 2.088<br>53.04 | 1.625<br>41.3  | .494<br>12.55 | .422<br>10.72 | .154<br>3.91<br>.120<br>3.05 | 311P407-3S-B-15  | 206064-2        |
| 62<br>(4)                        | 2.159<br>54.84 | .311<br>7.9   | 2.500<br>63.5  | 2.729<br>69.32 | 2.272<br>57.7  | .494<br>12.55 | .422<br>10.72 | .154<br>3.91<br>.120<br>3.05 | 311P407-4S-B-15  | 206503-1        |
| 78<br>(5)                        | 2.064<br>52.43 | .423<br>10.74 | 2.406<br>61.11 | 2.635<br>66.93 | 2.178<br>55.32 | .605<br>15.37 | .534<br>13.56 | .154<br>3.91<br>.120<br>3.05 | 311P407-5S-B-15  | 206505-1        |
| 104<br>(6)                       | 2.189<br>55.6  | .485<br>12.32 | 2.500<br>63.5  | 2.729<br>69.32 | 2.302<br>58.47 | .668<br>16.97 | .596<br>15.14 | .154<br>3.91<br>.120<br>3.05 | 311P407-6S-B-15  | 206065-2        |
|                                  |                |               |                |                |                |               |               |                              | 311P407-6S-B-12  | 206065-4        |

#### Non-Magnetic Receptacles With Silicone Rubber Rear Grommet<sup>1</sup>

| No. of Contact Pos. (Shell Size) | Dimensions     |               |                |                |                |               |               |              | AMP Part Number |
|----------------------------------|----------------|---------------|----------------|----------------|----------------|---------------|---------------|--------------|-----------------|
|                                  | A              | B             | C              | D              | E              | F             | G             | J            |                 |
| 15<br>(1)                        | .643<br>16.33  | .311<br>7.9   | .984<br>24.99  | 1.213<br>30.81 | .759<br>19.28  | .494<br>12.55 | .422<br>10.72 | .120<br>3.05 | 211667-4        |
| 26<br>(2)                        | .971<br>24.66  | .311<br>7.9   | 1.312<br>33.32 | 1.541<br>39.14 | 1.083<br>27.51 | .494<br>12.55 | .422<br>10.72 | .120<br>3.05 | 211668-4        |
| 44<br>(3)                        | 1.511<br>38.38 | .311<br>7.9   | 1.852<br>47.04 | 2.088<br>53.04 | 1.625<br>41.3  | .494<br>12.55 | .422<br>10.72 | .120<br>3.05 | 211669-4        |
| 62<br>(4)                        | 2.159<br>54.84 | .311<br>7.9   | 2.500<br>63.5  | 2.729<br>69.32 | 2.272<br>57.7  | .494<br>12.55 | .422<br>10.72 | .120<br>3.05 | 211670-4        |
| 78<br>(5)                        | 2.064<br>52.43 | .423<br>10.74 | 2.406<br>61.11 | 2.635<br>66.93 | 2.178<br>55.32 | .605<br>15.37 | .534<br>13.56 | .120<br>3.05 | 211671-4        |
| 104<br>(6)                       | 2.189<br>55.6  | .485<br>12.32 | 2.500<br>63.5  | 2.729<br>69.32 | 2.302<br>58.47 | .668<br>16.97 | .596<br>15.14 | .120<br>3.05 | 211672-4        |

<sup>1</sup> Grommet provided for cable strain relief.

### AMPLIMITE Connectors, Series 90 (Continued)

#### Crimp Blindmate Plugs, Series 90, High Density Connectors

##### Material and Finish

**Shell, Front** — Aluminum alloy, cadmium plated with yellow chromate

##### 1 Shell, Front for RoHS

**Compliant** — Aluminum alloy, zinc plated with yellow trivalent chromate

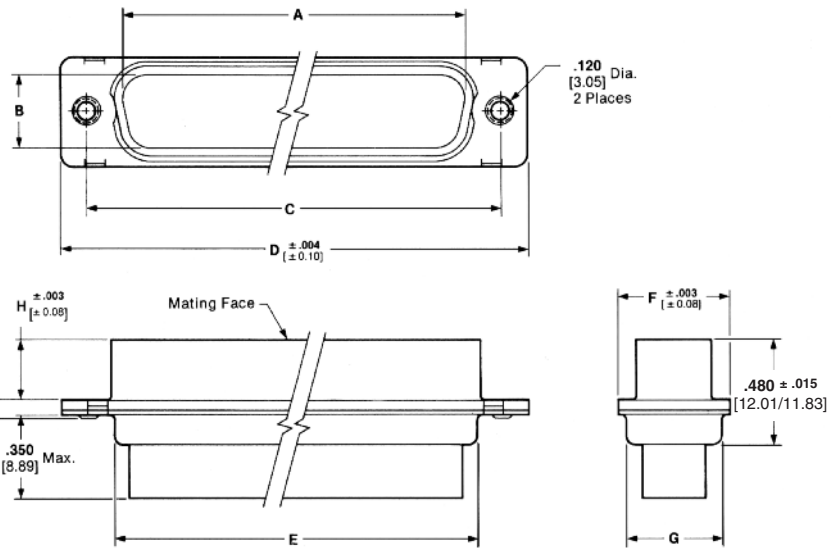
**Shell, Rear** — Steel, cadmium plated with yellow chromate

##### 1 Shell, Rear for RoHS

**Compliant** — Steel, zinc plated with yellow trivalent chromate

**Insert Assembly** — Approved material per MIL-DTL-24308

**Retention Clips** — Stainless steel



##### Related Product Data

**Cavity Identification** — page 8-69

**Contacts** — pages 8-70 and 8-71

**Mounting Specifications** — page 8-90

Flange to flange spacing can be a max. of .270 [6.86] for Blindmate connectors.

#### Blindmate Plugs with Floating Bushings

##### Material and Finish

**Shell** — Aluminum alloy per 6061, cadmium plated per QQ-P-416, Type II, Class 2 over copper per MIL-C-14550, Class 4.

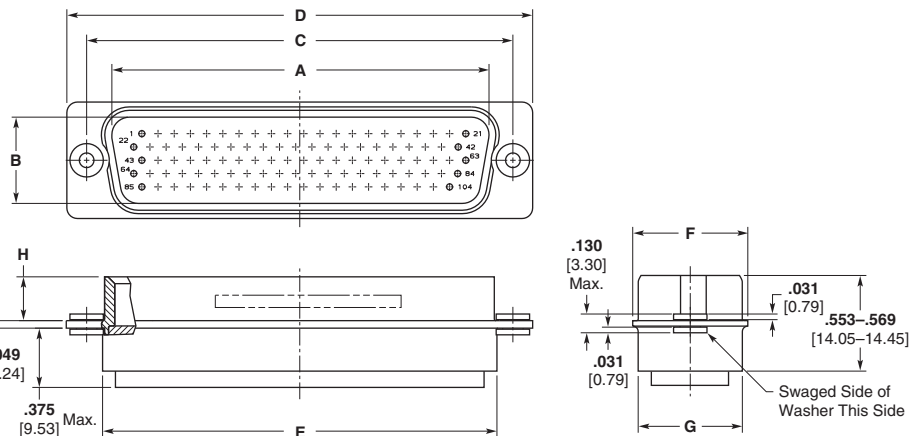
**Insert Assembly** — Diallyl phthalate per MIL-M-14, Type SDG-F; or polyester per MIL-M-24519, Type GPT-30F; or polyphenylene sulfide (PPS) per MIL-M-24519, Type GST-40F.

##### Floating Bushing/Washer

Stainless steel per ASTM-A-582, passivated per QQ-P-35B. Floats .008 ± .004 [0.20 ± 0.10] vertically and .031 [0.79] horizontally.

| No. of Contact Pos. (Shell Size) | Dimensions     |               |                |                |                            |               |                          |              | Part Number            |
|----------------------------------|----------------|---------------|----------------|----------------|----------------------------|---------------|--------------------------|--------------|------------------------|
|                                  | A              | B             | C              | D              | E                          | F             | G                        | H            |                        |
| 15 (1)                           | .656<br>16.66  | .324<br>8.23  | .984<br>24.99  | 1.224<br>31.09 | .769/.750<br>19.53/19.05   | .506<br>12.85 | .432/.413<br>10.97/10.49 | .257<br>6.53 | 213153-1               |
| 26 (2)                           | .984<br>25.0   | .324<br>8.23  | 1.312<br>33.32 | 1.552<br>39.42 | 1.093/1.074<br>27.76/27.28 | .506<br>12.85 | .432/.413<br>10.97/10.49 | .257<br>6.53 | 445010-1               |
| 44 (3)                           | 1.524<br>38.71 | .324<br>8.23  | 1.852<br>47.04 | 2.099<br>53.31 | 1.635/1.616<br>41.53/41.05 | .506<br>12.85 | .432/.413<br>10.97/10.49 | .257<br>6.53 | 445011-1<br>5-445011-1 |
| 62 (4)                           | 2.172<br>55.17 | .324<br>8.23  | 2.500<br>63.5  | 2.740<br>69.6  | 2.282/2.263<br>57.96/57.48 | .506<br>12.85 | .432/.413<br>10.97/10.49 | .257<br>6.53 | 213118-1               |
| 78 (5)                           | 2.082<br>52.88 | .444<br>11.28 | 2.406<br>61.11 | 2.646<br>67.21 | 2.188/2.167<br>55.58/55.04 | .617<br>15.67 | .544/.525<br>13.82/13.34 | .257<br>6.53 | 445012-1<br>5-445012-1 |
| 104 (6)                          | 2.212<br>56.18 | .503<br>12.78 | 2.500<br>63.5  | 2.740<br>69.6  | 2.302<br>58.47             | .680<br>17.27 | .606/.587<br>15.39/14.91 | .267<br>6.78 | 212933-3               |

1 See Material and Finish for RoHS compliant Part Numbers above.



##### Related Product Data

**Cavity Identification** — page 8-69

**Contacts** — pages 8-70 and 8-71

**Mounting Specifications** — page 8-90

Flange to flange spacing can be a max. of .270 [6.86] for Blindmate connectors.

| No. of Contact Pos. (Shell Size) | Dimensions                 |                          |                            |                            |                            |                          |                          |                        | Part Number |
|----------------------------------|----------------------------|--------------------------|----------------------------|----------------------------|----------------------------|--------------------------|--------------------------|------------------------|-------------|
|                                  | A                          | B                        | C                          | D                          | E                          | F                        | G                        | H                      |             |
| 104 (6)                          | 2.213/2.217<br>56.21/56.31 | .504/.508<br>12.80/12.90 | 2.495/2.505<br>63.37/63.63 | 2.714/2.744<br>68.94/69.70 | 2.307/2.319<br>58.60/58.90 | .673/.683<br>17.09/17.35 | .602/.614<br>15.29/15.59 | .254/.260<br>6.45/6.60 | 1757207-6   |
| 44 (3)                           | 1.522/1.526<br>38.66/38.76 | .321/.327<br>8.15/8.31   | 1.847/1.857<br>46.91/47.17 | 2.073/2.103<br>52.65/53.42 | 1.630/1.642<br>41.40/41.71 | .499/.509<br>12.67/12.93 | .432/.444<br>10.97/11.28 | .254/.260<br>6.45/6.60 | 1757207-3   |

**Note:** Additional sizes available upon request.

## AMPLIMITE Connectors, Series 90 (Continued)

### Straight PCB, Series 90, High Density Connectors (Industrial Grade)

#### Material and Finish

1 **Shell** — Steel, cadmium plated

2 **Shell for RoHS Compliant** — Steel, zinc plated

**Insert** — Polyphenylene Sulfide (PPS)

**Retention Clips** — Stainless steel

#### Related Product Data

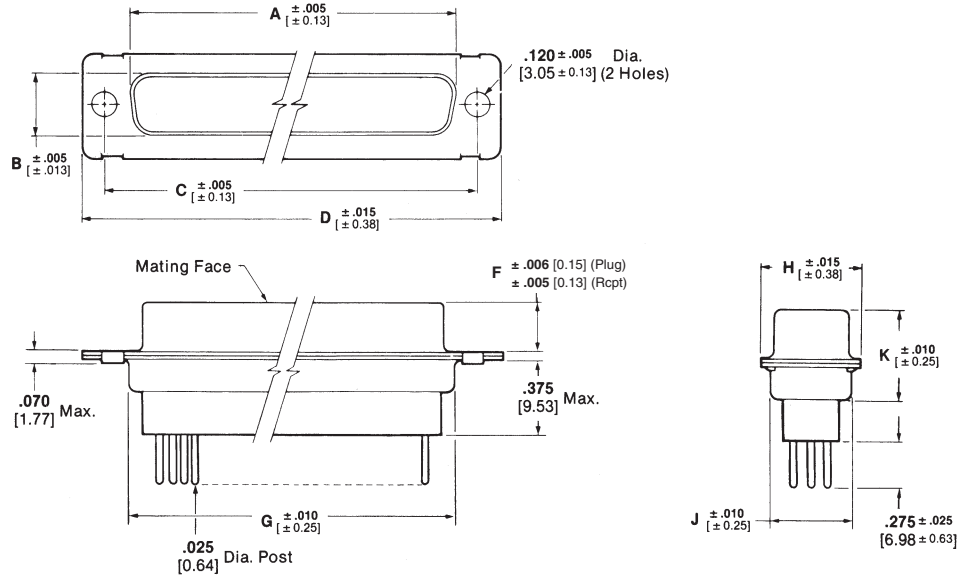
**Cavity Identification** — page 8-69

**Contacts** — page 8-71

**Mounting, Mating Dimensions** — page 8-90

**Accessories** — pages 8-95 to 8-97

**PCB Layouts** — See page 8-92 or TE Connectivity customer drawing



Replacement Pin Contact  
Part Number 207683-8

#### Plugs

| No. of Contact Pos. (Shell Size) | Dimensions |            |       |       |      |       |       |       |       | Part Number |
|----------------------------------|------------|------------|-------|-------|------|-------|-------|-------|-------|-------------|
|                                  | A (Inside) | B (Inside) | C     | D     | F    | G     | H     | J     | K     |             |
| 15                               | .666       | .329       | .984  | 1.213 | .235 | .759  | .494  | .422  | .422  | 208866-11   |
| (1)                              | 16.92      | 8.36       | 24.99 | 30.81 | 5.97 | 19.28 | 12.55 | 10.72 | 10.72 | 5-208866-12 |
| 26                               | .994       | .329       | 1.312 | 1.541 | .235 | 1.083 | .494  | .422  | .422  | 208867-11   |
| (2)                              | 25.25      | 8.36       | 33.32 | 39.14 | 5.97 | 27.51 | 12.55 | 10.72 | 10.72 | 5-208867-12 |
| 44                               | 1.534      | .329       | 1.852 | 2.088 | .230 | 1.625 | .494  | .422  | .426  | 208868-11   |
| (3)                              | 38.96      | 8.36       | 47.04 | 53.04 | 5.84 | 41.3  | 12.55 | 10.72 | 10.82 | 5-208868-12 |
| 62                               | 2.182      | .329       | 2.500 | 2.729 | .230 | 2.272 | .494  | .422  | .426  | 208869-11   |
| (4)                              | 55.42      | 8.36       | 63.5  | 69.32 | 5.84 | 57.7  | 12.55 | 10.72 | 10.82 | 5-208869-12 |
| 78                               | 2.079      | .441       | 2.406 | 2.635 | .230 | 2.178 | .605  | .534  | .426  | 208870-11   |
| (5)                              | 52.81      | 11.20      | 61.11 | 66.93 | 5.84 | 55.32 | 15.37 | 13.56 | 10.82 | 5-208870-12 |
| 104                              | 2.212      | .503       | 2.500 | 2.729 | .230 | 2.302 | .668  | .596  | .426  | 208871-11   |
| (6)                              | 56.18      | 12.78      | 63.5  | 69.32 | 5.84 | 58.47 | 16.97 | 15.14 | 10.82 | 5-208871-12 |

1 See Material and Finish above.

2 See Material and Finish for RoHS compliant Part Numbers above.

Replacement Socket Contact  
Part Number 207684-4

#### Receptacles

| No. of Contact Pos. (Shell Size) | Dimensions     |               |                |                |              |                |               |               |              | Part Number              |
|----------------------------------|----------------|---------------|----------------|----------------|--------------|----------------|---------------|---------------|--------------|--------------------------|
|                                  | A (Outside)    | B (Outside)   | C              | D              | F            | G              | H             | J             | K            |                          |
| 15<br>(1)                        | .643<br>16.33  | .311<br>7.9   | .984<br>24.99  | 1.213<br>30.81 | .243<br>6.17 | .759<br>19.28  | .494<br>12.55 | .422<br>10.72 | .429<br>10.9 | 208872-11<br>5-208872-12 |
| 26<br>(2)                        | .971<br>24.66  | .311<br>7.9   | 1.312<br>33.32 | 1.541<br>39.14 | .243<br>6.17 | 1.083<br>27.51 | .494<br>12.55 | .422<br>10.72 | .429<br>10.9 | 208873-11<br>5-208873-12 |
| 44<br>(3)                        | 1.511<br>38.38 | .311<br>7.9   | 1.852<br>47.04 | 2.088<br>53.04 | .243<br>6.17 | 1.625<br>41.3  | .494<br>12.55 | .422<br>10.72 | .429<br>10.9 | 208874-11<br>5-208874-12 |
| 62<br>(4)                        | 2.159<br>54.84 | .311<br>7.9   | 2.500<br>63.5  | 2.729<br>69.32 | .243<br>6.17 | 2.272<br>57.7  | .494<br>12.55 | .422<br>10.72 | .429<br>10.9 | 208875-11<br>5-208875-12 |
| 78<br>(5)                        | 2.064<br>52.43 | .423<br>10.74 | 2.406<br>61.11 | 2.635<br>66.93 | .243<br>6.17 | 2.178<br>55.32 | .605<br>15.37 | .534<br>13.56 | .429<br>10.9 | 208876-11<br>5-208876-12 |
| 104<br>(6)                       | 2.189<br>55.6  | .485<br>12.32 | 2.500<br>63.5  | 2.729<br>69.32 | .243<br>6.17 | 2.302<br>58.47 | .668<br>16.97 | .596<br>15.14 | .429<br>10.9 | 208877-11<br>5-208877-12 |

1 See Material and Finish above.

2 See Material and Finish for RoHS compliant Part Numbers above.

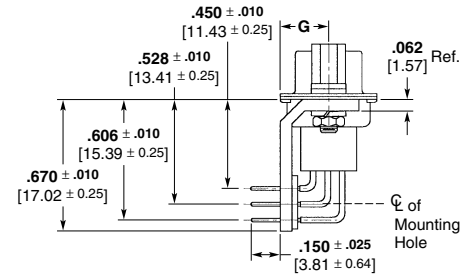
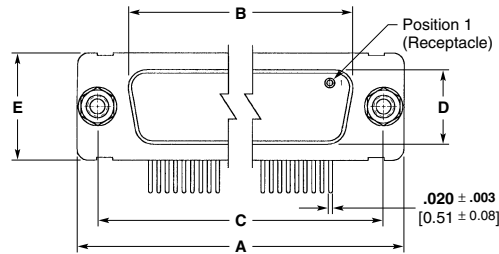
## AMPLIMITE Connectors, Series 90 (Continued)

### Right-Angle PCB, Series 90, with Female Screwlocks

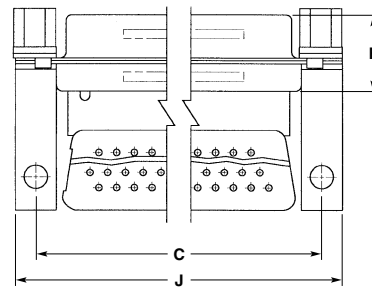
#### Material and Finish

**Shell** — Brass, gold over copper plated

**Insert** — Diallyl phthalate or polyester or Polyphenylene Sulfide (PPS)



Shell Size 1 thru 4



#### Plugs

| No. of Contact Pos. (Shell Size) | Dimensions     |                |                |               |               |               |                            |                | Part Number |
|----------------------------------|----------------|----------------|----------------|---------------|---------------|---------------|----------------------------|----------------|-------------|
|                                  | A              | B              | C              | D             | E             | F             | G                          | J              |             |
| 15<br>(1)                        | 1.213<br>30.81 | .666<br>16.92  | .984<br>24.99  | .329<br>8.36  | .494<br>12.55 | .422<br>10.72 | .246 ± .010<br>6.25 ± 0.25 | 1.204<br>30.58 | 1-593326-7  |
| 26<br>(2)                        | 1.541<br>39.14 | .994<br>25.25  | 1.312<br>33.32 | .329<br>8.36  | .494<br>12.55 | .422<br>10.72 | .246 ± .010<br>6.25 ± 0.25 | 1.532<br>38.91 | 1-593326-8  |
| 44<br>(3)                        | 2.088<br>53.04 | 1.534<br>38.96 | 1.852<br>47.04 | .329<br>8.36  | .494<br>12.55 | .426<br>10.82 | .246 ± .010<br>6.25 ± 0.25 | 2.077<br>52.76 | 1-593326-9  |
| 62<br>(4)                        | 2.729<br>69.32 | 2.182<br>55.42 | 2.500<br>63.50 | .329<br>8.36  | .494<br>12.55 | .426<br>10.82 | .246 ± .010<br>6.25 ± 0.25 | 2.720<br>69.09 | 2-593326-0  |
| 78<br>(5)                        | 2.635<br>66.93 | 2.079<br>52.81 | 2.406<br>61.11 | .441<br>11.20 | .605<br>15.37 | .426<br>10.82 | .246 ± .010<br>6.25 ± 0.25 | 2.626<br>66.70 | 2-593326-1  |
| 104<br>(6)                       | 2.729<br>69.32 | 2.213<br>56.21 | 2.500<br>63.50 | .503<br>12.78 | .668<br>16.97 | .426<br>10.82 | .246 ± .010<br>6.25 ± 0.25 | 2.720<br>69.09 | 2-593326-2  |

#### Receptacles

| No. of Contact Pos. (Shell Size) | Dimensions     |                |                |               |               |               |                            |                | Part Number |
|----------------------------------|----------------|----------------|----------------|---------------|---------------|---------------|----------------------------|----------------|-------------|
|                                  | A              | B              | C              | D             | E             | F             | G                          | J              |             |
| 15<br>(1)                        | 1.213<br>30.81 | .643<br>16.33  | .984<br>24.99  | .311<br>7.90  | .494<br>12.55 | .422<br>10.72 | .248 ± .010<br>6.30 ± 0.25 | 1.204<br>30.58 | 1-593327-7  |
| 26<br>(2)                        | 1.541<br>39.14 | .971<br>24.66  | 1.312<br>33.32 | .311<br>7.90  | .494<br>12.55 | .422<br>10.72 | .248 ± .010<br>6.30 ± 0.25 | 1.532<br>38.91 | 1-593327-8  |
| 44<br>(3)                        | 2.088<br>53.04 | 1.511<br>38.38 | 1.852<br>47.04 | .311<br>7.90  | .494<br>12.55 | .426<br>10.82 | .248 ± .010<br>6.30 ± 0.25 | 2.077<br>52.76 | 1-593327-9  |
| 62<br>(4)                        | 2.729<br>69.32 | 2.159<br>54.84 | 2.500<br>63.50 | .311<br>7.90  | .494<br>12.55 | .426<br>10.82 | .248 ± .010<br>6.30 ± 0.25 | 2.720<br>69.09 | 2-593327-0  |
| 78<br>(5)                        | 2.635<br>66.93 | 2.064<br>52.43 | 2.406<br>61.11 | .423<br>10.74 | .605<br>15.37 | .426<br>10.82 | .248 ± .010<br>6.30 ± 0.25 | 2.626<br>66.70 | 2-593327-1  |
| 104<br>(6)                       | 2.729<br>69.32 | 2.188<br>55.58 | 2.500<br>63.50 | .485<br>12.32 | .668<br>16.97 | .426<br>10.82 | .248 ± .010<br>6.30 ± 0.25 | 2.726<br>69.24 | 2-593327-2  |

## AMPLIMITE Connectors, Series 90 (Continued)

### Connector Savers, Series 90, High Density Connectors

Connector savers prolong the life of permanently installed connectors which would otherwise be subjected to repeated cycles of mating and unmating, in applications such as test interfaces or on testing devices.

#### Material and Finish Standard

**Shell** — Steel, cadmium plated

**Contact Body** — Beryllium copper, .000050 [0.00127] min. gold plate over .000050 [0.00127] min. nickel underplate

**Socket Hood** — Passivated stainless steel

**Insert** — Polyphenylene Sulfide (PPS)

**Spacer** — Black nylon

#### Non Magnetic

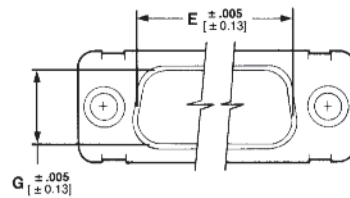
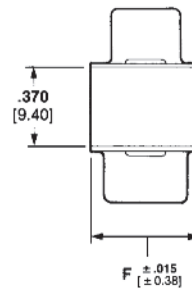
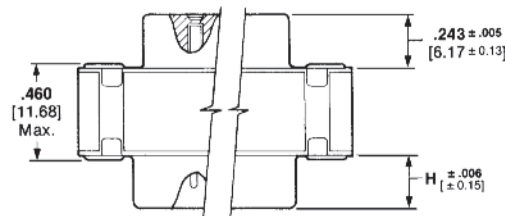
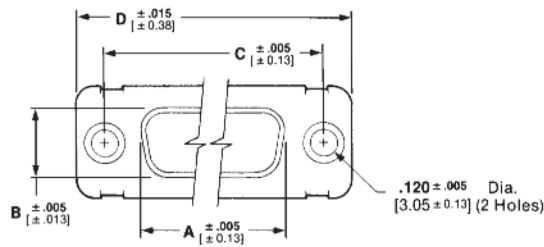
**Shell** — Brass, gold plated

**Contact Body** — Beryllium copper, .000050 [0.00127] min. gold plate over .000050 [0.00127] min. copper underplate

**Socket Hood** — Brass, .000050 [0.00127] min. gold plate over .000100 [0.00254] min. copper underplate

**Insert** — Polyphenylene Sulfide (PPS)

**Spacer** — Black nylon



| Dimensions     |                |                |                |                |               |               |              |
|----------------|----------------|----------------|----------------|----------------|---------------|---------------|--------------|
| A<br>(Outside) | B<br>(Outside) | C              | D              | E<br>(Inside)  | F             | G<br>(Inside) | H            |
| .643<br>16.33  | .311<br>7.9    | .984<br>24.99  | 1.213<br>30.81 | .666<br>16.92  | .494<br>12.55 | .329<br>8.36  | .235<br>5.97 |
| .971<br>24.66  | .311<br>7.9    | 1.312<br>33.32 | 1.541<br>39.14 | .994<br>25.25  | .494<br>12.55 | .329<br>8.36  | .235<br>5.97 |
| 1.511<br>38.38 | .311<br>7.9    | 1.852<br>47.04 | 2.088<br>53.04 | 1.534<br>38.96 | .494<br>12.55 | .329<br>8.36  | .230<br>5.84 |
| 2.159<br>54.84 | .311<br>7.9    | 2.500<br>63.5  | 2.729<br>69.32 | 2.182<br>55.42 | .494<br>12.55 | .329<br>8.36  | .230<br>5.84 |
| 2.064<br>52.43 | .423<br>10.74  | 2.406<br>61.11 | 2.635<br>66.93 | 2.079<br>52.81 | .605<br>15.37 | .441<br>11.20 | .230<br>5.84 |
| 2.189<br>55.60 | .485<br>12.32  | 2.500<br>63.5  | 2.729<br>69.32 | 2.212<br>56.18 | .668<br>16.97 | .503<br>12.78 | .230<br>5.84 |

| No. of<br>Contact<br>Pos.<br>(Shell Size) | Standard<br>(Cadmium<br>Over Steel) | Non-Magnetic<br>(Gold Over<br>Brass) |
|-------------------------------------------|-------------------------------------|--------------------------------------|
| 15<br>(1)                                 | 211010-1                            | 211010-4                             |
| 26<br>(2)                                 | 211011-1                            | 211011-4                             |
| 44<br>(3)                                 | 211012-1                            | 211012-4                             |
| 62<br>(4)                                 | 211013-1                            | 211013-4                             |
| 78<br>(5)                                 | 211014-1                            | 211014-4                             |
| 104<br>(6)                                | 211015-1                            | 211015-4                             |

## AMPLIMITE Connectors, Series 90 Cross Reference

### Material and Finish

**Shell** — Steel, tin plated per ASTM-B-545, .000400–.000550 [0.01016–0.01397] thick.

**Insert** — Approved material per MIL-DTL-24308.

**Retention Clips** — Stainless steel or copper alloy.

### Related Product Data

**Series 90 Connectors** — pages 8-72 to 8-75

### Attention: Connector Marking

Connector marking may differ from package marking.

**Note:** Meets 48 hr. salt spray requirements of MIL-DTL-24308.

### Series 90 Connectors

| No. of Contact Pos.<br>(Shell Size) | Part Number | Description                      | Dimensions                  |
|-------------------------------------|-------------|----------------------------------|-----------------------------|
| 15<br>(1)                           | 204501-6    | Plug Only                        | Refer to pages 6-69 to 6-72 |
|                                     | 204501-5    | Plug Only with Grounding Indents |                             |
|                                     | 204500-4    | Receptacle Only                  |                             |
| 26<br>(2)                           | 204503-5    | Plug Only                        | Refer to pages 6-69 to 6-72 |
|                                     | 204503-4    | Plug Only with Grounding Indents |                             |
|                                     | 204502-4    | Receptacle Only                  |                             |
| 44<br>(3)                           | 204505-6    | Plug Only                        | Refer to pages 6-69 to 6-72 |
|                                     | 204505-5    | Plug Only with Grounding Indents |                             |
|                                     | 204504-5    | Receptacle Only                  |                             |
| 62<br>(4)                           | 204507-6    | Plug Only                        | Refer to pages 6-69 to 6-72 |
|                                     | 204507-5    | Plug Only with Grounding Indents |                             |
|                                     | 204506-6    | Receptacle Only                  |                             |
| 78<br>(5)                           | 204509-7    | Plug Only                        | Refer to pages 6-69 to 6-72 |
|                                     | 204509-8    | Plug Only with Grounding Indents |                             |
|                                     | 204508-5    | Receptacle Only                  |                             |
| 104<br>(6)                          | —           | Plug Only                        | Refer to pages 6-69 to 6-72 |
|                                     | —           | Plug Only with Grounding Indents |                             |
|                                     | —           | Receptacle Only                  |                             |



## AMPLIMITE Connectors, ULTRA-LITE Connectors

### Product Facts

- One-piece aluminum shells for light-weight and enhanced EMI performance
- Connectors are typically 15–20% lighter than brass counterparts
- Interates/interchanges with existing designs
- Enhanced EMI performance over brass shells by 10–20 dB
- Series 109 Plugs & Receptacles in shell size 1 through 5 (9–50 positions)
- Series 90 Plugs & Receptacles in shell size 1 through 6 (15–104 positions)
- Can be provided with or without grommet
- Plug shells include grounding indents
- Designed to meet NASA 311P
- Designed to meet MIL-DTL-24308D specification
- DSCC Drawings 99012 through 99015



### Material and Finish

**Housing Material** — Polyphenylene Sulfide (PPS)

**Shell Finish** — .000050 [0.00127] min. gold plate over .00100–.00125 [0.0254–0.0318] nickel underplate

**Shell Material** — Aluminum alloy

**Temperature Range** — –67°F to 257°F [–55°C to 125°C]

**Voltage Rating** — 300 V

**Current Rating** — Contact current rating per MIL-C-39029

Size 20 — 7.5 amps in free air  
Size 22 — 5.0 amps in free air (refer to MIL Spec. for cable specifications)

**Low Level Termination**

**Resistance** — 11 Ohm max. 109 Series, 17 milliohms only for 90 Series per MIL-C-39029

### Performance Characteristics

**Dielectric Withstanding Voltage** — 1000 VAC between adjacent pos.

**Insulation Resistance** — Min. 1000 milliohm between adjacent pos.

**Voltage Rating** — 300 V

**Durability** — Up to 500 matings/cycle

**Vibration** — 3.13 G's RMS between 5–500 Hz 15 minutes per plane

**Physical Shock** — 18 drops, half-sine 30 G's at 11 millisecond

**Temperature Range** — –67°F to 257°F [–55°C to 125°C]

**Thermal Shock** — –67°F to 257°F [–55°C to 125°C]

**Temperature-Humidity** — 77°F to 149°F [+25°C to +65°C] at 95% relative humidity

**Corrosion** — Mixed flowing gas, class II

**Product Specifications** — 108-1834 (Design objectives)

### Weight Comparisons for the AMPLIMITE Connector Series 90 (1) PC AL vs the (2) PC Brass NASA Grade Connector Assemblies

#### Receptacles

| Shell Size | Connector Position | Aluminum Shell Assy. Without Grommet | Brass Shell Assy. Without Grommet | Brass to Aluminum % Difference Without Grommet |
|------------|--------------------|--------------------------------------|-----------------------------------|------------------------------------------------|
| 1          | 15                 | 4                                    | 5.2                               | 23.1%                                          |
| 2          | 26                 | 6.2                                  | 7.5                               | 17.3%                                          |
| 3          | 44                 | 9                                    | 10.9                              | 17.4%                                          |
| 4          | 62                 | 12.4                                 | 15.3                              | 19.0%                                          |
| 5          | 78                 | 15.3                                 | 17.9                              | 14.5%                                          |
| 6          | 104                | 17.2                                 | 20                                | 14.0%                                          |

**Note:** All weight values are in grams.

#### Plugs

| Shell Size | Connector Position | Aluminum Shell Assy. Without Grommet | Brass Shell Assy. Without Grommet | Brass to Aluminum % Difference Without Grommet |
|------------|--------------------|--------------------------------------|-----------------------------------|------------------------------------------------|
| 1          | 15                 | 3.6                                  | 4.6                               | 21.7%                                          |
| 2          | 26                 | 5.3                                  | 6.2                               | 14.5%                                          |
| 3          | 44                 | 7.8                                  | 10.3                              | 24.3%                                          |
| 4          | 62                 | 10.9                                 | 14.1                              | 22.7%                                          |
| 5          | 78                 | 12.7                                 | 15.9                              | 20.1%                                          |
| 6          | 104                | 14.3                                 | 17.5                              | 18.3%                                          |

**Note:** All weight values are in grams.

## AMPLIMITE Connectors, ULTRA-LITE Connectors (Continued)

### ULTRA-LITE Connector Plugs and Receptacles, Series 109

#### Connector Material and Finish

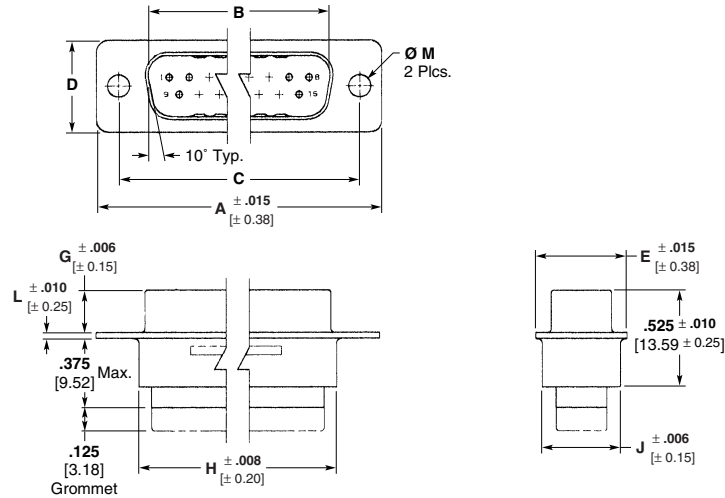
**Shell** — Aluminum alloy, gold plated per MIL-G-45204 over nickel per MIL-C-26074.

**Insert** — Blue diallyl phthalate per MIL-M-14 or black Polyphenylene Sulfide (PPS) per MIL-M-24519 or blue thermoplastic per MIL-M-24519

**Retention Clips** — Beryllium copper

**Grommet** — Silicon rubber per ZZ-R-765, color: red

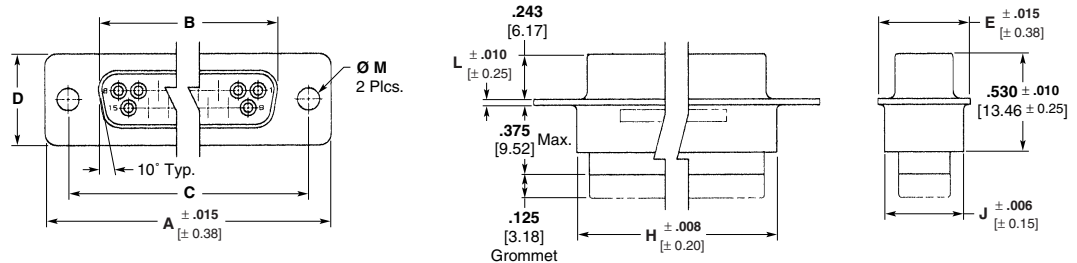
**Contacts** — Uses size 20 crimp or posted contacts, ref. pages 8-40 to 8-42.



#### Plugs

| No. of Contact Pos. (Shell Size) | Dimensions     |                |                |               |               |              |                |               |              | NASA <sup>1</sup> Part Number for reference only | AMP RoHS Part Number      |                 |
|----------------------------------|----------------|----------------|----------------|---------------|---------------|--------------|----------------|---------------|--------------|--------------------------------------------------|---------------------------|-----------------|
|                                  | A              | B              | C              | D             | E             | G            | H              | J             | L            |                                                  | M = .120 [3.05]           | M = .154 [3.91] |
| 9 (1)                            | 1.213<br>30.81 | .666<br>16.92  | .984<br>24.99  | .329<br>8.36  | .494<br>12.55 | .235<br>5.97 | .770<br>19.56  | .438<br>11.13 | .030<br>0.76 | 311P409-1P-B-15                                  | 1218234-1<br>1218234-6*   | 1883005-1       |
| 15 (2)                           | 1.541<br>39.14 | .994<br>25.25  | 1.312<br>33.32 | .329<br>8.36  | .494<br>12.55 | .235<br>5.97 | 1.094<br>27.79 | .438<br>11.13 | .030<br>0.76 | 311P409-2P-B-15                                  | 1218234-2<br>1218234-7*   | 1883005-2       |
| 25 (3)                           | 2.088<br>53.04 | 1.534<br>38.96 | 1.852<br>47.04 | .329<br>8.36  | .494<br>12.55 | .230<br>5.84 | 1.636<br>41.55 | .438<br>11.13 | .039<br>0.99 | 311P409-3P-B-15                                  | 1218234-3<br>1218234-8*   | 1883005-3       |
| 37 (4)                           | 2.729<br>69.32 | 2.182<br>55.42 | 2.500<br>63.50 | .329<br>8.36  | .494<br>12.55 | .230<br>5.84 | 2.284<br>58.01 | .438<br>11.13 | .039<br>0.99 | 311P409-4P-B-15                                  | 1218234-4<br>1218234-9*   | 1883005-4       |
| 50 (5)                           | 2.635<br>66.93 | 2.079<br>52.81 | 2.406<br>61.11 | .441<br>11.20 | .605<br>15.38 | .230<br>5.84 | 2.189<br>55.60 | .550<br>13.97 | .039<br>0.99 | 311P409-5P-B-15                                  | 1218234-5<br>1-1218234-0* | 1883005-5       |

\*Rubber Grommet



#### Receptacles

| No. of Contact Pos. (Shell Size) | Dimensions     |                |                |               |               |                |               |              |  | NASA <sup>1</sup> Part Number for reference only | AMP RoHS Part Number      |                 |
|----------------------------------|----------------|----------------|----------------|---------------|---------------|----------------|---------------|--------------|--|--------------------------------------------------|---------------------------|-----------------|
|                                  | A              | B              | C              | D             | E             | H              | J             | L            |  |                                                  | M = .120 [3.05]           | M = .154 [3.91] |
| 9 (1)                            | 1.213<br>30.81 | .643<br>16.33  | .984<br>24.99  | .311<br>7.90  | .494<br>12.55 | .770<br>19.56  | .438<br>11.13 | .030<br>0.76 |  | 311P409-1S-B-15                                  | 1218235-1<br>1218235-6*   | 1883006-1       |
| 15 (2)                           | 1.541<br>39.14 | .971<br>24.66  | 1.312<br>33.32 | .311<br>7.90  | .494<br>12.55 | 1.094<br>27.79 | .438<br>11.13 | .030<br>0.76 |  | 311P409-2S-B-15                                  | 1218235-2<br>1218235-7*   | 1883006-2       |
| 25 (3)                           | 2.088<br>53.04 | 1.511<br>38.38 | 1.852<br>47.04 | .311<br>7.90  | .494<br>12.55 | 1.636<br>41.55 | .438<br>11.13 | .039<br>0.99 |  | 311P409-3S-B-15                                  | 1218235-3<br>1218235-8*   | 1883006-3       |
| 37 (4)                           | 2.729<br>69.32 | 2.159<br>54.84 | 2.500<br>63.50 | .311<br>7.90  | .494<br>12.55 | 2.284<br>58.01 | .438<br>11.13 | .039<br>0.99 |  | 311P409-4S-B-15                                  | 1218235-4<br>1218235-9*   | 1883006-4       |
| 50 (5)                           | 2.635<br>66.93 | 2.064<br>52.43 | 2.406<br>61.11 | .423<br>10.74 | .605<br>15.38 | 2.189<br>55.60 | .550<br>13.97 | .039<br>0.99 |  | 311P409-5S-B-15                                  | 1218235-5<br>1-1218235-0* | 1883006-5       |

\*Rubber Grommet

<sup>1</sup>Tyco Electronic part numbers are not NASA qualified parts but can replace referenced NASA part numbers.

## AMPLIMITE Connectors, ULTRA-LITE Connectors (Continued)

### ULTRA-LITE Connector Plugs and Receptacles, Series 90

#### Connector Material and Finish

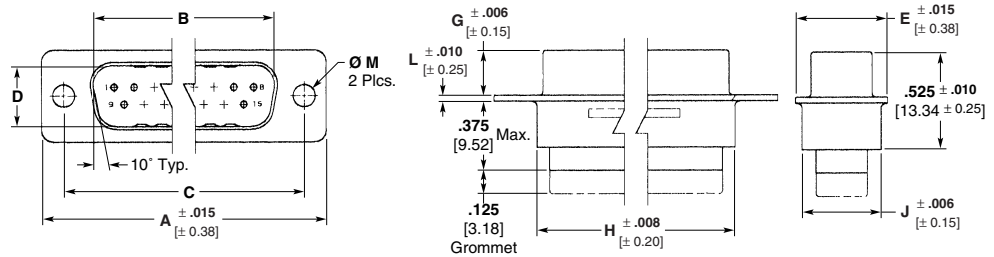
**Shell** — Aluminum alloy, gold plated per MIL-G-45204 over nickel per MIL-C-26074.

**Insert** — Blue diallyl phthalate per MIL-M-14 or black Polyphenylene Sulfide (PPS) per MIL-M-24519 or blue thermoplastic per MIL-M-24519

**Retention Clips** — Beryllium copper

**Grommet** — Silicon rubber per ZZ-R-765, color: red

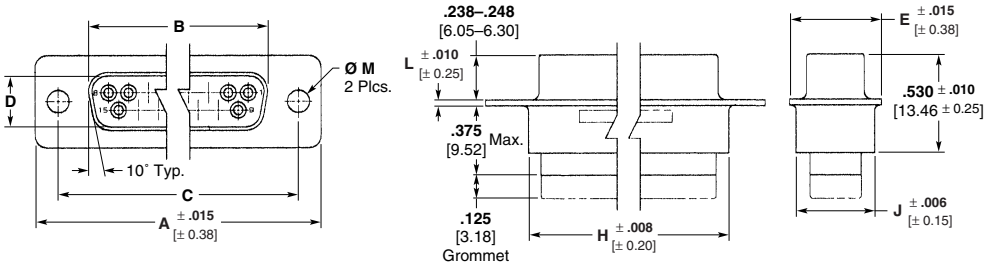
**Contacts** — Uses size 22 crimp and posted contacts, ref. pages 8-70 and 8-71.



#### Plugs

| No. of Contact Pos. (Shell Size) | Dimensions     |                |                |               |               |              |                |               |              | NASA <sup>1</sup> Part Number for reference only | AMP RoHS Part Number      |                 |
|----------------------------------|----------------|----------------|----------------|---------------|---------------|--------------|----------------|---------------|--------------|--------------------------------------------------|---------------------------|-----------------|
|                                  | A              | B              | C              | D             | E             | G            | H              | J             | L            |                                                  | M = .120 [3.05]           | M = .154 [3.91] |
| 15 (1)                           | 1.213<br>30.81 | .666<br>16.92  | .984<br>24.99  | .329<br>8.36  | .494<br>12.55 | .235<br>5.97 | .770<br>19.56  | .438<br>11.13 | .030<br>0.76 | 311P407-1P-B-15                                  | 1218232-1<br>1218232-7*   | 1883007-1       |
| 26 (2)                           | 1.541<br>39.14 | .994<br>25.25  | 1.312<br>33.32 | .329<br>8.36  | .494<br>12.55 | .235<br>5.97 | 1.094<br>27.79 | .438<br>11.13 | .030<br>0.76 | 311P407-2P-B-15                                  | 1218232-2<br>1218232-8*   | 1883007-2       |
| 44 (3)                           | 2.088<br>53.04 | 1.534<br>38.96 | 1.852<br>47.04 | .329<br>8.36  | .494<br>12.55 | .230<br>5.84 | 1.636<br>41.55 | .438<br>11.13 | .039<br>0.99 | 311P407-3P-B-15                                  | 1218232-3<br>1218232-9*   | 1883007-3       |
| 62 (4)                           | 2.729<br>69.32 | 2.182<br>55.42 | 2.500<br>63.50 | .329<br>8.36  | .494<br>12.55 | .230<br>5.84 | 2.284<br>58.01 | .438<br>11.13 | .039<br>0.99 | 311P407-4P-B-15                                  | 1218232-4<br>1-1218232-0* | 1883007-4       |
| 78 (5)                           | 2.635<br>66.93 | 2.079<br>52.81 | 2.406<br>61.11 | .441<br>11.20 | .605<br>15.38 | .230<br>5.84 | 2.189<br>55.60 | .550<br>13.97 | .039<br>0.99 | 311P407-5P-B-15                                  | 1218232-5<br>1-1218232-1* | 1883007-5       |
| 104 (6)                          | 2.729<br>69.32 | 2.212<br>56.18 | 2.500<br>63.50 | .503<br>12.78 | .668<br>16.97 | .230<br>5.84 | 2.313<br>58.75 | .608<br>15.44 | .039<br>0.99 | 311P407-6P-B-15                                  | 1218232-6<br>1-1218232-2* | 1883007-6       |

\*Rubber Grommet



#### Receptacles

| No. of Contact Pos. (Shell Size) | Dimensions     |                |                |               |               |                |               |              | NASA <sup>1</sup> Part Number for reference only | AMP RoHS Part Number      |                 |
|----------------------------------|----------------|----------------|----------------|---------------|---------------|----------------|---------------|--------------|--------------------------------------------------|---------------------------|-----------------|
|                                  | A              | B              | C              | D             | E             | H              | J             | L            |                                                  | M = .120 [3.05]           | M = .154 [3.91] |
| 15<br>(1)                        | 1.213<br>30.81 | .644<br>16.36  | .984<br>24.99  | .311<br>7.90  | .494<br>12.55 | .770<br>19.56  | .438<br>11.13 | .030<br>0.76 | 311P407-1S-B-15                                  | 1218233-1<br>1218233-7*   | -1              |
| 26<br>(2)                        | 1.541<br>39.14 | .972<br>24.69  | 1.312<br>33.32 | .311<br>7.90  | .494<br>12.55 | 1.094<br>27.79 | .438<br>11.13 | .030<br>0.76 | 311P407-2S-B-15                                  | 1218233-2<br>1218233-8*   | 1883008-2       |
| 44<br>(3)                        | 2.088<br>53.04 | 1.512<br>38.40 | 1.852<br>47.04 | .311<br>7.90  | .494<br>12.55 | 1.636<br>41.55 | .438<br>11.13 | .039<br>0.99 | 311P407-3S-B-15                                  | 1218233-3<br>1218233-9*   | 1883008-3       |
| 62<br>(4)                        | 2.729<br>69.32 | 2.160<br>54.86 | 2.500<br>63.50 | .311<br>7.90  | .494<br>12.55 | 2.284<br>58.01 | .438<br>11.13 | .039<br>0.99 | 311P407-4S-B-15                                  | 1218233-4<br>1-1218233-0* | 1883008-4       |
| 78<br>(5)                        | 2.635<br>66.93 | 2.065<br>52.45 | 2.406<br>61.11 | .423<br>10.74 | .605<br>15.38 | 2.189<br>55.60 | .550<br>13.97 | .039<br>0.99 | 311P407-5S-B-15                                  | 1218233-5<br>1-1218233-1* | 1883008-5       |
| 104<br>(6)                       | 2.729<br>69.32 | 2.190<br>55.63 | 2.500<br>63.50 | .485<br>12.32 | .668<br>16.97 | 2.313<br>58.75 | .608<br>15.44 | .039<br>0.99 | 311P407-6S-B-15                                  | 1218233-6<br>1-1218233-2* | 1883008-6       |

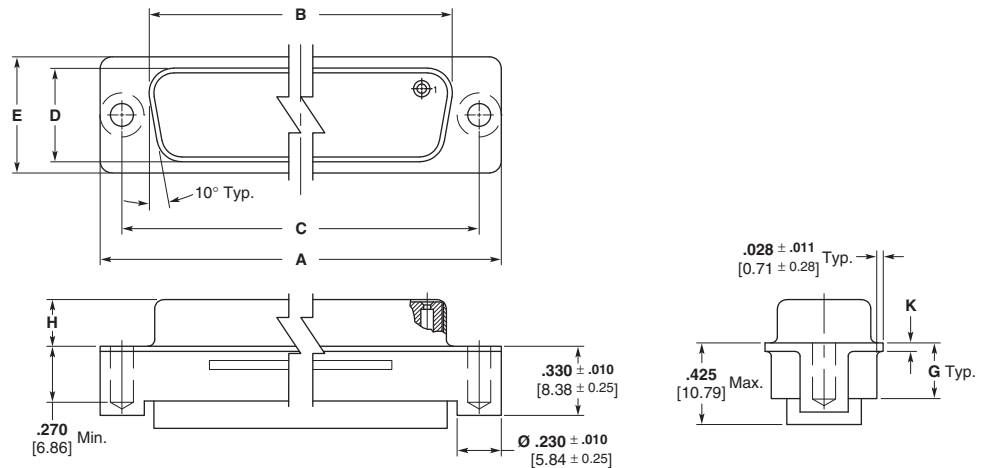
\*Rubber Grommet

<sup>1</sup>Tyco Electronic part numbers are not NASA qualified parts but can replace referenced NASA part numbers.

## AMPLIMITE Connectors, ULTRA-LITE Connectors (Continued)

### ULTRA-LITE Connector Plugs and Receptacles, Series 109, Crimp

Meets EU Directive  
2002/95/EC RoHS



### Plugs

| No. of Contact Pos.<br>(Shell Size) | Dimensions                 |                            |                            |                          |                          |                 |                        |              | NASA <sup>1</sup><br>Part Number<br>for reference only | AMP<br>Part Number |
|-------------------------------------|----------------------------|----------------------------|----------------------------|--------------------------|--------------------------|-----------------|------------------------|--------------|--------------------------------------------------------|--------------------|
|                                     | A                          | B                          | C                          | D                        | E                        | G ± .010 [0.25] | H                      | K            |                                                        |                    |
| 9<br>(1)                            | 1.208/1.218<br>30.68/30.94 | .661/.671<br>16.79/17.04   | .979/.989<br>24.87/25.12   | .324/.334<br>8.23/8.48   | .489/.499<br>12.42/12.67 | .294<br>7.47    | .229/.241<br>5.82/6.12 | .035<br>0.89 | 311P409-1P-B-440                                       | 1883053-1          |
| 15<br>(2)                           | 1.536/1.546<br>39.01/39.27 | .989/.999<br>25.12/25.37   | 1.307/1.317<br>33.20/33.45 | .324/.334<br>8.23/8.48   | .489/.499<br>12.42/12.67 | .294<br>7.47    | .229/.241<br>5.82/6.12 | .035<br>0.89 | 311P409-2P-B-440                                       | 1883053-2          |
| 25<br>(3)                           | 2.083/2.093<br>52.91/53.16 | 1.529/1.239<br>38.84/39.09 | 1.848/1.857<br>46.91/47.17 | .324/.334<br>8.23/8.48   | .489/.499<br>12.42/12.67 | .299<br>7.59    | .224/.236<br>5.69/5.99 | .044<br>1.12 | 311P409-3P-B-440                                       | 1883053-3          |
| 37<br>(4)                           | 2.724/2.734<br>69.20/69.44 | 2.177/2.187<br>55.30/55.55 | 2.495/2.505<br>63.37/63.63 | .324/.334<br>8.23/8.48   | .489/.499<br>12.42/12.67 | .299<br>7.59    | .224/.236<br>5.69/5.99 | .044<br>1.12 | 311P409-4P-B-440                                       | 1883053-4          |
| 50<br>(5)                           | 2.630/2.640<br>66.80/67.06 | 2.074/2.084<br>52.68/52.93 | 2.401/2.411<br>60.99/61.24 | .436/.446<br>11.07/11.33 | .500/.610<br>15.24/15.49 | .299<br>7.59    | .224/.236<br>5.69/5.99 | .044<br>1.12 | 311P409-5P-B-440                                       | 1883053-5          |

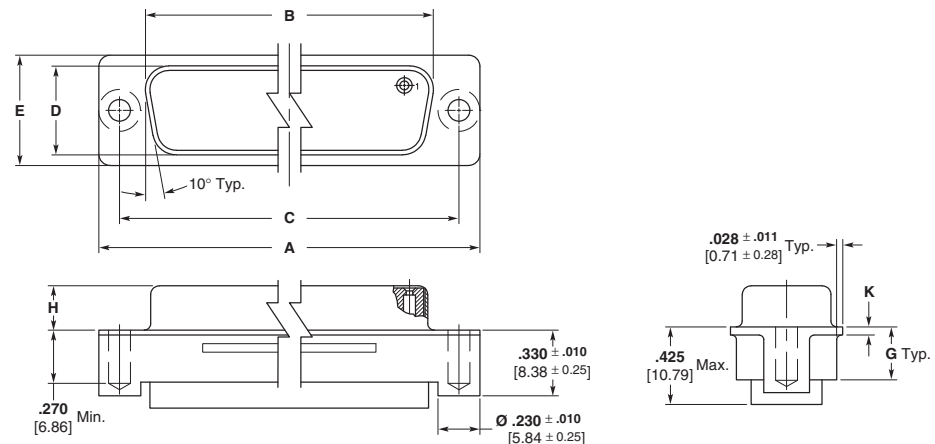
### Receptacles

| No. of Contact Pos.<br>(Shell Size) | Dimensions                 |                            |                            |                          |                          |                 |              |              | NASA <sup>1</sup><br>Part Number<br>for reference only | AMP<br>Part Number |
|-------------------------------------|----------------------------|----------------------------|----------------------------|--------------------------|--------------------------|-----------------|--------------|--------------|--------------------------------------------------------|--------------------|
|                                     | A                          | B                          | C                          | D                        | E                        | G ± .010 [0.25] | H            | K            |                                                        |                    |
| 9<br>(1)                            | 1.208/1.218<br>30.68/30.94 | .638/.648<br>16.21/16.46   | .979/.989<br>24.87/25.12   | .306/.316<br>7.77/8.03   | .489/.499<br>12.42/12.67 | .290<br>7.37    | .270<br>6.86 | .035<br>0.89 | 311P409-1S-B-440                                       | 1883054-1          |
| 15<br>(2)                           | 1.536/1.546<br>39.01/39.27 | .966/.976<br>24.54/24.79   | 1.307/1.317<br>33.20/33.45 | .306/.316<br>7.77/8.03   | .489/.499<br>12.42/12.67 | .290<br>7.37    | .270<br>6.86 | .035<br>0.89 | 311P409-2S-B-440                                       | 1883054-2          |
| 25<br>(3)                           | 2.083/2.093<br>52.91/53.16 | 1.506/1.516<br>38.25/38.51 | 1.847/1.857<br>46.91/47.17 | .306/.316<br>7.77/8.03   | .489/.499<br>12.42/12.67 | .290<br>7.37    | .270<br>6.86 | .044<br>1.12 | 311P409-3S-B-440                                       | 1883054-3          |
| 37<br>(4)                           | 2.724/2.734<br>69.20/69.44 | 2.154/2.164<br>54.71/54.97 | 2.495/2.505<br>63.37/63.63 | .306/.316<br>7.77/8.03   | .489/.499<br>12.42/12.67 | .290<br>7.37    | .270<br>6.86 | .044<br>1.12 | 311P409-4S-B-440                                       | 1883054-4          |
| 50<br>(5)                           | 2.630/2.640<br>66.80/67.06 | 2.059/2.069<br>52.30/52.55 | 2.401/2.411<br>60.99/61.24 | .418/.428<br>10.62/10.87 | .600/.610<br>15.24/15.49 | .290<br>7.37    | .270<br>6.86 | .044<br>1.12 | 311P409-5S-B-440                                       | 1883054-5          |

<sup>1</sup>Tyco Electronic part numbers are not NASA qualified parts but can replace referenced NASA part numbers.

**AMPLIMITE Connectors, ULTRA-LITE Connectors** (Continued)

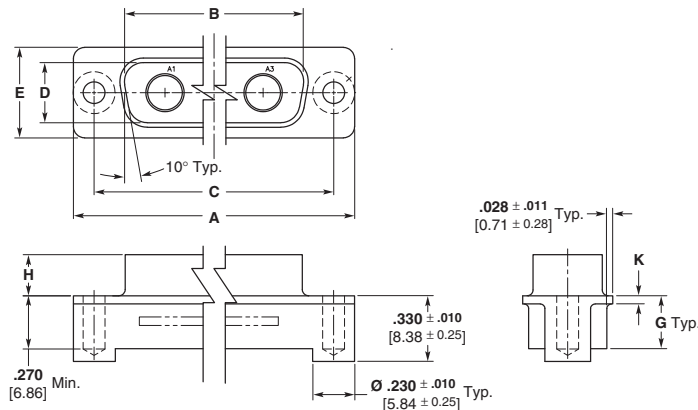
**ULTRA-LITE Connector  
Plugs and Receptacles,  
Series 109, Crimp** (Continued)

**Meets EU Directive  
2002/95/EC RoHS**

**Plugs**

| No. of Contact Pos.<br>(Shell Size) | Dimensions                 |                            |                            |                          |                          |                 |                        |              |  | NASA <sup>1</sup><br>Part Number<br>for reference only | AMP<br>Part Number |
|-------------------------------------|----------------------------|----------------------------|----------------------------|--------------------------|--------------------------|-----------------|------------------------|--------------|--|--------------------------------------------------------|--------------------|
|                                     | A                          | B                          | C                          | D                        | E                        | G ± .010 [0.25] | H                      | K            |  |                                                        |                    |
| 15<br>(1)                           | 1.208/1.218<br>30.68/30.94 | .661/.671<br>16.79/17.04   | .979/.989<br>24.87/25.12   | .324/.334<br>8.23/8.48   | .489/.499<br>12.42/12.67 | .294<br>7.47    | .229/.241<br>5.82/6.12 | .035<br>0.89 |  | 311P407-1P-B-440                                       | 1883055-1          |
| 26<br>(2)                           | 1.536/1.546<br>39.01/39.27 | .989/.999<br>25.12/25.37   | 1.307/1.317<br>33.20/33.45 | .324/.334<br>8.23/8.48   | .489/.499<br>12.42/12.67 | .294<br>7.47    | .229/.241<br>5.82/6.12 | .035<br>0.89 |  | 311P407-2P-B-440                                       | 1883055-2          |
| 44<br>(3)                           | 2.083/2.093<br>52.91/53.16 | 1.529/1.539<br>38.84/39.09 | 1.847/1.857<br>46.91/47.17 | .324/.334<br>8.23/8.48   | .489/.499<br>12.42/12.67 | .299<br>7.59    | .224/.236<br>5.69/5.99 | .044<br>1.12 |  | 311P407-3P-B-440                                       | 1883055-3          |
| 62<br>(4)                           | 2.724/2.734<br>69.20/69.44 | 2.177/2.187<br>55.30/55.55 | 2.495/2.505<br>63.37/63.63 | .324/.334<br>8.23/8.48   | .489/.499<br>12.42/12.67 | .299<br>7.59    | .224/.236<br>5.69/5.99 | .044<br>1.12 |  | 311P407-4P-B-440                                       | 1883055-4          |
| 78<br>(5)                           | 2.630/2.640<br>66.80/67.06 | 2.074/2.084<br>52.68/52.93 | 2.401/2.411<br>60.99/61.24 | .436/.446<br>11.07/11.33 | .600/.610<br>15.24/15.49 | .299<br>7.59    | .224/.236<br>5.69/5.99 | .044<br>1.12 |  | 311P407-5P-B-440                                       | 1883055-5          |

**Receptacles**

| No. of Contact Pos.<br>(Shell Size) | Dimensions                 |                            |                            |                          |                          |                 |              |              |  | NASA <sup>1</sup><br>Part Number<br>for reference only | AMP<br>Part Number |
|-------------------------------------|----------------------------|----------------------------|----------------------------|--------------------------|--------------------------|-----------------|--------------|--------------|--|--------------------------------------------------------|--------------------|
|                                     | A                          | B                          | C                          | D                        | E                        | G ± .010 [0.25] | H            | K            |  |                                                        |                    |
| 15<br>(1)                           | 1.208/1.218<br>30.68/30.94 | .638/.648<br>16.21/16.46   | .979/.989<br>24.87/25.12   | .306/.316<br>7.77/8.03   | .489/.499<br>12.42/12.67 | .290<br>7.37    | .243<br>6.17 | .035<br>0.89 |  | 311P407-1S-B-440                                       | 1883056-1          |
| 26<br>(2)                           | 1.536/1.546<br>39.01/39.27 | .966/.976<br>24.54/24.79   | 1.307/1.317<br>33.20/33.45 | .306/.316<br>7.77/8.03   | .489/.499<br>12.42/12.67 | .290<br>7.37    | .243<br>6.17 | .035<br>0.89 |  | 311P407-2S-B-440                                       | 1883056-2          |
| 44<br>(3)                           | 2.083/2.093<br>52.91/53.16 | 1.506/1.516<br>38.25/38.51 | 1.847/1.857<br>46.91/47.17 | .306/.316<br>7.77/8.03   | .489/.499<br>12.42/12.67 | .290<br>7.37    | .243<br>6.17 | .044<br>1.12 |  | 311P407-3S-B-440                                       | 1883056-3          |
| 62<br>(4)                           | 2.724/2.734<br>69.20/69.44 | 2.154/2.164<br>54.71/54.97 | 2.495/2.505<br>63.37/63.63 | .306/.316<br>7.77/8.03   | .489/.499<br>12.42/12.67 | .290<br>7.37    | .243<br>6.17 | .044<br>1.12 |  | 311P407-4S-B-440                                       | 1883056-4          |
| 78<br>(5)                           | 2.630/2.640<br>66.80/67.06 | 2.059/2.069<br>52.30/52.55 | 2.401/2.411<br>60.99/61.24 | .418/.428<br>10.62/10.87 | .600/.610<br>15.24/15.49 | .290<br>7.37    | .243<br>6.17 | .044<br>1.12 |  | 311P407-5S-B-440                                       | 1883056-5          |

**ULTRA-LITE Connector Plugs  
and Receptacles, Coax Mix**


| Insert Arrangement<br>(Shell Size) | Dimensions                 |                            |                            |                        |                          |                 |                        |              |  | NASA<br>Part Number | AMP<br>Part Number |
|------------------------------------|----------------------------|----------------------------|----------------------------|------------------------|--------------------------|-----------------|------------------------|--------------|--|---------------------|--------------------|
|                                    | A                          | B                          | C                          | D                      | E                        | G ± .010 [0.25] | H                      | K            |  |                     |                    |
| 3C3<br>(2)                         | 1.536/1.546<br>39.01/39.27 | .989/.999<br>25.12/25.37   | 1.307/1.317<br>33.20/33.45 | .324/.334<br>8.23/8.48 | .489/.499<br>12.42/12.67 | .294<br>7.47    | .229/.241<br>5.82/6.12 | .035<br>0.89 |  | 311P405-7P-B-440    | 1883057-1          |
| 3C3<br>(2)                         | 1.536/1.546<br>39.01/39.27 | .966/.976<br>24.54/24.79   | 1.307/1.317<br>33.20/33.45 | .306/.316<br>7.77/8.03 | .489/.499<br>12.42/12.67 | .290<br>7.37    | .243<br>6.17           | .035<br>0.89 |  | 311P405-7S-B-440    | 1883058-1          |
| 5C5<br>(3)                         | 2.083/2.093<br>52.91/53.16 | 1.529/1.539<br>38.84/39.09 | 1.847/1.857<br>46.91/47.17 | .324/.334<br>8.23/8.48 | .489/.499<br>12.42/12.67 | .299<br>7.59    | .224/.236<br>5.69/5.99 | .044<br>1.12 |  | 311P405-10P-B-440   | 1883059-1          |
| 5C5<br>(3)                         | 2.083/2.093<br>52.91/53.16 | 1.506/1.516<br>38.25/38.51 | 1.847/1.857<br>46.91/47.17 | .306/.316<br>7.77/8.03 | .489/.499<br>12.42/12.67 | .290<br>7.37    | .243<br>6.17           | .044<br>1.12 |  | 311P405-10S-B-440   | 1883060-1          |

<sup>1</sup>Tyco Electronic part numbers are not NASA qualified parts but can replace referenced NASA part numbers.

**AMPLIMITE Connectors, ULTRA-LITE Connectors** (Continued)

**ULTRA-LITE AMPLIMITE  
Connector Part Numbers vs.  
NASA's 311P Part Numbers  
and DSCC Part Numbers**
**AMPLIMITE Connector  
Series 90 (High Density  
Sub "D"'s)**

| DSCC <sup>1</sup><br>Part No.<br>w/Grommet<br>for reference only | DSCC <sup>1</sup><br>Part No.<br>w/out Grommet<br>for reference only | NASA <sup>1</sup><br>Part No.<br>w/out Grommet<br>for reference only | Plug /<br>Receptacle | Shell<br>Size | Position | ULTRA-LITE Connectors     |                          |
|------------------------------------------------------------------|----------------------------------------------------------------------|----------------------------------------------------------------------|----------------------|---------------|----------|---------------------------|--------------------------|
|                                                                  |                                                                      |                                                                      |                      |               |          | Part No.<br>w/out Grommet | Part No.<br>with Grommet |
| 99012SAFPRA-1                                                    | 99012NAFPR-1                                                         | 311P407-1P-B-12                                                      | Plug                 | 1             | 15       | 1218232-1                 | 1218232-7                |
| 99012SAFPRA-2                                                    | 99012NAFPR-2                                                         | 311P407-2P-B-12                                                      | Plug                 | 2             | 26       | 1218232-2                 | 1218232-8                |
| 99012SAFPRA-3                                                    | 99012NAFPR-3                                                         | 311P407-3P-B-12                                                      | Plug                 | 3             | 44       | 1218232-3                 | 1218232-9                |
| 99012SAFPRA-4                                                    | 99012NAFPR-4                                                         | 311P407-4P-B-12                                                      | Plug                 | 4             | 62       | 1218232-4                 | 1-1218232-0              |
| 99012SAFPRA-5                                                    | 99012NAFPR-5                                                         | 311P407-5P-B-12                                                      | Plug                 | 5             | 78       | 1218232-5                 | 1-1218232-1              |
| 99012SAFPRA-6                                                    | 99012NAFPR-6                                                         | 311P407-6P-B-12                                                      | Plug                 | 6             | 104      | 1218232-6                 | 1-1218232-2              |
| 99014SAESR-1                                                     | 99014NAESR-1                                                         | 311P407-1S-B-12                                                      | Receptacle           | 1             | 15       | 1218233-1                 | 1218233-7                |
| 99014SAESR-2                                                     | 99014NAESR-2                                                         | 311P407-2S-B-12                                                      | Receptacle           | 2             | 26       | 1218233-2                 | 1218233-8                |
| 99014SAESR-3                                                     | 99014NAESR-3                                                         | 311P407-3S-B-12                                                      | Receptacle           | 3             | 44       | 1218233-3                 | 1218233-9                |
| 99014SAESR-4                                                     | 99014NAESR-4                                                         | 311P407-4S-B-12                                                      | Receptacle           | 4             | 62       | 1218233-4                 | 1-1218233-0              |
| 99014SAESR-5                                                     | 99014NAESR-5                                                         | 311P407-5S-B-12                                                      | Receptacle           | 5             | 78       | 1218233-5                 | 1-1218233-1              |
| 99014SAESR-6                                                     | 99014NAESR-6                                                         | 311P407-6S-B-12                                                      | Receptacle           | 6             | 104      | 1218233-6                 | 1-1218233-2              |

**AMPLIMITE Connector  
Series 109 (Standard  
Density Sub "D"'s)**

| DSCC <sup>1</sup><br>Part No.<br>w/Grommet<br>for reference only | DSCC <sup>1</sup><br>Part No.<br>w/out Grommet<br>for reference only | NASA <sup>1</sup><br>Part No.<br>w/out Grommet<br>for reference only | Plug /<br>Receptacle | Shell<br>Size | Position | ULTRA-LITE Connectors     |                          |
|------------------------------------------------------------------|----------------------------------------------------------------------|----------------------------------------------------------------------|----------------------|---------------|----------|---------------------------|--------------------------|
|                                                                  |                                                                      |                                                                      |                      |               |          | Part No.<br>w/out Grommet | Part No.<br>with Grommet |
| 99013SAEPR-1                                                     | 99013NAEPR-1                                                         | 311P409-1P-B-12                                                      | Plug                 | 1             | 9        | 1218234-1                 | 1218234-7                |
| 99013SAEPR-2                                                     | 99013NAEPR-2                                                         | 311P409-2P-B-12                                                      | Plug                 | 2             | 15       | 1218234-2                 | 1218234-8                |
| 99013SAEPR-3                                                     | 99013NAEPR-3                                                         | 311P409-3P-B-12                                                      | Plug                 | 3             | 25       | 1218234-3                 | 1218234-9                |
| 99013SAEPR-4                                                     | 99013NAEPR-4                                                         | 311P409-4P-B-12                                                      | Plug                 | 4             | 37       | 1218234-4                 | 1-1218234-0              |
| 99013SAEPR-5                                                     | 99013NAEPR-5                                                         | 311P409-5P-B-12                                                      | Plug                 | 5             | 50       | 1218234-5                 | 1-1218234-1              |
| 99015SAESR-1                                                     | 99015NAESR-1                                                         | 311P409-1S-B-12                                                      | Receptacle           | 1             | 9        | 1218235-1                 | 1218235-7                |
| 99015SAESR-2                                                     | 99015NAESR-2                                                         | 311P409-2S-B-12                                                      | Receptacle           | 2             | 15       | 1218235-2                 | 1218235-8                |
| 99015SAESR-3                                                     | 99015NAESR-3                                                         | 311P409-3S-B-12                                                      | Receptacle           | 3             | 25       | 1218235-3                 | 1218235-9                |
| 99015SAESR-4                                                     | 99015NAESR-4                                                         | 311P409-4S-B-12                                                      | Receptacle           | 4             | 37       | 1218235-4                 | 1-1218235-0              |
| 99015SAESR-5                                                     | 99015NAESR-5                                                         | 311P409-5S-B-12                                                      | Receptacle           | 5             | 50       | 1218235-5                 | 1-1218235-1              |

<sup>1</sup>Tyco Electronic part numbers are not DSCC or NASA qualified parts but can replace referenced NASA part numbers.



## AMPLIMITE Connectors

### Application Tools for Series 109 (Size 20) Crimp Contacts



**Pin and Socket Insertion/Extraction Tool**

AMP Part Number 91067-2 or  
MIL Part Number M81969/1-02  
Insertion tip, for replacement  
Part Number 126195-3  
Extraction tip, for replacement  
Part Number 126195-4



**AMP-TAPEMATIC Stripper/  
Crimper Machine Part Number  
599406-7**

**Funnel Part Number 125905-1 for  
Size 20 Contacts**

The AMP-TAPEMATIC Stripper/Crimper Machine strips wire and applies an 8-indent crimp termination per MIL-C-22520. The machine terminates pin and socket contacts which are tape mounted and reel fed. It offers production rates of up to 1200 finished leads per hour, provides overall lower applied costs and maintains a high degree of termination reliability.



**Hand Crimping Tool  
AMP Part Number 601966-1 or  
MIL Part Number M22520/2-01**

**Positioner**

**AMP Part Number 601966-5 or  
MIL Part Number M22520/2-08**

This standard military-type hand tool terminates pins and sockets to wire with an 8-indent, M22520/2 crimp. It is ideally suited for prototype, field maintenance and other applications where volume production is not a factor.

### Application Tools for Series 90 (Size 22) Crimp Contacts



**Pin and Socket Insertion/Extraction Tool**

AMP Part Number 91067-1 or  
MIL Part Number M81969/1-04  
Insertion tip, for replacement  
Part Number 126237-1  
Extraction tip, for replacement  
Part Number 126195-2



**AMP-TAPEMATIC Stripper/  
Crimper Machine Part Number  
599406-7**

**Funnel Part Number 125905-2 for  
Size 22 Contacts**

The AMP-TAPEMATIC Stripper/Crimper Machine strips wire and applies an 8-indent crimp termination per MIL-C-22520. The machine terminates pin and socket contacts which are tape mounted and reel fed. It offers production rates of up to 1200 finished leads per hour, provides overall lower applied costs and maintains a high degree of termination reliability.



**Hand Crimping Tool  
AMP Part Number 601966-1 or  
MIL Part Number M22520/2-01**

**Positioner (Pin)**

**AMP Part Number 601966-6 or  
MIL Part Number M22520/2-09**

**Positioner (Socket)**

**AMP Part Number 601966-4 or  
MIL Part Number M22520/2-06**

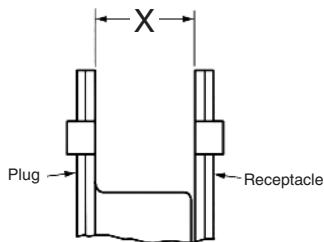
This standard military-type hand tool terminates pins and sockets to wire with an 8-indent, M22520/2 crimp. It is ideally suited for prototype, field maintenance and other applications where volume production is not a factor.



## AMPLIMITE Connectors (Continued)

### Mating and Mounting Specifications for Series 109 and Series 90 Connectors

#### Plug Receptacle Mating



Shell Sizes 1 and 2 —  
x = .280/.250 [7.11/6.35]

Shell Sizes 3, 4, 5 and 6 —  
x = .271/.241 [6.88/6.12]

Blindmate Connectors (all sizes) —  
x = .270 [6.86] max.

The X dimension is necessary for full mating of connector halves. This dimension must be taken into consideration when determining the method of mounting, panel thickness, etc.



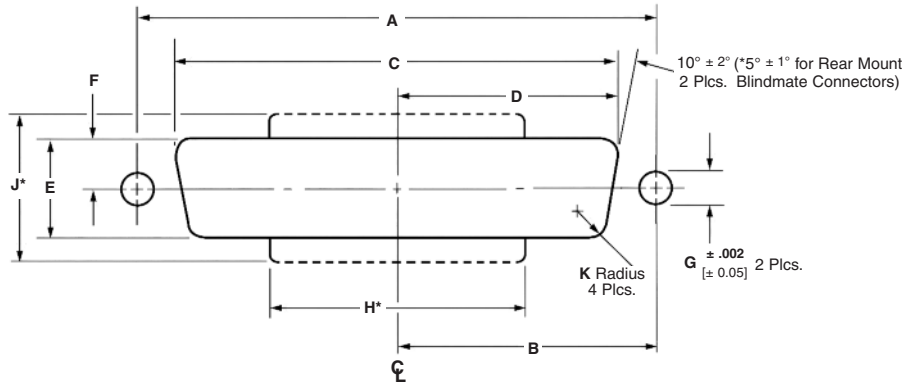
**AMPLIMITE Plug,  
Front-Panel Mounted**



**AMPLIMITE Receptacle,  
Rear-Panel Mounted**

#### Attention: Front-Panel Mount

When front mounting a MIL-DTL-24308 connector utilizing the tab method of securing shell halves, it is recommended to utilize a .032 [0.81] thick washer (not supplied) to prevent deformation of connector flange.



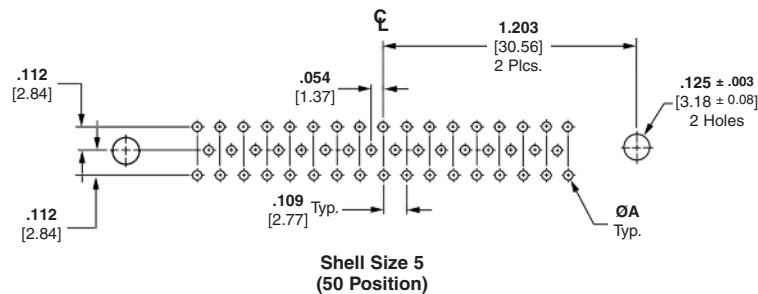
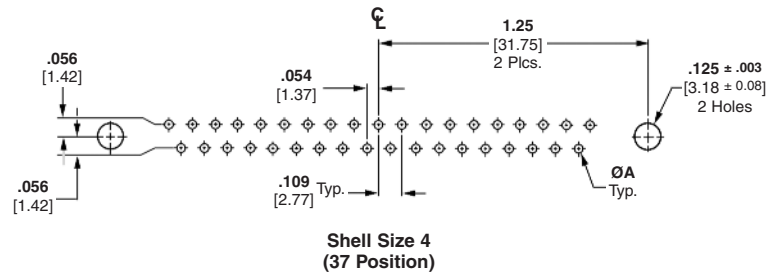
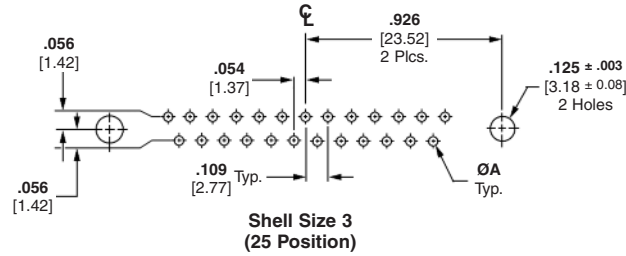
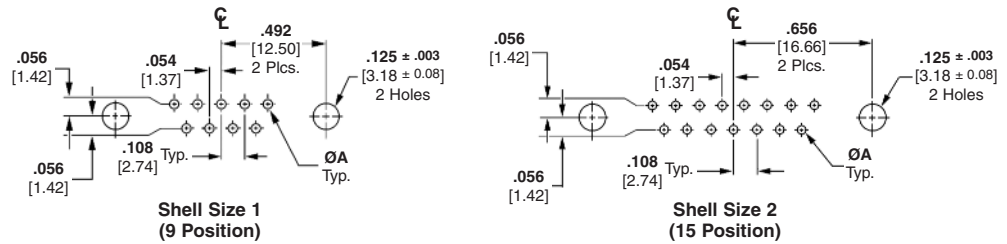
**Panel Cutout**

| Shell Size<br>(No. of Contact Pos.) |                         | Mounting Method     |                                  | Dimensions |       |       |       |       |      |      |       |       |      |  |
|-------------------------------------|-------------------------|---------------------|----------------------------------|------------|-------|-------|-------|-------|------|------|-------|-------|------|--|
| Series 109<br>Connectors            | Series 90<br>Connectors | Front/Rear<br>Panel | With/Without<br>Flouting Bushing | A          | B     | C     | D     | E     | F    | G    | H*    | J*    | K    |  |
| 1<br>(9 Pos.)                       | 1<br>(15 Pos.)          | Front               | With                             |            |       | .906  | .453  | .545  | .273 | .088 | —     | —     | .083 |  |
|                                     |                         |                     | Without                          | .984       | .492  | 23.01 | 11.51 | 13.84 | 6.93 | 2.24 | —     | —     | 2.11 |  |
|                                     |                         | Rear                | With                             |            |       | .874  | .437  | .513  | .257 | .120 | —     | —     |      |  |
|                                     |                         |                     | Without                          | 24.99      | 12.5  | 22.2  | 11.1  | 13.03 | 6.53 | 3.05 | —     | —     |      |  |
| 2<br>(15 Pos.)                      | 2<br>(26 Pos.)          | Front               | With                             |            |       | .838  | .419  | .481  | .241 | .088 | .332  | .662  | .132 |  |
|                                     |                         |                     | Without                          |            |       | 21.29 | 10.64 | 12.22 | 6.12 | 2.24 | 8.43  | 16.81 | 3.35 |  |
|                                     |                         | Rear                | With                             |            |       | .806  | .403  | .449  | .225 | .120 | .300  | .630  |      |  |
|                                     |                         |                     | Without                          |            |       | 20.47 | 10.24 | 11.4  | 5.72 | 3.05 | 7.62  | 16    |      |  |
| 3<br>(25 Pos.)                      | 3<br>(44 Pos.)          | Front               | With                             |            |       | 1.234 | .617  | .545  | .273 | .088 | —     | —     | .083 |  |
|                                     |                         |                     | Without                          | 1.312      | .656  | 31.34 | 15.67 | 13.84 | 6.93 | 2.24 | —     | —     | 2.11 |  |
|                                     |                         | Rear                | With                             |            |       | 1.202 | .601  | .513  | .257 | .120 | —     | —     |      |  |
|                                     |                         |                     | Without                          | 33.32      | 16.66 | 30.53 | 15.27 | 13.03 | 6.53 | 3.05 | —     | —     |      |  |
| 4<br>(37 Pos.)                      | 4<br>(62 Pos.)          | Front               | With                             |            |       | 1.166 | .583  | .481  | .241 | .088 | .665  | .662  | .132 |  |
|                                     |                         |                     | Without                          |            |       | 29.62 | 14.81 | 12.22 | 6.12 | 2.24 | 6.64  | 16.81 | 3.35 |  |
|                                     |                         | Rear                | With                             |            |       | 1.134 | .567  | .449  | .225 | .120 | .623  | .630  |      |  |
|                                     |                         |                     | Without                          |            |       | 28.8  | 14.4  | 11.4  | 5.72 | 3.05 | 15.82 | 16    |      |  |
| 5<br>(50 Pos.)                      | 5<br>(78 Pos.)          | Front               | With                             |            |       | 1.775 | .888  | .545  | .273 | .088 | —     | —     | .083 |  |
|                                     |                         |                     | Without                          | 1.852      | .926  | 45.09 | 22.55 | 13.84 | 6.93 | 2.24 | —     | —     | 2.11 |  |
|                                     |                         | Rear                | With                             |            |       | 1.743 | .872  | .513  | .257 | .120 | —     | —     |      |  |
|                                     |                         |                     | Without                          | 47.04      | 23.52 | 44.27 | 22.15 | 13.03 | 6.53 | 3.05 | —     | —     |      |  |
| 6<br>(104 Pos.)                     | 6<br>(104 Pos.)         | Front               | With                             |            |       | 1.706 | .853  | .481  | .241 | .088 | 1.197 | .662  | .132 |  |
|                                     |                         |                     | Without                          |            |       | 43.33 | 21.67 | 12.22 | 6.12 | 2.24 | 30.4  | 16.81 | 3.35 |  |
|                                     |                         | Rear                | With                             |            |       | 1.674 | .837  | .449  | .225 | .120 | 1.165 | .630  |      |  |
|                                     |                         |                     | Without                          |            |       | 42.52 | 21.26 | 11.4  | 5.72 | 3.05 | 29.59 | 16    |      |  |
| 7<br>(125 Pos.)                     | 7<br>(125 Pos.)         | Front               | With                             |            |       | 2.423 | 1.212 | .545  | .273 | .088 | —     | —     | .083 |  |
|                                     |                         |                     | Without                          | 2.500      | 1.250 | 61.17 | 30.78 | 13.84 | 6.93 | 2.24 | —     | —     | 2.11 |  |
|                                     |                         | Rear                | With                             |            |       | 2.391 | 1.196 | .513  | .257 | .120 | —     | —     |      |  |
|                                     |                         |                     | Without                          | 63.5       | 31.75 | 60.73 | 30.38 | 13.03 | 6.53 | 3.05 | —     | —     |      |  |
| 8<br>(150 Pos.)                     | 8<br>(150 Pos.)         | Front               | With                             |            |       | 2.354 | 1.777 | .481  | .241 | .088 | 1.845 | .662  | .132 |  |
|                                     |                         |                     | Without                          |            |       | 59.79 | 29.9  | 12.22 | 6.12 | 2.24 | 46.86 | 16.81 | 3.35 |  |
|                                     |                         | Rear                | With                             |            |       | 2.326 | 1.163 | .449  | .225 | .120 | 1.813 | .630  |      |  |
|                                     |                         |                     | Without                          |            |       | 59.08 | 29.54 | 11.4  | 5.72 | 3.05 | 46.05 | 16    |      |  |
| 9<br>(175 Pos.)                     | 9<br>(175 Pos.)         | Front               | With                             |            |       | 2.329 | 1.165 | .655  | .328 | .088 | —     | —     | .083 |  |
|                                     |                         |                     | Without                          | 2.406      | 1.203 | 59.16 | 29.59 | 16.64 | 8.33 | 2.24 | —     | —     | 2.11 |  |
|                                     |                         | Rear                | With                             |            |       | 2.297 | 1.149 | .623  | .312 | .120 | —     | —     |      |  |
|                                     |                         |                     | Without                          | 61.11      | 30.56 | 58.34 | 29.18 | 15.82 | 7.92 | 3.05 | —     | —     |      |  |
| 10<br>(200 Pos.)                    | 10<br>(200 Pos.)        | Front               | With                             |            |       | 2.250 | 1.125 | .587  | .294 | .088 | 1.740 | .772  | .132 |  |
|                                     |                         |                     | Without                          |            |       | 57.15 | 28.58 | 14.91 | 7.47 | 2.24 | 44.2  | 19.61 | 3.35 |  |
|                                     |                         | Rear                | With                             |            |       | 2.218 | 1.109 | .555  | .278 | .120 | 1.708 | .740  |      |  |
|                                     |                         |                     | Without                          |            |       | 56.34 | 28.17 | 14.1  | 7.06 | 3.05 | 43.38 | 18.8  |      |  |
| 11<br>(225 Pos.)                    | 11<br>(225 Pos.)        | Front               | With                             |            |       | 2.453 | 1.227 | .717  | .359 | .088 | —     | —     | .083 |  |
|                                     |                         |                     | Without                          | 2.500      | 1.250 | 62.31 | 31.17 | 18.21 | 9.12 | 2.24 | —     | —     | 2.11 |  |
|                                     |                         | Rear                | With                             |            |       | 2.421 | 1.211 | .685  | .343 | .120 | —     | —     |      |  |
|                                     |                         |                     | Without                          | 63.5       | 31.75 | 61.49 | 30.76 | 17.4  | 8.71 | 3.05 | —     | —     |      |  |
| 12<br>(250 Pos.)                    | 12<br>(250 Pos.)        | Front               | With                             |            |       | 2.388 | 1.194 | .654  | .327 | .088 | 1.875 | .835  | .132 |  |
|                                     |                         |                     | Without                          |            |       | 60.66 | 30.33 | 16.61 | 8.31 | 2.24 | 47.64 | 21.21 | 3.35 |  |
|                                     |                         | Rear                | With                             |            |       | 2.356 | 1.179 | .622  | .311 | .120 | 1.843 | .803  |      |  |
|                                     |                         |                     | Without                          |            |       | 59.84 | 29.92 | 15.8  | 7.9  | 3.05 | 46.81 | 20.4  |      |  |

\* Panel cutout configuration with these dimensions provides clearance for mounting connectors with cable clamp assemblies.

# AMPLIMITE Connectors (Continued)

## PCB Layouts — Series 109 (Standard Density)

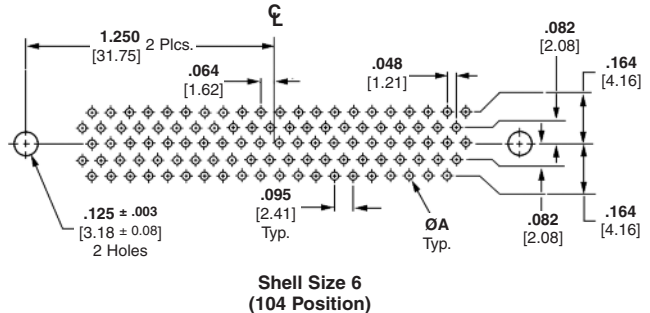
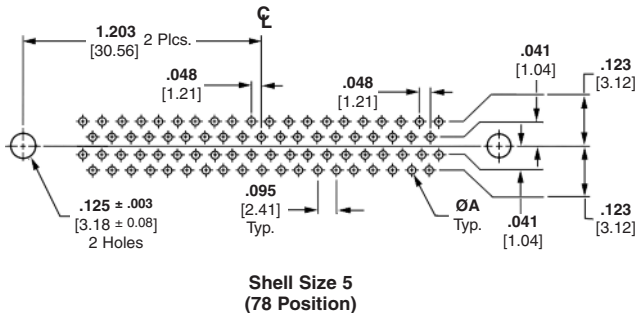
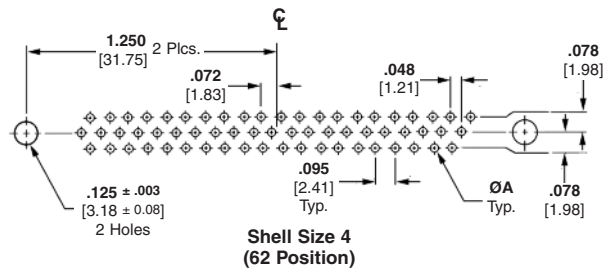
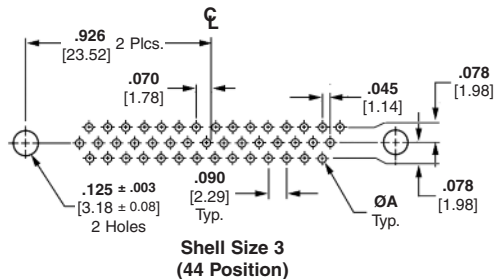
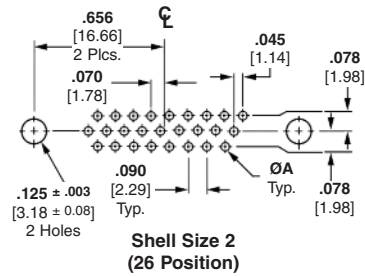
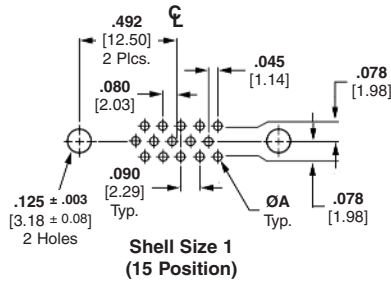


| Post Diameter | ØA                        |
|---------------|---------------------------|
| .018 [0.46]   | .028 [0.71] — .038 [0.96] |
| .025 [0.64]   | .035 [0.89] — .045 [1.14] |
| .030 [0.76]   | .040 [1.02] — .050 [1.27] |
| .040 [1.02]   | .050 [1.27] — .060 [1.52] |

- Notes:**
1. Mating face of plug is shown, receptacle is mirror image.
  2. PCB mounting hole diameters are provided for connectors with .120 [3.05] diameter mounting holes. For connectors with .154 [3.91] mounting holes, use PCB mounting hole diameter .160 ± .003 [4.06 ± 0.08].
  3. PC layouts illustrated above serve as a guide only; they are not to be used for actual design or construction of customer equipment. Consult TE Connectivity customer print for detailed PC board layout requirements.

## AMPLIMITE Connectors (Continued)

### PCB Layouts — Series 90 (High Density)

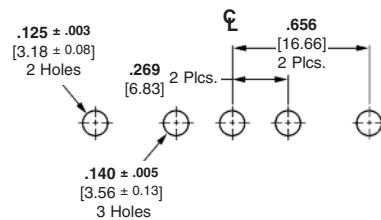


| Post Diameter | ØA                        |
|---------------|---------------------------|
| .018 [0.46]   | .028 [0.71] — .038 [0.96] |
| .025 [0.64]   | .035 [0.89] — .045 [1.14] |
| .030 [0.76]   | .040 [1.02] — .050 [1.27] |
| .040 [1.02]   | .050 [1.27] — .060 [1.52] |

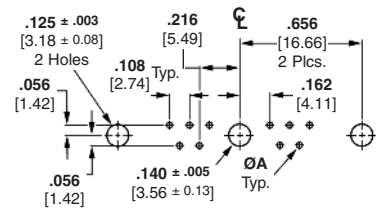
- Notes:**
1. Mating face of plug is shown, receptacle is mirror image.
  2. PCB mounting hole diameters are provided for connectors with .120 [3.05] diameter mounting holes. For connectors with .154 [3.91] mounting holes, use PCB mounting hole diameter .160 ± .003 [4.06 ± 0.08].
  3. PC layouts illustrated above serve as a guide only; they are not to be used for actual design or construction of customer equipment. Consult TE Connectivity customer print for detailed PC board layout requirements.

## AMPLIMITE Connectors (Continued)

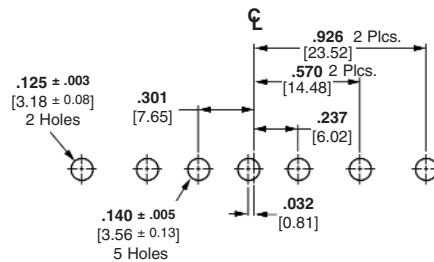
### PCB Layouts (Power/Coax/Signal)



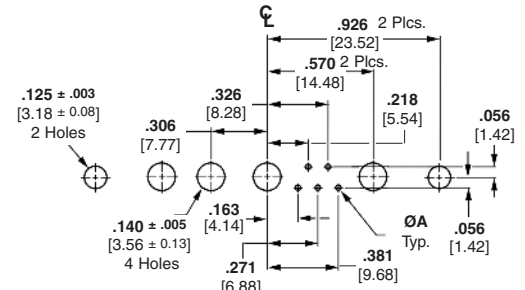
3C3



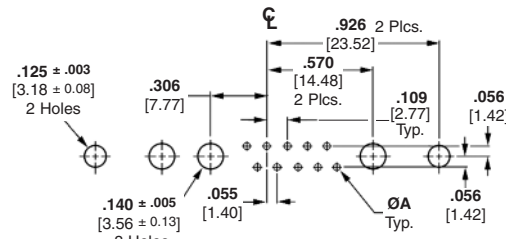
11C1



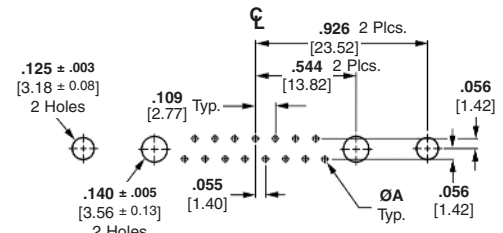
5C5



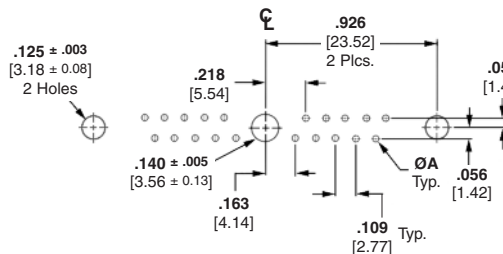
9C4



13C3



17C2



21C1

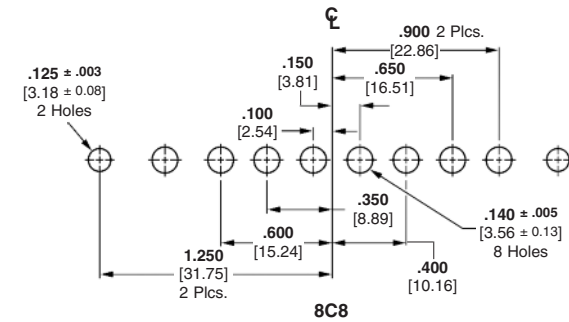
| Post Diameter | ØA                        |
|---------------|---------------------------|
| .018 [0.46]   | .028 [0.71] — .038 [0.96] |
| .025 [0.64]   | .035 [0.89] — .045 [1.14] |
| .030 [0.76]   | .040 [1.02] — .050 [1.27] |
| .040 [1.02]   | .050 [1.27] — .060 [1.52] |

- Notes:**
1. Mating face of plug is shown, receptacle is mirror image.
  2. PCB mounting hole diameters are provided for connectors with .120 [3.05] diameter mounting holes. For connectors with .154 [3.91] mounting holes, use PCB mounting hole diameter .160 ± .003 [4.06 ± 0.08].
  3. PC layouts illustrated above serve as a guide only; they are not to be used for actual design or construction of customer equipment. Consult TE Connectivity customer print for detailed PC board layout requirements.

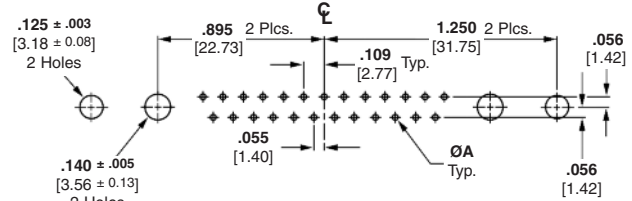
# AMPLIMITE Connectors (Continued)

## PCB Layouts

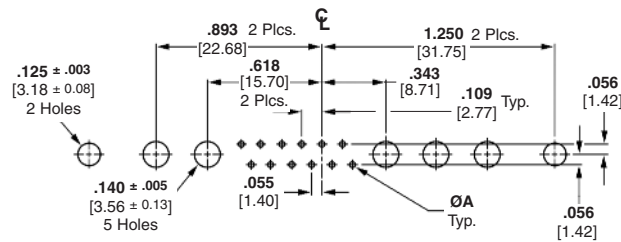
(Power/Coax/Signal) (Continued)



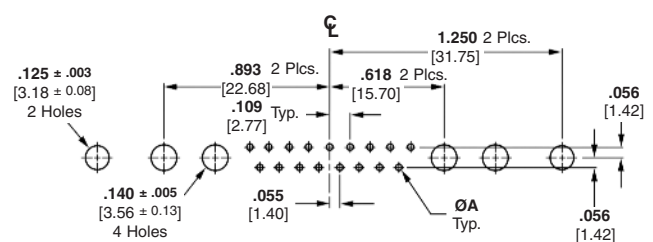
8C8



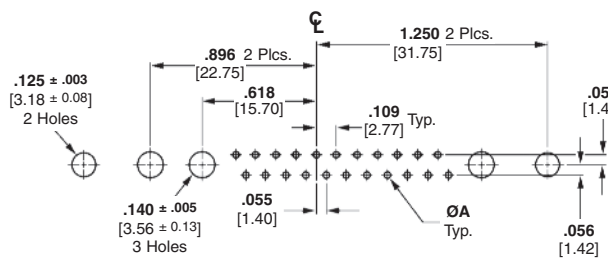
27C2



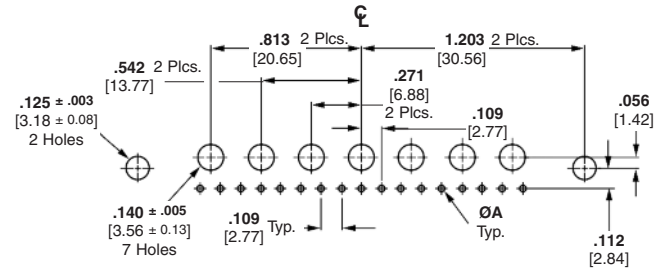
17C5



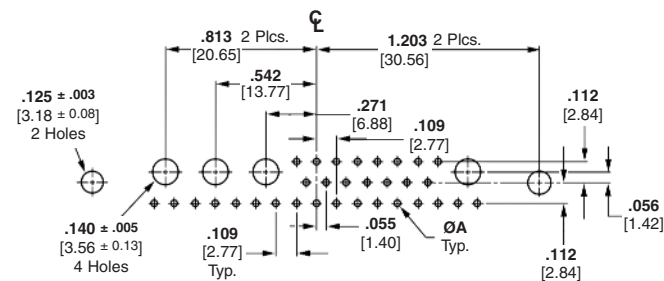
21C4



25C3



24C7



36C4

| Post Diameter | ØA                        |
|---------------|---------------------------|
| .018 [0.46]   | .028 [0.71] – .038 [0.96] |
| .025 [0.64]   | .035 [0.89] – .045 [1.14] |
| .030 [0.76]   | .040 [1.02] – .050 [1.27] |
| .040 [1.02]   | .050 [1.27] – .060 [1.52] |

- Notes:**
1. Mating face of plug is shown, receptacle is mirror image.
  2. PCB mounting hole diameters are provided for connectors with .120 [3.05] diameter mounting holes. For connectors with .154 [3.91] mounting holes, use PCB mounting hole diameter .160 ± .003 [4.06 ± 0.08].
  3. PC layouts illustrated above serve as a guide only; they are not to be used for actual design or construction of customer equipment. Consult TE Connectivity customer print for detailed PC board layout requirements.

## AMPLIMITE Connectors (Continued)

### Accessories

#### Female Screwlocks for Metal-Shell Connectors

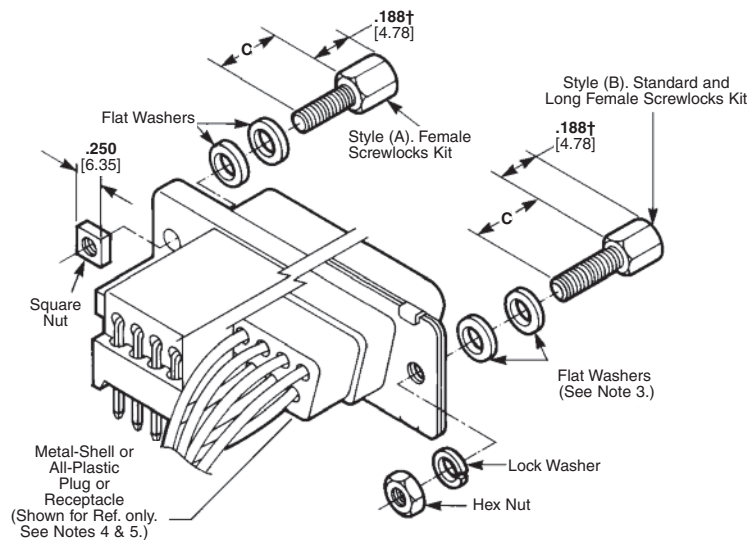
##### Material and Finish

**Standard Steel Parts** — Cold rolled steel per ASTM A108, zinc plated per ASTM B633, Type II, Class SCI

**Stainless Steel** — Passivated stainless steel

##### Technical Documents

**Instruction Sheet** — 408-7837



**Nut Driver, Part Number 811262-1**  
(Used for assembling female screwlocks to connector flange)

| Connector Used with | Style | Dim. C       | Thread Size | Finish          | Steel Kit Number |             | Stainless Steel |              |
|---------------------|-------|--------------|-------------|-----------------|------------------|-------------|-----------------|--------------|
|                     |       |              |             |                 | Individual       | Bulk Packed | Standard Kit    | Long Special |
| 6                   | (B)   | .312<br>7.93 | 4-40        | Yellow Chromate | 5205817-1        | 5205817-2   | —               | —            |
|                     |       |              |             | Clear Chromate  | 5748271-1†       | —           | —               | —            |
|                     |       |              | M3 (Metric) | Yellow Chromate | 5205817-3        | 5205817-4   | —               | —            |
|                     |       |              |             | Clear Chromate  | 5207872-1        | —           | —               | —            |
| .090 Thick Panels † | (B)   | .312<br>7.93 | 4-40        | Yellow Chromate | 5207872-3        | —           | —               | —            |
| 6                   | (B)   | .312<br>7.93 | 4-40        | Yellow Chromate | —                | —           | 212447-1        | —            |
| 6                   | (B)   | .500<br>12.7 | 4-40        | Yellow Chromate | —                | —           | —               | 212452-1     |

#### Individual Screwlocks

(Washers and Nuts not included)

| Connector Used with | Style     | Dimension C  | Thread Size     | Finish          | Screwlocks |             |
|---------------------|-----------|--------------|-----------------|-----------------|------------|-------------|
|                     |           |              |                 |                 | Individual | Bulk Packed |
| 6                   | (B)       | .312<br>7.93 | 4-40            | Yellow Chromate | 5205818-2  | —           |
|                     |           |              |                 | Clear Chromate  | 5205818-3  | —           |
|                     |           |              |                 | Clear Chromate  | 5748558-3  | 748558-4    |
|                     |           |              | M2.6** (Metric) | Clear Chromate  | 5749765-3  | —           |
|                     |           |              | 4-40            | Yellow Chromate | 5748270-2† | —           |
|                     |           |              | M3*** (Metric)  | Clear Chromate  | 5747404-3  | —           |
|                     | (Special) | .185<br>4.70 | 4-40            | Clear Chromate  | 5747877-3  | —           |

Each part is individually bulk packed for multiple kit orders.

With captivated star washer. No additional hardware included.

†Part Number 5748270-2 and 5748271-1 Dimension .158 [4.01]

\*\*M2.6 is the female thread size. The male thread size is 4-40.

\*\*\*M3 is the female thread size. The male thread size is 4-40.

- Notes:**
1. All parts are packaged unassembled.
  2. Each female screwlock kit is comprised of two assemblies as illustrated above.
  3. One or two flat washers may be required for panel thicknesses less than .060 [1.52]. Female screwlocks are not recommended for panel thicknesses greater than .060 [1.52].
  4. Female screwlocks with 2-56 thread size are to be used with cable clamps with mounting flanges. Female screwlocks with 4-40 and M3 (Metric) thread sizes can be used with all other cable clamps.
- Notes:**
5. Female screwlocks mate with male screw retainers (page 8-96).
  6. Series 90 and 109 Connectors without eyelets or floating bushings.



## AMPLIMITE Connectors (Continued)

### Accessories (Continued)

#### Male Screw Retainers for Metal-Shell Connectors

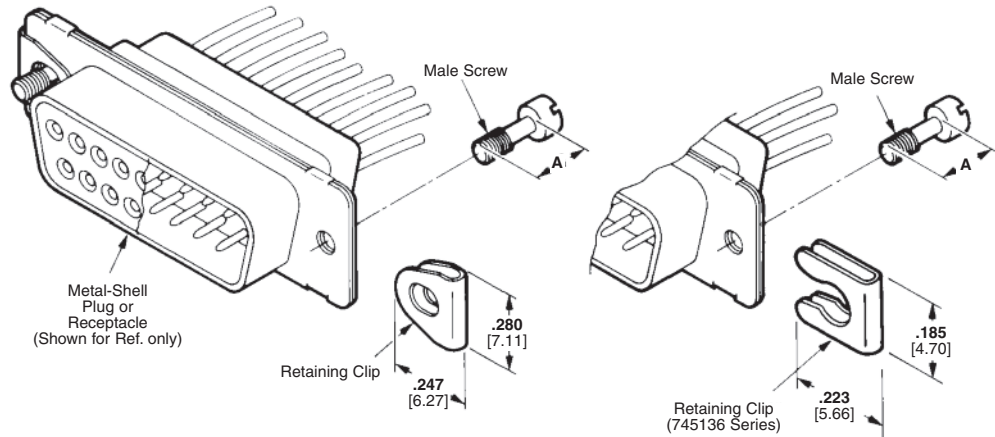
##### Material and Finish

**Male Screw** — Steel, zinc plated clear or yellow chromate

**Retaining Clip** — .012 [0.31] stainless steel

##### Technical Documents

**Instruction Sheet** — 408-7837



| Male Screw Finish | Thread Size | Dimension A  | Male Screw Retainer Kit No. |              |
|-------------------|-------------|--------------|-----------------------------|--------------|
|                   |             |              | Individual                  | Bulk Packed* |
| Yellow Chromate   | 4-40        | .220<br>5.59 | 5205980-1                   | 5205980-3    |
|                   |             | .200<br>5.08 | 5745136-1                   | 5745136-2    |
|                   | M3 (Metric) | .225<br>5.72 | 5207871-1                   | —            |
| Clear Chromate    | 4-40        | .220<br>5.59 | 5205980-4                   | 5205980-5    |
|                   |             | .200<br>5.08 | 5745136-3                   | 5745136-4    |

\*Each part is individually bulk packed for multiple kit orders.

**Notes:** 1. All parts are packaged unassembled.

2. Each kit is comprised of two male screws and two retaining clips. Male screw retainers are also furnished as part of cable clamp kits (pages 8-95 and 8-96).

**Notes:** 3. Male screw retainers mate with female screwlocks (page 8-95) and with metal-shell board mount connectors featuring 4-40 threaded inserts or female screwlocks.

**Notes:** 4. Retaining clip must be assembled onto connector flanges with threaded hole toward wire side of connector.

#### Stainless Steel Kit

##### Materials

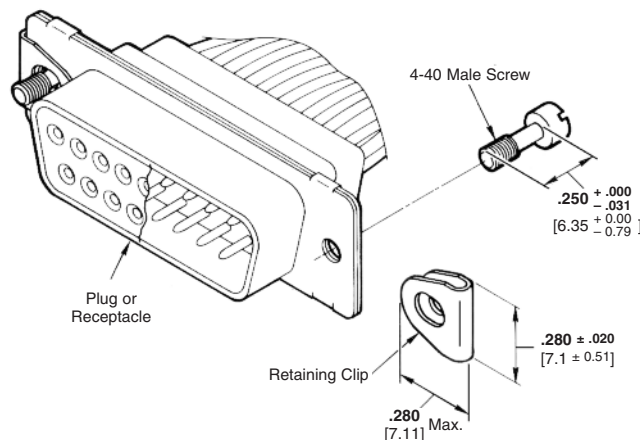
**All Parts** — Stainless steel, passivated per QQ-P-35B.

AMP Part Number 211883-5 or  
MIL Part Number M24308/25-6P

##### Notes:

- Each kit includes two screws and two retainers.
- Retainer is assembled onto connector flange with threaded hole toward the wire side of the connector.

#### Male Screw Retainer Kits





## AMPLIMITE Connectors (Continued)

### Accessories (Continued)

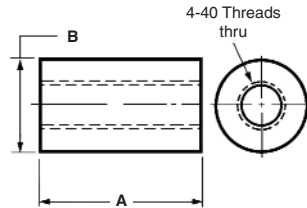
#### Standard Bushings (for Connectors with Straight Posted Contacts, PC Board Mounted)

##### Material

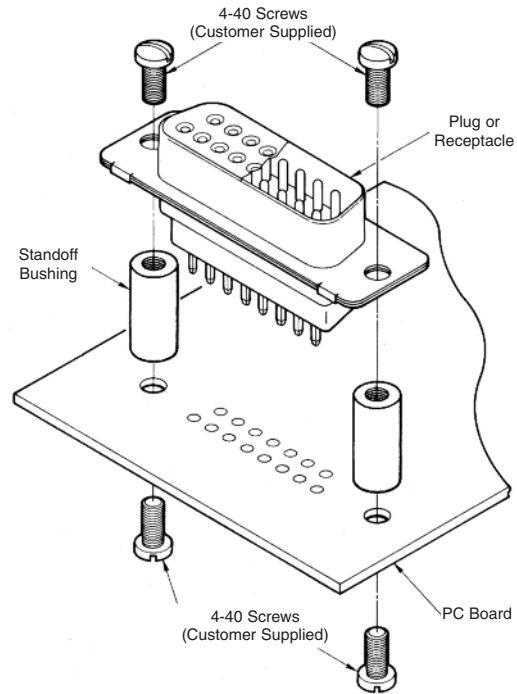
Aluminum

##### Kit Numbers

\*Parts are individually bulk packed for multiple kit orders.



**Note:** Standoff Bushings are used with a plug or receptacle of PC board mounted connectors.



| Part No.  | Dim. A        | Dim. B       | Packaged     |
|-----------|---------------|--------------|--------------|
| 5205933-3 | .435<br>11.05 | .250<br>6.35 | 2 Per Bag    |
| 5205933-4 | .435<br>11.05 | .250<br>6.35 | *Bulked Pack |
| 443279-2  | .246<br>6.25  | .190<br>4.83 | 2 Per Bag    |
| 443279-3  | .246<br>6.25  | .190<br>4.83 | *Bulk Pack   |

### Dust Covers

Dust covers for subminiature D connectors are not manufactured by TE Connectivity. They may be purchased from:\*\*

##### Caplugs

2150 Elmwood Avenue  
Buffalo, NY 14207  
Phone: (716) 876-9855  
Fax: (716) 874-1680

See Catalog 1307612 for additional hardware such as cable clamps, strain reliefs, etc.

##### Notes:

1. There are no cable clamp/strain relief hardware available for size 6 connectors.

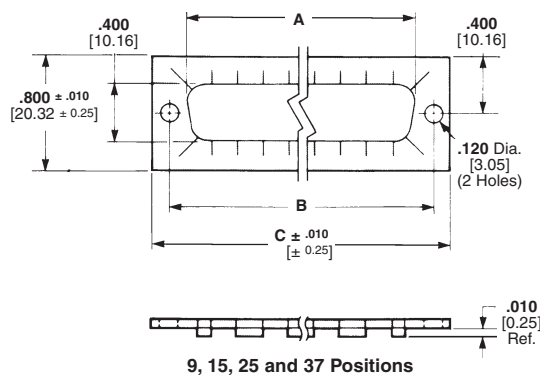
2. Cable clamp/strain relief hardware cannot be used with the Power/Coax/Combination Product shown on pages 8-62 to 8-64 of this catalog.

\*\* Caplugs is not an affiliate of TE.

### EMI/RFI Gaskets

#### Material and Finish

Brass, .006 [0.15] thick;  
bright tin-lead plated



| Shell Size<br>(No. of<br>Contact Pos.) | Dimensions     |                |                | Gasket<br>Part No. |
|----------------------------------------|----------------|----------------|----------------|--------------------|
|                                        | A              | B              | C              |                    |
| 1<br>(9)                               | .746<br>18.95  | .984<br>24.99  | 1.220<br>30.99 | 747024-3           |
| 2<br>(15)                              | 1.074<br>27.28 | 1.312<br>33.32 | 1.555<br>39.50 | 747025-3           |
| 3<br>(25)                              | 1.614<br>41.00 | 1.852<br>47.04 | 2.100<br>53.34 | 745776-3           |
| 4<br>(37)                              | 2.266<br>57.56 | 2.500<br>63.50 | 2.730<br>69.34 | 745777-3           |

## AMPLIMITE Connectors (Continued)

### Accessories (Continued)

#### Shielded Cable Clamps 45° Exit

##### Product Facts

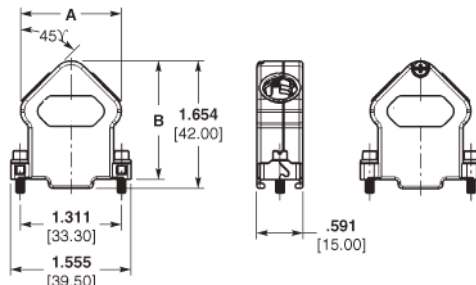
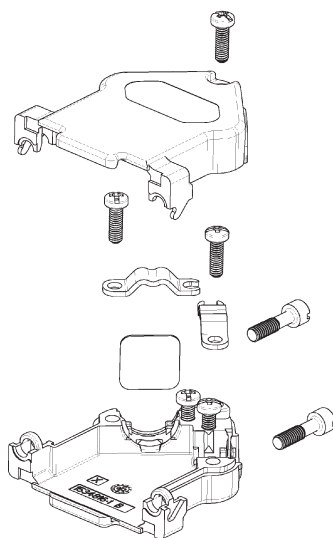
- Dual cable entry
- Rugged and durable diecast construction
- Available in 9 to 37 way (shell sizes 1 to 4)
- Choice of screw cable clamp or crimped ferrule
- Blanking plate included for single cable entry applications
- Supplied with jackscrews for locking with mating connector

##### Material and Finish

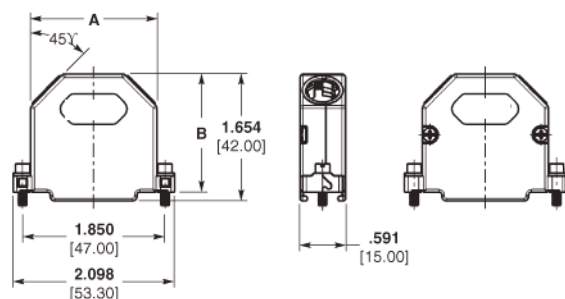
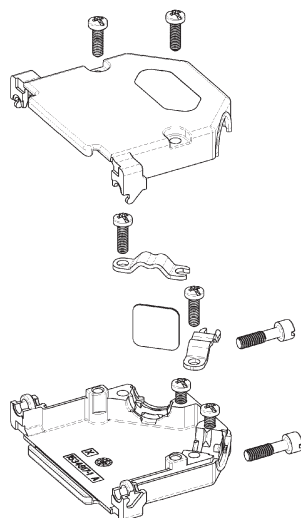
**Cable Clamp Housing** — Zinc alloy, plated bright nickel

**Screws and Cable Clamps** — Steel, zinc plate with supplementary chromate

**Dummy Plate** — Steel



| Shell Size | Dimensions     |                | Max. Cable Dia. | 4-40 Mounting Screw | Cable Clamp Kit No. | Cable Clamp Kit No. for Coax Contacts |
|------------|----------------|----------------|-----------------|---------------------|---------------------|---------------------------------------|
|            | A              | B              |                 |                     |                     |                                       |
| 1          | 1.063<br>27.00 | 1.378<br>35.00 | .354<br>9.00    | Phillips Head       | 1534805-1           | —                                     |
|            |                |                |                 | Hex Head            | 1534805-2           | —                                     |
|            |                |                | .365<br>9.27    | Phillips Head       | —                   | 1534806-1                             |
|            |                |                |                 | Hex Head            | —                   | 1534806-2                             |
| 2          | 1.299<br>33.00 | 1.535<br>39.00 | .433<br>11.00   | Phillips Head       | 1534807-1           | —                                     |
|            |                |                |                 | Hex Head            | 1534807-2           | —                                     |
|            |                |                | .430<br>10.92   | Phillips Head       | —                   | 1534808-1                             |
|            |                |                |                 | Hex Head            | —                   | 1534808-2                             |



| Shell Size | Dimensions     |                | Max. Cable Dia. | 4-40 Mounting Screw | Cable Clamp Kit No. | Cable Clamp Kit No. for Coax Contacts |
|------------|----------------|----------------|-----------------|---------------------|---------------------|---------------------------------------|
|            | A              | B              |                 |                     |                     |                                       |
| 3          | 1.642<br>41.70 | 1.535<br>39.00 | .433<br>11.00   | Phillips Head       | 1534809-1           | —                                     |
|            |                |                |                 | Hex Head            | 1534809-2           | —                                     |
|            |                |                | .430<br>10.92   | Phillips Head       | —                   | 1534810-1                             |
|            |                |                |                 | Hex Head            | —                   | 1534810-2                             |
| 4          | 2.291<br>58.20 | 1.535<br>39.00 | .433<br>11.00   | Phillips Head       | 1534811-1           | —                                     |
|            |                |                |                 | Hex Head            | 1534811-2           | —                                     |
|            |                |                | .430<br>10.92   | Phillips Head       | —                   | 1534812-1                             |
|            |                |                |                 | Hex Head            | —                   | 1534812-2                             |

## AMPLIMITE Connectors vs. MIL-DTL-24308 Cross Reference

This list is provided for reference only. In the event that a discrepancy exists between this catalog and the respective military QPL, then the QPL shall take precedence.

|               | MILITARY<br>PART NUMBER<br>FOR ORDERING | MILITARY<br>PART NUMBER<br>ON CONNECTOR | AMP<br>PART NUMBER<br>FOR ORDERING | AMP<br>PART NUMBER<br>ON CONNECTOR | REMARKS<br><br>(All connectors provided with contacts<br>unless otherwise specified) |
|---------------|-----------------------------------------|-----------------------------------------|------------------------------------|------------------------------------|--------------------------------------------------------------------------------------|
| /1            | M24308/1-1F                             | M24308/1-1F                             | 593007-1                           | 593007-1                           |                                                                                      |
|               | M24308/1-2F                             | M24308/1-2F                             | 593007-2                           | 593007-2                           |                                                                                      |
|               | M24308/1-3F                             | M24308/1-3F                             | 593007-3                           | 593007-3                           |                                                                                      |
|               | M24308/1-4F                             | M24308/1-4F                             | 593007-4                           | 593007-4                           |                                                                                      |
|               | M24308/1-5F                             | M24308/1-5F                             | 593007-5                           | 593007-5                           |                                                                                      |
|               | M24308/1-12F                            | M24308/1-12F                            | 593008-1                           | 593008-1                           |                                                                                      |
|               | M24308/1-13F                            | M24308/1-13F                            | 593008-2                           | 593008-2                           |                                                                                      |
|               | M24308/1-14F                            | M24308/1-14F                            | 593008-3                           | 593008-3                           |                                                                                      |
|               | M24308/1-15F                            | M24308/1-15F                            | 593008-4                           | 593008-4                           |                                                                                      |
|               | M24308/1-16F                            | M24308/1-16F                            | 593008-5                           | 593008-5                           |                                                                                      |
|               | M24308/1-23F                            | M24308/1-23F                            | 593009-1                           | 593009-1                           |                                                                                      |
|               | M24308/1-24F                            | M24308/1-24F                            | 593009-2                           | 593009-2                           |                                                                                      |
|               | M24308/1-25F                            | M24308/1-25F                            | 593009-3                           | 593009-3                           |                                                                                      |
|               | M24308/1-26F                            | M24308/1-26F                            | 593009-4                           | 593009-4                           |                                                                                      |
|               | M24308/1-27F                            | M24308/1-27F                            | 593009-5                           | 593009-5                           |                                                                                      |
|               | /2                                      | M24308/2-1F                             | M24308/2-1F                        | 205555-2                           | 205555-2                                                                             |
| M24308/2-2F   |                                         | M24308/2-2F                             | 205557-2                           | 205557-2                           |                                                                                      |
| M24308/2-3F   |                                         | M24308/2-3F                             | 205559-2                           | 205559-2                           |                                                                                      |
| M24308/2-4F   |                                         | M24308/2-4F                             | 205561-2                           | 205561-2                           |                                                                                      |
| M24308/2-5F   |                                         | M24308/2-5F                             | 205563-2                           | 205563-2                           |                                                                                      |
| M24308/2-6F   |                                         | M24308/2-1F                             | 205555-3                           | 205555-2                           | WITH TOOL                                                                            |
| M24308/2-7F   |                                         | M24308/2-2F                             | 205557-3                           | 205557-2                           | WITH TOOL                                                                            |
| M24308/2-8F   |                                         | M24308/2-3F                             | 205559-3                           | 205559-2                           | WITH TOOL                                                                            |
| M24308/2-9F   |                                         | M24308/2-4F                             | 205561-3                           | 205561-2                           | WITH TOOL                                                                            |
| M24308/2-10F  |                                         | M24308/2-5F                             | 205563-3                           | 205563-2                           | WITH TOOL                                                                            |
| M24308/2-11F  |                                         | M24308/2-11F                            | 204512-2                           | 204512-2                           |                                                                                      |
| M24308/2-12F  |                                         | M24308/2-12F                            | 204514-2                           | 204514-2                           |                                                                                      |
| M24308/2-13F  |                                         | M24308/2-13F                            | 204516-2                           | 204516-2                           |                                                                                      |
| M24308/2-14F  |                                         | M24308/2-14F                            | 204518-2                           | 204518-2                           |                                                                                      |
| M24308/2-15F  |                                         | M24308/2-15F                            | 204520-2                           | 204520-2                           |                                                                                      |
| M24308/2-16F  |                                         | M24308/2-16F                            | 204522-2                           | 204522-2                           |                                                                                      |
| M24308/2-17F  |                                         | M24308/2-11F                            | 204512-3                           | 204512-2                           | WITH TOOL                                                                            |
| M24308/2-18F  |                                         | M24308/2-12F                            | 204514-3                           | 204514-2                           | WITH TOOL                                                                            |
| M24308/2-19F  |                                         | M24308/2-13F                            | 204516-3                           | 204516-2                           | WITH TOOL                                                                            |
| M24308/2-20F  |                                         | M24308/2-14F                            | 204518-3                           | 204518-2                           | WITH TOOL                                                                            |
| M24308/2-21F  |                                         | M24308/2-15F                            | 204520-3                           | 204520-2                           | WITH TOOL                                                                            |
| M24308/2-22F  |                                         | M24308/2-16F                            | 204522-3                           | 204522-2                           | WITH TOOL                                                                            |
| M24308/2-23F  |                                         | M24308/2-23F                            | 205483-2                           | 205483-2                           |                                                                                      |
| M24308/2-24F  |                                         | M24308/2-24F                            | 205433-2                           | 205433-2                           |                                                                                      |
| M24308/2-25F  |                                         | M24308/2-25F                            | 205484-2                           | 205484-2                           |                                                                                      |
| M24308/2-26F  |                                         | M24308/2-26F                            | 205485-2                           | 205485-2                           |                                                                                      |
| M24308/2-27F  |                                         | M24308/2-27F                            | 205432-2                           | 205432-2                           |                                                                                      |
| M24308/2-28F  |                                         | M24308/2-28F                            | 204536-2                           | 204536-2                           |                                                                                      |
| M24308/2-29F  |                                         | M24308/2-29F                            | 204538-2                           | 204538-2                           |                                                                                      |
| M24308/2-30F  |                                         | M24308/2-30F                            | 204540-2                           | 204540-2                           |                                                                                      |
| M24308/2-31F  |                                         | M24308/2-31F                            | 204542-2                           | 204542-2                           |                                                                                      |
| M24308/2-32F  |                                         | M24308/2-32F                            | 204544-2                           | 204544-2                           |                                                                                      |
| M24308/2-33F  |                                         | M24308/2-33F                            | 204546-2                           | 204546-2                           |                                                                                      |
| M24308/2-281F |                                         | M24308/2-1F                             | 205161-1                           | 205555-2                           | LESS CONTACTS                                                                        |
| M24308/2-282F |                                         | M24308/2-2F                             | 205163-1                           | 205557-2                           | LESS CONTACTS                                                                        |
| M24308/2-283F |                                         | M24308/2-3F                             | 205165-1                           | 205559-2                           | LESS CONTACTS                                                                        |
| M24308/2-284F |                                         | M24308/2-4F                             | 205167-1                           | 205561-2                           | LESS CONTACTS                                                                        |
| M24308/2-285F |                                         | M24308/2-5F                             | 205169-1                           | 205563-2                           | LESS CONTACTS                                                                        |
| M24308/2-286F |                                         | M24308/2-11F                            | 204500-1                           | 204512-2                           | LESS CONTACTS                                                                        |
| M24308/2-287F |                                         | M24308/2-12F                            | 204502-1                           | 204514-2                           | LESS CONTACTS                                                                        |
| M24308/2-288F | M24308/2-13F                            | 204504-1                                | 204516-2                           | LESS CONTACTS                      |                                                                                      |
| M24308/2-289F | M24308/2-14F                            | 204506-1                                | 204518-2                           | LESS CONTACTS                      |                                                                                      |
| M24308/2-290F | M24308/2-15F                            | 204508-1                                | 204520-2                           | LESS CONTACTS                      |                                                                                      |
| M24308/2-291F | M24308/2-16F                            | 204510-1                                | 204522-2                           | LESS CONTACTS                      |                                                                                      |

**Note:** The suffix "F" on M24308 part numbers designates cadmium shell plating.

**AMPLIMITE Connectors vs. MIL-DTL-24308 Cross Reference** (Continued)

| MILITARY<br>PART NUMBER<br>FOR ORDERING | MILITARY<br>PART NUMBER<br>ON CONNECTOR | AMP<br>PART NUMBER<br>FOR ORDERING | AMP<br>PART NUMBER<br>ON CONNECTOR | REMARKS<br><small>(All connectors provided with contacts<br/>unless otherwise specified)</small> |               |
|-----------------------------------------|-----------------------------------------|------------------------------------|------------------------------------|--------------------------------------------------------------------------------------------------|---------------|
| /2                                      | M24308/2-292F                           | M24308/2-23F                       | 205416-1                           | 205483-2                                                                                         | LESS CONTACTS |
|                                         | M24308/2-293F                           | M24308/2-24F                       | 205417-1                           | 205433-2                                                                                         | LESS CONTACTS |
|                                         | M24308/2-294F                           | M24308/2-25F                       | 205418-1                           | 205484-2                                                                                         | LESS CONTACTS |
|                                         | M24308/2-295F                           | M24308/2-26F                       | 205419-1                           | 205485-2                                                                                         | LESS CONTACTS |
|                                         | M24308/2-296F                           | M24308/2-27F                       | 205420-1                           | 205432-2                                                                                         | LESS CONTACTS |
|                                         | M24308/2-297F                           | M24308/2-28F                       | 204524-1                           | 204536-2                                                                                         | LESS CONTACTS |
|                                         | M24308/2-298F                           | M24308/2-29F                       | 204526-1                           | 204538-2                                                                                         | LESS CONTACTS |
|                                         | M24308/2-299F                           | M24308/2-30F                       | 204528-1                           | 204540-2                                                                                         | LESS CONTACTS |
|                                         | M24308/2-300F                           | M24308/2-31F                       | 204530-1                           | 204542-2                                                                                         | LESS CONTACTS |
|                                         | M24308/2-301F                           | M24308/2-32F                       | 204532-1                           | 204544-2                                                                                         | LESS CONTACTS |
|                                         | M24308/2-302F                           | M24308/2-33F                       | 204534-1                           | 204546-2                                                                                         | LESS CONTACTS |
|                                         | M24308/2-342F                           | M24308/2-342F                      | 211525-2                           | 211525-2                                                                                         |               |
|                                         | M24308/2-343F                           | M24308/2-343F                      | 211526-2                           | 211526-2                                                                                         |               |
|                                         | M24308/2-344F                           | M24308/2-344F                      | 211527-2                           | 211527-2                                                                                         |               |
|                                         | M24308/2-345F                           | M24308/2-345F                      | 211528-2                           | 211528-2                                                                                         |               |
|                                         | M24308/2-346F                           | M24308/2-346F                      | 211529-2                           | 211529-2                                                                                         |               |
| M24308/2-347F                           | M24308/2-347F                           | 211536-2                           | 211536-2                           |                                                                                                  |               |
| M24308/2-348F                           | M24308/2-348F                           | 211537-2                           | 211537-2                           |                                                                                                  |               |
| M24308/2-349F                           | M24308/2-349F                           | 211538-2                           | 211538-2                           |                                                                                                  |               |
| M24308/2-350F                           | M24308/2-350F                           | 211539-2                           | 211539-2                           |                                                                                                  |               |
| M24308/2-351F                           | M24308/2-351F                           | 211540-2                           | 211540-2                           |                                                                                                  |               |
| M24308/2-352F                           | M24308/2-352F                           | 211541-2                           | 211541-2                           |                                                                                                  |               |
| M24308/2-482F                           | M24308/2-342F                           | 211525-1                           | 211525-2                           | LESS CONTACTS                                                                                    |               |
| M24308/2-483F                           | M24308/2-343F                           | 211526-1                           | 211526-2                           | LESS CONTACTS                                                                                    |               |
| M24308/2-484F                           | M24308/2-344F                           | 211527-1                           | 211527-2                           | LESS CONTACTS                                                                                    |               |
| M24308/2-485F                           | M24308/2-345F                           | 211528-1                           | 211528-2                           | LESS CONTACTS                                                                                    |               |
| M24308/2-486F                           | M24308/2-346F                           | 211529-1                           | 211529-2                           | LESS CONTACTS                                                                                    |               |
| M24308/2-487F                           | M24308/2-347F                           | 211536-1                           | 211536-2                           | LESS CONTACTS                                                                                    |               |
| M24308/2-488F                           | M24308/2-348F                           | 211537-1                           | 211537-2                           | LESS CONTACTS                                                                                    |               |
| M24308/2-489F                           | M24308/2-349F                           | 211538-1                           | 211538-2                           | LESS CONTACTS                                                                                    |               |
| M24308/2-490F                           | M24308/2-350F                           | 211539-1                           | 211539-2                           | LESS CONTACTS                                                                                    |               |
| M24308/2-491F                           | M24308/2-351F                           | 211540-1                           | 211540-2                           | LESS CONTACTS                                                                                    |               |
| M24308/2-492F                           | M24308/2-352F                           | 211541-1                           | 211541-2                           | LESS CONTACTS                                                                                    |               |
| /3                                      | M24308/3-1F                             | M24308/3-1F                        | 593002-1                           | 593002-1                                                                                         |               |
|                                         | M24308/3-2F                             | M24308/3-2F                        | 593002-2                           | 593002-2                                                                                         |               |
|                                         | M24308/3-3F                             | M24308/3-3F                        | 593002-3                           | 593002-3                                                                                         |               |
|                                         | M24308/3-4F                             | M24308/3-4F                        | 593002-4                           | 593002-4                                                                                         |               |
|                                         | M24308/3-5F                             | M24308/3-5F                        | 593002-5                           | 593002-5                                                                                         |               |
|                                         | M24308/3-12F                            | M24308/3-12F                       | 593004-1                           | 593004-1                                                                                         |               |
|                                         | M24308/3-13F                            | M24308/3-13F                       | 593004-2                           | 593004-2                                                                                         |               |
|                                         | M24308/3-14F                            | M24308/3-14F                       | 593004-3                           | 593004-3                                                                                         |               |
|                                         | M24308/3-15F                            | M24308/3-15F                       | 593004-4                           | 593004-4                                                                                         |               |
|                                         | M24308/3-16F                            | M24308/3-16F                       | 593004-5                           | 593004-5                                                                                         |               |
|                                         | /4                                      | M24308/4-1F                        | M24308/4-1F                        | 205556-2                                                                                         | 205556-2      |
| M24308/4-2F                             |                                         | M24308/4-2F                        | 205558-2                           | 205558-2                                                                                         |               |
| M24308/4-3F                             |                                         | M24308/4-3F                        | 205560-2                           | 205560-2                                                                                         |               |
| M24308/4-4F                             |                                         | M24308/4-4F                        | 205562-2                           | 205562-2                                                                                         |               |
| M24308/4-5F                             |                                         | M24308/4-5F                        | 205564-2                           | 205564-2                                                                                         |               |
| M24308/4-6F                             |                                         | M24308/4-1F                        | 205556-3                           | 205556-2                                                                                         | WITH TOOL     |
| M24308/4-7F                             |                                         | M24308/4-2F                        | 205558-3                           | 205558-2                                                                                         | WITH TOOL     |
| M24308/4-8F                             |                                         | M24308/4-3F                        | 205560-3                           | 205560-2                                                                                         | WITH TOOL     |
| M24308/4-9F                             |                                         | M24308/4-4F                        | 205562-3                           | 205562-2                                                                                         | WITH TOOL     |
| M24308/4-10F                            |                                         | M24308/4-5F                        | 205564-3                           | 205564-2                                                                                         | WITH TOOL     |
| M24308/4-11F                            |                                         | M24308/4-11F                       | 204513-2                           | 204513-2                                                                                         |               |
| M24308/4-12F                            |                                         | M24308/4-12F                       | 204515-2                           | 204515-2                                                                                         |               |
| M24308/4-13F                            |                                         | M24308/4-13F                       | 204517-2                           | 204517-2                                                                                         |               |
| M24308/4-14F                            |                                         | M24308/4-14F                       | 204519-2                           | 204519-2                                                                                         |               |
| M24308/4-15F                            |                                         | M24308/4-15F                       | 204521-2                           | 204521-2                                                                                         |               |
| M24308/4-16F                            |                                         | M24308/4-16F                       | 204523-2                           | 204523-2                                                                                         |               |

**Note:** The suffix "F" on M24308 part numbers designates cadmium shell plating.

**AMPLIMITE Connectors vs. MIL-DTL-24308 Cross Reference** (Continued)

|              | MILITARY<br>PART NUMBER<br>FOR ORDERING | MILITARY<br>PART NUMBER<br>ON CONNECTOR | AMP<br>PART NUMBER<br>FOR ORDERING | AMP<br>PART NUMBER<br>ON CONNECTOR | REMARKS<br>(All connectors provided with contacts<br>unless otherwise specified) |
|--------------|-----------------------------------------|-----------------------------------------|------------------------------------|------------------------------------|----------------------------------------------------------------------------------|
| /4           | M24308/4-17F                            | M24308/4-11F                            | 204513-3                           | 204513-2                           | WITH TOOL                                                                        |
|              | M24308/4-18F                            | M24308/4-12F                            | 204515-3                           | 204515-2                           | WITH TOOL                                                                        |
|              | M24308/4-19F                            | M24308/4-13F                            | 204517-3                           | 204517-2                           | WITH TOOL                                                                        |
|              | M24308/4-20F                            | M24308/4-14F                            | 204519-3                           | 204519-2                           | WITH TOOL                                                                        |
|              | M24308/4-21F                            | M24308/4-15F                            | 204521-3                           | 204521-2                           | WITH TOOL                                                                        |
|              | M24308/4-22F                            | M24308/4-16F                            | 204523-3                           | 204523-2                           | WITH TOOL                                                                        |
|              | M24308/4-259F                           | M24308/4-1F                             | 205162-1                           | 205556-2                           | LESS CONTACTS                                                                    |
|              | M24308/4-260F                           | M24308/4-2F                             | 205164-1                           | 205558-2                           | LESS CONTACTS                                                                    |
|              | M24308/4-261F                           | M24308/4-3F                             | 205166-1                           | 205560-2                           | LESS CONTACTS                                                                    |
|              | M24308/4-262F                           | M24308/4-4F                             | 205168-1                           | 205562-2                           | LESS CONTACTS                                                                    |
|              | M24308/4-263F                           | M24308/4-5F                             | 205170-1                           | 205564-2                           | LESS CONTACTS                                                                    |
|              | M24308/4-264F                           | M24308/4-11F                            | 204501-1                           | 204513-2                           | LESS CONTACTS                                                                    |
|              | M24308/4-265F                           | M24308/4-12F                            | 204503-1                           | 204515-2                           | LESS CONTACTS                                                                    |
|              | M24308/4-266F                           | M24308/4-13F                            | 204505-1                           | 204517-2                           | LESS CONTACTS                                                                    |
|              | M24308/4-267F                           | M24308/4-14F                            | 204507-1                           | 204519-2                           | LESS CONTACTS                                                                    |
|              | M24308/4-268F                           | M24308/4-15F                            | 204509-1                           | 204521-2                           | LESS CONTACTS                                                                    |
|              | M24308/4-269F                           | M24308/4-16F                            | 204511-1                           | 204523-2                           | LESS CONTACTS                                                                    |
|              | M24308/4-302F                           | M24308/4-302F                           | 205486-2                           | 205486-2                           |                                                                                  |
|              | M24308/4-303F                           | M24308/4-303F                           | 205409-2                           | 205409-2                           |                                                                                  |
|              | M24308/4-304F                           | M24308/4-304F                           | 205487-2                           | 205487-2                           |                                                                                  |
|              | M24308/4-305F                           | M24308/4-305F                           | 205488-2                           | 205488-2                           |                                                                                  |
|              | M24308/4-306F                           | M24308/4-306F                           | 205431-2                           | 205431-2                           |                                                                                  |
|              | M24308/4-307F                           | M24308/4-307F                           | 204537-2                           | 204537-2                           |                                                                                  |
|              | M24308/4-308F                           | M24308/4-308F                           | 204539-2                           | 204539-2                           |                                                                                  |
|              | M24308/4-309F                           | M24308/4-309F                           | 204541-2                           | 204541-2                           |                                                                                  |
|              | M24308/4-310F                           | M24308/4-310F                           | 204543-2                           | 204543-2                           |                                                                                  |
|              | M24308/4-311F                           | M24308/4-311F                           | 204545-2                           | 204545-2                           |                                                                                  |
|              | M24308/4-312F                           | M24308/4-312F                           | 204547-2                           | 204547-2                           |                                                                                  |
|              | M24308/4-324F                           | M24308/4-302F                           | 205412-1                           | 205486-2                           | LESS CONTACTS                                                                    |
|              | M24308/4-325F                           | M24308/4-303F                           | 205408-1                           | 205409-2                           | LESS CONTACTS                                                                    |
|              | M24308/4-326F                           | M24308/4-304F                           | 205413-1                           | 205487-2                           | LESS CONTACTS                                                                    |
|              | M24308/4-327F                           | M24308/4-305F                           | 205414-1                           | 205488-2                           | LESS CONTACTS                                                                    |
|              | M24308/4-328F                           | M24308/4-306F                           | 205415-1                           | 205431-2                           | LESS CONTACTS                                                                    |
|              | M24308/4-329F                           | M24308/4-307F                           | 204525-1                           | 204537-2                           | LESS CONTACTS                                                                    |
|              | M24308/4-330F                           | M24308/4-308F                           | 204527-1                           | 204539-2                           | LESS CONTACTS                                                                    |
|              | M24308/4-331F                           | M24308/4-309F                           | 204529-1                           | 204541-2                           | LESS CONTACTS                                                                    |
|              | M24308/4-332F                           | M24308/4-310F                           | 204531-1                           | 204543-2                           | LESS CONTACTS                                                                    |
|              | M24308/4-333F                           | M24308/4-311F                           | 204533-1                           | 204545-2                           | LESS CONTACTS                                                                    |
|              | M24308/4-334F                           | M24308/4-312F                           | 204535-1                           | 204547-2                           | LESS CONTACTS                                                                    |
|              | /5                                      | M24308/5-1F                             | M24308/5-1F                        | 593036-1                           | 593036-1                                                                         |
| M24308/5-2F  |                                         | M24308/5-2F                             | 593036-2                           | 593036-2                           |                                                                                  |
| M24308/5-3F  |                                         | M24308/5-3F                             | 593036-3                           | 593036-3                           |                                                                                  |
| M24308/5-4F  |                                         | M24308/5-4F                             | 593036-4                           | 593036-4                           |                                                                                  |
| M24308/5-5F  |                                         | M24308/5-5F                             | 593036-5                           | 593036-5                           |                                                                                  |
| M24308/5-12F |                                         | M24308/5-12F                            | 593037-1                           | 593037-1                           |                                                                                  |
| M24308/5-13F |                                         | M24308/5-13F                            | 593037-2                           | 593037-2                           |                                                                                  |
| M24308/5-14F |                                         | M24308/5-14F                            | 593037-3                           | 593037-3                           |                                                                                  |
| M24308/5-15F |                                         | M24308/5-15F                            | 593037-4                           | 593037-4                           |                                                                                  |
| M24308/5-16F |                                         | M24308/5-16F                            | 593037-5                           | 593037-5                           |                                                                                  |
| M24308/5-23F |                                         | M24308/5-23F                            | 593038-1                           | 593038-1                           |                                                                                  |
| M24308/5-24F |                                         | M24308/5-24F                            | 593038-2                           | 593038-2                           |                                                                                  |
| M24308/5-25F |                                         | M24308/5-25F                            | 593038-3                           | 593038-3                           |                                                                                  |
| M24308/5-26F |                                         | M24308/5-26F                            | 593038-4                           | 593038-4                           |                                                                                  |
| M24308/5-27F |                                         | M24308/5-27F                            | 593038-5                           | 593038-5                           |                                                                                  |
| /23          | M24308/23-1F                            | M24308/23-1F                            | 443975-1                           | 443975-1                           |                                                                                  |
|              | M24308/23-2F                            | M24308/23-2F                            | 443975-2                           | 443975-2                           |                                                                                  |
|              | M24308/23-3F                            | M24308/23-3F                            | 443975-3                           | 443975-3                           |                                                                                  |
|              | M24308/23-4F                            | M24308/23-4F                            | 443975-4                           | 443975-4                           |                                                                                  |
|              | M24308/23-5F                            | M24308/23-5F                            | 443975-5                           | 443975-5                           |                                                                                  |

**Note:** The suffix "F" on M24308 part numbers designates cadmium shell plating.

**AMPLIMITE Connectors vs. MIL-DTL-24308 Cross Reference** (Continued)

| /23 | MILITARY<br>PART NUMBER<br>FOR ORDERING | MILITARY<br>PART NUMBER<br>ON CONNECTOR | AMP<br>PART NUMBER<br>FOR ORDERING | AMP<br>PART NUMBER<br>ON CONNECTOR | REMARKS<br><br>(All connectors provided with contacts<br>unless otherwise specified) |
|-----|-----------------------------------------|-----------------------------------------|------------------------------------|------------------------------------|--------------------------------------------------------------------------------------|
|     | M24308/23-7F                            | M24308/23-7F                            | 443976-1                           | 443976-1                           |                                                                                      |
|     | M24308/23-8F                            | M24308/23-8F                            | 443976-2                           | 443976-2                           |                                                                                      |
|     | M24308/23-9F                            | M24308/23-9F                            | 443976-3                           | 443976-3                           |                                                                                      |
|     | M24308/23-10F                           | M24308/23-10F                           | 443976-4                           | 443976-4                           |                                                                                      |
|     | M24308/23-11F                           | M24308/23-11F                           | 443976-5                           | 443976-5                           |                                                                                      |
|     | M24308/23-13F                           | M24308/23-13F                           | 443977-1                           | 443977-1                           |                                                                                      |
|     | M24308/23-14F                           | M24308/23-14F                           | 443977-2                           | 443977-2                           |                                                                                      |
|     | M24308/23-15F                           | M24308/23-15F                           | 443977-3                           | 443977-3                           |                                                                                      |
|     | M24308/23-16F                           | M24308/23-16F                           | 443977-4                           | 443977-4                           |                                                                                      |
|     | M24308/23-17F                           | M24308/23-17F                           | 443977-5                           | 443977-5                           |                                                                                      |
|     | M24308/23-19F                           | M24308/23-19F                           | 443978-1                           | 443978-1                           |                                                                                      |
|     | M24308/23-20F                           | M24308/23-20F                           | 443978-2                           | 443978-2                           |                                                                                      |
|     | M24308/23-21F                           | M24308/23-21F                           | 443978-3                           | 443978-3                           |                                                                                      |
|     | M24308/23-22F                           | M24308/23-22F                           | 443978-4                           | 443978-4                           |                                                                                      |
|     | M24308/23-23F                           | M24308/23-23F                           | 443978-5                           | 443978-5                           |                                                                                      |
|     | M24308/23-25F                           | M24308/23-25F                           | 1218434-1                          | 1218434-1                          |                                                                                      |
|     | M24308/23-26F                           | M24308/23-26F                           | 1218434-2                          | 1218434-2                          |                                                                                      |
|     | M24308/23-27F                           | M24308/23-27F                           | 1218434-3                          | 1218434-3                          |                                                                                      |
|     | M24308/23-28F                           | M24308/23-28F                           | 1218434-4                          | 1218434-4                          |                                                                                      |
|     | M24308/23-29F                           | M24308/23-29F                           | 1218434-5                          | 1218434-5                          |                                                                                      |
|     | M24308/23-31F                           | M24308/23-31F                           | 1218408-1                          | 1218408-1                          |                                                                                      |
|     | M24308/23-32F                           | M24308/23-32F                           | 1218408-2                          | 1218408-2                          |                                                                                      |
|     | M24308/23-33F                           | M24308/23-33F                           | 1218408-3                          | 1218408-3                          |                                                                                      |
|     | M24308/23-34F                           | M24308/23-34F                           | 1218408-4                          | 1218408-4                          |                                                                                      |
|     | M24308/23-35F                           | M24308/23-35F                           | 1218408-5                          | 1218408-5                          |                                                                                      |
|     | M24308/23-37F                           | M24308/23-37F                           | 1218435-1                          | 1218435-1                          |                                                                                      |
|     | M24308/23-38F                           | M24308/23-38F                           | 1218435-2                          | 1218435-2                          |                                                                                      |
|     | M24308/23-39F                           | M24308/23-39F                           | 1218435-3                          | 1218435-3                          |                                                                                      |
|     | M24308/23-40F                           | M24308/23-40F                           | 1218435-4                          | 1218435-4                          |                                                                                      |
|     | M24308/23-41F                           | M24308/23-41F                           | 1218435-5                          | 1218435-5                          |                                                                                      |
|     | M24308/23-43F                           | M24308/23-43F                           | 1218436-1                          | 1218436-1                          |                                                                                      |
|     | M24308/23-44F                           | M24308/23-44F                           | 1218436-2                          | 1218436-2                          |                                                                                      |
|     | M24308/23-45F                           | M24308/23-45F                           | 1218436-3                          | 1218436-3                          |                                                                                      |
|     | M24308/23-46F                           | M24308/23-46F                           | 1218436-4                          | 1218436-4                          |                                                                                      |
|     | M24308/23-47F                           | M24308/23-47F                           | 1218436-5                          | 1218436-5                          |                                                                                      |
|     | M24308/23-49F                           | M24308/23-49F                           | 1218437-1                          | 1218437-1                          |                                                                                      |
|     | M24308/23-50F                           | M24308/23-50F                           | 1218437-2                          | 1218437-2                          |                                                                                      |
|     | M24308/23-51F                           | M24308/23-51F                           | 1218437-3                          | 1218437-3                          |                                                                                      |
|     | M24308/23-52F                           | M24308/23-52F                           | 1218437-4                          | 1218437-4                          |                                                                                      |
|     | M24308/23-53F                           | M24308/23-53F                           | 1218437-5                          | 1218437-5                          |                                                                                      |
|     | M24308/23-55F                           | M24308/23-55F                           | 1218438-1                          | 1218438-1                          |                                                                                      |
|     | M24308/23-56F                           | M24308/23-56F                           | 1218438-2                          | 1218438-2                          |                                                                                      |
|     | M24308/23-57F                           | M24308/23-57F                           | 1218438-3                          | 1218438-3                          |                                                                                      |
|     | M24308/23-58F                           | M24308/23-58F                           | 1218438-4                          | 1218438-4                          |                                                                                      |
|     | M24308/23-59F                           | M24308/23-59F                           | 1218438-5                          | 1218438-5                          |                                                                                      |
| /24 | M24308/24-1F                            | M24308/24-1F                            | 1218124-1                          | 1218124-1                          |                                                                                      |
|     | M24308/24-2F                            | M24308/24-2F                            | 1218124-2                          | 1218124-2                          |                                                                                      |
|     | M24308/24-3F                            | M24308/24-3F                            | 1218124-3                          | 1218124-3                          |                                                                                      |
|     | M24308/24-4F                            | M24308/24-4F                            | 1218124-4                          | 1218124-4                          |                                                                                      |
|     | M24308/24-5F                            | M24308/24-5F                            | 1218124-5                          | 1218124-5                          |                                                                                      |
|     | M24308/24-7F                            | M24308/24-7F                            | 1218125-1                          | 1218125-1                          |                                                                                      |
|     | M24308/24-8F                            | M24308/24-8F                            | 1218125-2                          | 1218125-2                          |                                                                                      |
|     | M24308/24-9F                            | M24308/24-9F                            | 1218125-3                          | 1218125-3                          |                                                                                      |
|     | M24308/24-10F                           | M24308/24-10F                           | 1218125-4                          | 1218125-4                          |                                                                                      |
|     | M24308/24-11F                           | M24308/24-11F                           | 1218125-5                          | 1218125-5                          |                                                                                      |
|     | M24308/24-13F                           | M24308/24-13F                           | 1218126-1                          | 1218126-1                          |                                                                                      |
|     | M24308/24-14F                           | M24308/24-14F                           | 1218126-2                          | 1218126-2                          |                                                                                      |
|     | M24308/24-15F                           | M24308/24-15F                           | 1218126-3                          | 1218126-3                          |                                                                                      |
|     | M24308/24-16F                           | M24308/24-16F                           | 1218126-4                          | 1218126-4                          |                                                                                      |
|     | M24308/24-17F                           | M24308/24-17F                           | 1218126-5                          | 1218126-5                          |                                                                                      |



**AMPLIMITE Connectors vs. MIL-DTL-24308 Cross Reference** (Continued)

|     | MILITARY<br>PART NUMBER<br>FOR ORDERING | MILITARY<br>PART NUMBER<br>ON CONNECTOR | AMP<br>PART NUMBER<br>FOR ORDERING | AMP<br>PART NUMBER<br>ON CONNECTOR | REMARKS<br><br>(All connectors provided with contacts<br>unless otherwise specified) |
|-----|-----------------------------------------|-----------------------------------------|------------------------------------|------------------------------------|--------------------------------------------------------------------------------------|
| /24 | M24308/24-19F                           | M24308/24-19F                           | 1218127-1                          | 1218127-1                          |                                                                                      |
|     | M24308/24-20F                           | M24308/24-20F                           | 1218127-2                          | 1218127-2                          |                                                                                      |
|     | M24308/24-21F                           | M24308/24-21F                           | 1218127-3                          | 1218127-3                          |                                                                                      |
|     | M24308/24-22F                           | M24308/24-22F                           | 1218127-4                          | 1218127-4                          |                                                                                      |
|     | M24308/24-23F                           | M24308/24-23F                           | 1218127-5                          | 1218127-5                          |                                                                                      |
|     | M24308/24-25F                           | M24308/24-25F                           | 1218440-1                          | 1218440-1                          |                                                                                      |
|     | M24308/24-26F                           | M24308/24-26F                           | 1218440-2                          | 1218440-2                          |                                                                                      |
|     | M24308/24-27F                           | M24308/24-27F                           | 1218440-3                          | 1218440-3                          |                                                                                      |
|     | M24308/24-28F                           | M24308/24-28F                           | 1218440-4                          | 1218440-4                          |                                                                                      |
|     | M24308/24-29F                           | M24308/24-29F                           | 1218440-5                          | 1218440-5                          |                                                                                      |
|     | M24308/24-31F                           | M24308/24-31F                           | 1218441-1                          | 1218441-1                          |                                                                                      |
|     | M24308/24-32F                           | M24308/24-32F                           | 1218441-2                          | 1218441-2                          |                                                                                      |
|     | M24308/24-33F                           | M24308/24-33F                           | 1218441-3                          | 1218441-3                          |                                                                                      |
|     | M24308/24-34F                           | M24308/24-34F                           | 1218441-4                          | 1218441-4                          |                                                                                      |
|     | M24308/24-35F                           | M24308/24-35F                           | 1218441-5                          | 1218441-5                          |                                                                                      |
|     | M24308/24-37F                           | M24308/24-37F                           | 1218442-1                          | 1218442-1                          |                                                                                      |
|     | M24308/24-38F                           | M24308/24-38F                           | 1218442-2                          | 1218442-2                          |                                                                                      |
|     | M24308/24-39F                           | M24308/24-39F                           | 1218442-3                          | 1218442-3                          |                                                                                      |
|     | M24308/24-40F                           | M24308/24-40F                           | 1218442-4                          | 1218442-4                          |                                                                                      |
|     | M24308/24-41F                           | M24308/24-41F                           | 1218442-5                          | 1218442-5                          |                                                                                      |
|     | M24308/24-43F                           | M24308/24-43F                           | 1218443-1                          | 1218443-1                          |                                                                                      |
|     | M24308/24-44F                           | M24308/24-44F                           | 1218443-2                          | 1218443-2                          |                                                                                      |
|     | M24308/24-45F                           | M24308/24-45F                           | 1218443-3                          | 1218443-3                          |                                                                                      |
|     | M24308/24-46F                           | M24308/24-46F                           | 1218443-4                          | 1218443-4                          |                                                                                      |
|     | M24308/24-47F                           | M24308/24-47F                           | 1218443-5                          | 1218443-5                          |                                                                                      |
|     | M24308/24-49F                           | M24308/24-49F                           | 1218444-1                          | 1218444-1                          |                                                                                      |
|     | M24308/24-50F                           | M24308/24-50F                           | 1218444-2                          | 1218444-2                          |                                                                                      |
|     | M24308/24-51F                           | M24308/24-51F                           | 1218444-3                          | 1218444-3                          |                                                                                      |
|     | M24308/24-52F                           | M24308/24-52F                           | 1218444-4                          | 1218444-4                          |                                                                                      |
|     | M24308/24-53F                           | M24308/24-53F                           | 1218444-5                          | 1218444-5                          |                                                                                      |
|     | M24308/24-55F                           | M24308/24-55F                           | 1218445-1                          | 1218445-1                          |                                                                                      |
|     | M24308/24-56F                           | M24308/24-56F                           | 1218445-2                          | 1218445-2                          |                                                                                      |
|     | M24308/24-57F                           | M24308/24-57F                           | 1218445-3                          | 1218445-3                          |                                                                                      |
|     | M24308/24-58F                           | M24308/24-58F                           | 1218445-4                          | 1218445-4                          |                                                                                      |
|     | M24308/24-59F                           | M24308/24-59F                           | 1218445-5                          | 1218445-5                          |                                                                                      |
| /25 | M24308/25-6P                            | —                                       | 211883-5                           | —                                  | Male screw retainer kit                                                              |
| /26 | M24308/26-1P                            | —                                       | 212447-1                           | —                                  | Female screwlock kit                                                                 |
|     | M24308/26-1                             | —                                       | 205817-8                           | —                                  | Female screwlock kit                                                                 |

**Note:** The suffix "F" on M24308 part numbers designates cadmium shell plating.  
The suffix "P" designates passivated stainless steel.

**AMPLIMITE Connectors vs. M39029, M22520 and M81969 Cross Reference**

| MILITARY<br>PART NUMBER<br>FOR ORDERING | AMP<br>PART NUMBER<br>FOR ORDERING | REMARKS<br><small>(All connectors provided with contacts<br/>unless otherwise specified)</small> |
|-----------------------------------------|------------------------------------|--------------------------------------------------------------------------------------------------|
| M39029/57-354                           | 204351-1                           | Size 22 Socket                                                                                   |
| M39029/58-360                           | 204370-2                           | Size 22 Pin                                                                                      |
| M39029/63-368                           | 205090-1                           | Size 20 Socket                                                                                   |
| M39029/64-369                           | 205089-1                           | Size 20 Pin                                                                                      |
| M22520/2-01                             | 601966-1                           | Crimp Tool                                                                                       |
| M22520/2-06                             | 601966-4                           | Size 22 Socket Positioner                                                                        |
| M22520/2-08                             | 601966-5                           | Size 20 Positioner                                                                               |
| M22520/2-09                             | 601966-6                           | Size 22 Pin Positioner                                                                           |
| M81969/1-02                             | 91067-2                            | Size 20 Ins/Ext Tool                                                                             |
| M81969/1-04                             | 91067-1                            | Size 22 Ins/Ext Tool                                                                             |



### AMPLIMITE Connectors vs. NASA Power/Coax/Signal Combination Cross Reference

| AMP<br>PART NUMBER | ASSEMBLY<br>NASA P/N<br>311-P-4/ | DESCRIPTION                      |
|--------------------|----------------------------------|----------------------------------|
| 448153-2           | 05-7P-B-12                       | PLUG,3C3,NON-MAG.,120 MTG HOLE   |
| 448153-3           | 05-7P-B-15                       | PLUG,3C3,NON-MAG.,154 MTG HOLE   |
| 448154-2           | 05-8P-B-12                       | PLUG,7C2,NON-MAG.,120 MTG HOLE   |
| 448154-3           | 05-8P-B-15                       | PLUG,7C2,NON-MAG.,154 MTG HOLE   |
| 211111-2           | 05-9P-B-12                       | PLUG,11C1,NON-MAG.,120 MTG HOLE  |
| 211111-3           | 05-9P-B-15                       | PLUG,11C1,NON-MAG.,154 MTG HOLE  |
| 212491-6           | 05-10P-B-12                      | PLUG,5C5,NON-MAG.,120 MTG HOLE   |
| 212491-7           | 05-10P-B-15                      | PLUG,5C5,NON-MAG.,154 MTG HOLE   |
| 212498-2           | 05-11P-B-12                      | PLUG,9C4,NON-MAG.,120 MTG HOLE   |
| 212498-3           | 05-11P-B-15                      | PLUG,9C4,NON-MAG.,154 MTG HOLE   |
| 208810-3           | 05-12P-B-12                      | PLUG,13C3,NON-MAG.,120 MTG HOLE  |
| 208810-4           | 05-12P-B-15                      | PLUG,13C3,NON-MAG.,154 MTG HOLE  |
| 212506-2           | 05-13P-B-12                      | PLUG,17C2,NON-MAG.,120 MTG HOLE  |
| 212506-4           | 05-13P-B-15                      | PLUG,17C2,NON-MAG.,154 MTG HOLE  |
| 212522-3           | 05-14P-B-12                      | PLUG,21C1,NON-MAG.,120 MTG HOLE  |
| 212522-4           | 05-14P-B-15                      | PLUG,21C1,NON-MAG.,154 MTG HOLE  |
| 446405-2           | 05-15P-B-12                      | PLUG,8C8,NON-MAG.,120 MTG HOLE   |
| 446405-3           | 05-15P-B-15                      | PLUG,8C8,NON-MAG.,154 MTG HOLE   |
| 212514-3           | 05-17P-B-12                      | PLUG,17C5,NON-MAG.,120 MTG HOLE  |
| 212514-4           | 05-17P-B-15                      | PLUG,17C5,NON-MAG.,154 MTG HOLE  |
| 212530-2           | 05-18P-B-12                      | PLUG,21C4,NON-MAG.,120 MTG HOLE  |
| 212530-3           | 05-18P-B-15                      | PLUG,21C4,NON-MAG.,154 MTG HOLE  |
| 208742-2           | 05-20P-B-12                      | PLUG,25C3,NON-MAG.,120 MTG HOLE  |
| 208742-3           | 05-20P-B-15                      | PLUG,25C3,NON-MAG.,154 MTG HOLE  |
| 212538-2           | 05-21P-B-12                      | PLUG,27C2,NON-MAG.,120 MTG HOLE  |
| 212538-3           | 05-21P-B-15                      | PLUG,27C2,NON-MAG.,154 MTG HOLE  |
| 208743-2           | 05-22P-B-12                      | PLUG,24C7,NON-MAG.,120 MTG HOLE  |
| 208743-6           | 05-22P-B-15                      | PLUG,24C7,NON-MAG.,154 MTG HOLE  |
| 208744-3           | 05-23P-B-12                      | PLUG,36C4,NON-MAG.,120 MTG HOLE  |
| 208744-4           | 05-23P-B-15                      | PLUG,36C4,NON-MAG.,154 MTG HOLE  |
| 445705-2           | 05-7S-B-12                       | RECPT,3C3,NON-MAG.,120 MTG HOLE  |
| 445705-3           | 05-7S-B-15                       | RECPT,3C3,NON-MAG.,154 MTG HOLE  |
| 211112-2           | 05-9S-B-12                       | RECPT,11C1,NON-MAG.,120 MTG HOLE |
| 211112-3           | 05-9S-B-15                       | RECPT,11C1,NON-MAG.,154 MTG HOLE |
| 212059-2           | 05-10S-B-12                      | RECPT,5C5,NON-MAG.,120 MTG HOLE  |
| 212059-6           | 05-10S-B-15                      | RECPT,5C5,NON-MAG.,154 MTG HOLE  |
| 212502-2           | 05-11S-B-12                      | RECPT,9C4,NON-MAG.,120 MTG HOLE  |
| 212502-3           | 05-11S-B-15                      | RECPT,9C4,NON-MAG.,154 MTG HOLE  |
| 208811-3           | 05-12S-B-12                      | RECPT,13C3,NON-MAG.,120 MTG HOLE |
| 208811-4           | 05-12S-B-15                      | RECPT,13C3,NON-MAG.,154 MTG HOLE |
| 212510-2           | 05-13S-B-12                      | RECPT,17C2,NON-MAG.,120 MTG HOLE |
| 212510-3           | 05-13S-B-15                      | RECPT,17C2,NON-MAG.,154 MTG HOLE |
| 212526-3           | 05-14S-B-12                      | RECPT,21C1,NON-MAG.,120 MTG HOLE |
| 212526-4           | 05-14S-B-15                      | RECPT,21C1,NON-MAG.,154 MTG HOLE |
| 445730-3           | 05-15S-B-12                      | RECPT,8C8,NON-MAG.,120 MTG HOLE  |
| 445730-4           | 05-15S-B-15                      | RECPT,8C8,NON-MAG.,154 MTG HOLE  |
| 212518-3           | 05-17S-B-12                      | RECPT,17C5,NON-MAG.,120 MTG HOLE |
| 212518-4           | 05-17S-B-15                      | RECPT,17C5,NON-MAG.,154 MTG HOLE |
| 212534-2           | 05-18S-B-12                      | RECPT,21C4,NON-MAG.,120 MTG HOLE |
| 212534-3           | 05-18S-B-15                      | RECPT,21C4,NON-MAG.,154 MTG HOLE |
| 208551-2           | 05-20S-B-12                      | RECPT,25C3,NON-MAG.,120 MTG HOLE |
| 208551-3           | 05-20S-B-15                      | RECPT,25C3,NON-MAG.,154 MTG HOLE |
| 212542-2           | 05-21S-B-12                      | RECPT,27C2,NON-MAG.,120 MTG HOLE |
| 212542-3           | 05-21S-B-15                      | RECPT,27C2,NON-MAG.,154 MTG HOLE |
| 208552-2           | 05-22S-B-12                      | RECPT,24C7,NON-MAG.,120 MTG HOLE |
| 208552-5           | 05-22S-B-15                      | RECPT,24C7,NON-MAG.,154 MTG HOLE |
| 208550-2           | 05-23S-B-12                      | RECPT,36C4,NON-MAG.,120 MTG HOLE |
| 208550-3           | 05-23S-B-15                      | RECPT,36C4,NON-MAG.,154 MTG HOLE |

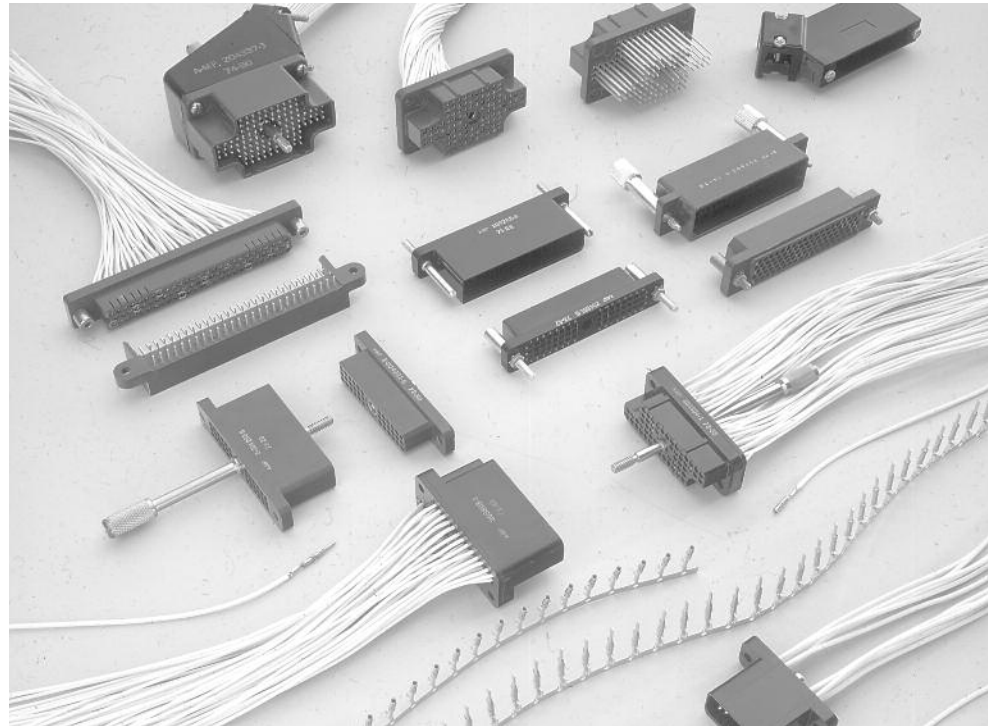
## AMPLIMITE Connectors vs. NASA Series 109 and 90 Cross Reference

| NASA<br>PART NUMBER<br>FOR ORDERING | NASA<br>PART NUMBER<br>ON CONNECTOR | AMP<br>PART NUMBER<br>FOR ORDERING | AMP<br>PART NUMBER<br>ON CONNECTOR | REMARKS<br>(All connectors provided with contacts<br>unless otherwise specified) |
|-------------------------------------|-------------------------------------|------------------------------------|------------------------------------|----------------------------------------------------------------------------------|
| 311P407-1P-B-15                     | 311P407-1P-B-15                     | 206498-1                           | 206498-1                           | LESS CONTACTS                                                                    |
| 311P407-1P-B-12                     | 311P407-1P-B-12                     | 206498-4                           | 206498-4                           | LESS CONTACTS                                                                    |
| 311P407-2P-B-15                     | 311P407-2P-B-15                     | 206500-1                           | 206500-1                           | LESS CONTACTS                                                                    |
| 311P407-2P-B-12                     | 311P407-2P-B-12                     | 206500-4                           | 206500-4                           | LESS CONTACTS                                                                    |
| 311P407-3P-B-15                     | 311P407-3P-B-15                     | 206063-2                           | 206063-2                           | LESS CONTACTS                                                                    |
| 311P407-3P-B-12                     | 311P407-3P-B-12                     | 206063-4                           | 206063-4                           | LESS CONTACTS                                                                    |
| 311P407-4P-B-15                     | 311P407-4P-B-15                     | 206502-1                           | 206502-1                           | LESS CONTACTS                                                                    |
| 311P407-4P-B-12                     | 311P407-4P-B-12                     | 206502-4                           | 206502-4                           | LESS CONTACTS                                                                    |
| 311P407-5P-B-15                     | 311P407-5P-B-15                     | 206504-1                           | 206504-1                           | LESS CONTACTS                                                                    |
| 311P407-5P-B-12                     | 311P407-5P-B-12                     | 206504-4                           | 206504-4                           | LESS CONTACTS                                                                    |
| 311P407-6P-B-15                     | 311P407-6P-B-15                     | 206066-2                           | 206066-2                           | LESS CONTACTS                                                                    |
| 311P407-6P-B-12                     | 311P407-6P-B-12                     | 206066-4                           | 206066-4                           | LESS CONTACTS                                                                    |
| 311P407-1S-B-15                     | 311P407-1S-B-15                     | 206499-1                           | 206499-1                           | LESS CONTACTS                                                                    |
| 311P407-1S-B-12                     | 311P407-1S-B-12                     | 206499-4                           | 206499-4                           | LESS CONTACTS                                                                    |
| 311P407-2S-B-15                     | 311P407-2S-B-15                     | 206501-1                           | 206501-1                           | LESS CONTACTS                                                                    |
| 311P407-2S-B-12                     | 311P407-2S-B-12                     | 206501-4                           | 206501-4                           | LESS CONTACTS                                                                    |
| 311P407-3S-B-15                     | 311P407-3S-B-15                     | 206064-2                           | 206064-2                           | LESS CONTACTS                                                                    |
| 311P407-3S-B-12                     | 311P407-3S-B-12                     | 206064-4                           | 206064-4                           | LESS CONTACTS                                                                    |
| 311P407-4S-B-15                     | 311P407-4S-B-15                     | 206503-1                           | 206503-1                           | LESS CONTACTS                                                                    |
| 311P407-4S-B-12                     | 311P407-4S-B-12                     | 206503-4                           | 206503-4                           | LESS CONTACTS                                                                    |
| 311P407-5S-B-15                     | 311P407-5S-B-15                     | 206505-1                           | 206505-1                           | LESS CONTACTS                                                                    |
| 311P407-5S-B-12                     | 311P407-5S-B-12                     | 206505-4                           | 206505-4                           | LESS CONTACTS                                                                    |
| 311P407-6S-B-15                     | 311P407-6S-B-15                     | 206065-2                           | 206065-2                           | LESS CONTACTS                                                                    |
| 311P407-6S-B-12                     | 311P407-6S-B-12                     | 206065-4                           | 206065-4                           | LESS CONTACTS                                                                    |
| 311P409-1P-B-15                     | 311P409-1P-B-15                     | 207252-1                           | 207252-1                           | LESS CONTACTS                                                                    |
| 311P409-1P-B-12                     | 311P409-1P-B-12                     | 207252-2                           | 207252-2                           | LESS CONTACTS                                                                    |
| 311P409-2P-B-15                     | 311P409-2P-B-15                     | 206798-1                           | 206798-1                           | LESS CONTACTS                                                                    |
| 311P409-2P-B-12                     | 311P409-2P-B-12                     | 206798-2                           | 206798-2                           | LESS CONTACTS                                                                    |
| 311P409-3P-B-15                     | 311P409-3P-B-15                     | 206800-1                           | 206800-1                           | LESS CONTACTS                                                                    |
| 311P409-3P-B-12                     | 311P409-3P-B-12                     | 206800-2                           | 206800-2                           | LESS CONTACTS                                                                    |
| 311P409-4P-B-15                     | 311P409-4P-B-15                     | 206802-1                           | 206802-1                           | LESS CONTACTS                                                                    |
| 311P409-4P-B-12                     | 311P409-4P-B-12                     | 206802-2                           | 206802-2                           | LESS CONTACTS                                                                    |
| 311P409-5P-B-15                     | 311P409-5P-B-15                     | 206804-1                           | 206804-1                           | LESS CONTACTS                                                                    |
| 311P409-5P-B-12                     | 311P409-5P-B-12                     | 206804-2                           | 206804-2                           | LESS CONTACTS                                                                    |
| 311P409-1S-B-15                     | 311P409-1S-B-15                     | 207253-1                           | 207253-1                           | LESS CONTACTS                                                                    |
| 311P409-1S-B-12                     | 311P409-1S-B-12                     | 207253-2                           | 207253-2                           | LESS CONTACTS                                                                    |
| 311P409-2S-B-15                     | 311P409-2S-B-15                     | 206799-1                           | 206799-1                           | LESS CONTACTS                                                                    |
| 311P409-2S-B-12                     | 311P409-2S-B-12                     | 206799-2                           | 206799-2                           | LESS CONTACTS                                                                    |
| 311P409-3S-B-15                     | 311P409-3S-B-15                     | 206801-1                           | 206801-1                           | LESS CONTACTS                                                                    |
| 311P409-3S-B-12                     | 311P409-3S-B-12                     | 206801-2                           | 206801-2                           | LESS CONTACTS                                                                    |
| 311P409-4S-B-15                     | 311P409-4S-B-15                     | 206803-1                           | 206803-1                           | LESS CONTACTS                                                                    |
| 311P409-4S-B-12                     | 311P409-4S-B-12                     | 206803-2                           | 206803-2                           | LESS CONTACTS                                                                    |
| 311P409-5S-B-15                     | 311P409-5S-B-15                     | 206805-1                           | 206805-1                           | LESS CONTACTS                                                                    |
| 311P409-5S-B-12                     | 311P409-5S-B-12                     | 206805-2                           | 206805-2                           | LESS CONTACTS                                                                    |
| G-08-P1                             |                                     | 204370-8                           |                                    | SIZE 22 PIN                                                                      |
| G-08-S1                             |                                     | 206071-1                           |                                    | SIZE 22 SOCKET                                                                   |
| G-10-P1                             |                                     | 205089-4                           |                                    | SIZE 20 PIN                                                                      |
| G-10-S1                             |                                     | 206793-1                           |                                    | SIZE 20 SOCKET                                                                   |

## High Density Rectangular Connectors

### Product Facts

- Plug and receptacle connectors are molded plastic blocks categorized by the number of contact positions and type of material
- The pin body is fabricated from brass and conforms to MIL-C-50 or ASTM-B-36. The plating is gold per MIL-G-45204 over nickel per QQ-N-290. The retention spring sleeve is fabricated from stainless steel and conforms to QQ-S-766.
- The socket body is made of brass per MIL-C-50 or ASTM-B-36. Plating is gold per MIL-G-45204 over nickel per QQ-N-290. The stainless steel retention spring sleeve conforms to QQ-S-766
- Shields and cable clamps are molded polysulfone components conforming to MIL-P-46120
- Brass keying pins and sockets conform to QQ-B-626 or ASTM-B-16, with zinc plating per QQ-Z-325 or stainless steel per QQ-S-763
- Locking rings, washers, bushings, retaining rings, nuts and screws are stainless steel conforming to QQ-S-763 or QQ-S-766
- Recognized under the Component Program of Underwriters Laboratories Inc., File No. E28476 



High Density Rectangular (HDR) connectors are designed in response to ever-increasing demands for miniaturization. The grid spacing of .100 x .100 [2.54 x 2.54] provides density for a connector accommodating a 20 thru 30 AWG [0.6 thru 0.05 mm<sup>2</sup>] wire range.

A variety of contact configurations and platings permits great design flexibility. Machine terminated, crimp snap-in contacts are available for the entire wire range. Also available are .025 [0.64] square posts on pin and socket contacts suitable for wrap-type wiring.

This unique connector is available in 12, 24, 36, 48, 54 and 106 positions in a rectangular housing. A special 95-position connector rounds out this group of rack and panel configured connectors.

A two piece, 80-position connector has been developed for printed circuit boards.

Versatility is designed into this family of connectors. Housings are available with or without center fasteners. Housing material for most connectors is diallyl phthalate or phenolic. When

mounting connectors with jackscrews, the receptacle half should be mounted to the chassis or panel. The turnable jackscrews should be positioned on the plug half containing the cable assembly.

Tooling for terminating leads is also available to meet production requirements. For limited production or prototype applications, the CERTI-CRIMP hand tool is ideal. Automatic machines are designed to fit various in-plant production needs.

### Technical Features

**Available Number of Positions** — 12, 24, 36, 48, 54, 106  
**Center Spacing** — .100 [2.54] x .100 [2.54]  
**Housing material** — Diallyl Phthalate or Phenolic  
**Flammability Rating** — UL 94V-0, UL File No. E28476  
**Contact Material** — Brass  
**Contact Finish** — .00030 [0.00076] Au  
**Contact Size** — 20  
**Wire Size Range** — 20–30 AWG

### Termination Resistance —

| AWG | Gold | Tin  |
|-----|------|------|
| 20  | 8.0  | 16.5 |
| 24  | 14.5 | 27.0 |
| 26  | 22.0 | —    |
| 30  | 48.0 | —    |

**Connector Mating Per Circuit** — Gold 25 oz./Contact

### Performance Characteristics

**Dielectric Withstanding Voltage** — 1000 VAC

**Insulation Resistance** — DAP 50,000 megohms min. (initial), Phenolic 5000 megohms min. (initial)

**Voltage Rating** — 440 VAC Sea Level @ 3 Amp max.

**Connector Mating/Unmating** — Gold 25 oz. max., Tin 50 oz. max.

**Contact Retention Force** — DAP — 5.0 lb., Phenolic — 7.5 lb.

**Durability** — 500 Matings per Cycle Gold, 250 Matings per Cycle Tin

**Temperature Range** — DAP —85°F to 257°F [–65°C to 125°C], Phenolic — 131°F to 302°F [55°C to 150°C]

**Thermal Shock** — DAP —85°F to 257°F [–65°C to 125°C], Phenolic — 131°F to 302°F [55°C to 125°C]

**Maximum Current** — 3 Amp max.

### Wire Size —

| AWG | Test Current |
|-----|--------------|
| 20  | 3.0          |
| 24  | 2.25         |
| 26  | 1.75         |
| 30  | 1.00         |

### Technical Documents

**Product Specifications** — Connectors/PC Board Headers — 108-10015

**Application Specification** — 114-10002

**Instruction Sheet** —

408-7357, 408-7472, 408-7484

## High Density Rectangular Connectors (Continued)

### Contacts

#### Type XI Crimp Snap-In Contacts

**Contact Size** — 20  
**Pin Diameter** — .040 [1.02]

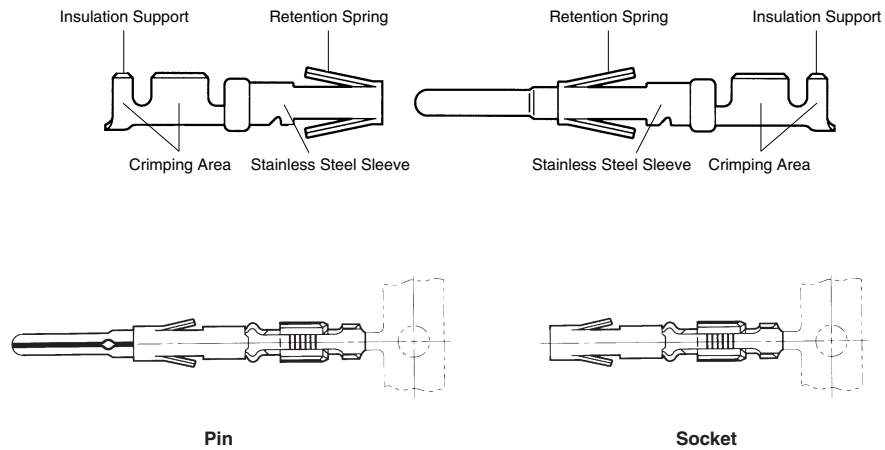
#### Plated as follows

**A** — .000030 [0.00076] gold over .000050 [0.00127] nickel  
**B** — Gold flash over .000050 [0.00127] nickel on entire contact with additional .000030 [0.00076] gold in contact area  
**Contact Sleeve** — Stainless Steel

#### Insertion Tool



**Part Number 91042-1**



| Wire Size Range |           | Ins. Dia.<br>Max. | Contact<br>Finish | Part Numbers |          |             |          | CERTI-CRIMP<br>Hand<br>Tool No. | Quick-Change Applicator No.        |                                               |
|-----------------|-----------|-------------------|-------------------|--------------|----------|-------------|----------|---------------------------------|------------------------------------|-----------------------------------------------|
| AWG             | mm²       |                   |                   | Strip Form   |          | Loose Piece |          |                                 | AMP-O-LETRIC<br>Machine<br>Model G | AMP-O-MATIC<br>Stripper/Crimper II<br>Machine |
|                 |           |                   |                   | Pin          | Socket   | Pin         | Socket   |                                 |                                    |                                               |
| 20-24           | 0.6-0.2   | .062<br>1.57      | A                 | 203816-1     | 203802-1 | 203816-3    | 203802-3 | 91544-1                         | —                                  | 466904-1                                      |
|                 |           |                   | B                 | 203816-2     | 203802-2 | 203816-4    | 203802-4 |                                 |                                    |                                               |
| 26-30           | 0.15-0.05 | .048<br>1.22      | A                 | 203874-1     | 203875-1 | 203874-3    | 203875-3 | 90223-5                         | —                                  | —                                             |
|                 |           |                   | B                 | 203874-2     | 203875-2 | 203874-4    | 203875-4 |                                 |                                    |                                               |

#### Wrap-Type Contacts with .025 x .025 [0.64 x 0.64] Posts

**Contact Size** — 20  
**Pin Diameter** — .040 [1.02]

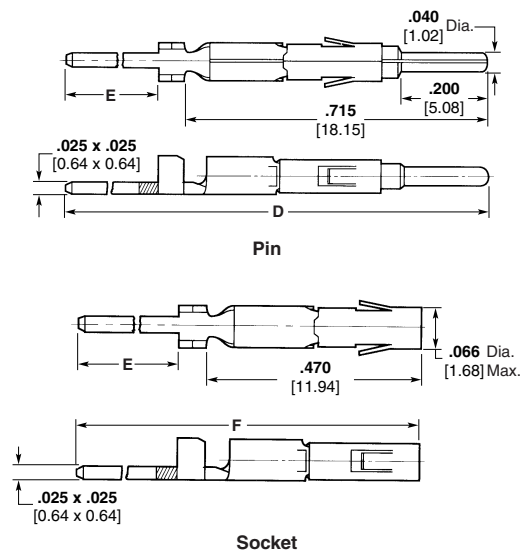
#### Plated as follows

**A** — .000030 [0.00076] gold over .000050 [0.00127] nickel  
**B** — Gold flash over .000050 [0.00127] nickel on entire contact with additional .000030 [0.00076] gold in contact area  
**Contact Sleeve** — Stainless Steel

#### Extraction Tool



**Part Number 91038-3**



| Max.<br>Terminations<br>Per Post | Dimensions            |                      |                       | Contact<br>Finish | Contact Part Numbers* |            |
|----------------------------------|-----------------------|----------------------|-----------------------|-------------------|-----------------------|------------|
|                                  | D                     | E                    | F                     |                   | Pin                   | Socket     |
| 1                                | <b>1.022</b><br>25.96 | <b>.257</b><br>6.53  | <b>.767</b><br>19.48  | A                 | 1-205171-0            | 1-205172-0 |
|                                  |                       |                      |                       | B                 | 205171-7              | 205172-7   |
| 2                                | <b>1.236</b><br>31.39 | <b>.471</b><br>11.96 | <b>.981</b><br>24.92  | A                 | 1-205171-1            | 1-205172-1 |
|                                  |                       |                      |                       | B                 | 205171-8              | 205172-8   |
| 3                                | <b>1.450</b><br>36.83 | <b>.685</b><br>17.40 | <b>1.195</b><br>30.35 | A                 | 1-205171-2            | 1-205172-2 |
|                                  |                       |                      |                       | B                 | 205171-9              | 205172-9   |

\*Loose piece contacts for maintenance and repair only. Packaged 100 pieces per bag.

## High Density Rectangular Connectors (Continued)

## Housings

## 12, 24, 36, & 48 Positions

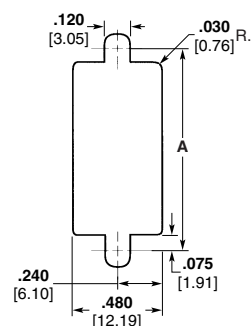
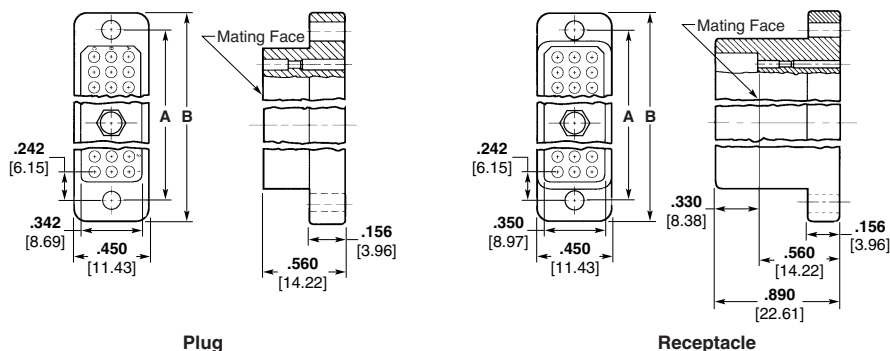
**Material** — See chart on page 8-109

### Related Product Data

**Contacts** — page 8-107

**Accessories** — pages 8-115 and 8-116

Technical Documents — page 8-106



### Recommended Panel Cutout

## 54 Position

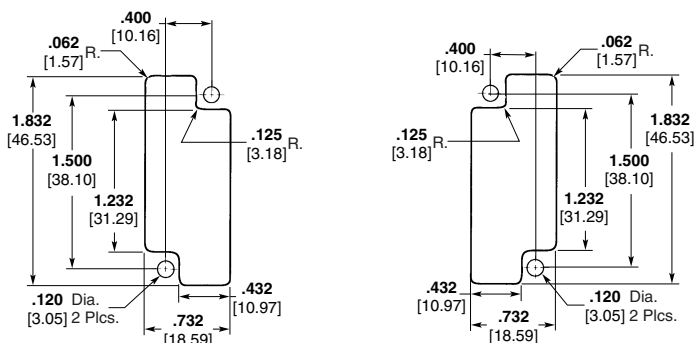
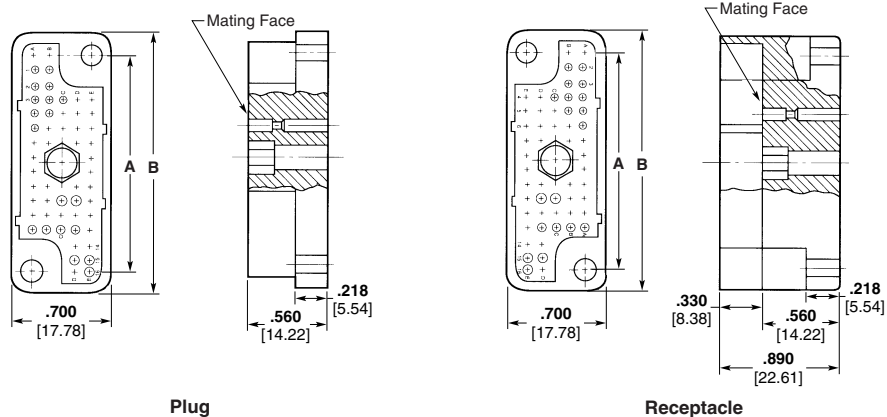
**Material** — See chart on page 8-109

### Related Product Data

**Contacts** — page 8-107

**Accessories** — pages 8-115 and 8-116

**Technical Documents —**  
page 8-106



### Recommended Panel Cutout

## High Density Rectangular Connectors (Continued)

### Housings (Continued)

#### 106 Position

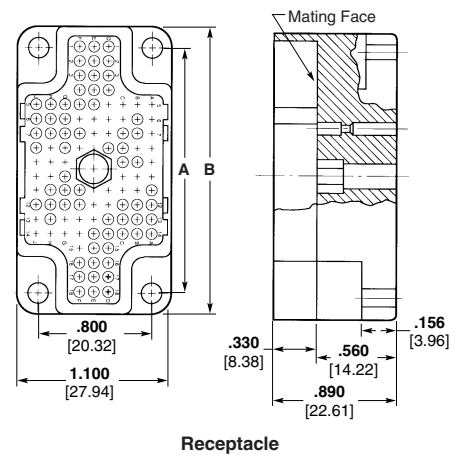
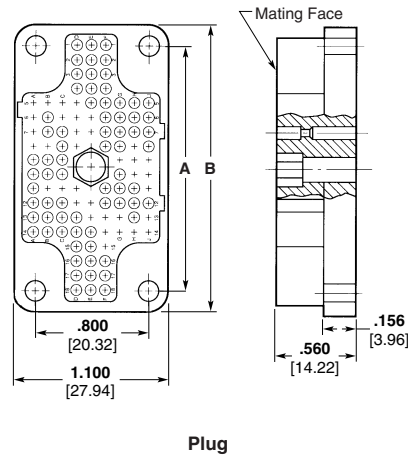
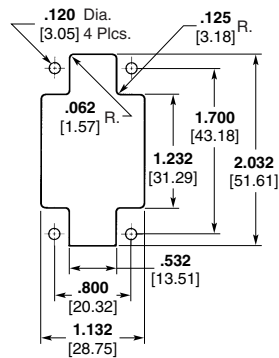
**Material** — see chart below

**Related Product Data**

**Contacts** — page 8-107

**Accessories** — pages 8-115 and 8-116

**Technical Documents** — page 8-106



#### Recommended Panel Cutout

| Center Fastener         | No. of Positions | Dimensions     |                | Center Fastener Type | Part Numbers |                   |                 |                   |
|-------------------------|------------------|----------------|----------------|----------------------|--------------|-------------------|-----------------|-------------------|
|                         |                  | A              | B              |                      | Plug Half    |                   | Receptacle Half |                   |
|                         |                  |                |                |                      | Phenolic     | Diallyl Phthalate | Phenolic        | Diallyl Phthalate |
| With Center Fastener    | 12               | 1.084<br>24.43 | 1.334<br>33.88 | Fixed Female         | 204727-1     | 204727-2          | —               | 204728-2          |
|                         |                  |                |                | Long Male Turnable   | —            | —                 | 204740-1        | 204740-2          |
|                         |                  |                |                | Short Male Turnable  | —            | —                 | —               | —                 |
|                         | 24               | 1.484<br>37.69 | 1.734<br>44.04 | Fixed Female         | 204729-1     | 204729-2          | —               | —                 |
|                         |                  |                |                | Long Male Turnable   | —            | 204741-2          | 204742-1        | 204742-2          |
|                         |                  |                |                | Short Male Turnable  | —            | —                 | —               | 204742-4          |
|                         | 36               | 1.884<br>47.85 | 2.134<br>54.20 | Fixed Female         | 204731-1     | 204731-2          | —               | 204732-2          |
|                         |                  |                |                | Long Male Turnable   | 204743-1     | 204743-2          | 204744-1        | 204744-2          |
|                         |                  |                |                | Short Male Turnable  | 204743-3     | —                 | —               | —                 |
|                         | 48               | 2.284<br>58.01 | 2.534<br>64.36 | Fixed Female         | 204733-1     | —                 | 204734-1        | 204734-2          |
|                         |                  |                |                | Long Male Turnable   | —            | 204745-2          | 204746-1        | 204746-2          |
|                         |                  |                |                | Short Male Turnable  | —            | 204745-4          | —               | —                 |
|                         | 54               | 1.500<br>38.10 | 1.800<br>45.72 | Fixed Female         | 204735-1     | —                 | 204736-1        | —                 |
|                         |                  |                |                | Long Male Turnable   | 204747-1     | 204747-2          | 204748-1        | 204748-2          |
|                         |                  |                |                | Short Male Turnable  | —            | —                 | —               | 204748-4          |
|                         | 106              | 1.700<br>43.18 | 2.000<br>50.80 | Fixed Female         | 204737-1     | 204737-2          | 204738-1        | 204738-2          |
|                         |                  |                |                | Long Male Turnable   | 204749-1     | 204749-2          | 204750-1        | 204750-2          |
|                         |                  |                |                | Short Male Turnable  | —            | 204749-4          | —               | 204750-4          |
| Without Center Fastener | 12               | 1.084<br>24.43 | 1.334<br>33.88 | —*                   | 204281-2     | 2-204281-2        | 204282-2        | —                 |
|                         | 24               | 1.484<br>37.69 | 1.734<br>44.04 | —*                   | —            | 2-204281-4        | 204282-4        | 2-204282-4        |
|                         | 36               | 1.884<br>47.85 | 2.134<br>54.20 | —*                   | 204281-6     | 2-204281-6        | 204282-6        | 2-204282-6        |
|                         | 48               | 2.284<br>58.01 | 2.534<br>64.36 | —*                   | 204281-8     | 2-204281-8        | 204282-8        | —                 |
|                         | 54               | 1.500<br>38.10 | 1.800<br>45.72 | —*                   | 203804-1     | 203804-2          | 203803-1        | 203803-2          |
|                         | 106              | 1.700<br>43.18 | 2.000<br>50.80 | —*                   | 204260-1     | 204260-2          | 204259-1        | 204259-2          |

\*See page 8-115 for jackscrews.



## High Density Rectangular Connectors (Continued)

### Housings (Continued)

#### 95 Position Connector with Jackscrews

##### Material

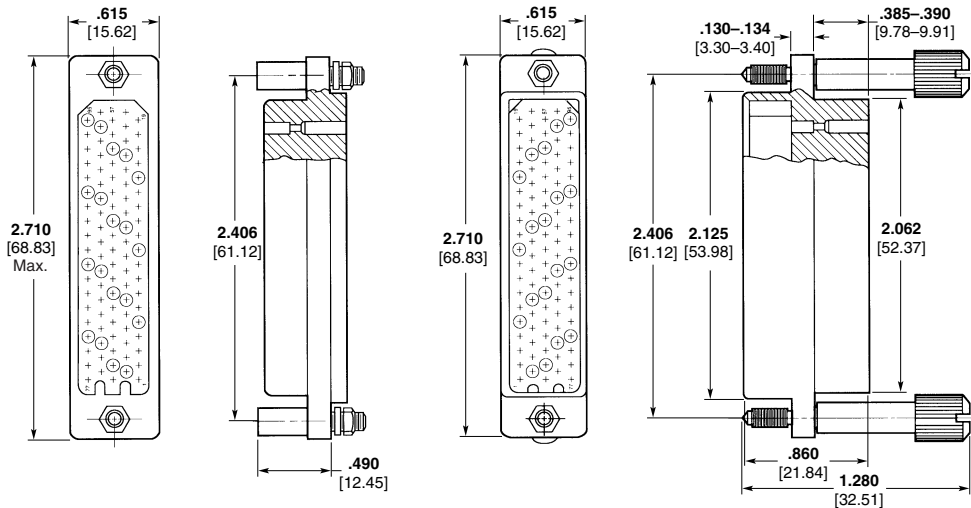
Housing — Diallyl Phthalate

Jackscrews — Stainless Steel

##### Related Product Data

Contacts — page 8-107

Technical Documents — page 8-106



Plug  
Part Number 204694-1

Receptacle  
Part Number 204693-2

#### 95 Position Connector with Floating Bushings

##### Material

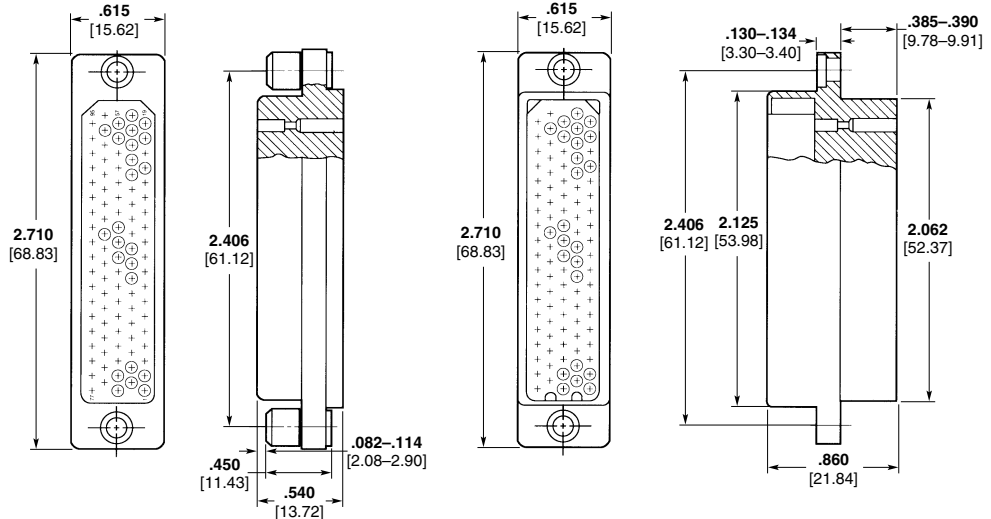
Housing — Diallyl Phthalate

Floating Bushings — Stainless Steel

##### Related Product Data

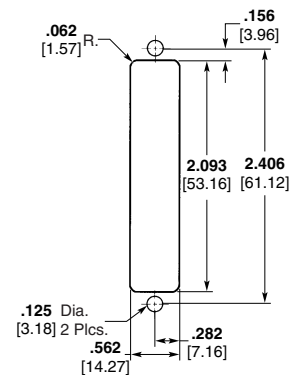
Contacts — page 8-107

Technical Documents — page 8-106



Plug  
Part Number 204030-1

Receptacle  
Part Number 204027-2



Recommended Panel Cutout

**Note:** Marking on receptacles are on wiring side only.



## High Density Rectangular Connectors (Continued)

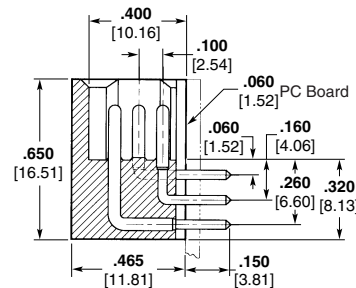
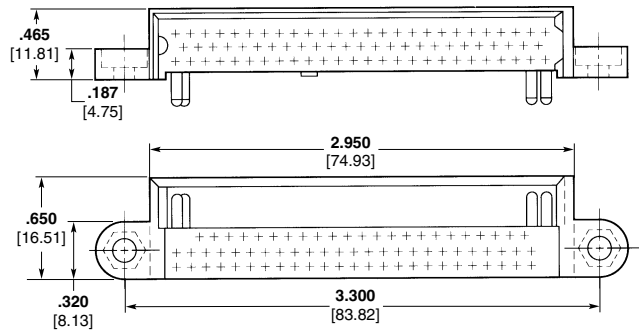
### Printed Circuit Board Connector

#### 80 Position Pin Header

##### Material and Finish

**Housing** — Diallyl Phthalate

**Contacts** — Brass Plated .000030  
[0.00076] Gold over .000030 [0.00076]  
Nickel



Part Number 204818-4

#### 80 Position Plug with Floating Bushings

##### Material and Finish

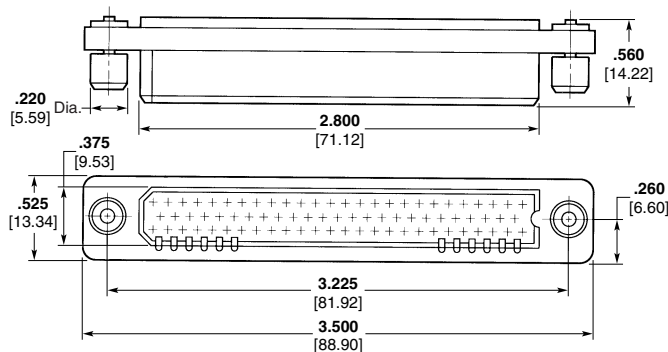
**Housing** — Diallyl Phthalate

**Floating Bushings** — Stainless Steel

##### Related Product Data

**Contacts** — page 8-107

**Technical Documents** — page 8-106



Part Number 204819-1

## High Density Rectangular Connectors (Continued)

### Preloaded Housings, .025 x .025 [0.64 x 0.64] Posted Contacts for Automatic Wiring

#### 12, 24, 36, & 48 Position

#### Material and Finish

**Housing** — See Chart

**Contact Body** —

Brass Plated as follows

**A** — .000030 [0.00076] Gold over  
.000050 [0.00127] Nickel

**B** — Gold Flash over .000050  
[0.00127] Nickel on entire contact, with  
additional .000030 [0.00076] Gold in  
contact area

**Contact Sleeve** — Stainless Steel

#### Related Product Data

**Contact Size** — 20

**Pin Diameter** — .040 [1.02]

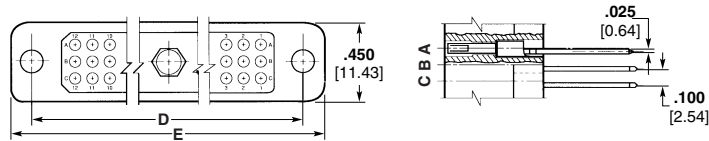
**Current Rating** — 3.0 Amperes  
(20 AWG [0.5–0.6 mm<sup>2</sup>] wire)

**Replacement Contacts** —  
page 8-107

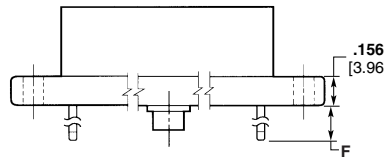
**Mateable Connectors** —  
pages 5-226 and 5-227

**Technical Documents** — page 8-106

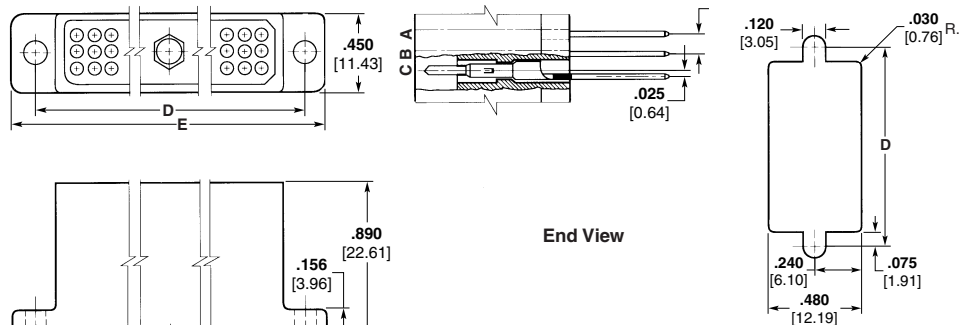
#### Plug Assembly



End View



#### Receptacle Assembly



End View

Recommended Panel Cutout

| No.<br>of<br>Positions | Dimensions     |                | Contact<br>Finish | Max.<br>Termination<br>Per Post | Dim.<br>F     | Part Numbers                  |                      |                                  |                      |
|------------------------|----------------|----------------|-------------------|---------------------------------|---------------|-------------------------------|----------------------|----------------------------------|----------------------|
|                        | D              | E              |                   |                                 |               | Plug Assembly Socket Contacts |                      | Receptacle Assembly Pin Contacts |                      |
|                        |                |                |                   |                                 |               | Phenolic                      | Diallyl<br>Phthalate | Phenolic                         | Diallyl<br>Phthalate |
| 12                     | 1.084<br>27.43 | 1.334<br>33.88 | A                 | 1                               | .242<br>6.15  | —                             | —                    | —                                | 2-204682-8           |
|                        |                |                |                   | 3                               | .670<br>17.02 | —                             | —                    | —                                | 3-204682-0           |
| 24                     | 1.484<br>37.69 | 1.734<br>44.04 | A                 | 1                               | .242<br>6.15  | —                             | 6-204683-4           | 1-204684-9                       | —                    |
|                        |                |                |                   | 3                               | .670<br>17.02 | —                             | 6-204683-6           | 2-204684-1                       | 3-204684-0           |
|                        |                |                | B                 | 1                               | .242<br>6.15  | 6-204683-1                    | 7-204683-0           | —                                | —                    |
|                        |                |                |                   | 3                               | .670<br>17.02 | 6-204683-3                    | —                    | 2-204684-7                       | —                    |
| 36                     | 1.884<br>48.85 | 2.134<br>54.20 | A                 | 1                               | .242<br>6.15  | —                             | —                    | 1-204686-9                       | 2-204686-8           |
|                        |                |                |                   | 3                               | .670<br>17.02 | 5-204685-7                    | 6-204685-6           | —                                | 3-204686-0           |
|                        |                |                | B                 | 1                               | .242<br>6.15  | —                             | —                    | —                                | 3-204686-4           |
|                        |                |                |                   | 3                               | .670<br>17.02 | 6-204685-3                    | 7-204685-2           | —                                | 3-204686-6           |
| 48                     | 2.284<br>58.01 | 2.534<br>64.36 | A                 | 1                               | .242<br>6.15  | 5-204687-5                    | —                    | —                                | 2-204688-8           |
|                        |                |                |                   | 3                               | .670<br>17.02 | 5-204687-7                    | 6-204687-6           | —                                | 3-204688-0           |
|                        |                |                | B                 | 1                               | .242<br>6.15  | —                             | 7-204687-0           | —                                | —                    |
|                        |                |                |                   | 3                               | .670<br>17.02 | 6-204687-3                    | 7-204687-2           | —                                | —                    |

**Notes:** 1. Markings on receptacle assembly are on wiring side only.

2. In addition to combinations listed, all sizes are available with or without female jackscrews. Plugs are available with pins, and receptacles are available with sockets. Consult TE Connectivity for details.

3. Fixed female jackscrews are included with these assemblies.

## High Density Rectangular Connectors (Continued)

**Preloaded Housings,  
.025 x .025 [0.64 x 0.64]  
Posted Contacts for  
Automatic Wiring (Continued)**

### 54 Position

#### Material and Finish

**Housing** — See Chart

**Contact Body** —

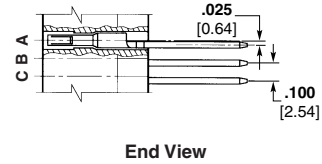
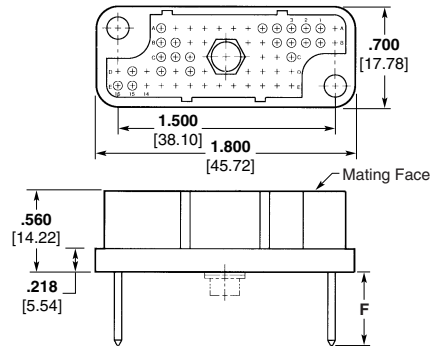
Brass Plated as follows

**A** — .000030 [0.00076] Gold over  
.000050 [0.00127] Nickel

**B** — Gold Flash over .000050  
[0.00127] Nickel on entire contact, with  
additional .000030 [0.00076] Gold in  
contact area

**Contact Sleeve** — Stainless Steel

#### Plug Assembly



End View

#### Related Product Data

**Contact Size** — 20

**Pin Diameter** — .040 [1.02]

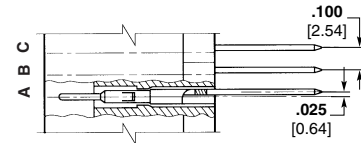
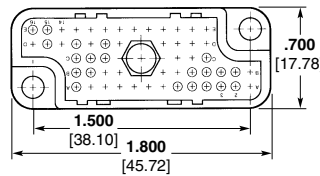
**Current Rating** — 3.0 Amperes  
(20 AWG [0.5–0.6 mm<sup>2</sup>] wire)

**Replacement Contacts** —  
page 8-107

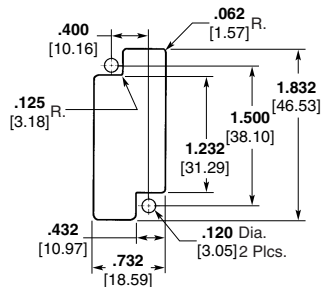
**Mateable Connectors** —  
pages 5-226 and 5-227

**Technical Documents** — page 8-106

#### Receptacle Assembly



End View



Recommended Panel Cutout  
for Receptacle

| Contact Finish | Max. Termination Per Post | Dim. F        | Part Numbers                  |                   |                                  |                   |
|----------------|---------------------------|---------------|-------------------------------|-------------------|----------------------------------|-------------------|
|                |                           |               | Plug Assembly Socket Contacts |                   | Receptacle Assembly Pin Contacts |                   |
|                |                           |               | Phenolic                      | Diallyl Phthalate | Phenolic                         | Diallyl Phthalate |
| A              | 1                         | .242<br>6.15  | 5-204689-5                    | 6-204689-4        | 1-204690-9                       | —                 |
|                | 2                         | .456<br>11.58 | 5-204689-6                    | 6-204689-5        | —                                | —                 |
|                | 3                         | .670<br>17.02 | 5-204689-7                    | 6-204689-6        | 2-204690-1                       | 3-204690-0        |
| B              | 1                         | .242<br>6.15  | 6-204689-1                    | —                 | —                                | —                 |
|                | 3                         | .670<br>17.02 | —                             | 7-204689-2        | 2-204690-7                       | —                 |

**Notes:** 1. Markings on receptacle assembly are on wiring side only.  
2. In addition to combinations listed, all sizes are available with or without female jackscrews. Plugs are available with pins, and receptacles are available with sockets. Consult TE Connectivity for details.  
3. Fixed female jackscrews are included with these assemblies.

## High Density Rectangular Connectors (Continued)

### Preloaded Housings, .025 x .025 [0.64 x 0.64] Posted Contacts for Automatic Wiring (Continued)

#### 106 Position

#### Material and Finish

**Housing** — See Chart

**Contact Body** —

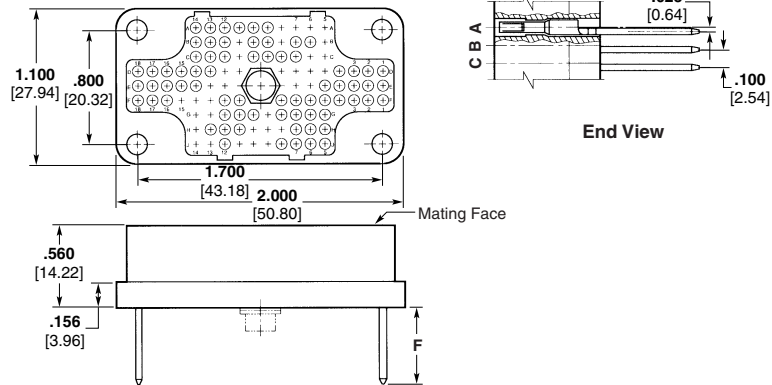
Brass Plated as follows

**A** — .000030 [0.00076] Gold over  
.000050 [0.00127] Nickel

**B** — Gold Flash over .000050  
[0.00127] Nickel on entire contact, with  
additional .000030 [0.00076] Gold in  
contact area

**Contact Sleeve** — Stainless Steel

#### Plug Assembly



#### Related Product Data

**Contact Size** — 20

**Pin Diameter** — .040 [1.02]

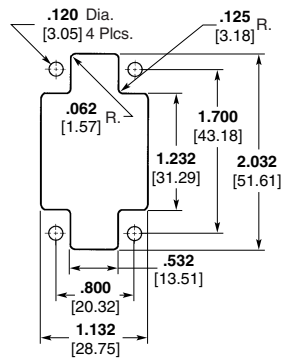
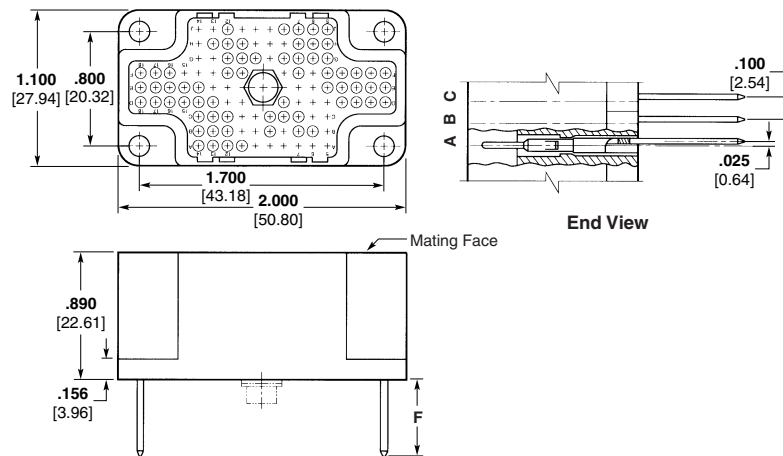
**Current Rating** — 3.0 Amperes  
(20 AWG [0.5–0.6 mm<sup>2</sup>] wire)

**Replacement Contacts** —  
page 8-107

**Mateable Connectors** —  
pages 5-226 and 5-227

**Technical Documents** — page 8-106

#### Receptacle Assembly



Recommended Panel Cutout

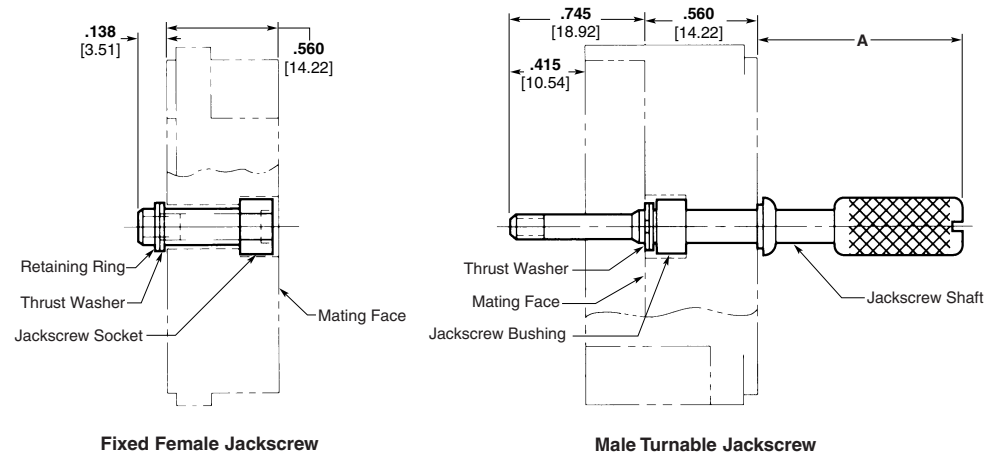
| Contact Finish | Max. Termination Per Post | Dim. F        | Part Numbers                  |                   |                                  |                   |
|----------------|---------------------------|---------------|-------------------------------|-------------------|----------------------------------|-------------------|
|                |                           |               | Plug Assembly Socket Contacts |                   | Receptacle Assembly Pin Contacts |                   |
|                |                           |               | Phenolic                      | Diallyl Phthalate | Phenolic                         | Diallyl Phthalate |
| A              | 1                         | .242<br>6.15  | 5-204691-5                    | —                 | —                                | 2-204692-8        |
|                | 3                         | .670<br>17.02 | 5-204691-7                    | 6-204691-6        | 2-204692-1                       | 3-204692-0        |
| B              | 1                         | .242<br>6.15  | 6-204691-1                    | 7-204691-0        | —                                | 3-204692-4        |
|                | 3                         | .670<br>17.02 | 6-204691-3                    | 7-204691-2        | 2-204692-7                       | 3-204692-6        |

**Notes:** 1. Markings on receptacle assembly are on wiring side only.  
2. In addition to combinations listed, all sizes are available with or without female jackscrews. Plugs are available with pins, and receptacles are available with sockets. Consult TE Connectivity for details.  
3. Fixed female jackscrews are included with these assemblies.

## High Density Rectangular Connectors (Continued)

### Accessories

#### Center Fasteners



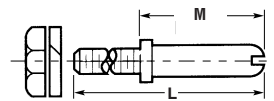
Fixed Female Jackscrew

Male Turnable Jackscrew

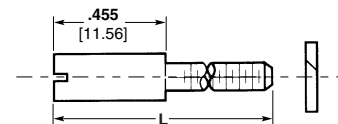
| No. of Positions | Type                | A             | Part No. |
|------------------|---------------------|---------------|----------|
| 12, 24<br>36, 48 | Fixed Female        | —             | 204299-1 |
|                  | Short Male Turnable | 1.01<br>25.65 | 204298-1 |
|                  | Long Male Turnable  | 1.76<br>44.70 | 204298-2 |
| 54, 106          | Fixed Female        | —             | 203879-1 |
|                  | Short Male Turnable | 1.01<br>25.65 | 203880-1 |
|                  | Long Male Turnable  | 1.76<br>44.70 | 203880-2 |

**Note:** Short male jackscrews cannot be used with shield and cable clamp assemblies.

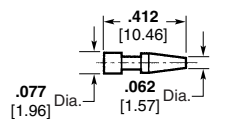
### Keying



Guide Pin



Guide Socket



Keying Plug  
Part Number 205120-1

| Material          | Pin            |               |          | Socket         |          |
|-------------------|----------------|---------------|----------|----------------|----------|
|                   | Dim. L         | Dim. M        | Part No. | Dim. L         | Part No. |
| Zinc Plated Brass | 1.100<br>27.94 | .515<br>13.08 | 203881-1 | 1.045<br>26.54 | 203882-1 |
| Stainless Steel   | 1.100<br>27.94 | .515<br>13.08 | 203881-2 | 1.045<br>26.54 | 203882-2 |
| Zinc Plated Brass | 1.300<br>33.02 | .725<br>18.42 | 205694-1 | —              | —        |

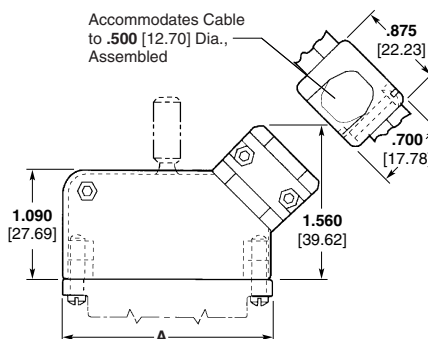
## High Density Rectangular Connectors (Continued)

### Accessories (Continued)

#### 45° Shield and Cable Clamps

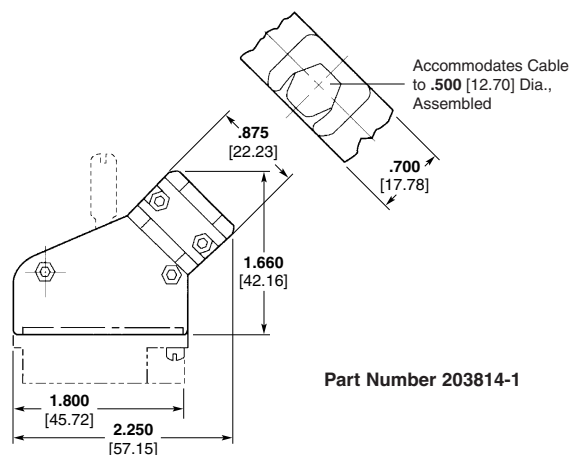
**Material** — Black Polysulfone

#### 12, 24, 36 & 48 Position



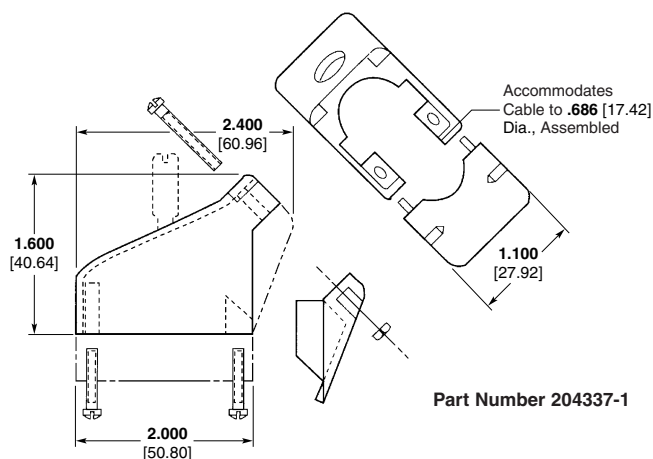
| No. of Positions | Dim. A         | Part No. |
|------------------|----------------|----------|
| 12               | 1.334<br>33.88 | 205083-1 |
| 24               | 1.734<br>44.04 | 205083-2 |
| 36               | 2.134<br>54.20 | 205083-3 |
| 48               | 2.534<br>64.36 | 205083-4 |

#### 54 Position



Part Number 203814-1

#### 106 Position



Part Number 204337-1

## High Density Rectangular Connectors (Continued)

### Application Tooling

Type XI crimp/snap-in contacts may be applied with hand tools, semi-automatic bench equipment or fully-automatic lead-making machines.

#### CERTI-CRIMP II Straight Action Hand Tools (SAHT)



Premium grade hand tools. Feature ratchet control to provide complete crimp cycle. Die sets close in a straight line. Include a contact locator and wire stop, plus an insulation crimp adjustment lever, when applicable. Approximate weight 1.3 lb [0.59 kg].

#### AMP-O-ELECTRIC Model "K" Terminating Machine, 1-471273-3



Semiautomatic bench machine for use with standard-style applicators. It is an electrically-powered, clutched, flywheel-energy-style machine, equipped with a mechanical strip feed mechanism. Products commonly applied with this machine include AMP splices, AMPLIVAR splices, and FASTON flag receptacles.

##### Specifications

**Width** — 21 [533]

**Depth** — 20 [508]

**Height** — 24 [610] without reel

**Weight** — 230 lb [104 kg]

**Electrical** — 120 VAC, 60 Hz, 6 A

**Air** — 90-110 psi [6.21-7.59 bar], 6 scfm [0.00282 m³/s] when required with air-feed applicators

**Wire Range** — 26-10 AWG [0.12-6 mm²] solid or stranded, depending on product applied

For more information, contact TE Connectivity.

#### AMPOMATOR CLS IV+ Lead-Making Machines, 356500-1, -2



Fully-automatic machines that measure, cut, strip and terminate single leads. Microprocessor-controlled, and programmed and operated using an easy-to-follow, menu-driven touch-screen. Features include direct-drive terminating units with precision crimp height adjustment, fully programmable setups, wire runout and splice detection, and motorized pre-feed with wire straightener. Crimp quality monitoring is also available.

##### Specifications

**Width** — 159 [4 040]

**Depth** — 68 [1 730]

**Height** — 86 [2 185] with 24 [610] dia. reel

**Weight** — 2 000 lb [907 kg]

**Electrical** — 220 VAC, 50 or 60 Hz, single phase, 25 A, with neutral and ground

**Air** — 90 psi [6.21 bar], 15 scfm [0.0071 m³/s] sustained

**Wire Range** — 26-10 AWG [0.12-6 mm²] stranded, 26-16 AWG [0.12-1.4 mm²] solid

**Lead Lengths** — 3-90 [76.2-2 285], 90-1 000 [2 285-25 400] with long lead conveyors

For more information, request Catalog 124324.

#### Crimp Quality Monitor (CQM), 1320420-1, -2



This unique system provides 100% on-the-fly crimp inspection. It measures the crimp height of each termination, and evaluates the quality of each crimp. If a crimp is questionable, the monitor alerts the operator with both visual and audible alarms. It also provides ports for printing and networking. When used with AMP-O-ELECTRIC Model "K" Termination Machines, the monitor is mounted to the machine. When used with AMPOMATOR CLS IV+ Lead-Making Machines, it is integrated into the machine's operating system.

##### Specifications

**Width** — 8.8 [220]

**Depth** — 8.1 [205]

**Height** — 4.6 [115]

**Weight** — 5 lb [2.3 kg]

**Electrical** — 100-240 VAC, 50/60 Hz, 3.2 A

For more information, request Catalog 82275.

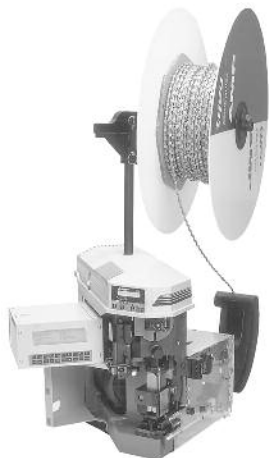


## High Density Rectangular Connectors (Continued)

### Application Tooling

(Continued)

#### AMP-O-LECTRIC Model "G" Terminating Machines, 354500-1, -9, -11



Semiautomatic bench machines for crimping reeled terminals and contacts, featuring a quiet and reliable direct motor drive, microprocessor controls for ease of setup and operation, and guarding and lighting designed for operator convenience. All models are equipped with either manual or automatic precision adjustment of crimp height. Machine-mounted sensors are available for crimp quality monitoring using conventional miniature-style applicators.

#### Specifications

**Width** — 18.7-25.3 [475-643]

depending on applicator type

**Depth** — 21.5-28.1 [546-713]

depending on applicator type

**Height** — 20 [508]

**Weight** — 240 lb [110 kg]

Electrical — 120 or 220 VAC, 50 or 60 Hz, 310 VA

**Air** — 90-110 psi [6.21-7.59 bar], 6 scfm [0.00282 m<sup>3</sup>/s] when required with air-feed applicators

**Wire Range** — 26-10 AWG [0.12-6 mm<sup>2</sup>] solid or stranded, depending on product applied

For more information, request Catalog 65828.

#### Entry Level Terminator (ELT), 1338600-1, -2, -3, -4, -5, -6



Semiautomatic Bench Terminator for side- and end-feed reeled terminals and contacts. The ELT uses a DC motor with gear box drive. The result is a small-footprint design that is fast and quiet. Cycle time is less than 0.400 seconds with an operation sound level of 76dBA. With a crimp force capacity of 3,000 pounds, the ELT is available for all but the highest crimp force applications. A wide range of optional equipment is also available to meet your specific application requirements.

#### Specifications

**Width** — 16.8 [427]

**Depth** — 20.6 [523]

**Height** — 20 [510] without reel support

**Weight** — approx. 150 lb [68 kg]

**Electrical** — 100-240 VAC, 50/60 Hz, 6A (Note: Avg <1 A at 120 VAC when used as a bench-top unit at 2,000 cycles per hour operating rate)

**Air** — 90-100 psi [6.21-6.90 bar], 6 scfm [0.00282 m<sup>3</sup>/s] when required for use with air-feed applicators (Note: Optional Air Feed Valve Assembly Required)

**Wire Range** — Up to 14 AWG [2.5 mm<sup>2</sup>]

For more information, request catalog 1308382.

#### AMP-O-MATIC Stripper/Crimper Machine, 1320895-1



Semiautomatic bench crimping machines that also strip the wire, and are therefore used for terminating jacketed cable. Feature manual precision adjustment of crimp height, keyed strip blades for faster, more accurate setups, and an efficient scrap removal system. All adjustments can be made from the front of the machines without special tools. Available with crimp quality monitoring.

#### Specifications

**Width** — 14 [355]

**Depth** — 18 [457]

**Height** — 33 [838] without reel

**Weight** — 150 lb [68 kg]

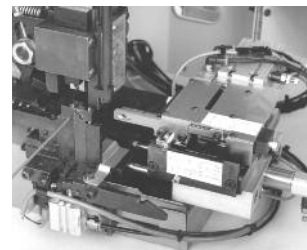
**Electrical** — 120 VAC, 50 or 60 Hz, .5 A

**Air** — 80-100 psi [5.52-6.90 bar], 3.5 scfm [0.00165 m<sup>3</sup>/s]

**Wire Range** — 32-14 AWG [0.03-2 mm<sup>2</sup>]

For more information, request Catalog 65004.

#### Stripping Module



The combination of the Stripping Module with the Entry Level Terminator (ELT) or the AMP-O-LECTRIC Model G Terminator provides an economical and proficient method of stripping wire and crimping terminals on the same machine. Wires are stripped moments before crimping, meaning there is virtually no chance of damaging wire conductors during handling or storage. Once the wire is fed into the start sensor the Stripping Module does the rest, improving placement accuracy.

#### Specifications

**Wire Range Base Module** — 0.03 mm<sup>2</sup> - 2.0 mm<sup>2</sup> (32-14 AWG) (30-32 AWG may require special kit.)

**Max. Insulation** — .200 [5.08]

**Cable Breakout** — > 1.100 [29.00]

**Strip Length** — .100 - .400 [2.50 - 10.16]

**Noise** — Less than 82 dBA (Typical at operator position with standard mechanical feed applicator)

**Weight** — 4.53 Kilograms (10 lb)

**Height** — 5.000 [127.00]

**Electrical** — 100-240 VAC, 50/60 Hz, single phase current, obtains power from the terminator

**Air** — 620-760 kPa (90-100 psi), 2.83 liters/sec (6 scfm)

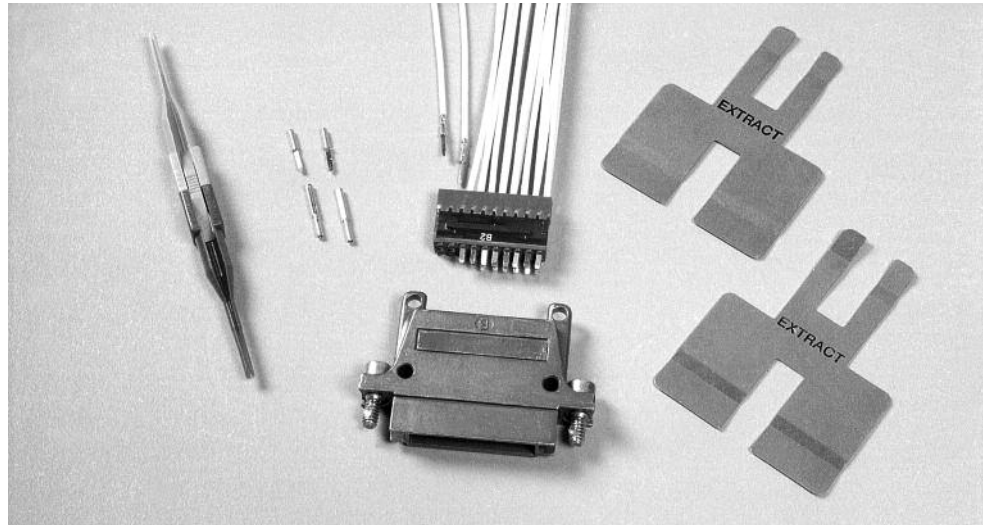
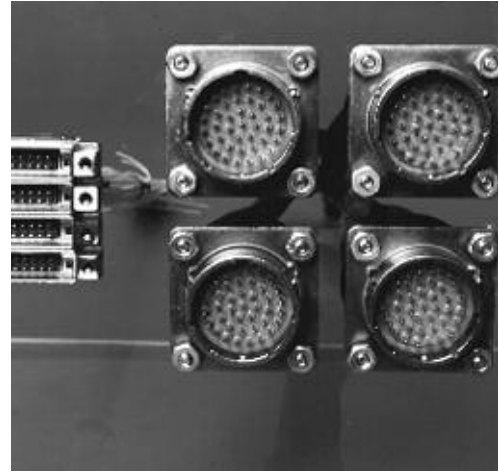
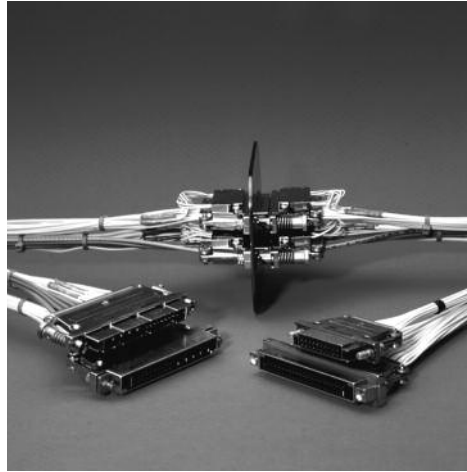
**Wire Sensor** — Gold plated contacts with laser etched target

For more information, request Catalog 1309085.

## Introduction

### Product Facts

- Low-profile rectangular design for high packaging density
- Environmental sealing for aerospace applications
- Modular components for design versatility and logistics savings
- Lightweight materials for weight savings
- Quick-disconnect or jackscrew mating hardware



### System

TE Connectivity MTC product line is a complete modular connector system consisting of lightweight, environmentally sealed miniature rectangular connectors (shell housings with removable inserts) and individually removable rear-release contacts.

### Components

MTC connectors are now available with quick-disconnect mating hardware, EME shielding accessories, and modular inserts that can accommodate a mix of signal and power crimp contacts and coaxial contacts. The need for special termination tooling

has been minimized, while the ease of manufacturing and maintenance has been improved.

### Configurations

MTC rectangular connectors using jack screws or quick-disconnect hardware can be stacked or panel-mounted next to each other without any provision for grip space, a feature that can save significant panel area.

MTC connectors are available in 1-inch and 2-inch configurations. Modular removable inserts with size 22 and/or size 16 contact cavities can be combined into the 1-inch and 2-inch MTC housings.

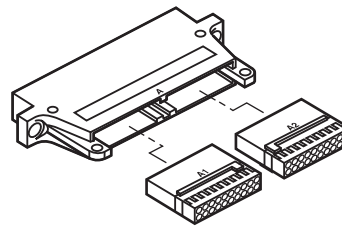
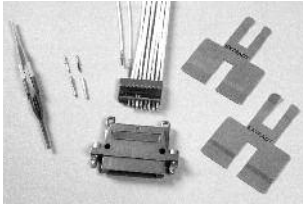
### Inserts

MTC inserts are available in 20-cavity and 5-cavity versions. The 20-cavity insert accepts size 20-22 (24 AWG to 20 AWG wire) crimp contacts. The 5-cavity insert accepts size 16-14 crimp contacts. Insertion/extraction of the contacts is rear release.

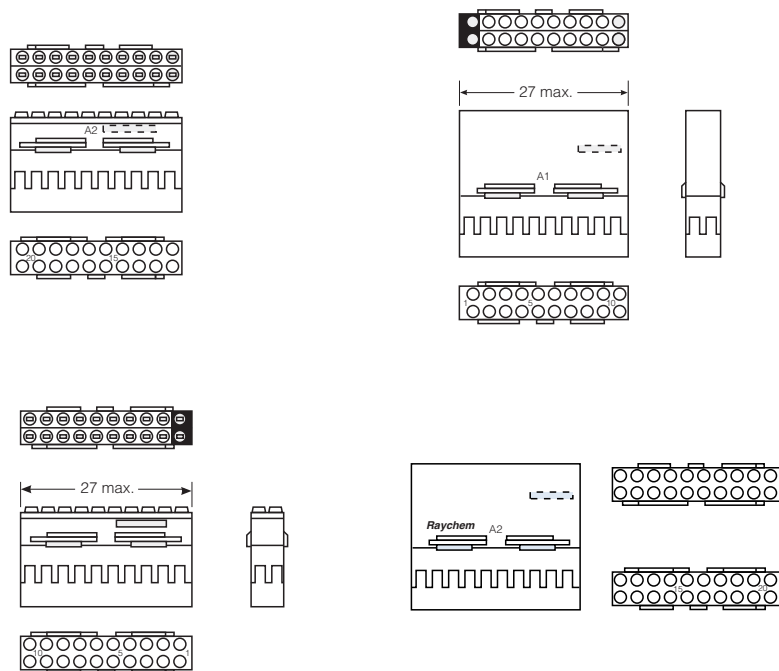
### Note:

Other configurations are available in the MTC family (size 12 contacts; 50 mil spacing for double density; accessories). Please contact TE.

## 20-Cavity Inserts



2-inch shell with inserts



MTCP-122-20 inserts are used with MTC100 1-inch and 2-inch shells.  
The 1-inch shell takes:

- One MTCP-122-20P (pin contact) **or**
- One MTCP-122-20S (socket contact)

The 2-inch shell takes:

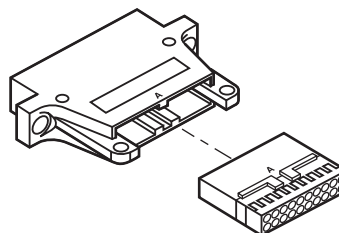
- One MTCP-122-20P1 and one MTCP-122-20P2 (pin contact) **or**
- One MTCP-122-20S1 and one MTCP-122-20S2 (socket contact)

### 2 x 20 Cavity Inserts (Size 20-22)—2-Inch Shell

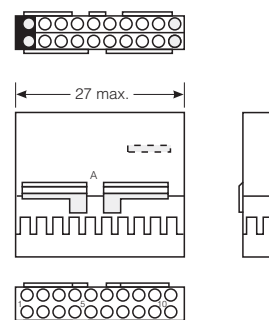
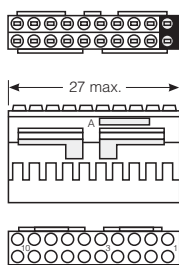
| Pin Insert    | Socket Insert |
|---------------|---------------|
| MTCP-122-20P1 | MTCP-122-20S1 |
| MTCP-122-20P2 | MTCP-122-20S2 |

## 20-Cavity Inserts (Continued)

### 1 x 20 Cavity Inserts (Size 20–22)—1-Inch Shell



1-inch shell with insert



#### Pin Insert

MTCP-122-20P

#### Socket Insert

MTCP-122-20S

#### Contacts for 20-Cavity Inserts

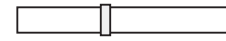
The contacts for 20-cavity inserts must be ordered separately. They are:

- CTA-0166—pin contact
- CTA-0165—socket contact

Contacts accept 24 AWG to 20 AWG wires.



Pin Contact  
CTA-0166



Socket Contact  
CTA-0165

#### Tools

Positioner for pin contact

CE-1605900

Installation process

ES-61413

Contact removal tool (plastic)

CTA-1160

Extraction tool for MTCP inserts

CTA-0161

#### Tools

Positioner for socket contact

CE-1606000

Installation process

ES-61413

Contact removal tool (plastic)

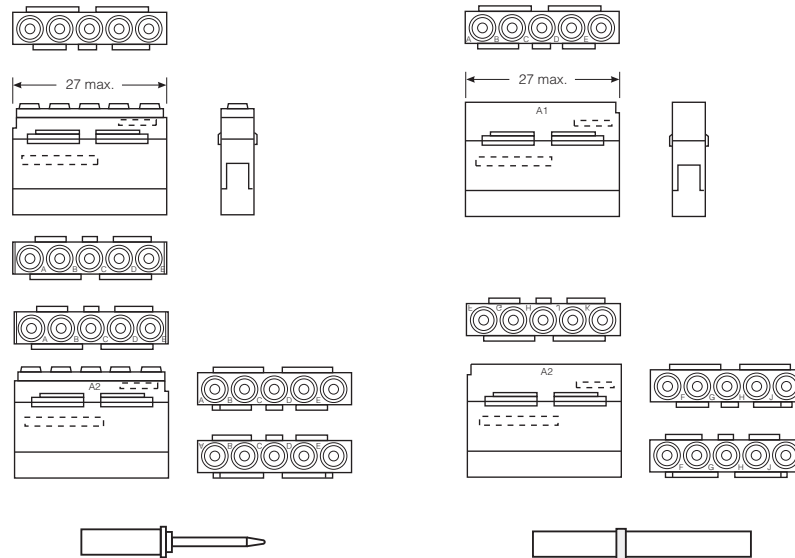
CTA-1160

Extraction tool for MTCP inserts

CTA-0161

## 5-Cavity Inserts

### 5-Cavity Inserts (Size 16)



MTCP-116-05 inserts are used with MTC100 1-inch and 2-inch shells.  
The 1-inch shell takes:

- One MTCP-116-05-P1 (pin contact) **or**
- One MTCP-116-05-S1 (socket contact)

The 2-inch shell takes:

- One MTCP-116-05P1 and one MTC-116-05P2 (pin contact) **or**
- One MTCP-116-05-S1 and one MTCP-116-05-S2 (socket contact)

#### 5-Cavity Inserts (Size 16)

| Pin Insert    | Socket Insert |
|---------------|---------------|
| MTCP-116-05P1 | MTCP-116-05S1 |
| MTCP-116-05P2 | MTCP-116-05S2 |

### Contacts for 5-Cavity Inserts

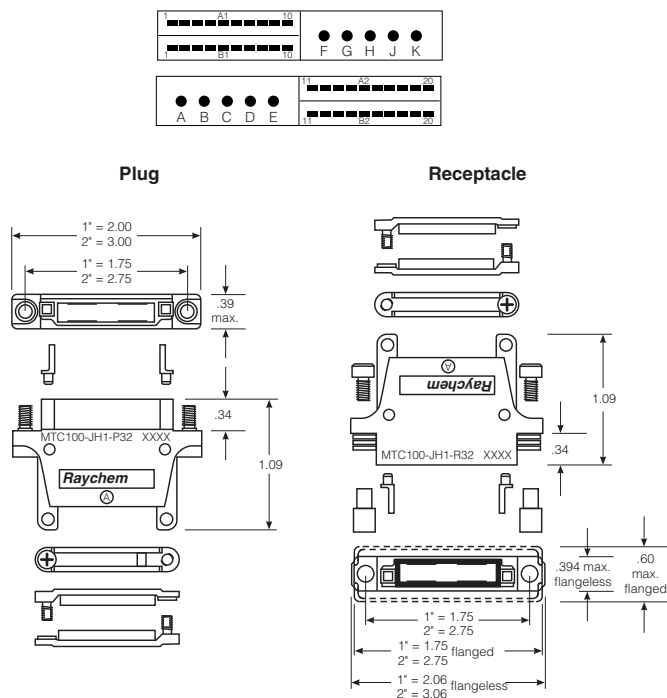
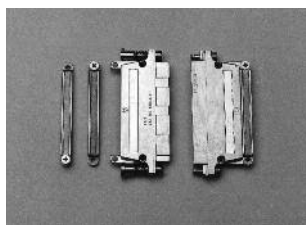
The contacts for 5-cavity inserts must be ordered separately. They include:

- CTA-0079 - pin contact (MS 27493-16) (MIL-C-39029/58 intermateable)
- CTA-0078 - socket contact (MS 27491-16) (MIL-C-39029/57 intermateable)
- D-602-0140 - coaxial pin contact (MIL-C-39029/76 intermateable)
- D-602-0171 - coaxial socket contact (MIL-C-39029/78 intermateable)

Other contacts designed for M38999 Series II connectors can be used.

| Pin Contact          | Socket Contact       |
|----------------------|----------------------|
| D-602-0140 (coaxial) | D-602-0171 (coaxial) |
| CTA-0079 (power)     | CTA-0078 (power)     |

## Hybrid Inserts



## Hybrids

Hybrid insert combinations of size 22 and size 16 contact cavities are also possible.

### 2-Inch Shell—Hybrid Assembly

Power and signal

## Shells

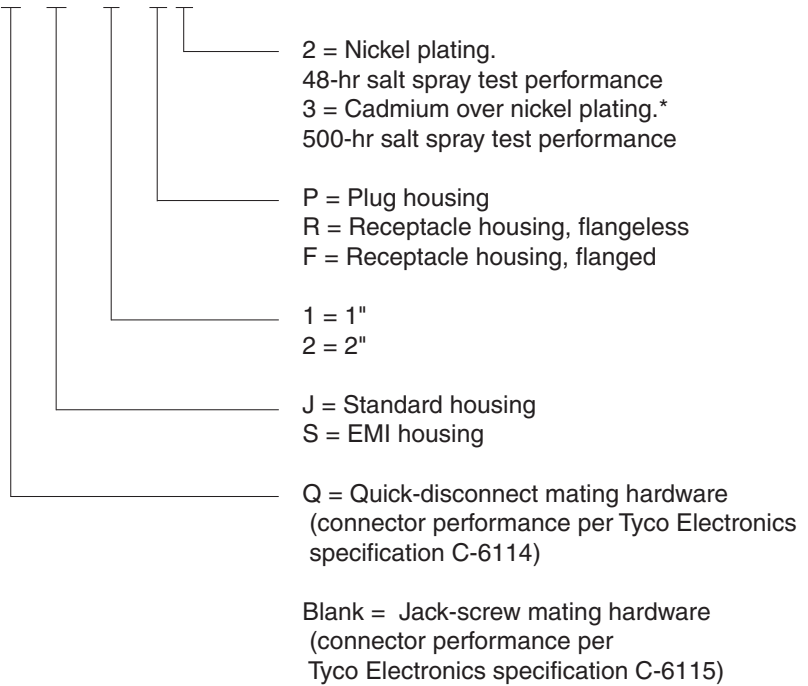
MTC connector housing shells are available with nickel plating (48-hr salt spray performance) or cadmium over nickel plating (500-hr salt spray performance).

MTC connector housings are offered with quick-disconnect or jack-screw mating hardware. Each connector shell is polarized and has 64 user-defined keying combinations. Lightweight, low-profile EME backshells are also available for increased shielding effectiveness of the connector.



## MTC Shells Ordering Information

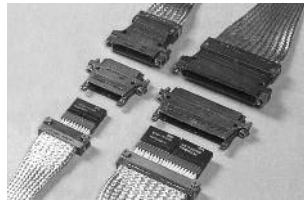
**M T C 1 0 0 X - X H X - X X2**



\*Some combinations of shells, mating hardware and EME shielding accessories are not available.  
Contact TE Connectivity for product information.



## Accessories



### Low-Profile EME Backshells

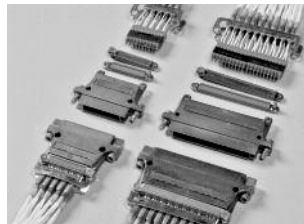
Lightweight rectangular EME backshells connect the overall bundle shield to the MTC connector housing. Individual cable shields can also be terminated to the backshell braid by using SolderSleeve devices.

The backshell is mounted on the MTC housing via the cable clamp screws.

MTC backshell features include a low profile, light weight, and Level II EME performance.

### EME Backshell Adapters

- CHA-0275 2-inch adapter (plug or receptacle)
- CHA-0276 1-inch adapter (plug or receptacle)



### MTC Shield-Grounding BusBars

MTC shield-grounding busbars allow for simple, cost-effective termination of cable shielding to MTC aluminum housings.

Two-inch shield-grounding busbars terminate up to 20 shielded twisted pairs on a 2-inch MTC connector. The individual shields are terminated to "fingers" on the busbar with SolderSleeve devices.

The busbar is mounted on the MTC housing via cable clamp screws.

MTC busbar features include a simple termination, cost effectiveness, light weight, and Level I EME performance.

### Shield-Grounding Busbars

- CTA-0022 1-inch busbar (with 5 SolderSleeve terminators)
- CTA-0023 2-inch busbar (with 10 SolderSleeve terminators)



### EME Shielding Accessories for MTC Connectors

#### Grounding Block (Externally attached)

Allows for cable shield termination grounding on the MTC shell housing via crimp-removable contacts. This grounding scheme allows individual cables to be removed from the connector without cutting a ganged ground connection. Sufficient ground contacts are available to handle shielded twisted-pair cables.

### Grounding Block

- CHA-0305 1-inch grounding block receptacle shell
- CHA-0306 2-inch grounding block receptacle shell
- CHA-0307 1-inch grounding block plug shell
- CHA-0308 2-inch grounding block plug shell

**MTCR Size 12 Connectors****Product Facts**

- Low-profile rectangular design for high packaging density
- Environmental sealing for aerospace applications
- 64 user-defined keying positions for logistics savings
- 4 contact cavities per 1" shell



TE Connectivity MTCR connectors are rectangular, lightweight, and environmentally-sealed, with individually removable rear-release size 12 contacts.

The MTCR connector's size 12 cavities accept four standard MIL-C-83723 Series III contacts for twisted pairs, coax, triax, and 12 to 14 AWG power cables.

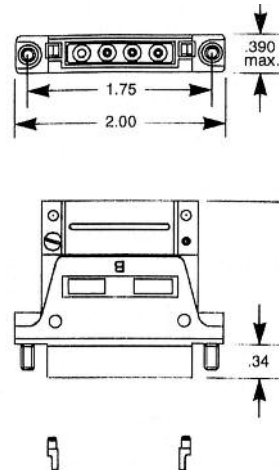
MTCR connectors are available with flanged receptacles and a variety of accessories, including EME backshells.

MTCR connectors are qualified to TE Specification C-6115.

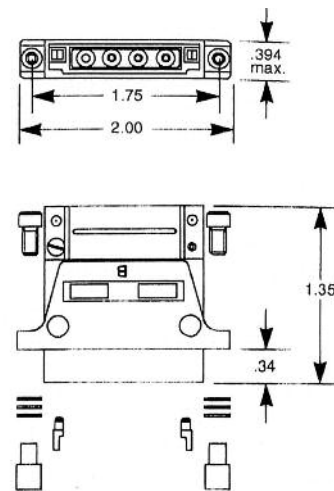
## MTCR Size 12 Connectors (Continued)

### Connectors

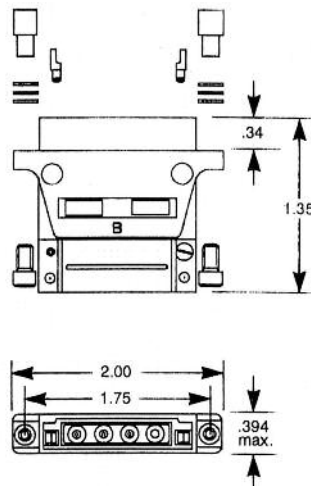
**Pin-Cavity Plug Shell**  
MTCR-163-04P



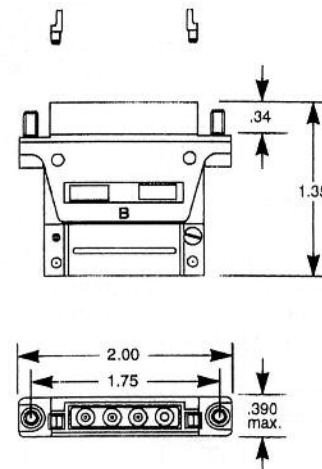
**Pin-Cavity Receptacle Shell**  
MTCR-103-04P



**Socket-Cavity Plug Shell**  
MTCR-163-04S



**Socket-Cavity Receptacle Shell**  
MTCR-103-04S



### Contacts

| Cable Type     | 12 AWG Power Cable          | 0.100" Max. Coaxial Cable      | 0.126" Max Coaxial Cable       | Twisted Pair Cable             |
|----------------|-----------------------------|--------------------------------|--------------------------------|--------------------------------|
| Pin Contact    | CTA-0114<br>(MIL-C-39029/4) | D-602-0094<br>(MIL-C-39029/74) | D-602-0106<br>(MIL-C-39029/74) | D-602-0104<br>(MIL-C-39029/74) |
| Socket Contact | CTA-0115<br>(MIL-C-39029/5) | D-602-0095<br>(MIL-C-39029/73) | D-602-0107<br>(MIL-C-39029/73) | D-602-0105<br>(MIL-C-39029/73) |

Note:

Various options are available. Please see customer drawings or contact TE Connectivity.

### Tooling

Sealing Plugs (for unused cavities): MS27488-12  
Contact Insertion/Removal Tool: M81969/14-04

## EME Shielding Accessories for MTC Connectors

### Low Profile EME Backshells

#### Product Facts

- Low profile
- Lightweight
- Level II EME performance for hardened applications\*

### MTC Busbar

#### Product Facts

- Simple termination
- Lightweight
- Cost effective
- Level I EME performance\*



TE Connectivity Raychem brand of MTC Shield-Grounding Busbars allow for simple, cost-effective termination of cable shielding to MTC aluminum housings.

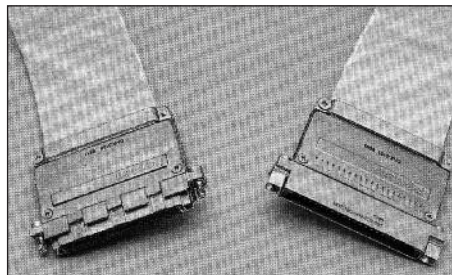
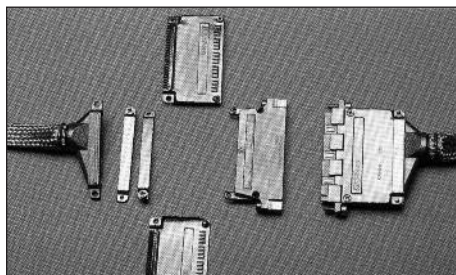
Two-inch shield-grounding busbars terminate up to 20 shielded twisted pairs on a 2" MTC connector. The individual shields are terminated to "fingers" on the busbar with Raychem brand SolderSleeve devices.

The busbar is mounted on the MTC housing via the cable clamp screws.

TE also offers lightweight, rectangular EME backshells that connect the overall bundle shield to the MTC connector housing. Individual cable shields can also be terminated to the backshell braid by using Raychem brand SolderSleeve devices.

The backshell is mounted on the MTC housing via the cable clamp screws.

### Screening

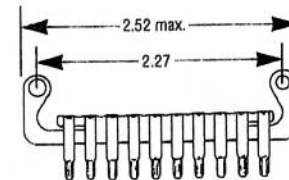
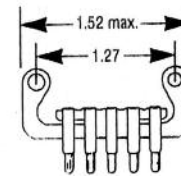


\*Per TE Specifications C-6111 for connectors with fixed contacts and C-6115 for connectors with removable contacts.

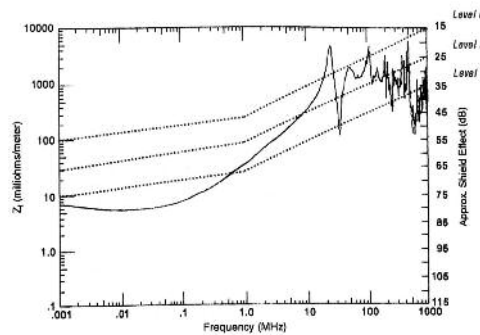
## EME Shielding Accessories for MTC Connectors (Continued)

### Shielding-Grounding Busbars

CTA-0022 = 1-inch busbar  
(with 5 SolderSleeve terminators)  
CTA-0023 = 2-inch busbar  
(with 10 SolderSleeve terminators)  
CTA-0024 = SolderSleeve terminator

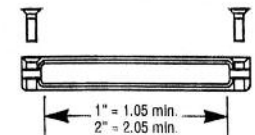
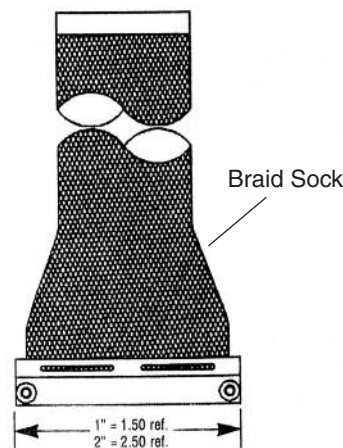


Typical Surface Transfer Impedance ( $Z_t$ )  
2-inch CTA-0023  
(with shielded twisted pairs)

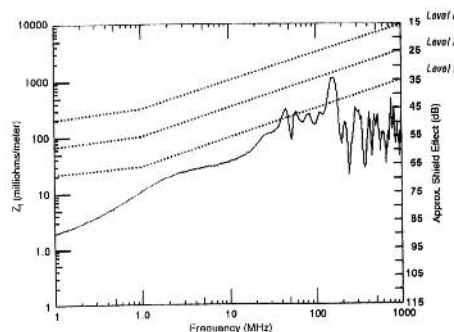


### EME Backshell Adapters

CHA-0275 = 2-inch adapter  
(plug or receptacle)  
CHA-0276 = 1-inch adapter  
(plug or receptacle)



Typical Surface Transfer Impedance ( $Z_t$ )  
1-inch CTA-0276 (with overall shielded wire bundle)





## MTC Boxmount Connectors

### Size 22 Connectors

#### Product Facts

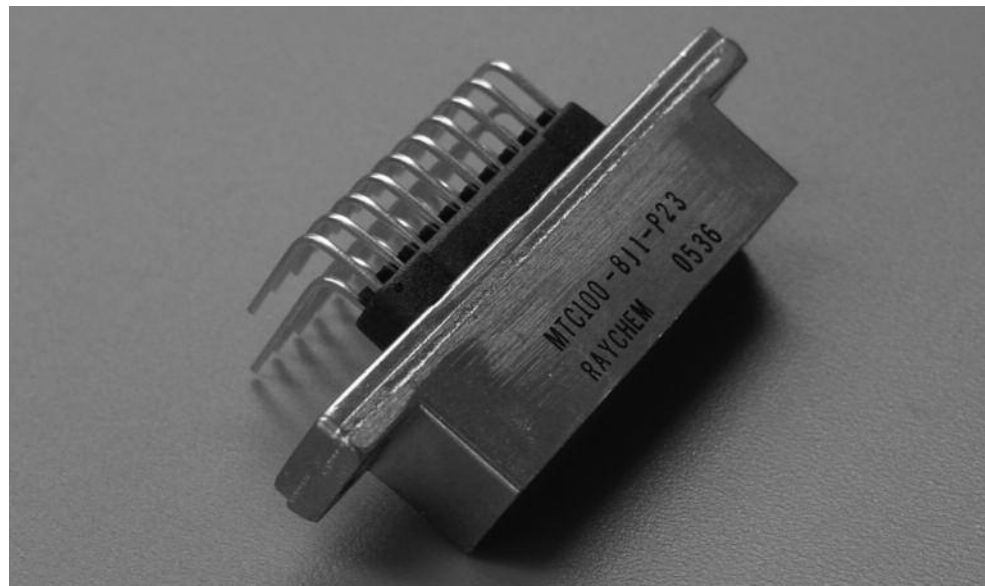
- Fixed size 22 contacts on 100-mil centers
- Compact, lightweight design
- Variety of configurations
- Termination flexibility:

Direct mount onto circuit boards  
Solderless wire wrap  
Variety of Solder Sleeve terminations

### Size 16 Connectors

#### Product Facts

- Removable size 16 MIL-C-38999 Series II contacts on 200-mil centers
- Compact, lightweight design



TE Connectivity offers an extensive line of MTC boxmounted connectors to complement the MTC cable connectors.

MTC boxmount connectors are lightweight, high-density, one-piece receptacles with fixed pin or socket inserts.

Boxmounted MTC connectors allow for a high density of interconnections while utilizing a minimum of interior box space.

MTC boxmounts are available with either size 22 or size 16 contacts.

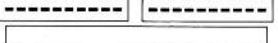
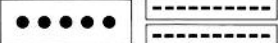
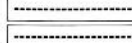
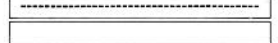
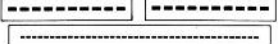


### Boxmount Connector Part Numbers

M T C X X X - B X X - X 3 X

- Tail Type  
1 = Long tail; 2 = Short tail; 3 = 90°; 4 = Removable contact
- Plating  
Cadmium over nickel
- Contact Type  
P = Pin; S = Socket
- Connector Size  
1 = 1 inch; 2 = 2 inch
- Shell Type  
F = Flanged with standard gasket  
S = Shielded/EME gasket included
- Insert/Cavity Type  
100 = 100 mil/size 22; P = 200 mil/size 16

### MTC Selection Guide

| Total<br>Number | Contacts            |          | Arrangement                                                                         | Possible<br>Round Wire |             | Possible<br>Flat Cable |             | Family<br>Shell | Shell<br>Size |
|-----------------|---------------------|----------|-------------------------------------------------------------------------------------|------------------------|-------------|------------------------|-------------|-----------------|---------------|
|                 | Number              | Size     |                                                                                     | AWG<br>Min.            | AWG<br>Max. | AWG<br>Min.            | AWG<br>Max. |                 |               |
| 4               | 4                   | 12       |    | 16                     | 12          |                        |             | MTCR            | 1             |
| 5               | 5                   | 16       |    | 20                     | 16          |                        |             | MTC100          | 1             |
| 10              | 2x5                 | 16       |    | 20                     | 16          |                        |             | MTC100          | 2             |
| 10              | 10<br>Dummy wafer   | 22       |    | 26                     | 20          | 24                     | 22          | MTC100          | 1             |
| 20              | 2x10                | 22       |    | 26                     | 20          | 24                     | 22          | MTC100          | 1             |
| 20              | 20<br>Dummy wafer   | 26       |    | 28                     | 24          |                        | 28          | MTC50           | 1             |
| 20              | 2x10<br>Dummy wafer | 22       |    | 26                     | 20          | 24*                    | 22*         | MTC100          | 2             |
| 20              | 20<br>Dummy wafer   | 22       |    | 26                     | 20          | 24                     | 22          | MTC100          | 2             |
| 25              | 5<br>2x10           | 16<br>22 |   | 20<br>26               | 16<br>20    |                        |             | MTC100          | 2             |
| 30              | 10<br>20            | 22<br>26 |  | 26<br>28               | 20<br>24    | 24                     | 22<br>28    | MTC50           | 1             |
| 40              | 2x20                | 26       |  | 28                     | 24          |                        | 28          | MTC50           | 1             |
| 40              | 20<br>2x10          | 22       |  | 26                     | 20          | 24*                    | 22*         | MTC100          | 2             |
| 40              | 4x10                | 22       |  | 26                     | 20          | 24*                    | 22*         | MTC100          | 2             |
| 40              | 40<br>Dummy wafer   | 26       |  | 28                     | 24          |                        | 28          | MTC50           | 2             |
| 40              | 2x20                | 22       |  | 26                     | 20          | 24                     | 22          | MTC100          | 2             |
| 60              | 20<br>40            | 22<br>26 |  | 26<br>28               | 20<br>24    | 24                     | 22<br>28    | MTC50           | 2             |
| 60              | 2x10<br>40          | 22<br>26 |  | 26<br>28               | 20<br>24    | 24*                    | 22*<br>28   | MTC50           | 2             |
| 80              | 2x40                | 26       |  | 28                     | 24          |                        | 28          | MTC50           | 2             |

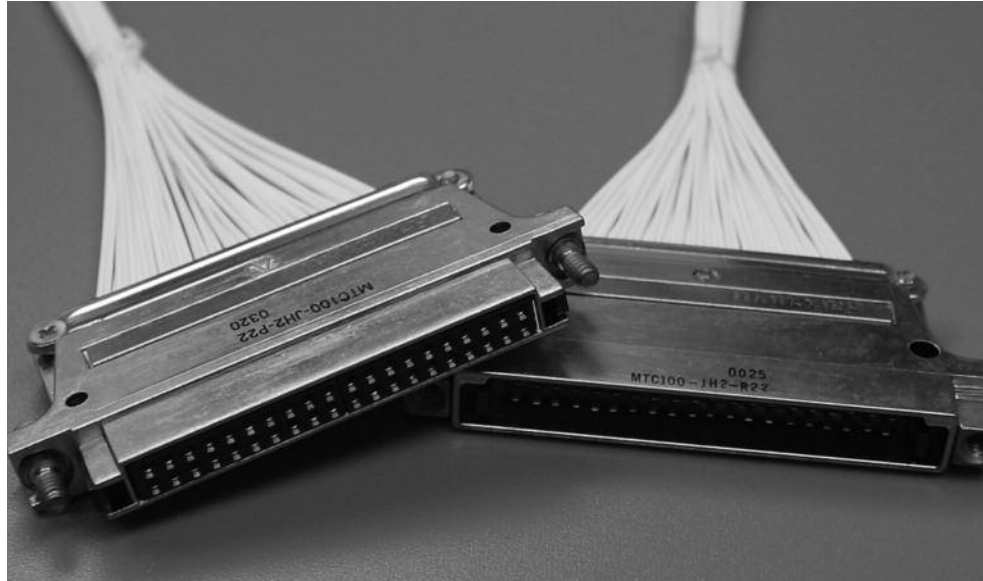
\*Two 4-way wafers FCC cannot be mounted together in a same size 2 shell.



## MTC100 Connectors

### Product Facts

- 10 or 20 contacts size 22  
2.54 mm (0.100 in.) spacing
- 20 or 40 contacts size 22  
2.54 mm (0.100 in.) spacing
- Round wire 20-26 AWG or  
flat cable 22-24 AWG
- -65°C to +125°C  
-65°C to +150°C
- TE Connectivity  
Specification C-6111
- Three shell finishes: Black  
anodized (non-conductive),  
Nickel plated (conductive)  
and Cadmium over nickel  
(500 h salt spray)



The basic connector consists of the following modular components: two shells (plug and receptacle), mounting hardware and keying pins. In each shell are included two removable wafers with either 10 or 20 fixed contacts, 2.54mm (0.100 in.) spacing.

These wafers, pin or socket, are available in two versions to receive either round wire or flat conductor cable or flexible printed circuits. It is recommended to use TE flat cable with rectangular section conductors, perfectly adapted to the contacts shape of the connector.

The wafers use a tuning fork type contact design, which corresponds to the requirements of MIL-C-28754. Both pin and socket contacts are fixed in the wafer. The pin contact is molded into the wafer while the socket contact has a degree of free movement.

Environmental sealing is achieved by:

- an integral interfacial seal which is attached to the face of the pin wafer. This seal is compressed when the connector is mated.

- a thermoplastic material which seals the wafer body to the wire during soldering

by additional components. Polarization of shells and wafers prevents mis-mating.

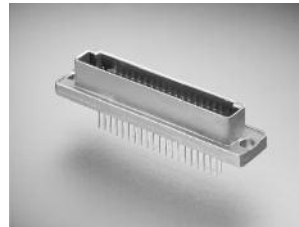
The MTC100 is available in two sizes:

#### Size 1:

20 contacts, 2.54mm (0.100 in.) spacing 2 rows of contacts

#### Size 2:

40 contacts, 2.54mm (0.100 in.) spacing 2 rows of contacts



The connector contact is terminated to the wire by controlled soldering using a heat-shrinkable Solder Sleeve. This well-known technology achieves a high degree of electrical performance and allows semi-automated termination.

The EME protection continuity can be achieved

## MTC100 Connectors (Continued)

### Technical Specification

#### Materials

|                        |                                                                                                                                                                                          |
|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Shell                  | Aluminum alloy per QQ-A-591                                                                                                                                                              |
| Shell Finish           | Nickel plated (MIL-C-26074) or<br>Black anodized (MIL-C-8625) or<br>Cadmium plated (QQ-P-416)                                                                                            |
| Hardware               | Passivated stainless steel                                                                                                                                                               |
| Wafer                  | Polyarylene thermoplastic                                                                                                                                                                |
| Interfacial Seal       | Silicone elastomer                                                                                                                                                                       |
| Termination Insulation | Transparent blue heat-shrinkable radiation cross-linked PVF2                                                                                                                             |
| Contact                | Engaging end: copper alloy gold plated over nickel underplate per<br>MIL-G-45204; type 1, Grade C, class 1<br>Termination end: Sn 63 pre-tinning (125°C) or SN96 (150°C)<br>per QQ-S-571 |

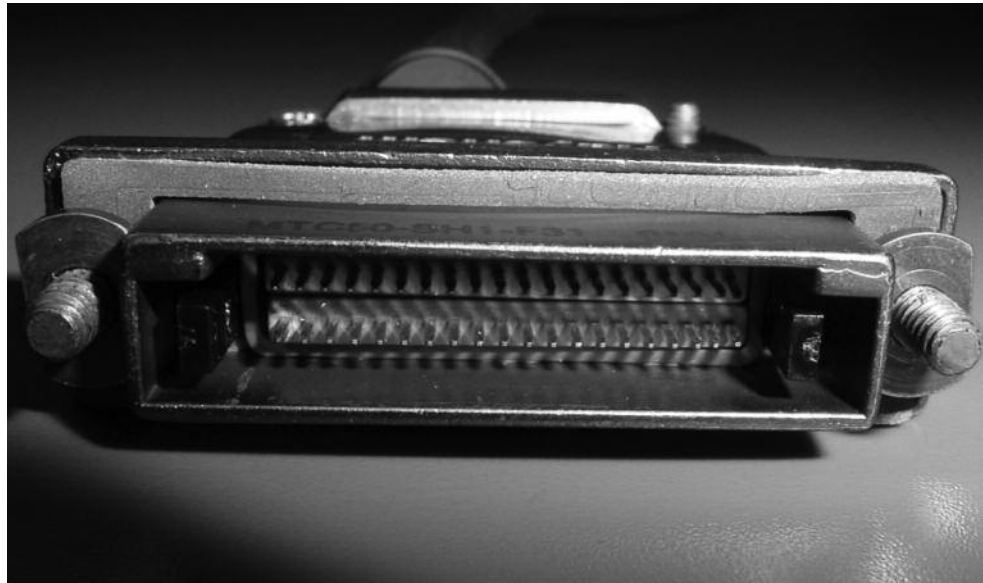
#### Technical Data and Performance

|                                                                       |                                                                                                                                                                                       |
|-----------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Contact Spacing                                                       | 2.54 mm                                                                                                                                                                               |
| Insulation Resistance                                                 | 5000 MΩmin. / 23°C                                                                                                                                                                    |
| DWV                                                                   | 1500 VAC-RMS 50-60 Hz/Sea level<br>1500 V eff (round wire) 1000 V eff (flat conductor flat cable)                                                                                     |
| Current Rating                                                        | 1.5A per request                                                                                                                                                                      |
| Temperature Range                                                     | -65°C to 125°C or<br>-65°C to 150°C                                                                                                                                                   |
| Contact Resistance<br>(low current)                                   | MIL-STD-1344 method 3002 before aging<br>18mΩ/ after aging 21 mΩ wire size 0.4mm <sup>2</sup>                                                                                         |
| Shell to shell conductivity<br>(except black anodized non-conductive) | 2.5mV (1 A dc)                                                                                                                                                                        |
| Vibration                                                             | MIL-STD-1344, method 2005 condition VI-Letter J                                                                                                                                       |
| Mechanical Shock                                                      | MIL-STD-1344, method 2004 condition D                                                                                                                                                 |
| Temperature Aging                                                     | 1000 h 125°C 1000 MΩmin. at T max.<br>5000 MΩmin. 23°C                                                                                                                                |
| Humidity                                                              | 90-98% RH 10 cycles 100 MΩmin.                                                                                                                                                        |
| Altitude Immersion                                                    | 30 minutes at 21000 M 5000MΩmin.<br>(MIL-STD-1344, method 1004)                                                                                                                       |
| Salt Spray                                                            | 5% salt / 48h or 500 h (cadmium plated)<br>(MIL-STD-1344 method 1001 Condition B)                                                                                                     |
| Fluid Resistance                                                      | MIL-STD-1344 method 1016                                                                                                                                                              |
| Contact engagement and<br>separation forces                           | Engagement: 3.3 N Max. per contact<br>Separation: 0.2 N min. per contact                                                                                                              |
| Durability                                                            | 500 cycles (including mounting hardware)                                                                                                                                              |
| Contact Retention                                                     | 45 N min. (MIL-STD-1344 method 2007)                                                                                                                                                  |
| Wafer Retention                                                       | Size 1: 178N<br>Size 2: 356N (MIL-STD-1344, method 2010)                                                                                                                              |
| Wire Sizes                                                            | FCC MIL-C-49059: 0.25mm <sup>2</sup> -0.4mm <sup>2</sup> (22-24 AWG)<br>Round wire 0.15mm <sup>2</sup> -0.34mm <sup>2</sup> (20-26 AWG)<br>For AWG 18 or 20, contact TE Connectivity. |

## MTC50 Connectors

### Product Facts

- 20 or 40 contacts size 26  
1.27 mm (0.050 in.) spacing
- 40 or 80 contacts size 26  
1.27 mm (0.050 in.) spacing
- AWG 24-28 (round wire) or  
28 (flat cable)
- -65°C to +125°C
- TE Connectivity  
Specification C-6111
- Three shell finishes: Black  
anodized (non-conductive),  
Nickel plated (conductive)  
and Cadmium over nickel  
(500 h salt spray)



The basic connector consists of the following modular components: two shells (plug and receptacle), mounting hardware and keying pins. In each shell are included two removable wafers with either 20 or 40 fixed contacts, 1.27mm spacing.

These wafers, pin or socket, are available in two versions to receive either round wire or flat conductor cable or flexible printed circuits. It is recommended to use TE flat cable with rectangular section conductors, perfectly adapted to the contacts shape of the connector.

The wafers use a tuning fork type contact design. Both pin and socket contacts are fixed in the wafer. The pin contact is molded into the wafer while the socket contact has a degree of free movement.

Environmental sealing is achieved by:

- an integral interfacial seal which is attached to the face of the pin wafer. This seal is compressed when the connector is mated.
- a thermoplastic material which seals the wafer body to the wire during soldering

The MTC50 is available in two sizes:

**Size 1:**  
40 contacts, 1.27mm  
(0.050 in.) spacing 2 rows  
of contacts

**Size 2:**  
80 contacts, 1.27 mm  
(0.050 in.) spacing 2 rows  
of contacts

The connector contact is terminated to the wire by controlled soldering using a heat-shrinkable boot. This well-known technology achieves a high degree of electrical performance and allows semi-automated termination.

The EME protection continuity can be achieved by additional components. Polarization of shells and wafers prevents mis-mating.



## MTC50 Connectors (Continued)

### Technical Specification

#### Materials

|                        |                                                                                                                                                                                          |
|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Shell                  | Aluminum alloy per QQ-A-591                                                                                                                                                              |
| Shell Finish           | Nickel plated (MIL-C-26074) or<br>Black anodized (MIL-C-8625) or<br>Cadmium plated (QQ-P-416)                                                                                            |
| Hardware               | Passivated stainless steel                                                                                                                                                               |
| Wafer                  | Polyarylene thermoplastic                                                                                                                                                                |
| Interfacial Seal       | Silicone elastomer                                                                                                                                                                       |
| Termination Insulation | Transparent blue heat-shrinkable radiation cross-linked PVF2                                                                                                                             |
| Contact                | Engaging end: copper alloy gold plated over nickel underplate per<br>MIL-G-45204; type 1, Grade C, class 1<br>Termination end: Sn 63 pre-tinning (125°C) or SN96 (150°C)<br>per QQ-S-571 |

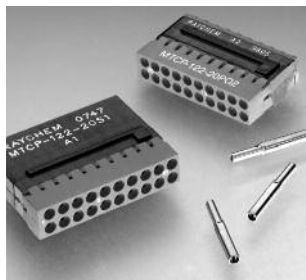
#### Technical Data and Performance

|                                                                       |                                                                                                                |
|-----------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------|
| Contact Spacing                                                       | 1.27 mm                                                                                                        |
| Insulation Resistance                                                 | 5000 M $\Omega$ min. / 23°C                                                                                    |
| DWV                                                                   | 750 VAC-RMS 50-60 Hz/Sea level                                                                                 |
| Current Rating                                                        | 1.5A per request                                                                                               |
| Temperature Range                                                     | -65°C to 125°C                                                                                                 |
| Contact Resistance<br>(low current)                                   | Wire size/before aging/after aging<br>0.1mm <sup>2</sup> 43m $\Omega$ 51m $\Omega$                             |
| Shell to shell conductivity<br>(except black anodized non-conductive) | 2.5mV (1 A dc)                                                                                                 |
| Vibration                                                             | MIL-STD-1344, method 2005 condition VI-Letter J                                                                |
| Mechanical Shock                                                      | MIL-STD-1344, method 2004 condition D                                                                          |
| Temperature Aging                                                     | 1000 h 125°C 1000 M $\Omega$ min. 125°C<br>5000 M $\Omega$ min. 23°C                                           |
| Humidity                                                              | MIL-STD-1344 Method 1002<br>Type II, 100 M $\Omega$ min.                                                       |
| Altitude Immersion                                                    | 30 minutes at 21000 M 5000M $\Omega$ min.<br>(MIL-STD-1344, method 1004)                                       |
| Salt Spray                                                            | 5% salt / 48h or 500 h (cadmium plated)<br>(MIL-STD-1344 method 1001 Condition B)                              |
| Fluid Resistance                                                      | MIL-STD-1344 method 1016                                                                                       |
| Contact engagement and<br>separation forces                           | Engagement: 2.20 N Max. per contact<br>Separation: 0.14 N min. per contact                                     |
| Durability                                                            | 500 cycles (including mounting hardware)                                                                       |
| Contact Retention                                                     | 22 N min. (MIL-STD-1344 method 2007)                                                                           |
| Wafer Retention                                                       | Size 1: 178N<br>Size 2: 356N (MIL-STD-1344, method 2010)                                                       |
| Wire Sizes                                                            | FCC MIL-C-49059: 0.1mm <sup>2</sup> (28 AWG)<br>Round wire 0.1mm <sup>2</sup> -0.15mm <sup>2</sup> (24-28 AWG) |

## MTCP 20 Cavity Inserts

### Product Facts

- 20 cavity inserts
- Size 22-20 contacts



MTCP inserts have been redesigned to include size 22 cavity which can accept 22-20 crimp contacts.

Insertion/extraction of contacts are rear release.

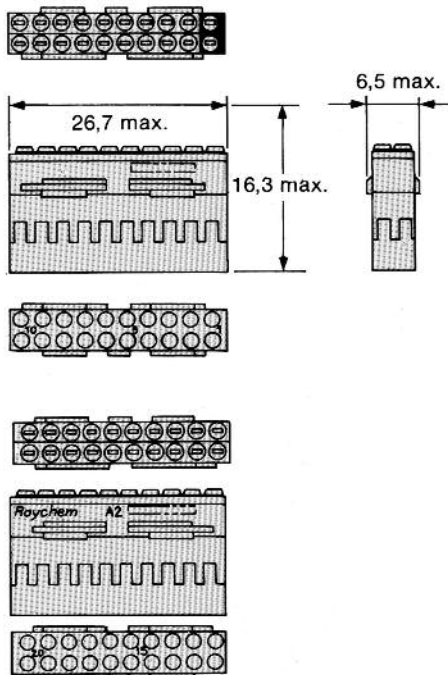
This series completes the MTC100 and MTC50 mass termination families. It extends the crimp version product range from size 12 (MTCR) to size 16 and 20 (MTCP).

MCTP 22-20 inserts are intermateable and changeable with MTC100 connectors.

They keep the same high performance level.

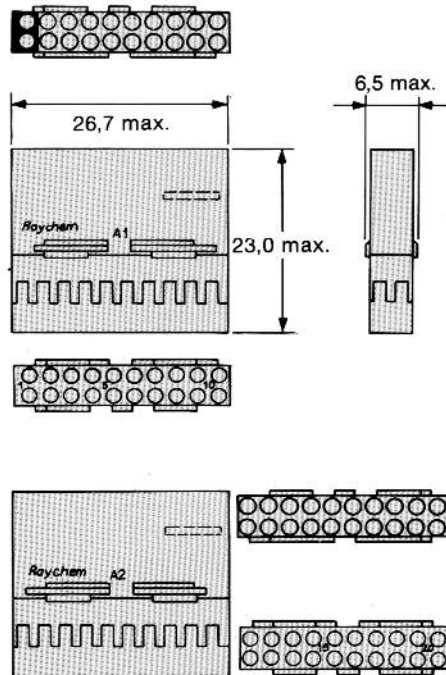
#### 2" shell Pin Insert

MTCP-122-20P1  
MTCP-122-20P2



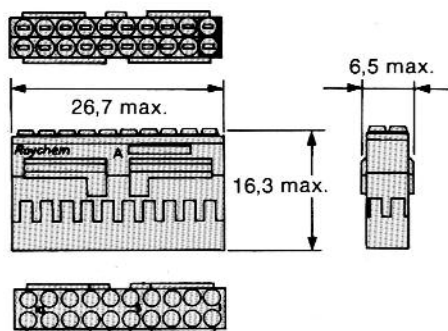
#### 2" shell Socket Insert

MTCP-122-20S1  
MTCP-122-20S2



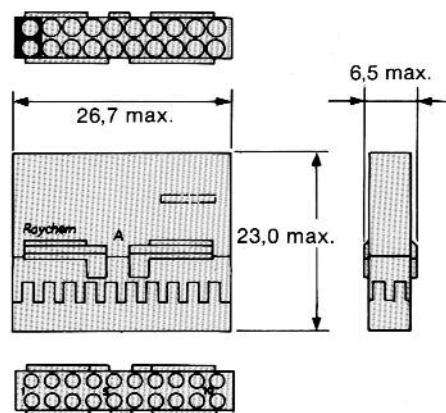
#### 1" shell Pin Insert

MTCP-122-20P



#### 1" shell Socket Insert

MTCP-122-20S



#### Pin Contact

CTA-0166



#### Socket Insert

CTA-0165



#### Contact removal tool (plastic):

CTA-1160

#### Extraction tool for MTCP inserts:

CTA-0161

#### Positioner for pin contact:

CE-1605900

#### Positioner for socket socket:

CE-1606000



## MTCT High Performance Modular Rectangular Connectors

for use with ARINC 801 Optical Termini

### Product Facts

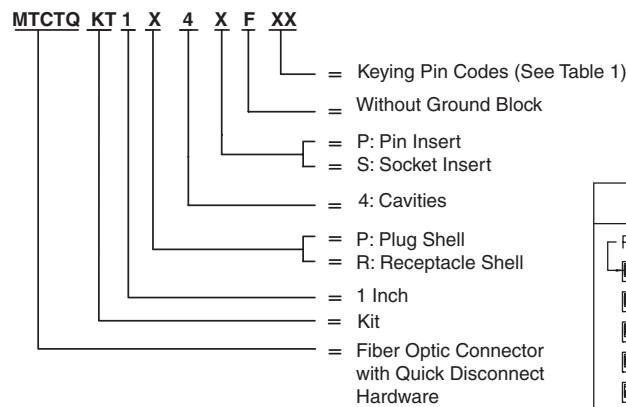
- Available in aluminum or corrosion resisting steel
- Utilizes the industry standard ARINC 801 optical termini - no empty cavities requiring sealing
- Mating hardware options - available in quick disconnect or jack screw styles for optimized space utilization
- Accommodates four ARINC 801 optical termini
- Enhanced MTCT mating interface
- Uses commonly available tooling for installation - no need to carry extra specialized tooling



TE Connectivity MTCT connector is a compact, lightweight design connector for use with ARINC 801 fiber optic termini.

Ideal for applications such as avionics, in-flight entertainment systems, communications, production breaks and other areas.

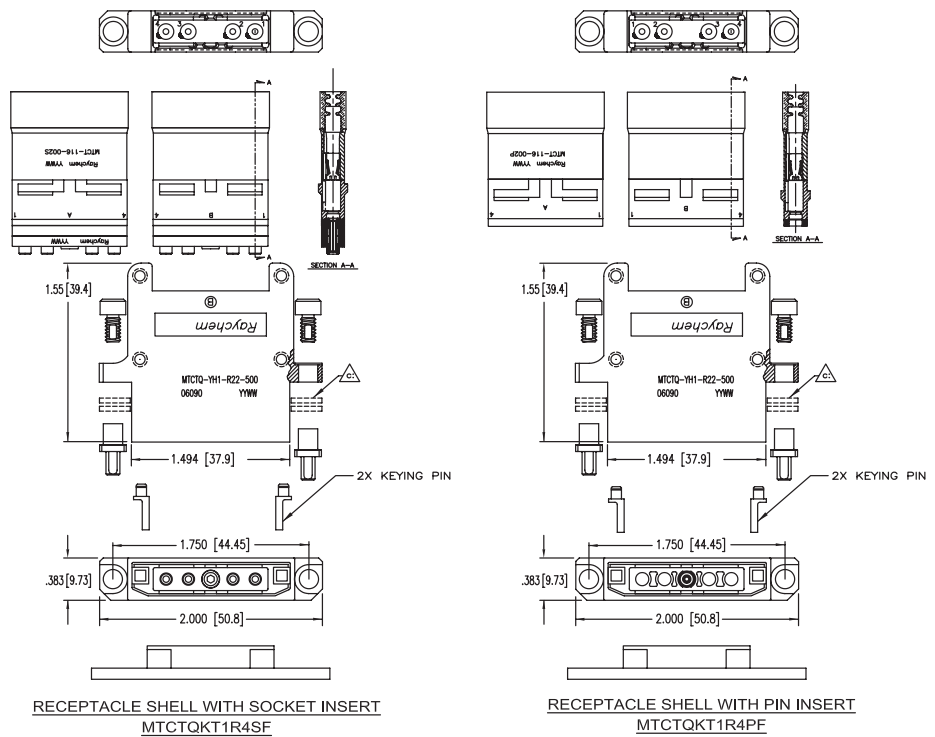
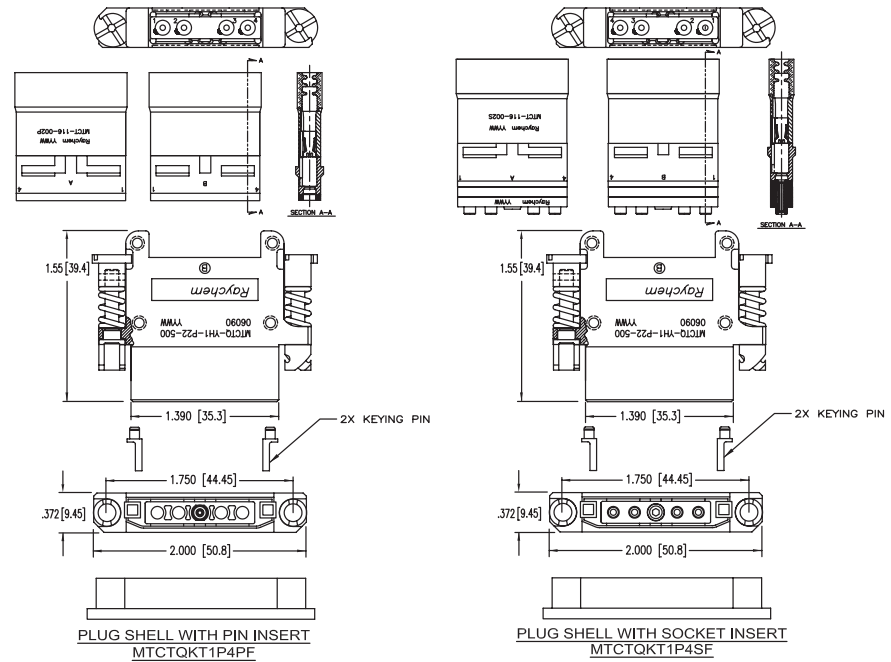
### Part Number Information



| TABLE 1 KEYING CODES             |       |      |
|----------------------------------|-------|------|
| POSITION OF PROJECTING TAB (TYP) |       |      |
|                                  | -A A- |      |
|                                  | -A B- |      |
|                                  | -A C- |      |
|                                  | -A D- |      |
|                                  | -B A- |      |
|                                  | -B B- |      |
|                                  | -B C- |      |
|                                  | -B D- |      |
|                                  | -C A- |      |
|                                  | -C B- |      |
|                                  | -C C- |      |
|                                  | -C D- |      |
|                                  | -D A- |      |
|                                  | -D B- |      |
|                                  | -D C- |      |
|                                  | -D D- |      |
|                                  | -X X- |      |
| RECEPTACLE                       | CODE  | PLUG |

**MTCT High Performance Modular Rectangular Connectors** (Continued)

**Kit, Plug and Receptacle**





## Screening

### Round Wire

The following terminal strips must be used to connect screening to the body of an MTC 100 housing:

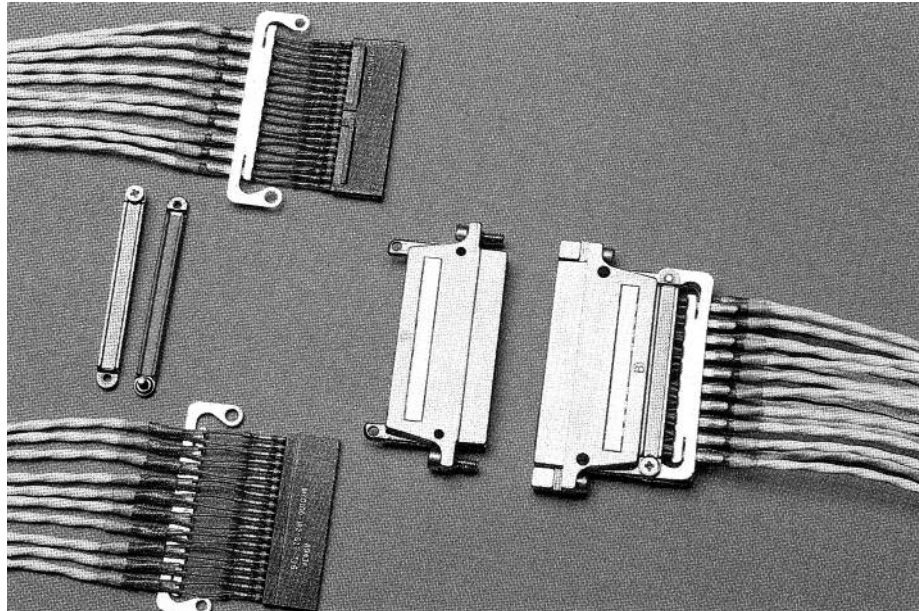
#### Size 1 housing:

Type CTA-0022

#### Size 2 housing:

Type CTA-0023

The strips are connected to the screening using SolderSleeve devices, and secured by the connector cable clamp.



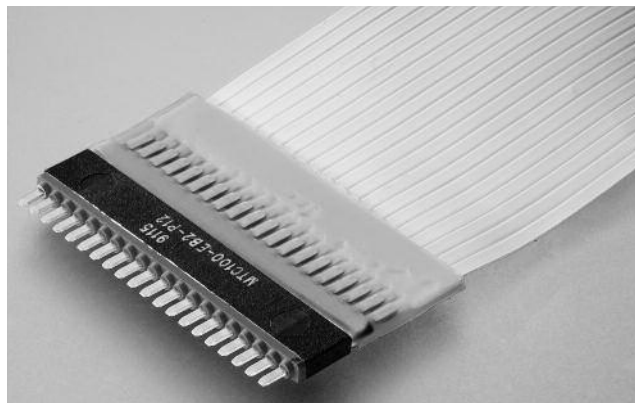
### Ribbon Cable

With ribbon cables, the screening is provided by a copper strip.

The copper strip is connected using different terminal strips in accordance with the electrical diagram (contact TE Connectivity).

In any case, the terminal strips and block must be connected at the same time in the T.C.W.I. heating device (CE-1404300).

The assembly is contained in the connector housing, and does not alter the overall dimensions of the latter.



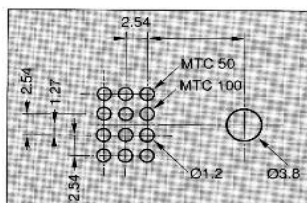
Unscreened cable shown above.

## Application and Installation

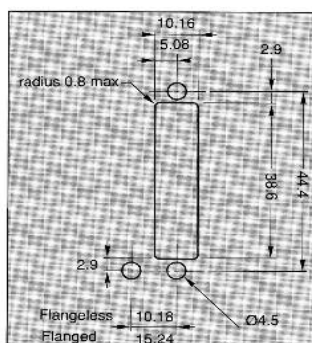
### Panel cut out for boxmount connectors and receptacle shells

Cut out dimensions opposite are for guidance only. Panel cut out and spacing dimensions must be derived from the current Specification Control Drawing.

### Hole Pattern for PCB

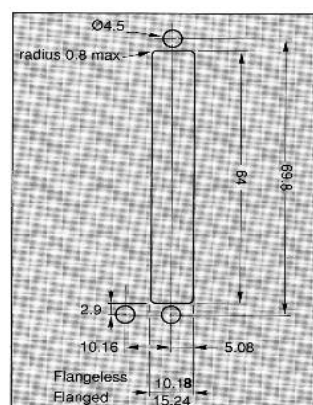


### Panel Cut Out for 1" Shell



\* (Rear mounting)

### Panel Cut Out for 2" Shell



## Keying Chart

Both the shell and the wafer have their own built in polarization.

Keying of the shell is completed by the user. Two square keying pins are supplied with each shell and should be inserted into the square sockets in the shell according to one of the 16 keying codes to the right.

Any “keyed” shell may be modified to a different polarization by repositioning the keying pins.

A triangular keying pin is available, giving up to 64 different polarizations.

**Triangular keying pin:**  
CHA-0036

### Triangular keying chart:

D-659-0080

| RECEPTACLE | CODE | PLUG |
|------------|------|------|
|            | AA   |      |
|            | AB   |      |
|            | AC   |      |
|            | AD   |      |
|            | BA   |      |
|            | BB   |      |
|            | BC   |      |
|            | BD   |      |
|            | CA   |      |
|            | CB   |      |
|            | CC   |      |
|            | CD   |      |
|            | DA   |      |
|            | DB   |      |
|            | DC   |      |
|            | DD   |      |

## Application and Installation (Continued)

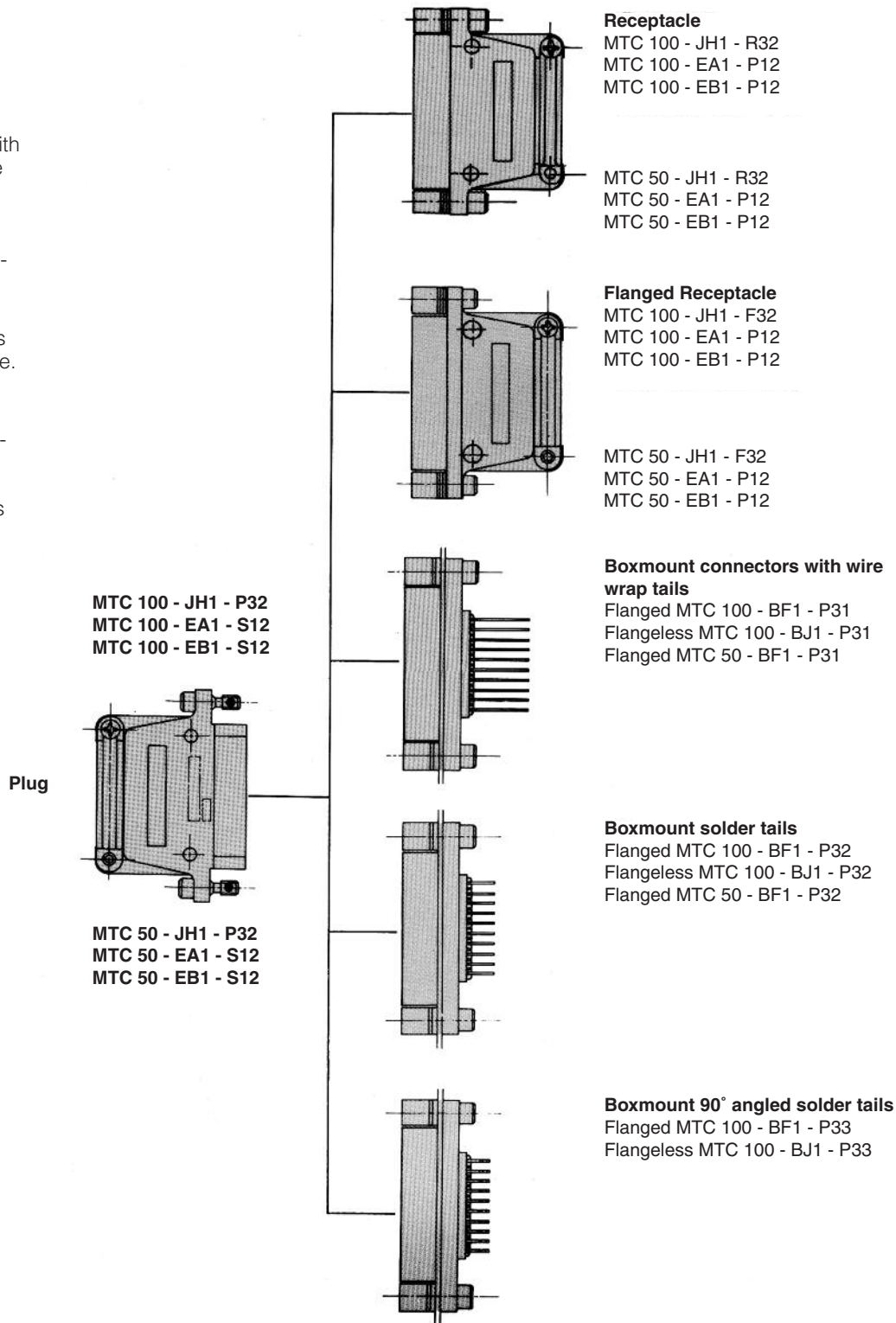
### Mating possibilities

The mating possibilities of the MTC100 and MTC50 series are depicted below by using a 1" plug shell with cadmium finish. The same mating possibilities are available for 2" shells and other shell finishes. Part numbers should be substituted as necessary.

The wafers shown in the plug and receptacle shells are for flat conductor cable. For round wire wafers, consult text.

Because of the multiple fitting possibilities of pin or socket wafers, the user must ensure that the types of wafer in the plug and receptacle shells match each other.

The MTCR plug shell can only be mated with an MTCR receptacle shell; contact types must match each other.



## Application and Installation (Continued)

### Installation dimensions for receptacle shells and box-mount connectors

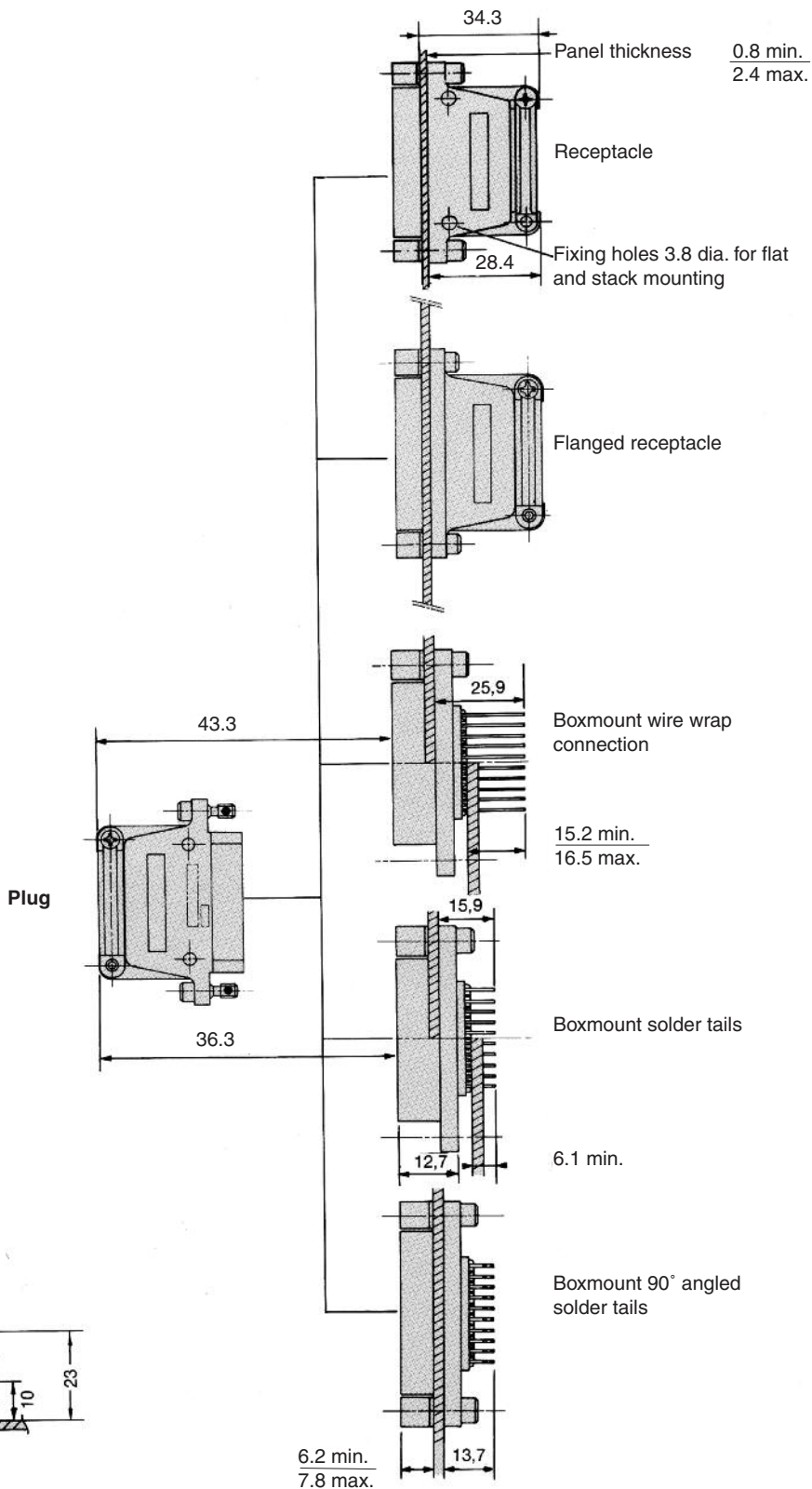
The installation dimensions for the MTC100 and MTC50 series are the same.

All receptacle and box-mount shells are suitable for rear panel mounting. Differences in panel thickness between 0.8mm min. and 2.4mm max. are to be adjusted with the 0.8mm thick spacer washers supplied.

Boxmounts with straight wire wrap or solder tails may also be front panel mounted. Front panel and PCB mounting kits are available (consult TE Connectivity).

All receptacle shells are suitable for flat or stack mounting. It is not necessary to dismantle the stack to remove the mating plug shells.

The MTCR connector has a different cable clamp and is therefore longer than a standard receptacle shell.





## Introduction

### Product Facts

- **Modular versatility with Multimate contact capabilities permit multiple combinations of power, signal, coaxial and fiber optic circuits in one basic connector configuration**
- **Choice of shell sizes for housing one, two or three contact modules**
- **Modules available accommodating various circuit arrangements**
- **Polarized shells, with and without floating bushings**
- **Machine-applied terminations provide high production rates at low applied cost**
- **Recognized under the Component Program of Underwriters Laboratories Inc., File No. E28476** 
- **Certified by Canadian Standards Association, File No. LR 7189** 



AMP G Series connectors provide a practical means of mixing various types of electrical circuits in one basic connector configuration. They offer modular versatility as well as Multimate contact capabilities which permit use of multiple combinations of power, signal, coaxial and fiber optic circuits in the same connectors.

The "G" Series connector line provides a choice of shell sizes for housing either one, two, or three

contact modules. The modules, in turn, are available in a variety of circuit densities to accommodate Type XII power contacts; Size 12 Type I and miniature COAXICON contacts (interchangeable in the same contact cavity); and Size 16 Type II, III+, VI, X, subminiature COAXICON contacts.

Each shell includes a retainer plate for easy drop-in assembly of the contact modules. Both shell and retainer are made of cast

aluminum. Shells also are available with and without floating bushings and are polarized with keyways in the receptacles and matching keys in the plugs. The modules are made of either diallyl phthalate or general purpose phenolic.

Complementing the "G" Series modular connectors are latching hardware, cable clamps and strain relief which ensure the integrity of all mated connections.

### Technical Documents

The following is a list of technical documents covering the application, performance and maintenance of "G" Series Connectors.

**Product Specifications** describe technical performance characteristics and verification tests. They are intended for the Design, Component and Quality Engineer.

**108-10002** — AMP G Series Connectors

**108-10037** — Type XII Contacts

**Instruction Sheets** provide instructions for assembling or applying the product. They are intended for the Manufacturing Assembler or Operator.

#### Product —

Connectors, Contacts and Accessories — 408-7171, 408-7184, 408-7189, 408-7190, 408-7230

Locking Latch — 408-7268

Locking Spring — 408-7187

Cable Clamps — 408-7185

Strain Relief — 408-7186, 408-7263

#### Tooling —

Crimping Dies:

Type I Contacts 1 — 408-7225

Type II Contacts — 408-7420, 408-7453

Type XII Contacts — 408-7175

Miniature COAXICON Contacts — 408-1770

Hand Crimping:

Type I Contacts — 408-7192

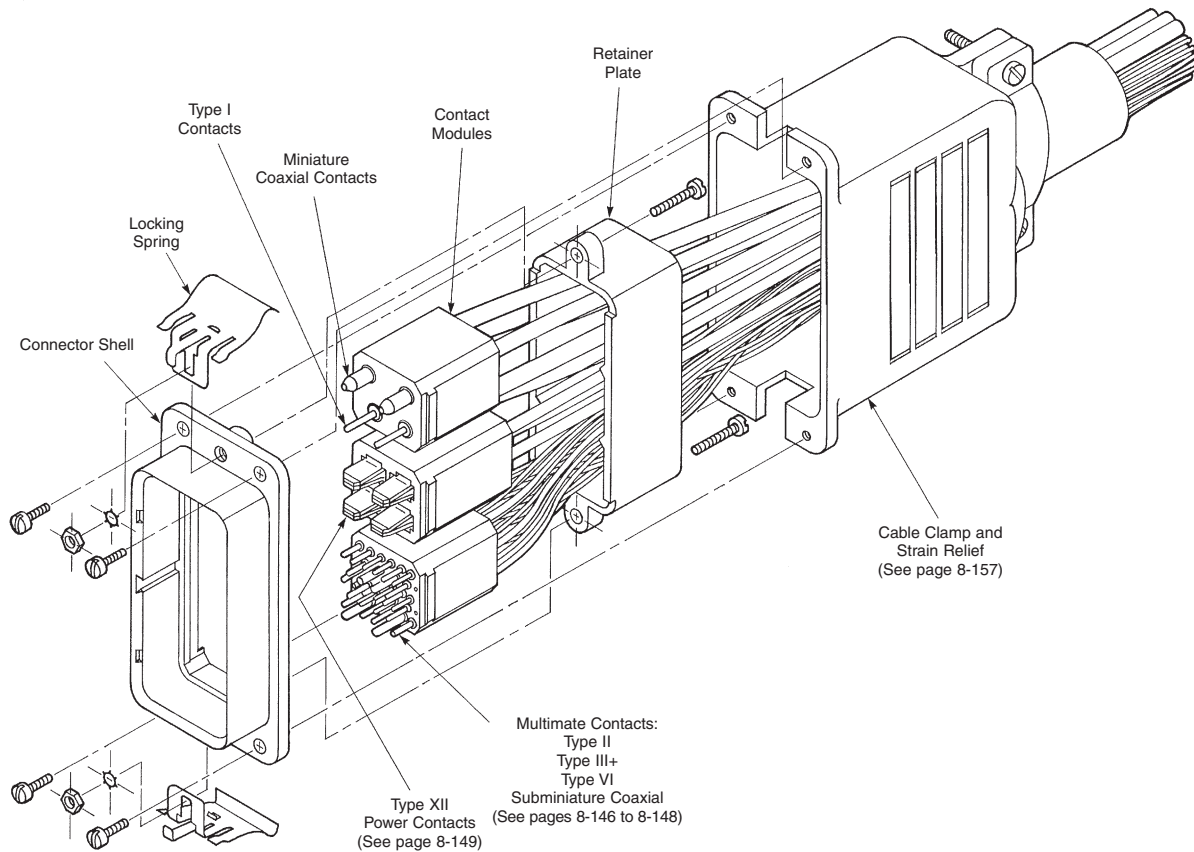
Type II Contacts — 408-6810, 408-1786, 408-7267

Type III+ Contacts — 408-7414, 408-9819

Type VI Contacts — 408-9819, 408-7680, 408-7716

Type XII Contacts — 408-2095

## Introduction (Continued)



### Contact Current Carrying Capability

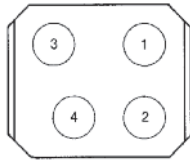
The total current capacity of each contact is dependent upon the heat rise resulting from the combination of electrical loads on all the contacts in the connector arrangement and the maximum ambient temperature in which the connector will be operating. Caution must be taken to assure that these combinations of conditions do not cause the internal temperature of the connector to exceed the maximum operating temperature of the housing material. There are several variables which must be considered when determining the maximum current capability of your application.

These variables are:

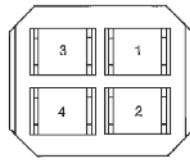
- Wire Size** — Larger wire will carry more current since it has less internal resistance to current flow and generates less heat. The wire also conducts heat away from the connector.
- Connector Size** — In general, the more circuits in a connector, the less current per contact can be carried.
- Ambient Temperature** — The higher the ambient temperature, the less current can be carried.

## Module Specifications

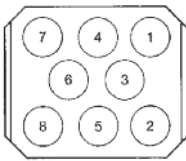
### Contact Modules



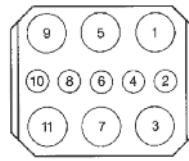
**4 Position**  
(Type I and/or Miniature  
COAXICON Contacts)



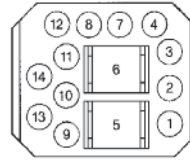
**4 Position**  
(Type XII Power Contacts)



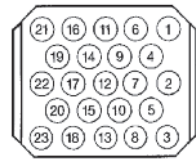
**8 Position**  
(Type I and/or Miniature  
COAXICON Contacts)



**11 Position**  
(Type I and/or Miniature  
COAXICON Contacts  
and Multimate Contacts)



**14 Position**  
(Type XII and Multimate  
Contacts)



**23 Position**  
(Multimate Contacts)

**Note:** Mating face of Pin Module shown. Socket Module is mirror image.

| No. of Positions | Module Will Accommodate These Contact Variations†                                                                                                            | Part Numbers |               |                       |                       |
|------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|---------------|-----------------------|-----------------------|
|                  |                                                                                                                                                              | Phenolic     |               | Diallyl Phthalate     |                       |
|                  |                                                                                                                                                              | Pin Module   | Socket Module | Pin Module            | Socket Module         |
| 4                | 4 Type XII Contacts                                                                                                                                          | 202624-2     | 202625-2      | —                     | —                     |
| 4                | 4 Miniature COAXICON Contacts or Type I (Size 12) Contacts                                                                                                   | —            | —             | 213092-2              | 213093-2              |
| 8                | 8 Any combination of Miniature COAXICON Contacts and Type I (Size 12) Contacts                                                                               | —            | —             | 213090-4*<br>213090-2 | 213091-4*<br>213091-2 |
| 11               | 6 Miniature COAXICON Contacts or Type I (Size 12) Contacts and 5 Type II (Size 16), Type III+ (Size 16), Type VI (Size 16) or Subminiature COAXICON Contacts | 202648-4     | 202649-4      | 202648-2              | 202649-2              |
| 14               | 2 Type XII Contacts and 12 Type II (Size 16), Type III+ (Size 16), Type VI (Size 16), or Subminiature COAXICON Contacts                                      | 202759-2     | 202760-2      | 202759-4              | 202760-4              |
| 23               | 23 Type II (Size 16), Type III+ (Size 16), Type VI (Size 16) or Subminiature COAXICON Contacts                                                               | 202650-4     | 202651-4      | 202650-2              | 202651-2              |

\* Type I contacts cannot be used in cavities 1, 2, 7 and 8.

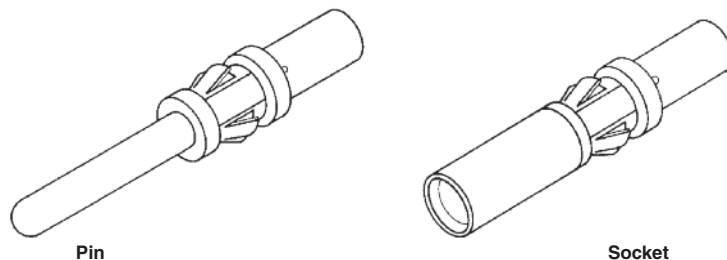
† Order contacts separately, see below and pages 8-148 to 8-151.

### Multimate Contacts

#### Type I Contacts

**Contact Size** — 12  
**Pin Diameter** — .094 [2.39]  
**Test Current** — 23 amperes\*  
**Materials**  
**Contact Body** — Copper alloy  
**Spring** — Stainless steel  
**Finish** — .000030 [0.00076] gold over .000030 [0.00076] nickel

\*Note: Current carrying capability depends on wire size, connector size and ambient temperature.



| Wire Size Range |         | Wire Strip Length | Ins. Dia. Range | Loose Piece Contact Part No. |          | Tooling Part Number |                               |
|-----------------|---------|-------------------|-----------------|------------------------------|----------|---------------------|-------------------------------|
| AWG             | [mm²]   |                   |                 | Pin                          | Socket   | Hand Tool           | Dies for Pneumatic Tool 69365 |
| 18-16           | 0.8-1.4 | .234<br>5.95      | No Ins. Support | 202421-1                     | 202418-1 | 90121               | 90122                         |
| 14-12           | 2-3     | .234<br>5.95      | No Ins. Support | 202422-1                     | 202417-1 |                     |                               |

Extraction Tool Part Number 305183-8.



## Signal Contacts

### Type II, Screw Machined, Crimp

#### Material

**Contact Body** — Brass

**Retention Spring** — Stainless steel

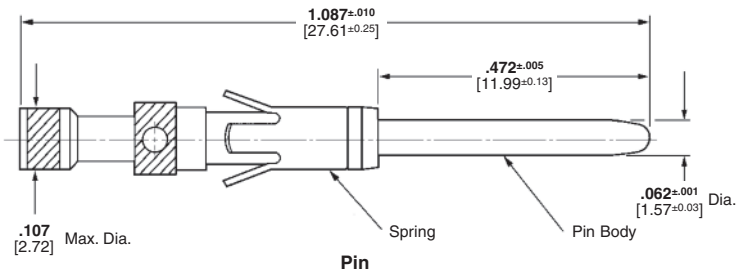
#### Finish

**Contact Body** — 000030 [0.00076]  
gold over .000050 [0.00127]  
nickel. Gold thickness controlled  
on socket O.D.

**Retention Spring** — Stainless steel



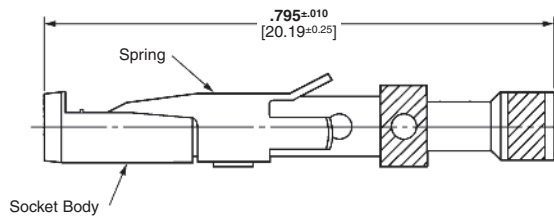
Pin



Pin



Socket



Socket

### Contact Size 16—Pin Diameter .062 [1.57] (Test Current, 13 Ampere)‡

| Wire Size Range |                  | Ins. Dia. Range <sup>1</sup> | Tape Mounted Contact No. <sup>2</sup> |          | Loose Piece Contact No. |           | Contact Color Code | Tooling Part No.                                   |                                                   |                                    |
|-----------------|------------------|------------------------------|---------------------------------------|----------|-------------------------|-----------|--------------------|----------------------------------------------------|---------------------------------------------------|------------------------------------|
|                 |                  |                              | Pin                                   | Socket   | Pin                     | Socket    |                    | Tape Mounted Dies for AMP-TAPETRONIC Machine 69875 | Loose Piece Die Set for 626 Pneumatic Tool System | Hand Tool                          |
| 28-24           | 0.08-0.20        | .035-.055<br>0.89-1.40       | 201611-4                              | —        | 201611-14               | 201613-15 | Red/Red            | 90249-2                                            | 90230-17                                          | 91538-1<br>or 601967-1             |
|                 |                  | .048-.065<br>1.22-1.65       | —                                     | —        | 201334-14               | 201332-15 | Red/Red            |                                                    |                                                   |                                    |
|                 |                  | .095-.110<br>2.41-2.79       | —                                     | —        | 202410-14               | 202411-15 | Green              |                                                    |                                                   |                                    |
| 24-20           | 0.2-0.6          | .040-.062<br>1.02-1.57       | 201578-4                              | —        | 201578-14               | 201580-15 | Yellow/Red         | 90249-2                                            | 90230-17                                          | 91538-1<br>or 58541-1*             |
|                 |                  | .055-.088<br>1.40-2.16       | 201330-6                              | 201328-9 | 201330-14               | 201328-15 | Yellow/Red         |                                                    |                                                   |                                    |
| 18<br>(Two)     | 0.9-0.9<br>(Two) | No. Ins. Support             | —                                     | —        | 202725-14               | 202726-14 | Blue               | —                                                  | 90231-27                                          | 91539-1<br>or 601967-1             |
| 18-16           | 0.8-1.4          | .080-.105<br>2.03-2.67       | —                                     | —        | 202507-14               | 202508-15 | —                  | —                                                  | —                                                 | 90136-1<br>or 601967-1             |
|                 |                  | No Ins. Support              | 200336-6                              | 200333-8 | 200336-14               | 200333-14 | Blue/Blue          | 90250-1                                            | 90231-27                                          | 91539-1<br>58541-1*<br>or 601967-1 |
|                 |                  | No Ins. Support              | —                                     | —        | 204219-15.6             | —         | Blue/Blue          | —                                                  | —                                                 | 91539-1<br>58541-1*<br>or 601967-1 |
| 14              | 2                | No Ins. Support              | 212618-23                             | 201568-3 | 201570-14               | 201568-15 | Violet/Blue        | 90250-1                                            | 90231-27                                          | 91539-1<br>58541-1*<br>or 601967-1 |
|                 |                  |                              | —                                     | —        | 212618-13.6,†           | —         | —                  | —                                                  | —                                                 | —                                  |

<sup>1</sup> Overall insulation crimp diameter, including crimp barrel, must not exceed .125 [3.18].

<sup>2</sup> For AMP-TAPETRONIC Machine Part Number 69875, order contacts by Tape Mounted Contact No., plus packaging code "IM REEL" (5000 parts per reel).

<sup>3</sup> Grounding pin is used to provide a make-first/break-last condition when mating and unmating connector halves.

<sup>4</sup> Use turret TH502 (1-601967-6) with hand tool 601967-1.

<sup>5</sup> Use turret TH501 (1-601967-5) with hand tool 601967-1.

<sup>6</sup> Pin length is .630 ± .005 [16.002 ± .127] on these two pins.

<sup>7</sup> Die Set requires "C" Head Adapter Part Number 318161-1; Adapter Holder Part Number 356304-1 (with ratchet) or 189928-1 (without); and Power Unit Part Number 189721-2 (hand actuated) or 189722-2 (foot actuated).

\* Commercial PRO-CRIMPER II Hand Tool for field repair use only. Note: Die Set can be adapted for use with the 626 Pneumatic Tool System.

† Does not use Hand Tool 91539-1 or 601967-1.

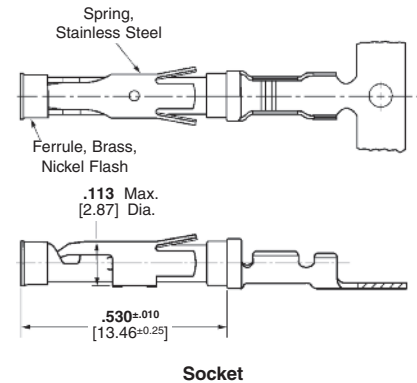
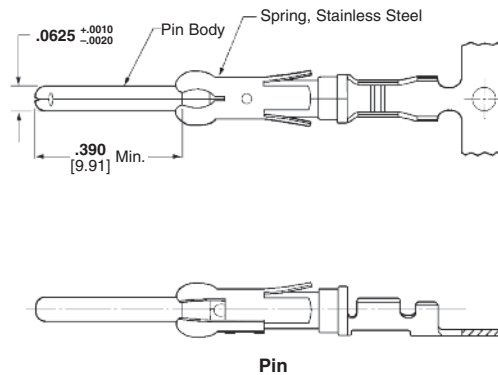
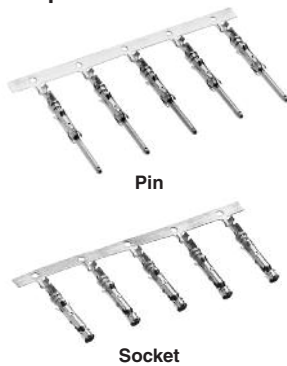
‡ Single contact, free-air test current is not to be construed as contact rating current.

Insertion Tool Part Number 200893-2 (for insulation diameters .070 [1.78] or less).

Extraction Tool Part Number 305183.

## Signal Contacts (Continued)

### Type III+ Precision Formed, Crimp



### Material and Finish

**Contact Body** — Brass

**Retention Spring** — Stainless steel

### Contact Size 16—Pin Diameter .062 [1.57] (Test Current, 13 Ampere)†

| Wire Size Range |                 | Ins. Dia. Range                     | Contact Finish                | Strip Form Contact No. |           | Loose Piece Contact No. |         | Tooling Part No.                       |                                              |
|-----------------|-----------------|-------------------------------------|-------------------------------|------------------------|-----------|-------------------------|---------|----------------------------------------|----------------------------------------------|
| AWG             | mm <sup>2</sup> |                                     |                               | Pin                    | Socket    | Pin                     | Socket  | Loose Piece Hand Tool                  | Strip Form Applicators                       |
| 30-26           | 0.05-0.15       | .040-.060 <sup>1</sup><br>1.02-1.52 | Bright Tin-Lead               | 66425-6                | 66424-6   | —                       | —       | 91515-15                               | 466598-□**                                   |
|                 |                 |                                     | Gold/Nickel <sup>2</sup>      | 66425-7                | 66424-7   | 66429-3                 | 66428-3 |                                        |                                              |
|                 |                 | .014-.030 <sup>1</sup><br>0.36-0.76 | Sel. Gold/Nickel <sup>3</sup> | 66425-8                | 66424-8   | 66429-4                 | 66428-4 | 90225-25                               | 466585-3**                                   |
|                 |                 |                                     | Gold/Nickel <sup>2</sup>      | 66393-7                | 66394-7   | —                       | —       |                                        |                                              |
| 26-24           | 0.12-0.2        | .035-.055 <sup>1</sup><br>0.89-1.40 | Bright Tin-Lead               | 66106-6                | 66108-6   | 66107-2                 | 66109-2 | 91515-15<br>or<br>58495-1*             | 466321-□**<br>or<br>466908-2**               |
|                 |                 |                                     | Gold/Nickel <sup>2</sup>      | 66106-7                | 66108-7   | 66107-3                 | 66109-3 |                                        |                                              |
|                 |                 | .040-.080 <sup>1</sup><br>1.02-2.03 | Sel. Gold/Nickel <sup>3</sup> | 66106-8                | 66108-8   | 66107-4                 | 66109-4 | 91515-15<br>or<br>58495-1*             | 466323-□**<br>or<br>466907-2**               |
|                 |                 |                                     | Bright Tin-Lead               | 66102-7                | 66104-7   | 66103-2                 | 66105-2 |                                        |                                              |
| 24-20           | 0.2-0.6         | .060-.120 <sup>4</sup><br>1.52-3.05 | Gold/Nickel <sup>2</sup>      | 66102-8                | 66104-8   | 66103-3                 | 66105-3 | 91542-15                               | 466383-4**<br>or 466979-1**<br>or 567363-□** |
|                 |                 |                                     | Sel. Gold/Nickel <sup>3</sup> | 66102-9                | 66104-9   | 66103-4                 | 66105-4 |                                        |                                              |
|                 |                 | .080-.100 <sup>1</sup><br>2.03-2.54 | Bright Tin-Lead               | 66564-6                | 66563-6   | 66566-2                 | 66565-2 | 91523-15<br>or<br>90225-25             | 466324-□**<br>or<br>466942-1**               |
|                 |                 |                                     | Sel. Gold/Nickel <sup>3</sup> | 66564-8                | 66563-8   | 66566-4                 | 66565-4 |                                        |                                              |
| 18-16           | 0.8-1.4         | .080-.100 <sup>1</sup><br>2.03-2.54 | Bright Tin-Lead               | 66332-5                | 66331-5   | 66400-1                 | 66399-1 | 91505-15 or<br>91523-15 or<br>58495-1* | 466325-□**<br>or<br>466906-1**               |
|                 |                 |                                     | Gold/Nickel <sup>2</sup>      | 66332-7                | 66331-7   | 66400-3                 | 66399-3 |                                        |                                              |
|                 |                 | .080-.100 <sup>1</sup><br>2.03-2.54 | Sel. Gold/Nickel <sup>3</sup> | 66332-8                | 66331-8   | 66400-4                 | 66399-4 | 91519-15                               | 466326-□**<br>or<br>466923-2**               |
|                 |                 |                                     | Bright Tin-Lead               | 66098-7                | 66100-7   | 66099-2                 | 66101-2 |                                        |                                              |
| 18-14           | 0.8-2.0         | .080-.100 <sup>1</sup><br>2.03-2.54 | Gold/Nickel <sup>2</sup>      | 66098-8                | 66100-8   | 66099-3                 | 66101-3 | 91521-15                               | 466958-1**<br>or<br>567364-□**               |
|                 |                 |                                     | Sel. Gold/Nickel <sup>3</sup> | 66098-9                | 66100-9   | 66099-4                 | 66101-4 |                                        |                                              |
|                 |                 | .110-.150 <sup>4</sup><br>2.79-3.81 | Bright Tin-Lead               | 66359-6                | 66358-6   | 66361-2                 | 66360-2 | 91521-15                               | 466958-1**<br>or<br>567364-□**               |
|                 |                 |                                     | Gold/Nickel <sup>2</sup>      | 66359-9                | 66358-9   | 66361-3                 | 66360-3 |                                        |                                              |
|                 |                 |                                     | Sel. Gold/Nickel <sup>3</sup> | 1-66359-0              | 1-66358-0 | 66361-4                 | 66360-4 |                                        |                                              |
|                 |                 |                                     | Bright Tin-Lead               | 66597-1                | 66598-1   | 66602-1                 | 66601-1 |                                        |                                              |
|                 |                 |                                     | Gold/Nickel <sup>2</sup>      | —                      | —         | —                       | —       |                                        |                                              |
|                 |                 |                                     | Sel. Gold/Nickel <sup>3</sup> | 66597-2                | 66598-2   | 66602-2                 | 66601-2 |                                        |                                              |

<sup>1</sup> Overall insulation crimp diameter, including crimp barrel, must not exceed .125 [3.18].

<sup>2</sup> .000015 [0.00038] gold in the mating area over .000030 [0.00076] min. nickel.

<sup>3</sup> .000030 [0.00076] gold in the mating area over .000030 [0.00076] min. nickel.

<sup>4</sup> Contacts can only be used in Metrimate, Series 1 (Arr. 23-24), Series 4 (Arr. 23-13M, 23-16M, 23-22M), and VDE connectors.

<sup>5</sup> To use with the 626 Pneumatic Tool System: remove the crimping head from the Straight Action Hand Tool (SAHT) Assembly, order SAHT Adapter (Contact Technical Support for Part Number), Adapter Holder Part Number 356304-1 (with ratchet) or 189928-1 (without), and Power Unit Part Number 189721-1 (hand actuated) or 189722-1 (foot actuated).

\* Commercial PRO-CRIMPER II hand tool for field repair only. Note: Die Set can be adapted for use with the 626 Pneumatic Tool System.

\*\* Contact Technical Support for Automatic Machine Applicator Part Numbers.

† Single contact, free-air test current is not to be construed as contact rating current. Use only for testing.

Insertion Tool Part Number 91002-1 (for insulation diameters .070 [1.78] or less), Number 200893-2 (for insulation diameters .090 [2.29] max.).  
Extraction Tool Part Number 305183.

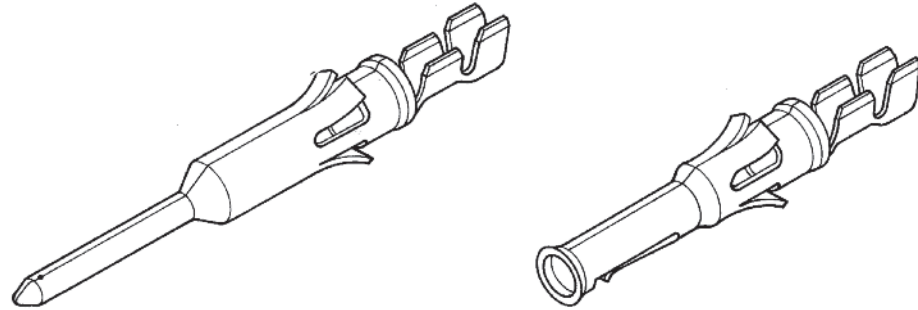
## Multimate Contacts

### Type VI Contacts

**Contact Size** — 16  
**Pin Diameter** — .062 [1.57]  
**Test Current** — 13 amperes\*  
**Material** — Copper alloy

#### Contact Finish

**A** — Tin  
**B** — Gold flash over .000050 [0.00127] nickel on entire contact with .000030 [0.00076] selective gold plating on contact area



Pin

Socket

\*Note: Current carrying capability depends on wire size, connector size and ambient temperature.

| Wire Size Range <sup>1</sup> |                    | Ins. Dia. Range                     | Contact Finish | Contact Part Number (reeled for Standard Applicator) |         | Contact Part Numbers (reeled for Quick-Change Applicator) |         | Loose Piece Contact Part No. |         | Tooling Part Numbers Hand Tool |
|------------------------------|--------------------|-------------------------------------|----------------|------------------------------------------------------|---------|-----------------------------------------------------------|---------|------------------------------|---------|--------------------------------|
| AWG                          | [mm <sup>2</sup> ] |                                     |                | Pin                                                  | Socket  | Pin                                                       | Socket  | Pin                          | Socket  |                                |
| 28-26                        | 0.08-0.15          | .035-.055<br>0.89-1.4               | A              | 66585-1                                              | —       | 66585-2                                                   | —       | —                            | —       | 91515-1<br>58495-13            |
|                              |                    |                                     | B              | —                                                    | —       | 66585-4                                                   | 66586-4 | 66595-2                      | 66596-2 |                                |
| 24-20                        | 0.2-0.6            | .040-.080<br>1.02-2.03              | A              | 66583-1                                              | 66584-1 | 66583-2                                                   | 66584-2 | 66593-1                      | 66594-1 | 91515-1<br>58495-13            |
|                              |                    |                                     | B              | —                                                    | —       | 66583-4                                                   | 66584-4 | 66593-2                      | 66594-2 |                                |
| 22-18                        | 0.3-0.9            | .055-.110<br>1.40-2.79              | A              | 66581-1                                              | 66582-1 | 66581-2                                                   | 66582-2 | 66591-1                      | 66592-1 | 90327-1                        |
|                              |                    |                                     | B              | —                                                    | —       | 66581-4                                                   | 66582-4 | 66591-2                      | 66592-2 |                                |
| 18-16                        | 0.8-1.4            | .080-.100<br>2.03-2.54              | A              | 66579-1                                              | 66580-1 | 66579-2                                                   | 66580-2 | 66589-1                      | 66590-1 | 91515-1<br>58495-13            |
|                              |                    |                                     | B              | —                                                    | —       | 66579-4                                                   | 66580-4 | 66589-2                      | 66590-2 |                                |
| 14                           | 2                  | .080-.135 <sup>2</sup><br>2.03-3.43 | A              | 66577-1                                              | 66578-1 | 66577-2                                                   | 66578-2 | 66587-1                      | —       | 91550-1                        |
|                              |                    |                                     | B              | —                                                    | —       | 66577-4                                                   | 66578-4 | 66587-2                      | 66588-2 |                                |

<sup>1</sup> Wire strip length—.156 [.396] (all wire sizes).

<sup>2</sup> Maximum insulation diameter recommended for "G" Series connectors with Multimate contact cavities is .110 [2.79].

<sup>3</sup> Economy Hand Tool for field repair only.

Insertion Tool Part Number 91002-1 for insulation diameters .070 [1.78] or less.

Extraction Tool Part Number 305183.

### Applicator Nos. for Terminating Machines

| Wire Size Range |                 | Model K                                        | Model T  | Model G  | Model Stripper/Crimper |
|-----------------|-----------------|------------------------------------------------|----------|----------|------------------------|
| AWG             | mm <sup>2</sup> |                                                |          |          |                        |
| 28-26           | 0.08-0.15       | 466321-4                                       | 466321-3 | 466321-6 | 466908-2               |
| 24-20           | 0.2-0.6         | 466323-4                                       | 466323-3 | —        | 466907-2               |
| 22-18           | 0.3-0.9         | 466384-4                                       | 466384-3 | —        | 466914-1               |
| 18-16           | 0.8-1.4         | 466325-2                                       | 466325-1 | 466325-5 | —                      |
| 14              | 2               | 687997-2 <sup>4</sup><br>687997-4 <sup>4</sup> | —        | —        | —                      |

<sup>4</sup> Insulation Dia. Range—Part Number 687997-2, .080-.105 [2.03-2.67]; Part Number 687997-4, .105-.135 [2.67-3.43].

## Multimate Contacts (Continued)

### Type XII Power Contacts

#### Continuous Operating Current

**Silver or Gold** — 25 amperes max.

**Tin-lead** — 15 amperes max.

**Material** — Copper

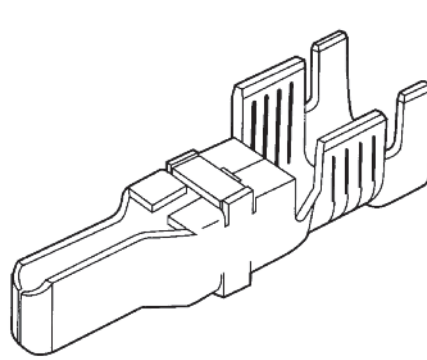
#### Contact Finish

**A** — Tin-Lead

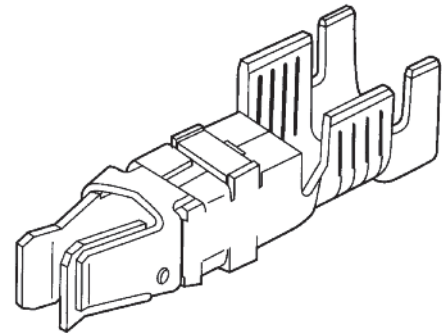
**B** — .000030 [0.00076] selective gold over .000030 [0.00076] nickel

**C** — .000100 [0.00254] silver plated contacts with lubricant added

**D** — Tin



Male



Female

| Wire Size Range <sup>1</sup> | Ins. Dia. Range  | Contact Finish | Strip Form Contact Part Number |           |                              |           | Loose Piece Contact Part No. |           | Die Insert Number for Hand Tool 69710-1 or 626 Pneumatic Tool System** |
|------------------------------|------------------|----------------|--------------------------------|-----------|------------------------------|-----------|------------------------------|-----------|------------------------------------------------------------------------|
|                              |                  |                | for Standard Applicator        |           | for Quick-Change Applicator* |           | Male                         | Female    |                                                                        |
| 16 and 14-12                 | 1.25-1.4 and 2-3 | A              | 66255-1                        | 66740-7   | 66255-5                      | 1-66740-2 | 66261-1                      | 66740-8   | 90145-2 <sup>3</sup> and 90145-14                                      |
|                              |                  |                | 66256-1 <sup>2</sup>           | —         | 66256-5 <sup>2</sup>         | —         | 66262-1 <sup>2</sup>         | —         |                                                                        |
|                              |                  |                | 66255-2                        | 66740-5   | 66255-6                      | 1-66740-1 | 66261-2                      | 66740-6   |                                                                        |
|                              |                  |                | 66256-2 <sup>2</sup>           | —         | 66256-4 <sup>2</sup>         | —         | 66262-2 <sup>2</sup>         | —         |                                                                        |
|                              |                  | C              | 66255-7                        | 66740-1   | 66255-8                      | 66740-9   | 66261-4                      | 66740-2   |                                                                        |
|                              |                  |                | 66256-6 <sup>2</sup>           | —         | 66256-7 <sup>2</sup>         | —         | 66262-4 <sup>2</sup>         | —         |                                                                        |
|                              |                  | D              | 1-66255-1                      | 1-66740-9 | 1-66255-2                    | 2-66740-0 | 66261-5                      | 2-66740-1 |                                                                        |
|                              |                  |                | 66256-8 <sup>2</sup>           | —         | 66256-9 <sup>2</sup>         | —         | 66262-5 <sup>2</sup>         | —         |                                                                        |
| 10                           | 5-6              | A              | 66253-1                        | 66741-7   | 66253-5                      | 1-66741-2 | 66259-1                      | 66741-8   | 90140-1                                                                |
|                              |                  |                | 66254-1 <sup>2</sup>           | —         | —                            | —         | 66260-1 <sup>2</sup>         | —         |                                                                        |
|                              |                  | B              | 66253-2                        | 66741-5   | 66253-6                      | 1-66741-1 | 66259-2                      | 66741-6   |                                                                        |
|                              |                  |                | 66254-2 <sup>2</sup>           | —         | —                            | —         | 66260-2 <sup>2</sup>         | —         |                                                                        |
|                              |                  | C              | 66253-4                        | 66741-1   | 66253-8                      | 66741-9   | 66259-4                      | 66741-2   |                                                                        |
|                              |                  |                | 66254-4 <sup>2</sup>           | —         | —                            | —         | 66260-4 <sup>2</sup>         | —         |                                                                        |
|                              |                  | D              | 66253-4                        | 66741-1   | 66253-8                      | 66741-9   | 66259-5                      | 66741-1   |                                                                        |
|                              |                  |                | 66254-4 <sup>2</sup>           | —         | —                            | —         | 66260-5 <sup>2</sup>         | —         |                                                                        |

<sup>1</sup> Wire strip length—.281 [7.14]

<sup>2</sup> Grounding Contact

<sup>3</sup> Die Insert Part Number 90145-2 is for crimping 16 AWG [1.25-1.4 mm<sup>2</sup>] wire

<sup>4</sup> Die Insert Part Number 90145-1 is for crimping 14-12 AWG [2-3 mm<sup>2</sup>] wire

Extraction Tool Part Number 91019-3

\* Quick-Change Applicators for—16-14-12 AWG: Model K—Part Number 567455-2, Model T—Part Number 567455-1, Model G—Part Number 567455-3  
10 AWG: Model K—Part Number 567021-2, Model T—Part Number 567021-1, Model G—Part Number 567021-4

\*\* Use 626 adapter 318161-1

## Multimate Contacts (Continued)

### Miniature COAXICON Contacts

#### Material

**Outer Shell** — Brass per MIL-C-50

**Center Conductor** — Beryllium copper

**Inner Dielectric** — Polypropylene

**Retention Spring** — Passivated stainless steel

**Ferrule** — Copper

#### Finish

**Outer Shell, Center Conductor** — .000030 [0.00076] gold over .000030 [0.00076] nickel

**Retention Spring** — Nickel per QQ-N-290

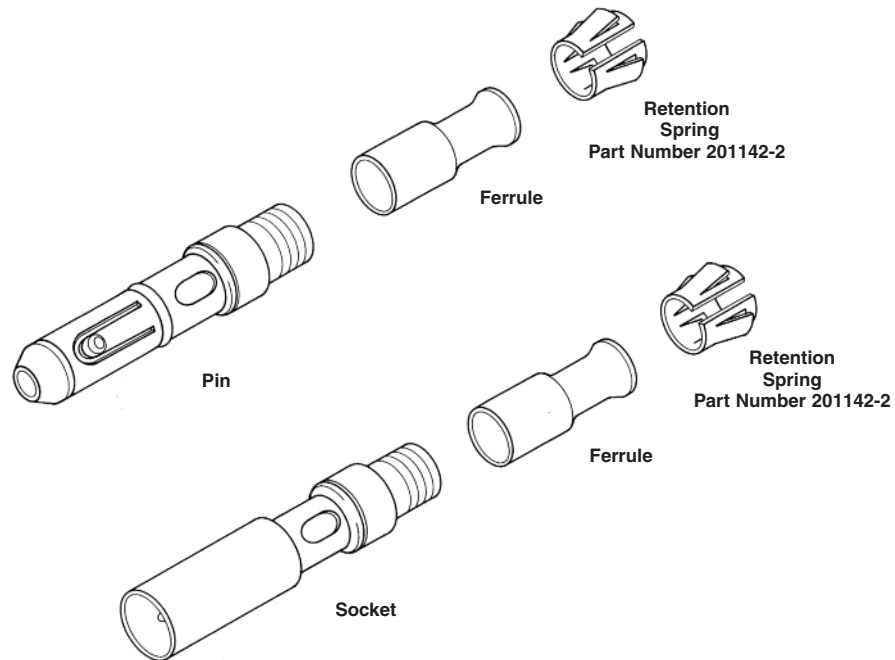
**Ferrule** — Bright tin-lead per MIL-T-10727

#### Contacts

**A** — .000030 [0.00076] gold

**B** — .000100 [0.00254] gold

Test Method for Electronic and Electrical Component Parts:  
MIL-STD-202



### Selection Chart for Coaxial Cable

| Cable Size (RG/U)                                           | Contact Finish | Loose Piece Contact Part Number |            | Ferrule Part Number | Tooling Part Number                                                      |                      | Tool Handle, Die Insert and Plastic Collar Color Code** |
|-------------------------------------------------------------|----------------|---------------------------------|------------|---------------------|--------------------------------------------------------------------------|----------------------|---------------------------------------------------------|
|                                                             |                | Pin                             | Socket     |                     | Die Insert for Hand Tool 69710 or 626 Pneumatic Tool System <sup>2</sup> | Hand Tool Number     |                                                         |
| 55, 55A, 55B, 141, 142, 223                                 | A              | 201145-4                        | 201146-4   | 330478              | 69315-4                                                                  | 69248-4              | Blue & Orange                                           |
|                                                             | B              | —                               | 201146-9   |                     |                                                                          |                      |                                                         |
| 58, 58A, 58B, 58C                                           | A              | 201145-4                        | 201146-4   | —                   | 69220-2                                                                  | —                    | Blue                                                    |
|                                                             | B              | —                               | 201146-9   |                     |                                                                          |                      |                                                         |
| 59, 59A, 59B, 62, 62A, 62B, 124, 140, 210 (4-Position Only) | A              | 201097-1                        | 201098-1   | 329006              | 69675-1                                                                  | 91912-4 <sup>1</sup> | Yellow                                                  |
| 179, 179A, 187, 21-598                                      | A              | 201143-1                        | 201144-1   | 328666              | 69227-2                                                                  | 91912-3 <sup>1</sup> | White                                                   |
|                                                             | B              | —                               | 201144-6   |                     |                                                                          |                      |                                                         |
| 180, 180A, 195, 21-597                                      | A              | 201145-2                        | 201146-2   | 328664              | 69222-2                                                                  | —                    | Red                                                     |
|                                                             | B              | 1-201145-0                      | 1-201146-0 |                     |                                                                          |                      |                                                         |
| 178, 178A, 196                                              | A              | 201511-1                        | —          | 328667              | 69373                                                                    | 69186-2              | Brown                                                   |
| 174, 188, 316                                               | A              | 201143-5                        | 201144-5   | 328666              | 69227-2                                                                  | 91912-3 <sup>1</sup> | White                                                   |
|                                                             | B              | 201143-7                        | 201144-7   |                     |                                                                          |                      |                                                         |
| 122                                                         | A              | 201145-1                        | 201146-4   | 328664              | 69222-2                                                                  | 45639-2              | Red                                                     |

\* Includes bench mount and foot control.

\*\* Match Plastic Collar and Tool colors for application to cable, Inner Insulator color identifies Wire Barrel of Center Contact

**Note:** A ferrule and retention spring (Part Number 201142-2) are required for each pin and socket.

Extraction Tool Part Number 305183-8

<sup>1</sup> SDE die used with tool frame 354940-1

<sup>2</sup> Use 626 adapter 318161-1

## Multimate Contacts (Continued)

### Selection Chart for Twisted Pair Leads

| Wire Size Range              |                    | Max. Ins. Dia.<br>(Two Wires Combined) | Contact Finish | Loose Piece Contact Part Number |          | Ferrule Part Number | Tooling Part Number                                                         |                      | Tool Handle, Die Insert and Plastic Collar Color Code ** |
|------------------------------|--------------------|----------------------------------------|----------------|---------------------------------|----------|---------------------|-----------------------------------------------------------------------------|----------------------|----------------------------------------------------------|
| AWG                          | [mm <sup>2</sup> ] |                                        |                | Pin                             | Socket   |                     | Die Inserts for Hand Tool 69710-1 or 626 Pneumatic Tool System <sup>1</sup> | Hand Tool            |                                                          |
| 28-26<br>(Solid)             | 0.08-0.15          | .080<br>2.03                           | A              | 201511-1                        | —        | 328667              | 69373                                                                       | 69186-2              | Brown                                                    |
| 24-22<br>(Stranded)          | 0.2-0.4            | .115<br>2.92                           | A              | 201143-5                        | 201144-5 | 328666              | 69672                                                                       | 91912-4 <sup>2</sup> | Gray and White                                           |
|                              |                    |                                        | B              | 201143-7                        | 201144-7 |                     |                                                                             |                      |                                                          |
| 24-22<br>(Solid or Stranded) | 0.2-0.4            | .160<br>.406                           | A              | 50079-1                         | 50080-1  | 329029              | 69222-2                                                                     | 45639-2              | Red                                                      |

### Selection Chart for Shielded Wire

| Cable Size<br>(RG/U)                                                                                                                                                                                                                                                    | Contact Finish | Loose Piece Contact Part Number |          | Ferrule Part Number | Tooling Part Number                                                         |                      | Tool Handle, Die Insert and Plastic Collar Color Code ** |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|---------------------------------|----------|---------------------|-----------------------------------------------------------------------------|----------------------|----------------------------------------------------------|
|                                                                                                                                                                                                                                                                         |                | Pin                             | Socket   |                     | Die Inserts for Hand Tool 69710-1 or 626 Pneumatic Tool System <sup>1</sup> | Hand Tool            |                                                          |
| No. 26, NAS-702, Class A & C<br>No. 26, MIL-W-16878, Types E & EE<br>No. 24, NAS-702, Class A & C<br>No. 24, MIL-W-16878, Types E & EE<br>No. 22, NAS-702, Class C<br>No. 22, MIL-W-16878, Type E<br>No. 22, MIL-C-7078 A, Type I<br>No. 1 Dielectric, .068 [1.73] O.D. | A              | 201143-2                        | 201144-2 | 328666              | —                                                                           | 69147-2              | Gray                                                     |
| No. 22, NAS-702, Class A<br>No. 22, MIL-C-7078 A, Type II                                                                                                                                                                                                               | A              | 201143-3                        | 201144-3 | 328666              | 69227-2                                                                     | 91912-3 <sup>2</sup> | White                                                    |
| No. 22, MIL-C-7078 A, Types I & II<br>No. 2 Dielectric, .075 [1.91] O.D.<br>No. 3 Dielectric, .085 [2.16] O.D.                                                                                                                                                          | A              | 201145-1                        | 201146-4 | —                   | 69222-2                                                                     | 45639-2              | Red                                                      |
| No. 22, NAS-702, Class B                                                                                                                                                                                                                                                | A              | 201145-4                        | 201146-4 | 328663              | 69220-2                                                                     | 45740-2              | Blue                                                     |
|                                                                                                                                                                                                                                                                         | B              | —                               | 201146-9 |                     |                                                                             |                      |                                                          |

### Selection Chart for Various Manufacturers' Cables

| Center Conductor Wire      |                    | Dielectric O.D.<br>(Max.) | Cable O.D.<br>Range   | Braid  | Loose Piece Contact Part No. |          | Ferrule Part Number | Tooling Part Number                                                         |           | Tool Handle, Die Insert and Plastic Collar Color Code** |
|----------------------------|--------------------|---------------------------|-----------------------|--------|------------------------------|----------|---------------------|-----------------------------------------------------------------------------|-----------|---------------------------------------------------------|
| AWG/Type                   | [mm <sup>2</sup> ] |                           |                       |        | Pin                          | Socket   |                     | Die Inserts for Hand Tool 69710-1 or 626 Pneumatic Tool System <sup>1</sup> | Hand Tool |                                                         |
| Brand Rex T209A<br>29 AWG  | 0.7-0.08           | .076<br>1.93              | .112-.122<br>2.84-3.1 | Single | —                            | 201146-2 | 330587              | 69440                                                                       | —         | Orange                                                  |
| Brand Rex T5788A<br>26 AWG | 0.12-0.15          | .106<br>2.69              | .160<br>4.06          | Single | 201145-2                     | 201146-2 | 328664              | 69222-2                                                                     | 45639-2   | Red                                                     |
| 32-26                      | 0.03-0.15          | .129<br>3.28              | .122-.137<br>3.1-3.48 | Single | —                            | 201146-2 | 330587              | 69440                                                                       | —         | Orange                                                  |
| Raychem 0030D1314          |                    |                           |                       |        |                              |          |                     |                                                                             |           |                                                         |
| Army Ordnance 11207177     |                    |                           |                       |        |                              |          |                     |                                                                             |           |                                                         |

<sup>1</sup>Includes bench mount and foot control; requires Manual Take-Up Attachment Part Number 69689

<sup>2</sup>Match Plastic Collar and Tool colors for application to cable. Inner Insulator color identifies Wire Barrel of Center Contact.

**Note:** A ferrule and retention spring (Part Number 201142-2) are required for each pin and socket.

Extraction Tool Part Number 305183-8

<sup>1</sup> Use 626 adapter 318161-1

<sup>2</sup> SDE die used with tool frame 354940-1

## Coaxial Contacts

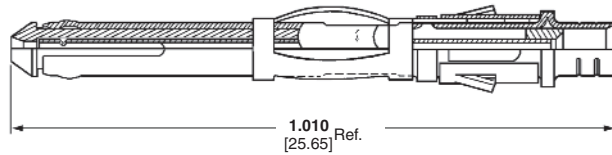
### Subminiature Coax, Size 16 Precision Formed, Crimp



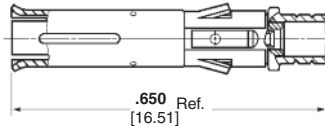
Pin



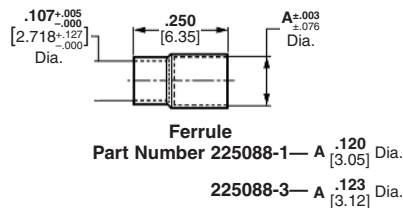
Socket



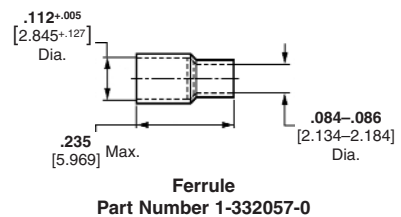
Pin



Socket



Ferrule  
Part Number 225088-1—A .120 [3.05] Dia.  
225088-3—A .123 [3.12] Dia.



Ferrule  
Part Number 1-332057-0

### Material

**Outer Shell** — Brass per MIL-C-50

**Center Conductor** — Beryllium copper per QQ-C-533 (Pin); Brass per QQ-B-626 (Socket)

**Inner Dielectric** — Polypropylene

**Retention Spring** — Stainless steel per QQ-S-766

**Ferrule** — Copper per QQ-C-576

### Finish

**Outer Shell, Center Conductor** — See charts

**Ferrule** — Bright tin-lead per MIL-T-10727

### Selection Chart for Coaxial Cable

| Cable Size<br>(RG/U)  | Contact<br>Finish                       | Loose Piece<br>Contact No. |         | Ferrule<br>Part No.                     | Tooling Part No.                                                     |              |
|-----------------------|-----------------------------------------|----------------------------|---------|-----------------------------------------|----------------------------------------------------------------------|--------------|
|                       |                                         | Pin                        | Socket  |                                         | Die Sets for<br>Hand Tool 69710-1<br>or 626 Pneumatic<br>Tool System | Hand<br>Tool |
| 178, 196              | Gold/Nickel<br>Gold/Copper <sup>1</sup> | 226537-2                   | 51565-2 | 1-332057-0†                             | 69690-2 <sup>3</sup>                                                 | 69656-2      |
|                       | Gold/Nickel<br>Gold/Copper <sup>2</sup> | —                          | 51565-5 |                                         |                                                                      |              |
| 196<br>(Double Braid) | Gold/Nickel<br>Gold/Copper <sup>1</sup> | 226537-2                   | 51565-2 | 225088-1† or<br>5-225088-1 <sup>4</sup> | —                                                                    | 69656-9      |
|                       | Gold/Nickel<br>Gold/Copper <sup>2</sup> | —                          | 51565-5 |                                         |                                                                      |              |
| 174, 188, 316         | Gold/Nickel<br>Gold/Copper <sup>1</sup> | 226537-1                   | 51565-1 | 1-332056-0                              | 69690 <sup>3</sup>                                                   | 91911-3*     |
|                       | Gold/Nickel<br>Gold/Copper <sup>2</sup> | 226537-4                   | 51565-4 |                                         |                                                                      |              |
| 174<br>(Double Braid) | Gold/Nickel<br>Gold/Copper <sup>1</sup> | 226537-1                   | 51565-1 | 225088-3 or<br>5-225088-3 <sup>4</sup>  | —                                                                    | 69656-7      |
|                       | Gold/Nickel<br>Gold/Copper <sup>2</sup> | 226537-4                   | 51565-4 |                                         |                                                                      |              |
| 179, 187              | Gold/Nickel<br>Gold/Copper <sup>1</sup> | 226537-1                   | 51565-1 | 1-332056-0                              | 69690-1 <sup>3</sup>                                                 | 91911-4*     |
|                       | Gold/Nickel<br>Gold/Copper <sup>2</sup> | 226537-4                   | 51565-4 |                                         |                                                                      |              |
| 187<br>(Double Braid) | Gold/Nickel<br>Gold/Copper <sup>1</sup> | 226537-1                   | 51565-1 | 225088-1†                               | —                                                                    | 69656-8      |
|                       | Gold/Nickel<br>Gold/Copper <sup>2</sup> | 226537-4                   | 51565-4 |                                         |                                                                      |              |
| 161                   | Gold/Nickel<br>Gold/Copper <sup>1</sup> | 226537-1                   | 51565-1 | 1-332056-0                              | —                                                                    | —            |
|                       | Gold/Nickel<br>Gold/Copper <sup>2</sup> | 226537-4                   | 51565-4 |                                         |                                                                      |              |

<sup>1</sup> .000030 [0.00076] gold over .000050 [0.00127] nickel—outer shell and socket center conductor; .000030 [0.00076] gold over .000100 [0.00254] copper—pin center conductor.

<sup>2</sup> .000050 [0.00127] gold over .000050 [0.00127] nickel—outer shell and socket center conductor; .000050 [0.00127] gold over .000100 [0.00254] copper—pin center conductor.

<sup>3</sup> Die Set requires "C" Head Adapter Part Number 318161-1; Adapter Holder Part Number 356304-1 (with ratchet) or 189928-1 (without); and Power Unit Part Number 189721-2 (hand actuated) or 189722-2 (foot actuated).

<sup>4</sup> RoHS compliant Part Numbers.

† Does not use Hand Tool 45098 or 601967-1.

Extraction Tool Part Number 305183

\* SDE die used with tool frame 354940-1



## Coaxial Contacts (Continued)

### Subminiature Coax, Size 16 Precision Formed, Crimp

(Continued)

#### Finish

**Ferrulet** — Bright tin-lead per  
MIL-T-10727

### Selection Chart for Twisted Pair and Shielded Wire

| Wire Size |                                                                          | Contact Finish                       | Loose Piece Contact No. |         | Ferrule Part No. | Tooling Part No.                                            |                           |
|-----------|--------------------------------------------------------------------------|--------------------------------------|-------------------------|---------|------------------|-------------------------------------------------------------|---------------------------|
|           |                                                                          |                                      | Pin                     | Socket  |                  | Die Sets for Hand Tool 69710-1 or 626 Pneumatic Tool System | Hand Tool                 |
| 30        | 0.05<br>(Twisted Pair, Solid)                                            | Gold/Nickel Gold/Copper <sup>1</sup> | 226537-3                | 51565-3 | 1-332057-0†      | 69690-2 <sup>3</sup>                                        | 69656-2                   |
|           |                                                                          | Gold/Nickel Gold/Copper <sup>2</sup> | 226537-6                | 51565-6 |                  |                                                             |                           |
| 28        | 0.08-0.09<br>(Twisted Pair, Solid)                                       | Gold/Nickel Gold/Copper <sup>1</sup> | 226537-3                | 51565-3 | 1-332057-0†      | 69690 <sup>3</sup>                                          | 91911-3*                  |
|           |                                                                          | Gold/Nickel Gold/Copper <sup>2</sup> | 226537-6                | 51565-6 |                  |                                                             |                           |
| 28        | 0.08-0.09<br>(Twisted Pair, Stranded 7 Str., .0050 [0.13] Dia.)          | Gold/Nickel Gold/Copper <sup>1</sup> | 226537-3                | 51565-3 | 1-332057-0†      | 69690-1 <sup>3</sup><br>or<br>69690-2 <sup>3</sup>          | 91911-4*<br>or<br>69656-2 |
|           |                                                                          | Gold/Nickel Gold/Copper <sup>2</sup> | 226537-6                | 51565-6 |                  |                                                             |                           |
| 26        | 0.12-0.15<br>(Twisted Pair, Solid or Stranded 7 Str., .0063 [0.16] Dia.) | Gold/Nickel Gold/Copper <sup>1</sup> | 226537-3                | 51565-3 | 1-332057-0†      | 69690 <sup>3</sup>                                          | 91911-3*                  |
|           |                                                                          | Gold/Nickel Gold/Copper <sup>2</sup> | 226537-6                | 51565-6 |                  |                                                             |                           |
| 26        | 0.12-0.15<br>(Shielded, .075 [1.91] Max. O.D.)                           | Gold/Nickel Gold/Copper <sup>1</sup> | 226537-1                | 51565-1 | 1-332057-0†      | 69690-3 <sup>3</sup>                                        | 69656-3                   |
|           |                                                                          | Gold/Nickel Gold/Copper <sup>2</sup> | 226537-4                | 51565-4 |                  |                                                             |                           |

<sup>1</sup> .000030 [0.00076] gold over .000050 [0.00127] nickel—outer shell and socket center conductor; .000030 [0.00076] gold over .000100 [0.00254] copper—pin center conductor.

<sup>2</sup> .000050 [0.00127] gold over .000050 [0.00127] nickel—outer shell and socket center conductor; .000050 [0.00127] gold over .000100 [0.00254] copper—pin center conductor.

<sup>3</sup> Die Set requires "C" Head Adapter Part Number 318161-1; Adapter Holder Part Number 356304-1 (with ratchet) or 189928-1 (without); and Power Unit Part Number 189721-2 (hand actuated) or 189722-2 (foot actuated).

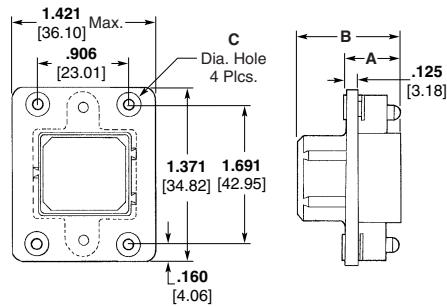
† Does not use Hand Tool 45098 or 601967-1.

**Note:** A ferrule is required for each pin and socket. Extraction Tool Part Number 305183.

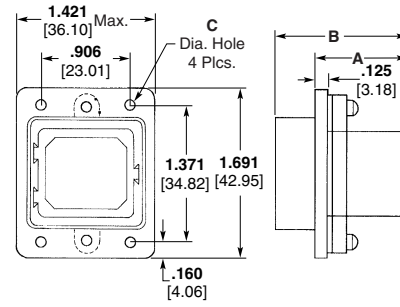
\* SDE die used with tool frame 354940-1

## Shell Specifications

### One-Module Shell



Plug

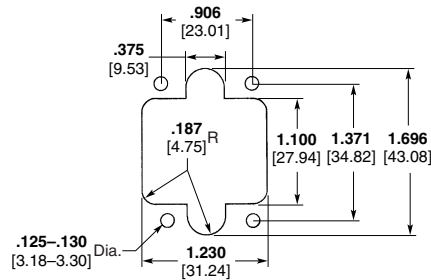


Receptacle

### Material and Finish

**Shell and Retainer** — Die cast aluminum, electroless nickel plated (no intentional additions of lead or cadmium)

**Screws and Floating Bushings** — Passivated stainless steel



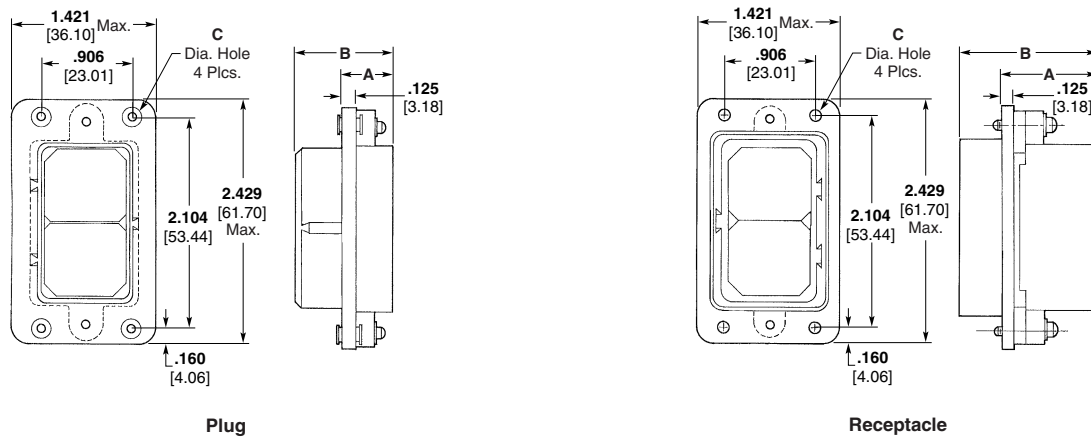
Recommended Panel Cutout

| Shell Type                       | For Pin Module |                |              |                | For Socket Module |                |              |                |
|----------------------------------|----------------|----------------|--------------|----------------|-------------------|----------------|--------------|----------------|
|                                  | Dimensions     |                |              | Shell Part No. | Dimensions        |                |              | Shell Part No. |
|                                  | A              | B              | C            |                | A                 | B              | C            |                |
| Receptacle                       | 1.001<br>25.43 | 1.509<br>38.33 | .120<br>3.05 | 5-202279-3     | .595<br>15.11     | 1.103<br>28.02 | .120<br>3.05 | 5-202279-4     |
| Plug (with Floating Bushings)    | .886<br>22.5   | 1.416<br>35.97 | .118<br>3.00 | 5-202275-4     | .480<br>12.19     | 1.010<br>25.65 | .118<br>3.00 | 5-202275-3     |
| Plug (without Floating Bushings) | .886<br>22.5   | 1.416<br>35.97 | .125<br>3.18 | 5-202786-2     | .480<br>12.19     | 1.010<br>25.65 | .125<br>3.18 | 5-202786-1     |

- Notes:** 1. Plugs for pin modules mate with receptacles for socket modules, and plug for socket modules mate with receptacles for pin modules.  
2. Pin and socket modules for these shells are presented on page 8-145.  
3. For cable clamps and latching hardware, see page 8-157.

## Shell Specifications (Continued)

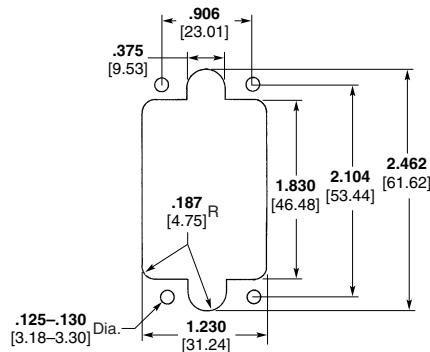
### Two-Module Shell



### Material and Finish

**Shell and Retainer** — Die cast aluminum, electroless nickel plated (no intentional additions of lead or cadmium)

**Screws and Floating Bushings** — Passivated stainless steel



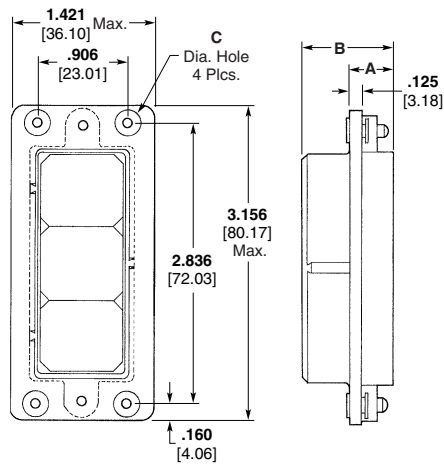
Recommended Panel Cutout

| Shell Type                       | For Pin Module |                |              |                | For Socket Module |                |              |                |
|----------------------------------|----------------|----------------|--------------|----------------|-------------------|----------------|--------------|----------------|
|                                  | Dimensions     |                |              | Shell Part No. | Dimensions        |                |              | Shell Part No. |
|                                  | A              | B              | C            |                | A                 | B              | C            |                |
| Receptacle                       | 1.001<br>25.43 | 1.509<br>38.33 | .120<br>3.05 | 5-202681-2     | .595<br>15.11     | 1.103<br>28.02 | .120<br>3.05 | 5-202681-3     |
| Plug (with Floating Bushings)    | .886<br>22.5   | 1.416<br>35.97 | .118<br>3.00 | 5-202680-3     | .480<br>12.19     | 1.010<br>25.65 | .118<br>3.00 | —              |
| Plug (without Floating Bushings) | .886<br>22.5   | 1.416<br>35.97 | .125<br>3.18 | 5-202789-2     | .480<br>12.19     | 1.010<br>25.65 | .125<br>3.18 | 5-202789-1     |

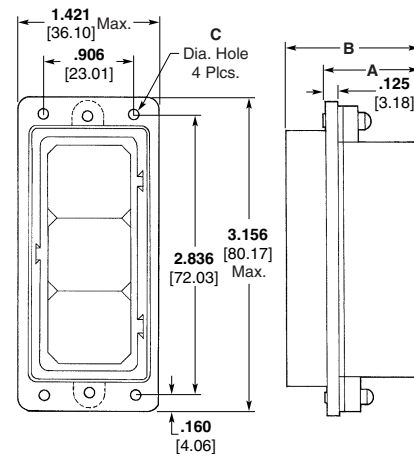
- Notes:** 1. Plugs for pin modules mate with receptacles for socket modules, and plug for socket modules mate with receptacles for pin modules.  
 2. Pin and socket modules for these shells are presented on page 8-145.  
 3. For cable clamps and latching hardware, see page 8-157.

## Shell Specifications (Continued)

### Three-Module Shell



Plug

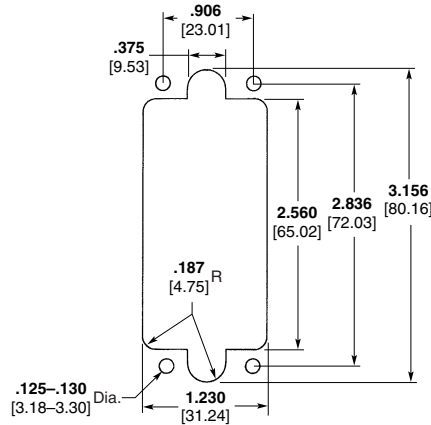


Receptacle

### Material and Finish

**Shell and Retainer** — Die cast aluminum, electroless nickel plated (no intentional additions of lead or cadmium)

**Screws and Floating Bushings** — Passivated stainless steel



Recommended Panel Cutout

| Shell Type                       | For Pin Module |                |              |                | For Socket Module |                |              |                |
|----------------------------------|----------------|----------------|--------------|----------------|-------------------|----------------|--------------|----------------|
|                                  | Dimensions     |                |              | Shell Part No. | Dimensions        |                |              | Shell Part No. |
|                                  | A              | B              | C            |                | A                 | B              | C            |                |
| Receptacle                       | 1.001<br>25.43 | 1.509<br>38.33 | .120<br>3.05 | 5-202287-3     | .595<br>15.11     | 1.103<br>28.02 | .120<br>3.05 | 5-202287-4     |
| Plug (with Floating Bushings)    | .886<br>22.5   | 1.416<br>35.97 | .118<br>3.00 | 5-202283-4     | .480<br>12.19     | 1.010<br>25.65 | .118<br>3.00 | 5-202283-3     |
| Plug (without Floating Bushings) | .886<br>22.5   | 1.416<br>35.97 | .125<br>3.18 | 5-202795-2     | .480<br>12.19     | 1.010<br>25.65 | .125<br>3.18 | 5-202795-1     |

## Accessories

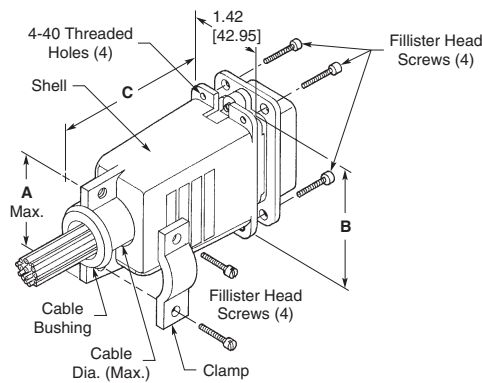
### Cable Clamps, Straight Cable Exit

#### Material and Finish

**Clamp and Shell** — Die cast aluminum, electroless nickel plated (no intentional additions of lead or cadmium)

**Fillister Head Screws** — Passivated stainless steel

**Cable Bushings** — Rubber, black



| Shell Size<br>(No. of Modules) | Dimensions     |                |                | Cable Dia.<br>(Max.) | Cable Bushings | Cable RoHS<br>Part No. |
|--------------------------------|----------------|----------------|----------------|----------------------|----------------|------------------------|
|                                | A              | B              | C              |                      |                |                        |
| 1                              | 1.315<br>33.4  | 1.416<br>35.96 | 2.625<br>66.68 | .750<br>19.05        | With           | 5-202764-1*            |
|                                | 1.100<br>27.94 | 1.691<br>42.95 | 2.625<br>66.68 | .563<br>14.3         | Without        | 5-202305-3             |
| 2                              | 1.820<br>46.23 | 2.424<br>61.57 | 3.140<br>69.76 | .875<br>22.23        | With           | 5-202617-1*            |
|                                | 2.135<br>54.23 | 3.156<br>80.16 | 3.140<br>79.76 | 1.156<br>29.37       | Without        | 5-202617-2             |
| 3                              | 2.135<br>54.23 | 3.156<br>80.16 | 3.140<br>79.76 | 1.156<br>29.37       | With           | 6-202301-1**           |
|                                |                |                |                |                      | Without        | 6-202301-0             |

\*Two Cable Bushings are included to provide .625 [15.88] and .250 [6.35] diameter cable outlets.

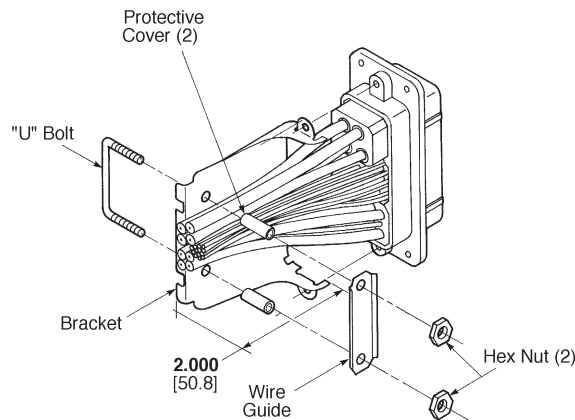
\*\*Four Cable Bushings are included to provide .938 [23.83], .750 [19.05], .625 [15.88] and .250 [6.35] diameter cable outlets.

**Note:** These cable clamps can be used on either a plug or receptacle shell of the appropriate size; refer to pages 8-154 to 8-156.

### Strain Relief (for Three-Module Shell)

**Part Number 5-202567-1**

**Note:** This strain relief can be used on either a plug or receptacle shell, three-module size only, refer to page 8-156.



### Locking Latch Assembly

**Part Number 5-202832-1**

(without mounting hardware)

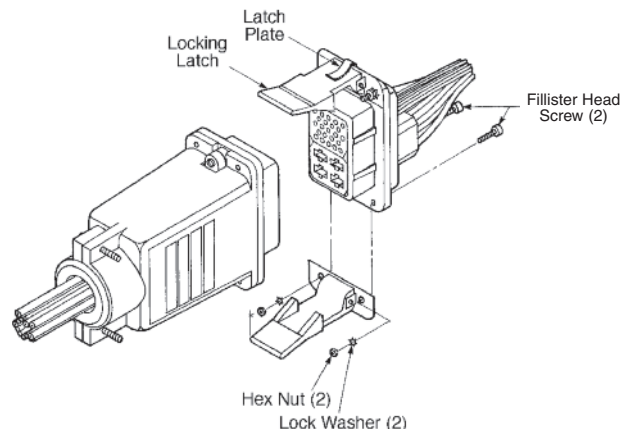
**Part Number 5-202832-2**

(with mounting hardware\*)

\*Mounting hardware includes four lock washers, 4-40 hex nuts and fillister head screws.

#### Notes:

1. Locking Latch Assemblies are packaged two per unit.
2. Locking Latch Assemblies can be used on either a plug or receptacle shell. They cannot be used with shells having floating bushings.
3. Locking Latch Assemblies must be used with a cable clamp.



## Application Tooling

### CERTI-CRIMP and CERTI-CRIMP II Hand Tools

These tools are ideal for small production, prototype and experimental applications. They are used for terminating pin and socket contacts to wire and feature the CERTI-CRIMP ratchet device to form accurate crimps each time.



Hand Tool Part Number 69710

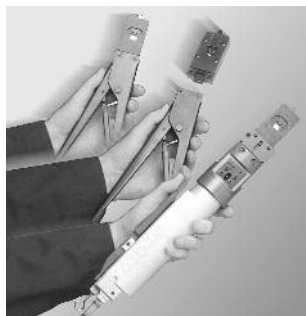


CERTI-CRIMP II  
Straight Action Hand Tool



SDE die in  
PRO-CRIMPER frame. Go to  
[www.tooling.te.com](http://www.tooling.te.com) for additional  
tooling options for SDE dies.

### 626 Pneumatic Tool System



Lightweight, air-operated modular tooling system. Accepts a wide variety of interchangeable heads for crimping various types of contacts, terminals and splices onto wires ranging 6-26 AWG [13-0.12 mm<sup>2</sup>], plus coaxial and fiber optic cable. Available with either hand- or foot-actuation switch. Optional ratchet control available to provide complete crimp cycle.

#### Specifications

**Outside Diameter** — 1.83 [46.5]

**Length** — 11.6-12.9 [295-327]

**Grip Span** — 2.19 [55.6] over button/handle

**Weight** — 2.3-3.3 lb [1.0-1.5 kg]

**Air** — 90-100 psi [6.21-6.89 bar], 11.14 in<sup>3</sup> [0.00018 m<sup>3</sup>]

**Cycle Time** — 0.7-0.8 sec (16-14 AWG [1.3-2 mm<sup>2</sup>] PIDG Terminals)

For more information, request Catalog 124208.

### AMP-O-ELECTRIC Model "K" Terminating Machine, 1-471273-3



Semiautomatic bench machine for use with standard-style applicators. It is an electrically-powered, clutched, flywheel-energy-style machine, equipped with a mechanical strip feed mechanism. Products commonly applied with this machine include AMP splices, AMPLIVAR splices, and FASTON flag receptacles.

#### Specifications

**Width** — 21 [533]

**Depth** — 20 [508]

**Height** — 24 [610] without reel

**Weight** — 230 lb [104 kg]

**Electrical** — 120 VAC, 60 Hz, 6 A

**Air** — 90-110 psi [6.21-7.59 bar], 6 scfm [0.00282 m<sup>3</sup>/s] when required with air-feed applicators

**Wire Range** — 26-10 AWG [0.12-6 mm<sup>2</sup>] solid or stranded, depending on product applied

For more information, contact TE Connectivity.

### AMP-O-ELECTRIC Model "G" Terminating Machines, 354500-1, -9, -11



Semiautomatic bench machines for crimping reeled terminals and contacts, featuring a quiet and reliable direct motor drive, microprocessor controls for ease of setup and operation, and guarding and lighting designed for operator convenience. All models are equipped with either manual or automatic precision adjustment of crimp height. Machine-mounted sensors are available for crimp quality monitoring using conventional miniature-style applicators.

#### Specifications

**Width** — 18.7-25.3 [475-643] depending on applicator type

**Depth** — 21.5-28.1 [546-713] depending on applicator type

**Height** — 20 [508]

**Weight** — 240 lb [110 kg]

**Electrical** — 120 or 220 VAC, 50 or 60 Hz; 310 VA

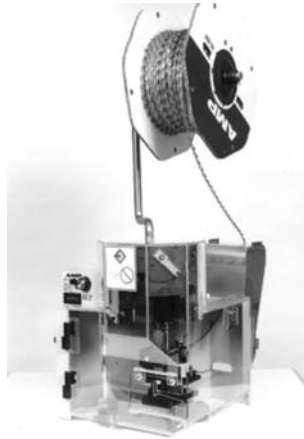
**Air** — 90-110 psi [6.21-7.59 bar], 6 scfm [0.00282 m<sup>3</sup>/s] when required with air-feed applicators

**Wire Range** — 26-10 AWG [0.12-6 mm<sup>2</sup>] solid or stranded, depending on product applied

For more information, request Catalog 65828.

## Application Tooling (Continued)

### Entry Level Terminator (ELT), 1338600-1, -2, -3, -4, -5, -6



Semiautomatic Bench Terminator for side- and end-feed reeled terminals and contacts. The ELT uses a DC motor with gear box drive. The result is a small-footprint design that is fast and quiet. Cycle time is less than 0.400 seconds with an operation sound level of 76dBA. With a crimp force capacity of 3,000 pounds, the ELT is available for all but the highest crimp force applications. A wide range of optional equipment is also available to meet your specific application requirements.

#### Specifications

**Width** — 16.8 [427]  
**Depth** — 20.6 [523]  
**Height** — 20 [510] without reel support  
**Weight** — approx. 150 lb [68 kg]  
**Electrical** — 100-240 VAC, 50/60 Hz, 6A (*Note: Avg <1 A at 120 VAC when used as a bench-top unit at 2,000 cycles per hour operating rate*)  
**Air** — 90-100 psi [6.21-6.90 bar], 6 scfm [0.00282 m³/s] when required for use with air-feed applicators (*Note: Optional Air Feed Valve Assembly Required*)  
**Wire Range** — Up to 14 AWG [2.5 mm²]  
 For more information, request catalog 1308382.

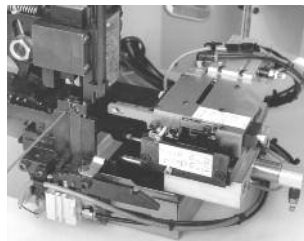
### AMP-O-MATIC Stripper-Crimper Machines, 1320895-1, -2



Semiautomatic bench crimping machines that also strip the wire, and are therefore used for terminating jacketed cable. Feature manual precision adjustment of crimp height, keyed strip blades for faster, more accurate setups, and an efficient scrap removal system. All adjustments can be made from the front of the machines without special tools. Available with crimp quality monitoring.

#### Specifications

**Width** — 14 [355]  
**Depth** — 18 [457]  
**Height** — 33 [838] without reel  
**Weight** — 150 lb [68 kg]  
**Electrical** — 120 VAC, 50 or 60 Hz, .5 A  
**Air** — 80-100 psi [5.52-6.90 bar], 3.5 scfm [0.00165 m³/s]  
**Wire Range** — 32-14 AWG [0.03-2 mm²]  
 For more information, request Catalog 65004.



The combination of the Stripping Module with the Entry Level Terminator (ELT) or the AMP-O-LECTRIC Model G Terminator provides an economical and proficient method of stripping wire and crimping terminals on the same machine. Wires are stripped moments before crimping, meaning there is virtually no chance of damaging wire conductors during handling or storage. Once the wire is fed into the start sensor the Stripping Module does the rest, improving placement accuracy.

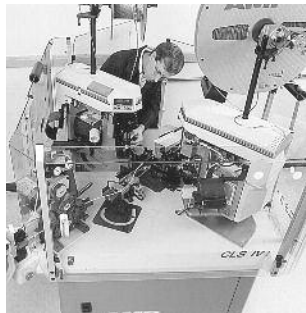
#### Specifications

**Wire Range Base Module** — 0.03 mm² - 2.0 mm² (32-14 AWG) (30-32 AWG may require special kit.)  
**Max. Insulation** — .200 [5.08]  
**Cable Breakout** — > 1.100 [29.00]  
**Strip Length** — .100 - .400 [2.50 - 10.16]  
**Noise** — Less than 82 dBA (Typical at operator position with standard mechanical feed applicator)  
**Weight** — 4.53 Kilograms (10 lb)  
**Height** — 5.000 [127.00]  
**Electrical** — 100-240 VAC, 50/60 Hz, single phase current, obtains power from the terminator  
**Air** — 620-760 kPa (90-100 psi), 2.83 liters/sec (6 scfm)  
**Wire Sensor** — Gold plated contacts with laser etched target  
 For more information, request Catalog 1309085.



## Application Tooling (Continued)

### AMPOMATOR CLS IV+ Lead-Making Machines, 356500-1, -2



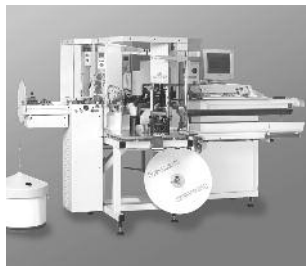
Fully-automatic machines that measure, cut, strip and terminate single leads. Microprocessor-controlled, and programmed and operated using an easy-to-follow, menu-driven touch-screen. Features include direct-drive terminating units with precision crimp height adjustment, fully programmable setups, wire runout and splice detection, and motorized pre-feed with wire straightener. Crimp quality monitoring is also available.

#### Specifications

**Width** — 159 [4 040]  
**Depth** — 68 [1 730]  
**Height** — 86 [2 185] with 24 [610] dia. reel  
**Weight** — 2 000 lb [907 kg]  
**Electrical** — 220 VAC, 50 or 60 Hz, single phase, 25 A, with neutral and ground  
**Air** — 90 psi [6.21 bar], 15 scfm [0.0071 m³/s] sustained  
**Wire Range** — 26-10 AWG [0.12-6 mm²] stranded, 26-16 AWG [0.12-1.4 mm²] solid  
**Lead Lengths** — 3-90 [76.2-2 285], 90-1 000 [2 285-25 400] with long lead conveyors

For more information, request Catalog 124324.

### Gamma 333 PC Lead-Making Machine, Three Stations, 1-528324-1



With its capacity to accommodate an additional processing station on side 1, the Gamma 333 PC can perform a number of new processes. It can produce two-ended crimp leads, process double crimp connections with three different terminals or apply seals on one end of the wire. Tinning and ink jet marking are two further options. Process monitoring is integrated into the system, for accurate trimming and stripping of the wires.

#### Specifications

**Length** — 125 [3137]  
**Width** — 54.2 [1377]  
**Height** — 70.5 [1790]  
**Length Range** — 2.36 in-32.8 ft [60-10,000] (optional 30mm)  
**Cross-Section Range** — AWG 26-AWG 10 [0.125mm²-5mm²]  
**Noise Level** — <76dB (without crimping modules)  
**Electrical** — 3x208 - 480V, 50-60Hz; 6kVA  
**Compressed Air** — 5-6 bar  
**Air Consumption** — 6.5m³/h  
**Weight** — 1850 lbs [840 kg] with two crimping modules  
 For more information, request Catalog 1307901.

### Crimp Quality Monitor (CQM), 1320420-1, -2



This unique system provides 100% on-the-fly crimp inspection. It measures the crimp height of each termination, and evaluates the quality of each crimp. If a crimp is questionable, the monitor alerts the operator with both visual and audible alarms. It also provides ports for printing and networking. When used with AMP-O-ELECTRIC Model "G" Termination Machines, the monitor is mounted to the

machine. When used with AMPOMATOR CLS IV Lead-Making Machines, it is integrated into the machine's operating system.

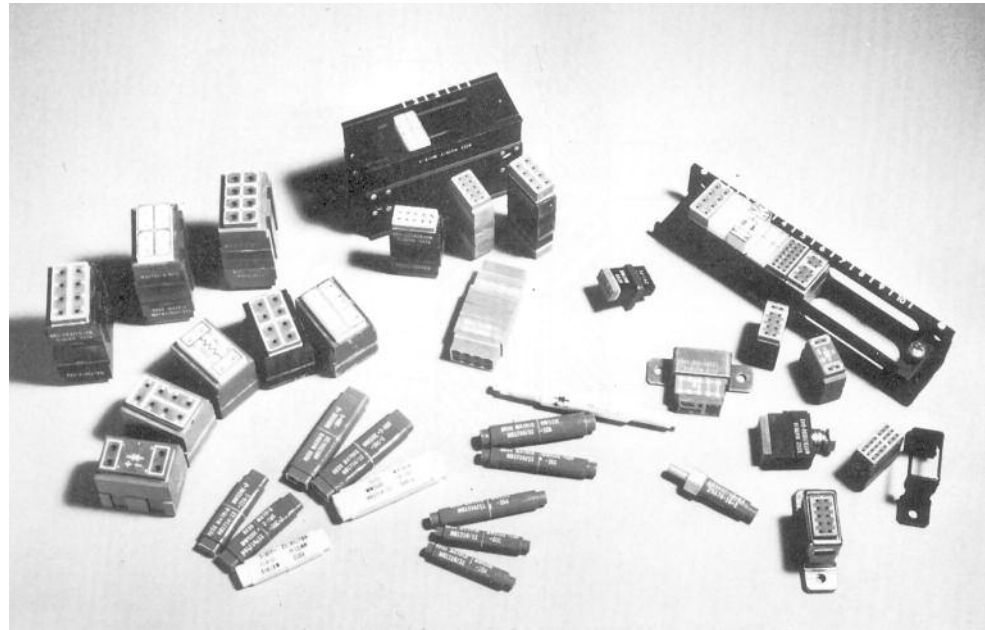
#### Specifications

**Width** — 8.8 [220]  
**Depth** — 8.1 [205]  
**Height** — 4.6 [115]  
**Weight** — 5 lb [2.3 kg]  
**Electrical** — 100-240 VAC, 50/60 Hz, 3.2 A  
 For more information, request Catalog 82275.

## Introduction

### Product Facts

- The TJS connections are inherently more reliable than conventional threaded and solder terminations
- The user's wiring is crimped to gold plated pin contacts, conforming the MIL-C-39029/1, which are individually mated to probe-proof gold plated pre-bussed sockets contained within the module and splice
- Modules and Splices — environment proof conforming to the requirements of MIL-T-81714. These modules can be assembled into MIL-T-81714 rails and are individually removable. Brackets are also available to mount individual or triads of modules. The splices are designed to terminate from two to four wires.
- Commercial TJS consists of module blocks (either environmental or non-environmental) designed for custom assembled installations. These can be furnished in pre-assembled arrays in rails or individually with rail kits to accommodate various rows and lengths of modules.
- TJS Connectors also qualified to German Army Standard VG 95212-31/ VG 95231-102/103/105



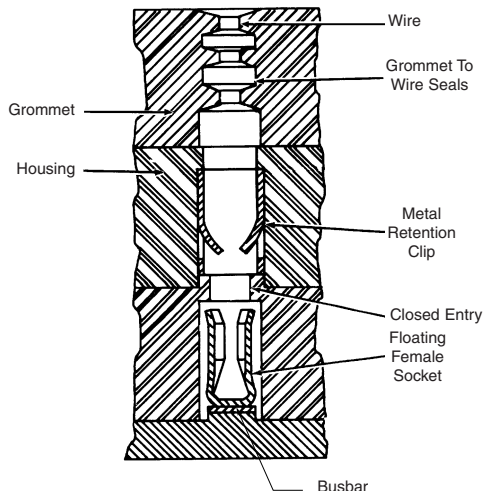
The Terminal Junction System (TJS) provides design engineers with a compact family of modules and splices for interconnecting wires. Both the modules and splices facilitate interconnecting with pre-bussed configurations to which the user's 22 thru 12 AWG wires are terminated with crimped removable pin contacts. Servicing tools required are the commonly available MIL-C-81969/14, plastic tool and MIL-C-22520 crimping tool used

for rear release connector contacts.

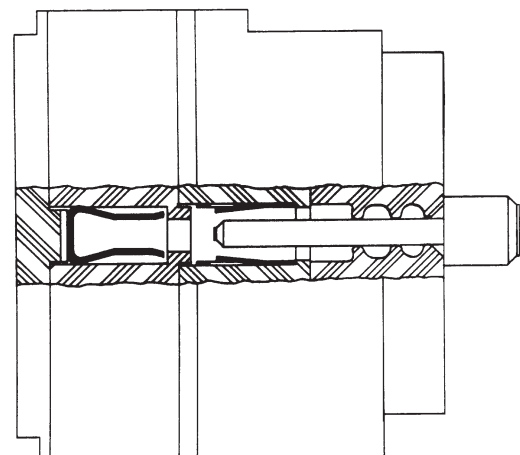
The TJS eliminates many shortcomings of the conventional lug and threaded termination. The TJS has no loose attaching hardware, such as nuts, screws and lock-washers to complete the termination. The TJS saves space and weight over threaded terminations while reducing installation cost. There is complete electrical isolation and optional environmental

sealing grommet in the TJS without user installed busses, barriers, insulating strips, potting and enclosures. The TJS module pre-bussed integral sockets are permanently connected in a variety of bussing arrangements to suit the most exacting circuit requirements. These modules can be user assembled into any required bussing arrangement and contact size permutation.

### Typical Module Construction (Cross-Section)



### Module With Sealing Plug Installed (Cross-Section)



## Performance Specifications

### Voltage Rating —

Sizes 22, 20, 16, 12

| Altitude      | DWV*    | Working Voltage |
|---------------|---------|-----------------|
| Sea level     | 1,500 V | 600 V           |
| 70,000 Feet** | 600 V   | 300 V           |

Size 21 (22HD)

| Altitude      | DWV*    | Working Voltage |
|---------------|---------|-----------------|
| Sea Level     | 1,000 V | 600 V           |
| 70,000 Feet** | 325 V   | 300 V           |

\* DWV = Dielectric Withstanding Voltage

\*\* [21,336m]

### Contact Voltage Drop (Max.) —

| Contact Size | Test Current | Initial | After Conditioning |
|--------------|--------------|---------|--------------------|
| 21 (22HD)    | 5.0 A        | 55 mV   | 65 mV              |
| 22           | 5.0 A        | 45 mV   | 50 mV              |
| 20           | 7.5 A        | 45 mV   | 50 mV              |
| 16           | 13.0 A       | 50 mV   | 55 mV              |
| 12           | 23.0 A       | 40 mV   | 45 mV              |

The MV drop is measured across an adjacent bussed pair of wire contacts.

### Operating Temperature Range —

| Class | Minimum       | Maximum         |
|-------|---------------|-----------------|
| D     | -65°C (-85°F) | +200°C (+392°F) |

### Altitude Immersion —

Insulation resistance shall not fall below 5,000 megohms after being subjected to three, 70,000-foot [21,336m] altitude immersion cycles in salt water.

### Fluid Immersion —

Class D—Extended fluid type

| Fluid       |                 |
|-------------|-----------------|
| MIL-H-5606  | Hydraulic fluid |
| MIL-L-23699 | Lubricating oil |
| MIL-T-5624  | Aviation fuel   |
| MIL-L-7808  | Lubrication oil |
| MIL-A-8243  | Anti-ice fluid  |
| MIL-C-25769 | Cleaning fluid  |
| Skydrol     | 500A & 500B     |
| Aerosafe    | 2300 & 2300W    |
| Flyjet      | III             |
| Esso Oil    | Turbo 25        |

### Moisture Resistance —

High Humidity (95% RH) 100 megohms min.

After Drying—24 hours 1,000 megohms min.

### Durability —

No performance degradation after 10 cycles of contact insertion/removal.

### Vibration —

Class D

Sine, MIL-STD-202, method 204 condition G

Random, MIL-STD-1344, method 2005.

### Shock —

Class D

MIL-STD-1344, Method 2004

(300 G, 3 milliseconds duration, half-sine).

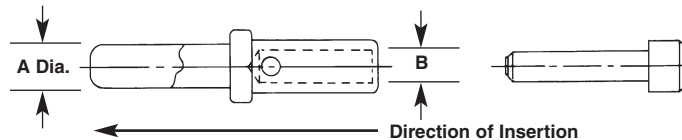
### Specifications —

QPL-AS390929

SAE-AS39029/1

## Contacts, Sealing Plugs and Assembly Tools

### Contacts and Sealing Plugs



| Size      |          | Part Numbers |              | Wire Barrel | Part Numbers  |            | B         |
|-----------|----------|--------------|--------------|-------------|---------------|------------|-----------|
|           |          | Pin Contacts |              |             | Sealing Plugs |            |           |
| A Dia.    | Size     | Commercial   | Military     |             | Commercial    | Military   |           |
| .039/.041 | 21(22HD) | 592413-1     | M39029/1-507 | 22D         | 592104-4      | MS27488-22 | —         |
| .061/.063 | 22       | 3-592404-1   | M39029/1-100 | 22          | 592104-1      | MS27488-20 | .035/.03  |
| .061/.063 | 20       | 2-592404-1   | M39029/1-101 | 20          | 592104-1      | MS27488-20 | .048/.05  |
| .076/.078 | 16       | 1-592404-1   | M39029/1-102 | 16          | 592104-2      | MS27488-16 | .066/.068 |
| .093/.095 | 12       | 592404-1     | M39029/1-103 | 12          | 592104-3      | MS27488-12 | .098/.102 |

### Insertion/Removal Tools

| Size     | Part Numbers |              | Color*  | Wire Gage | Contact Wire Dia. Min./Max. | Finished Crimp Tool  | Turret or Positioner |
|----------|--------------|--------------|---------|-----------|-----------------------------|----------------------|----------------------|
|          | Commercial   | Military     |         |           |                             |                      |                      |
| 21(22HD) | —            | M81969/14-01 | Grn/Wh  | 28-22     | .030-.054 [.76-1.37]        | M22520/2-01          | M22520/2-32          |
| 22       | 592105-1     | M81969/14-11 | Rd/Wh   | 26-22     | .034-.066 [.86-1.68]        | M22520/2-01          | M22520/2-11          |
| 20       | 592105-1     | M81969/14-11 | Rd/Wh   | 24-20     | .038-.083 [.97-2.11]        | M22520/1-01 or /2-01 | M22520/1-02 or /2-02 |
| 16       | 592105-2     | M81969/14-03 | Blue/Wh | 20-16     | .060-.101 [1.52-2.57]       | M22520/1-01          | M22520/1-02          |
| 12       | —            | M81969/14-04 | Yel/Wh  | 14-12     | .087-.147 [2.21-3.73]       | M22520/1-01          | M22520/1-02          |

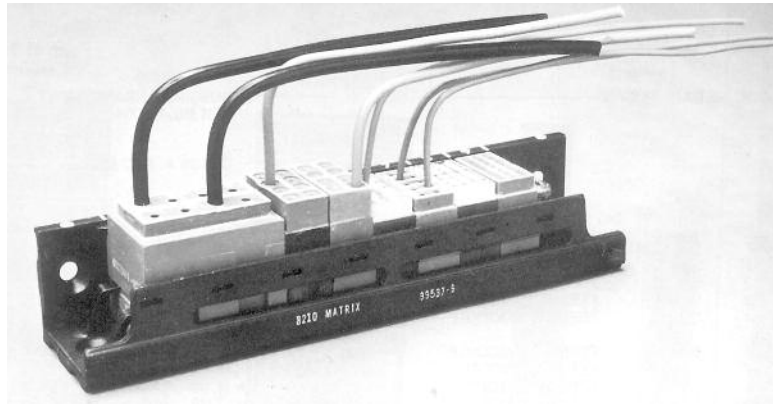
\* Colored end for contact insertion; white end for release/removal.

## Feedback and Feedthru Terminal Junction Modules

MIL-T-81714 Terminal Junction module blocks are available in sizes 12, 16, 20, 22 and 22HD. The size 12 and 16 feedback blocks have eight cavities each. The size 20 and 22 feed-back blocks have 10 cavities each (size 22HD has 21 cavities). The feedthru blocks have the same number of cavities situated on both sides of the block.

Military bussing arrangements are available with each size block.

These module blocks and mounting rail assemblies are qualified to MIL-T-81714. The pin contacts are qualified to MIL-C-39029/1.



### Feedthru

| Military Part Numbers<br>Feedthru Modules | AMP Commercial Part Numbers<br>Feedthru Modules |
|-------------------------------------------|-------------------------------------------------|
| <b>(Class D) Size 20</b>                  |                                                 |
| M81714/7-DA1                              | 592608-3                                        |
| M81714/7-DB1                              | 592608-1                                        |
| M81714/7-DB2                              | —                                               |
| M81714/7-DB3                              | —                                               |
| M81714/7-DC1                              | 592608-8                                        |
| M81714/7-DC2                              | —                                               |
| M81714/7-DD1                              | 592608-6                                        |
| M81714/7-DE1                              | 592608-5                                        |
| M81714/7-DJ1                              | —                                               |
| <b>(Class D) Size 16</b>                  |                                                 |
| M81714/8-DA1                              | 592604-5                                        |
| M81714/8-DB1                              | 592604-3                                        |
| M81714/8-DB2                              | 592604-7                                        |

| Military Part Numbers<br>Feedthru Modules | AMP Commercial Part Numbers<br>Feedthru Modules |
|-------------------------------------------|-------------------------------------------------|
| <b>(Class D) Size 16 (Continued)</b>      |                                                 |
| M81714/8-DC1                              | 592604-9                                        |
| M81714/8-DC2                              | —                                               |
| M81714/8-DD1                              | 592604-1                                        |
| M81714/8-DH1                              | —                                               |
| <b>(Class D) Size 12</b>                  |                                                 |
| M81714/9-DA1                              | 592600-9                                        |
| M81714/9-DB1                              | 592600-7                                        |
| M81714/9-DB2                              | 1-592600-3                                      |
| M81714/9-DC1                              | 592600-1                                        |
| M81714/9-DC2                              | 1-592600-1                                      |
| M81714/9-DD1                              | 592600-5                                        |
| M81714/9-DH1                              | 592600-3                                        |

**Notes:** TE Connectivity has not qualified the Feedthru Modules to MIL-T-81714. The Military part number is shown for reference only.

### Feedback

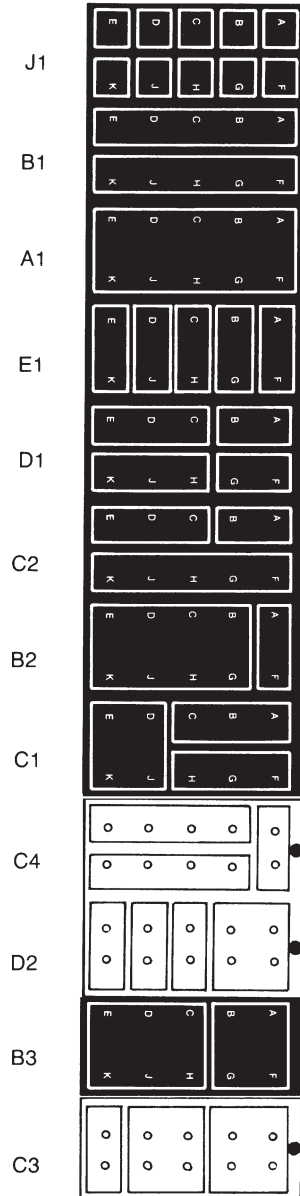
| Military Part Numbers<br>Feedback Modules | AMP MIL Qualified Part Numbers<br>Feedback Modules | AMP Commercial Part Numbers<br>Feedback Modules |
|-------------------------------------------|----------------------------------------------------|-------------------------------------------------|
| <b>(Class D) Size 22</b>                  |                                                    |                                                 |
| M81714/1-DA1                              | —                                                  | 592633-4                                        |
| M81714/1-DB1                              | —                                                  | 592633-2                                        |
| M81714/1-DB2                              | —                                                  | 1-592633-2                                      |
| M81714/1-DB3                              | —                                                  | 2-592633-0                                      |
| M81714/1-DC1                              | —                                                  | 1-592633-4                                      |
| M81714/1-DC2                              | —                                                  | 1-592633-0                                      |
| M81714/1-DD1                              | —                                                  | 592633-8                                        |
| M81714/1-DE1                              | —                                                  | 592633-6                                        |
| <b>(Class D) Size 21</b>                  |                                                    |                                                 |
| M81714/17-D31                             | 592629-1                                           | 592629-2                                        |
| M81714/17-D32                             | 592629-3                                           | 592629-4                                        |
| M81714/17-D33                             | 592629-5                                           | 592629-6                                        |
| M81714/17-D34                             | 592629-7                                           | 592629-8                                        |
| M81714/17-D35                             | 592629-9                                           | 1-592629-0                                      |
| M81714/17-D36                             | 4-592629-4                                         | —                                               |
| M81714/17-D37                             | 1-529629-1                                         | 1-592629-2                                      |
| M81714/17-D38                             | 1-592629-3                                         | 1-592629-4                                      |
| M81714/17-D39                             | 1-592629-5                                         | 1-592629-6                                      |
| M81714/17-D40                             | 1-592629-7                                         | 1-592629-8                                      |
| M81714/17-D42                             | 4-592629-2                                         | 4-592629-0                                      |
| M81714/17-D43                             | 4-592629-3                                         | —                                               |
| M81714/17-D44                             | 1-592629-9                                         | 2-592629-0                                      |
| M81714/17-D45                             | 4-592629-5                                         | 2-592629-2                                      |

| Military Part Numbers<br>Feedback Modules | AMP MIL Qualified Part Numbers<br>Feedback Modules | AMP Commercial Part Numbers<br>Feedback Modules |
|-------------------------------------------|----------------------------------------------------|-------------------------------------------------|
| <b>(Class D) SIZE 20</b>                  |                                                    |                                                 |
| M81714/2-DA1                              | 592624-3                                           | 592624-4                                        |
| M81714/2-DB1                              | 592624-1                                           | 592624-2                                        |
| M81714/2-DB2                              | 1-592624-0                                         | 1-592624-1                                      |
| M81714/2-DB3                              | 1-592624-8                                         | 1-592624-9                                      |
| M81714/2-DC1                              | 1-592624-2                                         | 1-592624-3                                      |
| M81714/2-DC2                              | 2-592624-2                                         | 592624-9                                        |
| M81714/2-DD1                              | 592624-7                                           | 592624-8                                        |
| M81714/2-DE1                              | 592624-5                                           | 592624-6                                        |
| <b>(Class D) SIZE 16</b>                  |                                                    |                                                 |
| M81714/3-DA1                              | 592620-5                                           | 592620-6                                        |
| M81714/3-DB1                              | 592620-3                                           | 592620-4                                        |
| M81714/3-DB2                              | 592620-9                                           | 1-592620-0                                      |
| M81714/3-DC1                              | 1-592620-1                                         | 1-592620-2                                      |
| M81714/3-DC2                              | 592620-7                                           | 592620-8                                        |
| M81714/3-DD1                              | 592620-1                                           | 592620-2                                        |
| <b>(Class D) SIZE 12</b>                  |                                                    |                                                 |
| M81714/4-DA1                              | —                                                  | 592616-6                                        |
| M81714/4-DB1                              | —                                                  | 592616-4                                        |
| M81714/4-DB2                              | —                                                  | 1-592616-0                                      |
| M81714/4-DC1                              | —                                                  | 1-592616-2                                      |
| M81714/4-DC2                              | —                                                  | 592616-8                                        |
| M81714/4-DD1                              | —                                                  | 592616-1                                        |

## Feedback Terminal Junction Modules

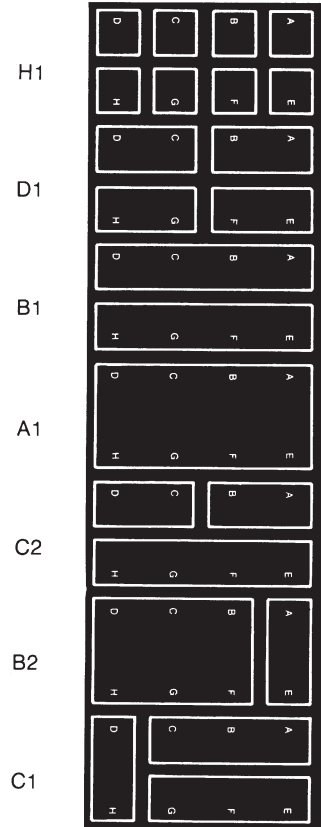
### Typical Bussing Arrangements

Size 20 and 22 Modules



Consult TE Connectivity for additional bussing arrangements.

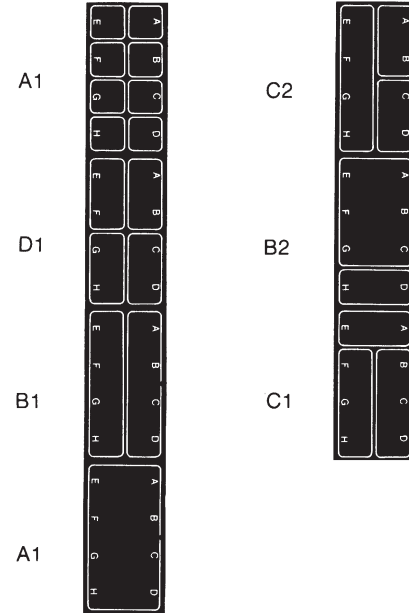
Size 16 Modules



Indexing Indicator (Typ.)

Bussing Indicator (Typ.)

Size 12 Modules



### Military Part Numbering (Example)

**M81714 / \* - D \*\***

Basic Military Prefix ————

Bussing Arrangement Per MIL-T-81714/\*

Class D

|                  |           |    |
|------------------|-----------|----|
|                  | Size 22HD | 17 |
|                  | Size 22   | 1  |
| Feedback Module  | Size 20   | 2  |
|                  | Size 16   | 3  |
|                  | Size 12   | 4  |
|                  | Size 22   | 6  |
| Feedthru Module* | Size 20   | 7  |
|                  | Size 16   | 8  |
|                  | Size 12   | 9  |

\* For Reference Only

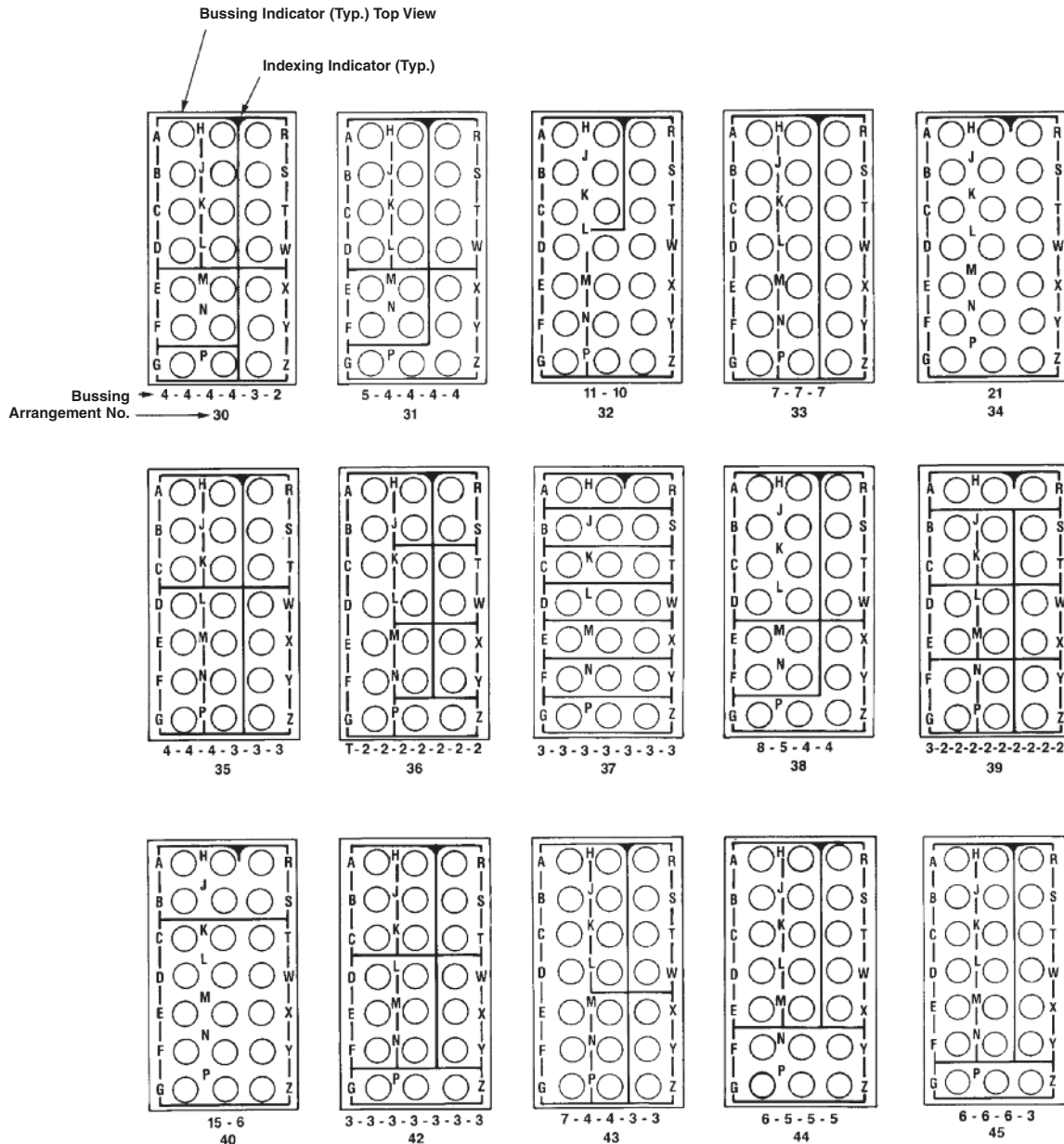
- Notes:** 1. When ordered to military part number, contacts and sealing plugs are included.  
2. Mounting hardware is not included; order separately. (See pages 8-166 and 8-167.)  
3. Size 16 Module Dim. (Typ.) — (Feedback) .850 [21.59] L x .390 [9.91] W x 1.000 [25.40] H  
(Feedthru) .850 [21.59] L x .390 [9.91] W x 1.830 [46.48] H



**Feedback Terminal Junction Modules (Continued)**

**Typical Bussing Arrangements**

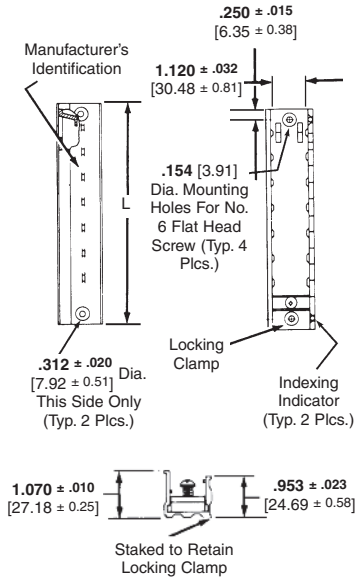
Size 22HD Military,  
Size 21 Commercial  
Modules



## Feedback Terminal Junction Modules (Continued)

### Mounting Hardware

#### Standard Weight Rail Assembly Part Number 591613

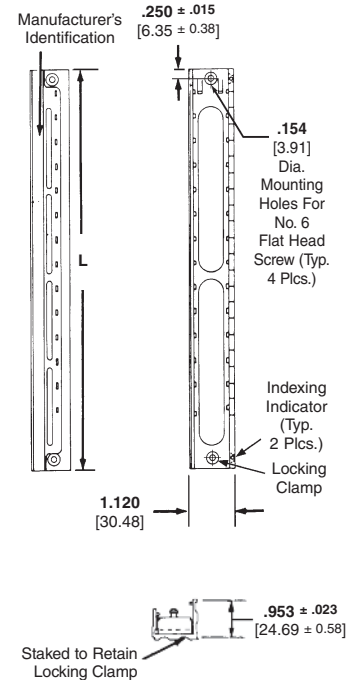


### Rail Assembly Dimensions

| Length<br>L    | 591613 and 591621 Part Numbers |                      |                      |                       |
|----------------|--------------------------------|----------------------|----------------------|-----------------------|
|                | Standard Weight                |                      | Lightweight          |                       |
|                | Commercial<br>591613           | Military<br>M81714/5 | Commercial<br>591621 | Military<br>M81714/16 |
| 1.781 [45.24]  | -1                             | —                    | -1                   | —                     |
| 2.171 [55.14]  | -2                             | —                    | -2                   | —                     |
| 2.561 [65.05]  | -3                             | -2                   | -3                   | -2                    |
| 2.951 [74.96]  | -4                             | -3                   | -4                   | -3                    |
| 3.341 [84.86]  | -5                             | -4                   | -5                   | -4                    |
| 3.371 [85.62]  | -6                             | -5                   | -6                   | -5                    |
| 4.121 [104.67] | -7                             | -6                   | -7                   | -6                    |
| 4.511 [114.58] | -8                             | -7                   | -8                   | -7                    |
| 4.901 [124.49] | -9                             | -8                   | -9                   | -8                    |
| 5.291 [134.39] | -10                            | -1                   | -10                  | -1                    |
| 5.681 [144.30] | -11                            | -9                   | -11                  | -9                    |
| 6.071 [154.20] | -12                            | -10                  | -12                  | -10                   |
| 6.461 [164.11] | -13                            | -11                  | -13                  | -11                   |
| 6.851 [174.02] | -14                            | -12                  | -14                  | -12                   |
| 7.241 [183.92] | -15                            | -13                  | -15                  | -13                   |
| 7.631 [193.83] | -16                            | —                    | -16                  | —                     |
| 8.021 [203.73] | -17                            | —                    | -17                  | —                     |
| 8.411 [213.64] | -18                            | —                    | -18                  | —                     |
| 8.801 [223.54] | -19                            | —                    | -19                  | —                     |
| 9.191 [233.45] | -20                            | —                    | -20                  | —                     |

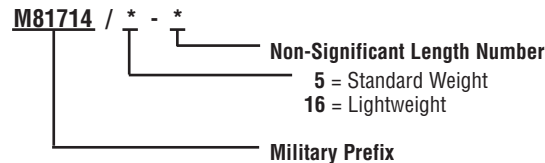
Rail Assemblies are made of black anodized aluminum alloy. Locking clamp screw is corrosion resistant steel (passivated). Rails will accommodate all sizes and various quantities of feedback modules in any combination.

### Lightweight Rail Assembly Part Number 591621 (weight savings of up to 40%)



### Rail Part Numbering

#### Military



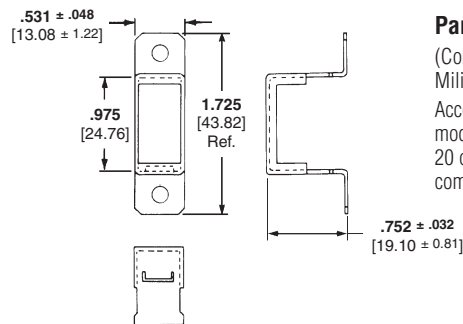
**Note:** Rail Assemblies do not contain module blocks. Order separately.  
(See page 8-163.)

†(based on Size 22, 20, and 16 dimensions)

### Individual Module Mounting Brackets

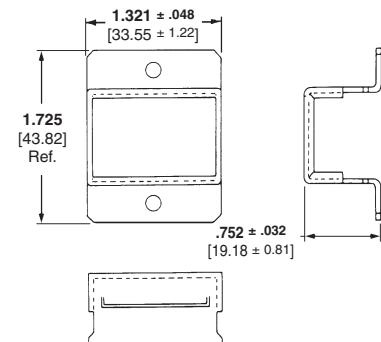
#### Part Number 591637-1

(Commercial equiv. to  
Military M81714/29-1)  
Accommodates one Size  
21, 22, 20 or 16 module.



#### Part Number 591638-1

(Commercial equiv. to  
Military M81714/29-2)  
Accommodates one Size 12  
module or three Size 21, 22,  
20 or 16 modules in any  
combination.

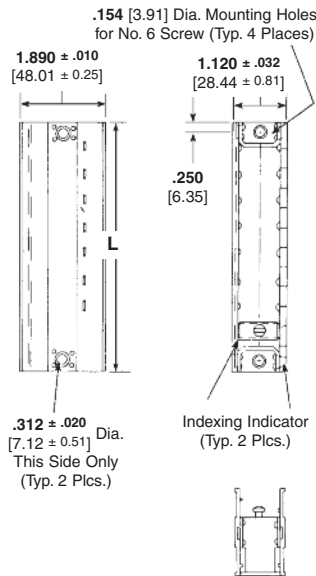




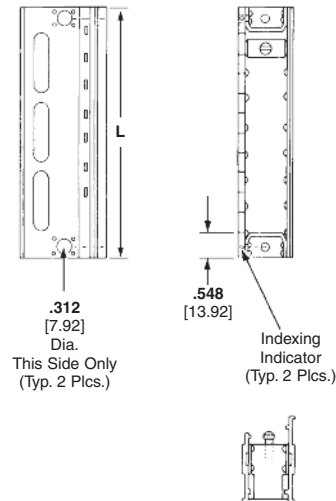
## Feedthru Terminal Junction Modules

### Mounting Hardware

#### Standard Weight Rail Assembly Part Number 591601



#### Lightweight Rail Assembly Part Number 591603



### Rail Assembly Dimensions

| Length<br>L    | 591601 and 591603 Part Numbers |              |
|----------------|--------------------------------|--------------|
|                | Standard Weight                | Lightweight  |
|                | Commercial*                    | Commercial** |
|                | 591601                         | 591603       |
| 2.041 [51.84]  | -1                             | —            |
| 2.431 [61.75]  | -2                             | —            |
| 2.821 [71.65]  | -3                             | —            |
| 3.211 [81.56]  | -4                             | —            |
| 3.601 [91.46]  | -5                             | -4           |
| 3.991 [101.37] | -6                             | -5           |
| 4.381 [111.28] | -7                             | —            |
| 4.771 [121.18] | -8                             | —            |
| 5.161 [131.09] | -9                             | —            |
| 5.551 [141.00] | -10                            | —            |
| 5.941 [150.90] | -11                            | -1           |
| 6.331 [160.81] | -12                            | —            |
| 6.721 [170.71] | -13                            | —            |
| 7.111 [180.62] | -14                            | -2           |
| 7.501 [190.52] | -15                            | -3           |
| 7.891 [200.43] | -16                            | —            |
| 8.281 [210.34] | -17                            | —            |
| 8.671 [220.24] | -18                            | —            |
| 9.061 [230.15] | -19                            | —            |
| 9.451 [240.06] | -20                            | —            |

Rail Assemblies are made of black anodized aluminum alloy. Locking clamp screw is corrosion resistant steel (passivated). Rails will accommodate all sizes and various quantities of feed thru modules in any combination.

\* Commercial equivalent to M81714/10—\*

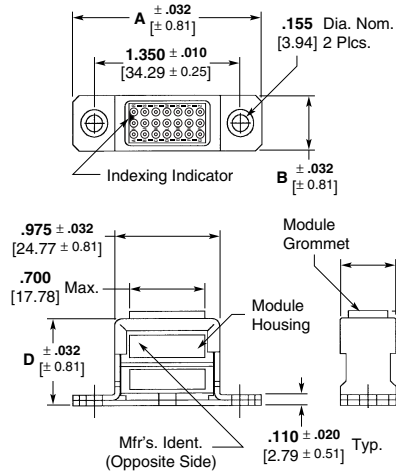
\*\* Commercial equivalent to M81714/14—\*

## Feedback

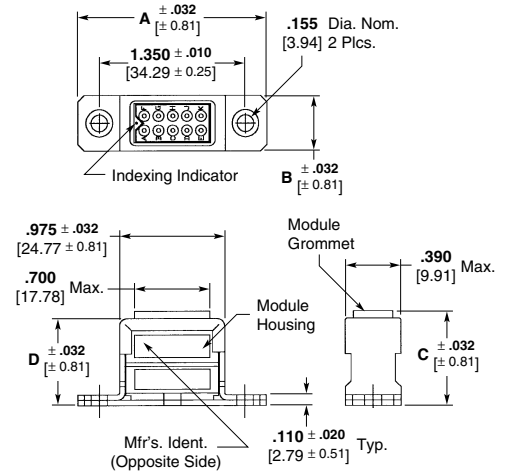
### Grounding Flange Modules

AMP Grounding Flange Blocks are available in Sizes 22, 20, 16 and 12. All contacts are bussed together and connected to a ground plate made of nickel plated aluminum.

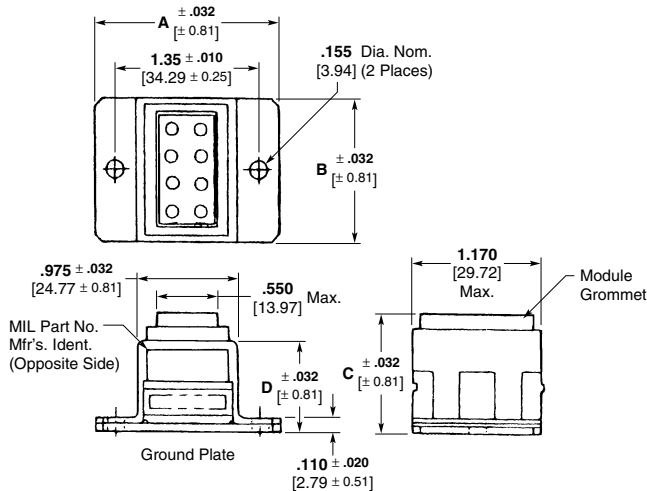
#### HD22 Part Number 592840



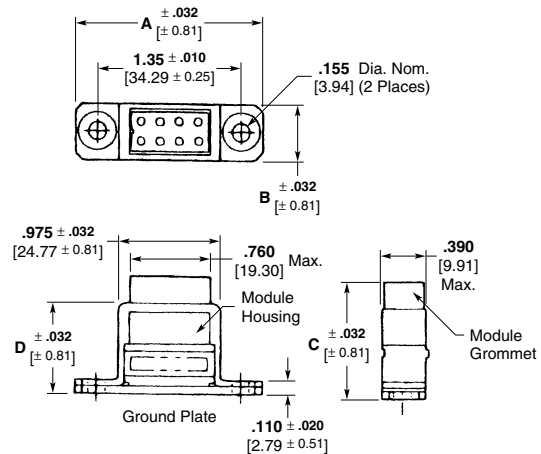
#### Size 20, 22 Part Number 592836



#### Size 12 Part Number 592820-1



#### Size 16 Part Number 592830-1



### Commercial Equivalent to Military M81714/28- \* \*\*

| Contact Size | Dimensions     |                |                |                | Part Number |
|--------------|----------------|----------------|----------------|----------------|-------------|
|              | A              | B              | C              | D              |             |
| HD22         | 1.725<br>43.82 | 0.515<br>13.08 | 0.880<br>22.35 | 0.817<br>20.75 | 592840-2    |
| 22           | 1.725<br>43.82 | 0.515<br>13.08 | 0.880<br>22.35 | 0.817<br>20.75 | 592836-3    |
| 20           | 1.725<br>43.82 | 0.515<br>13.08 | 0.880<br>22.35 | 0.817<br>20.75 | 592836-1    |
| 16           | 1.725<br>43.82 | 0.515<br>13.08 | 1.060<br>26.92 | 0.817<br>20.75 | 592830-1    |
| 12           | 1.725<br>43.82 | 1.305<br>33.15 | 1.060<br>26.92 | 0.817<br>20.75 | 592820-1    |

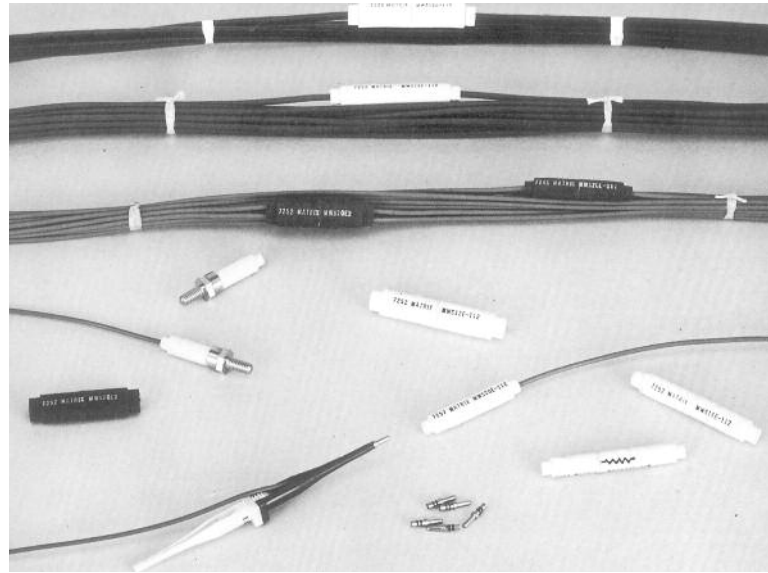
## Wire Splices

### Single Splice

Built and qualified to MIL-T-81714, the commercial Single Wire Splice provides an environmentally reliable, positive and maintainable in-line disconnect between single wires. Their small diameter permits placement within a wire bundle or electrical harness. The standard M39029/1 pin contact is utilized. Single wire splices are available per MIL-T-81714.

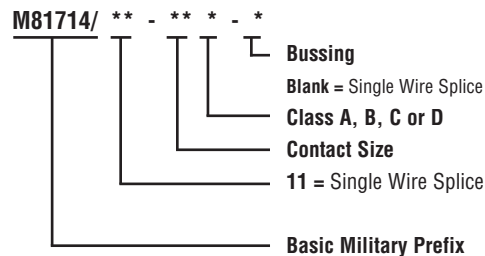
### Double Splice

Provides an environmental in-line disconnect for joining up to four wires. Bussed or unbussed contacts are available permitting the versatility of joining wires in double, triple or quadruple combinations.



### Part Numbering

#### Military



### Double Spliced

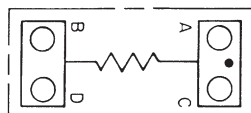
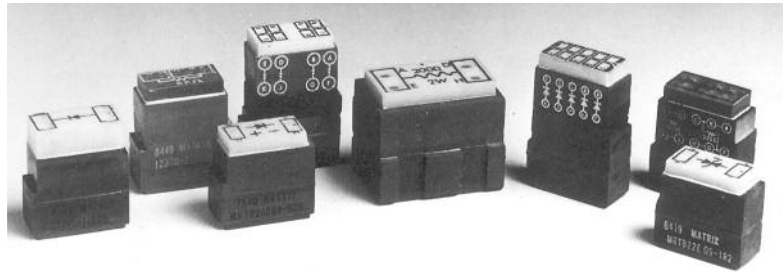
| Contact Size | Bussed Part Number | Unbussed Part Number |
|--------------|--------------------|----------------------|
| 22           | 592588-6           | —                    |
| 20           | 592588-5           | 592589-1             |
| 16           | 592588-4           | —                    |

### Single Splice

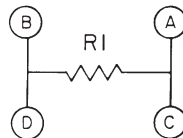
| Contact Size | Part Number | MIL Part No. M81714/11 |
|--------------|-------------|------------------------|
| 20           | 592583-3    | -20D                   |
| 16           | 592583-2    | -16D                   |
| 12           | 592583-1    | -12D                   |

## Electronic Module Blocks and Splices

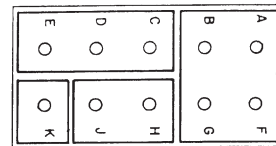
Electronic Modules, Splices and Mounting Hardware are custom engineered to suit the user's application. During design, specific part numbers will be assigned. (see page 8-174.)



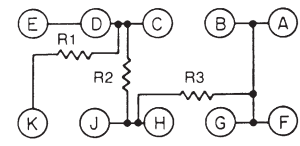
TOP MARKING (TYP)



SCHEMATIC DIAGRAM



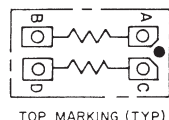
TOP MARKING



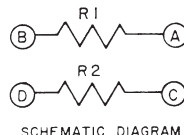
SCHEMATIC DIAGRAM

**Fig. 1A**

**Fig. 5A**

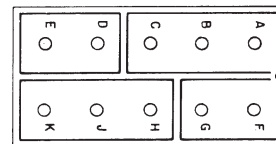


TOP MARKING (TYP)

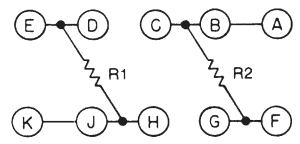


SCHEMATIC DIAGRAM

**Fig. 2A**

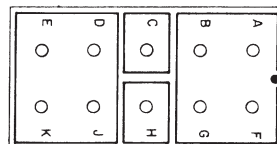


TOP MARKING

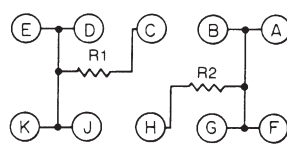


SCHEMATIC DIAGRAM

**Fig. 6A**

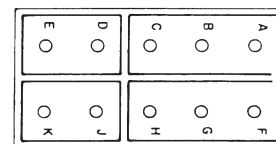


TOP MARKING

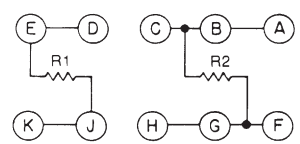


SCHEMATIC DIAGRAM

**Fig. 3A**

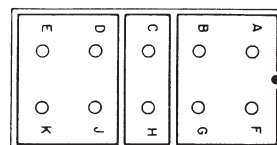


TOP MARKING

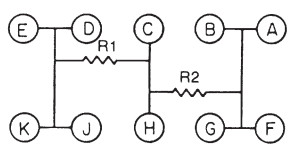


SCHEMATIC DIAGRAM

**Fig. 7A**

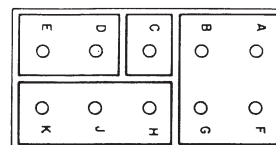


TOP MARKING

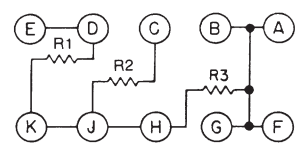


SCHEMATIC DIAGRAM

**Fig. 4A**



TOP MARKING



SCHEMATIC DIAGRAM

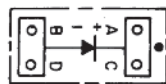
**Fig. 8A**

Consult TE Connectivity for additional circuit arrangements.

## Electronic Module Blocks (Continued)

### Typical Diode Circuit Arrangements

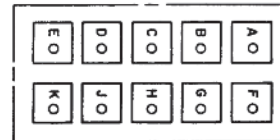
(See page 8-174 for Part Numbers.)



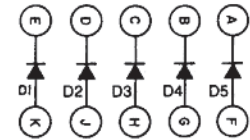
TOP MARKING



SCHEMATIC DIAGRAM



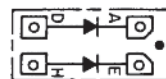
TOP MARKING (TYP)



SCHEMATIC DIAGRAM

Fig. 1B

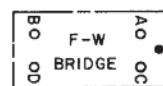
Fig. 5B



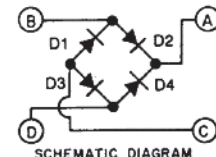
TOP MARKING



SCHEMATIC DIAGRAM



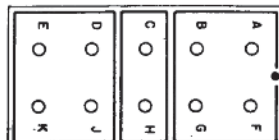
TOP MARKING



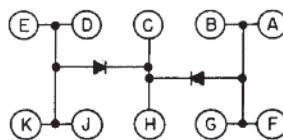
SCHEMATIC DIAGRAM

Fig. 2B

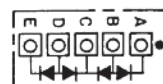
Fig. 6B



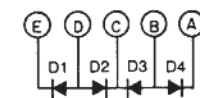
TOP MARKING



SCHEMATIC DIAGRAM



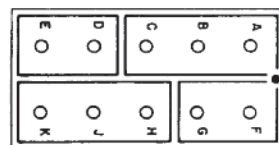
TOP MARKING (TYP)



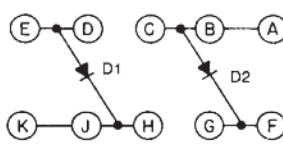
SCHEMATIC DIAGRAM

Fig. 3B

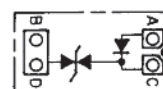
Fig. 7B



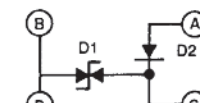
TOP MARKING



SCHEMATIC DIAGRAM



TOP MARKING (TYP)



SCHEMATIC DIAGRAM

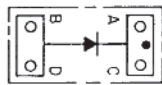
Fig. 4B

Fig. 8B

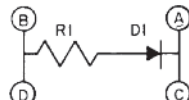
Consult TE Connectivity for additional circuit arrangements.

## Electronic Module Blocks (Continued)

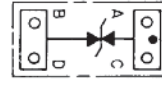
### Typical Combination Circuit Arrangements



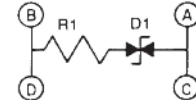
TOP MARKING



SCHEMATIC DIAGRAM



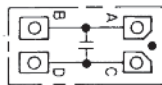
TOP MARKING



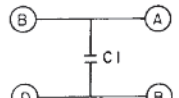
SCHEMATIC DIAGRAM

**Fig. 1C**

**Fig. 5C**



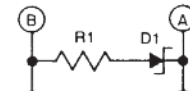
TOP MARKING (TYP)



SCHEMATIC DIAGRAM



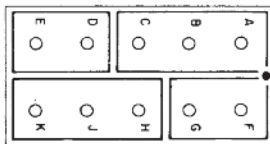
TOP MARKING (TYP)



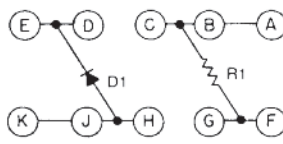
SCHEMATIC DIAGRAM

**Fig. 2C**

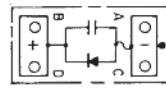
**Fig. 6C**



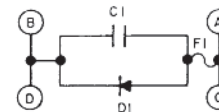
TOP MARKING



SCHEMATIC DIAGRAM



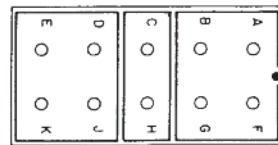
TOP MARKING



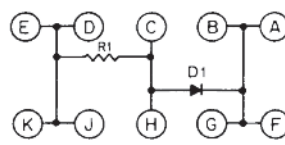
SCHEMATIC DIAGRAM

**Fig. 3C**

**Fig. 7C**

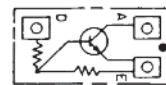


TOP MARKING

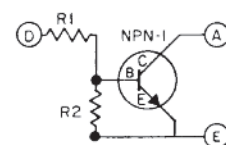


SCHEMATIC DIAGRAM

**Fig. 4C**



TOP MARKING



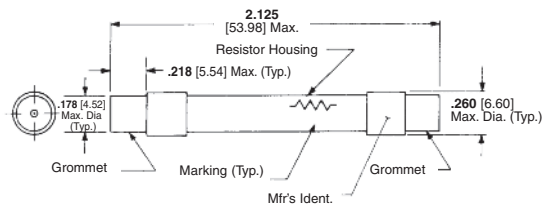
SCHEMATIC DIAGRAM

**Fig. 8C**

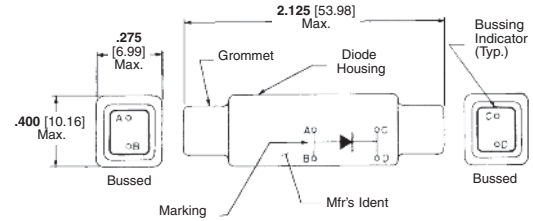
Consult TE Connectivity for additional circuit arrangements.

## Commercial Electronic Splices

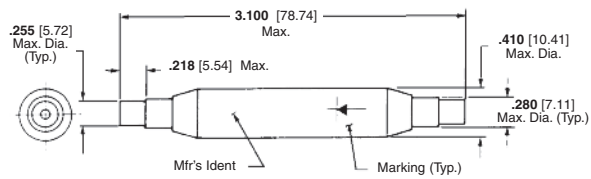
### Various Component Types



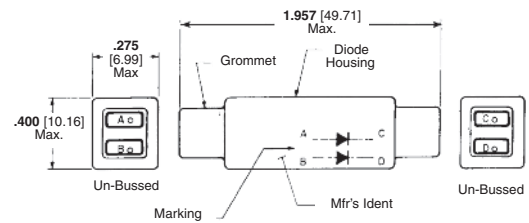
**Fig. 1D**



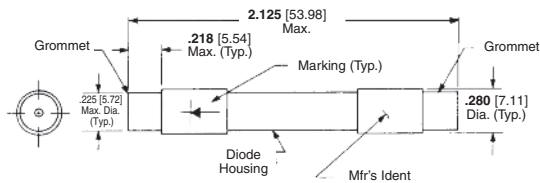
**Fig. 5D**



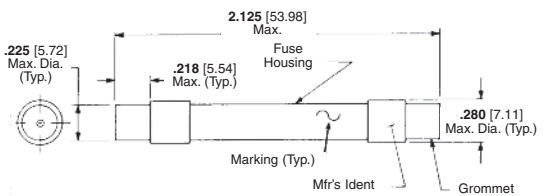
**Fig. 2D**



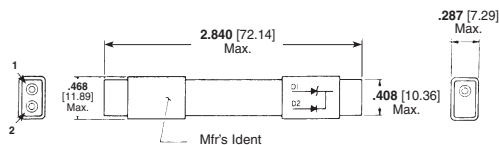
**Fig. 6D**



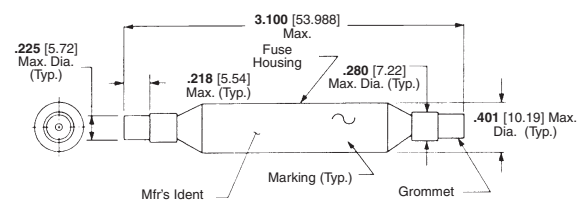
**Fig. 3D**



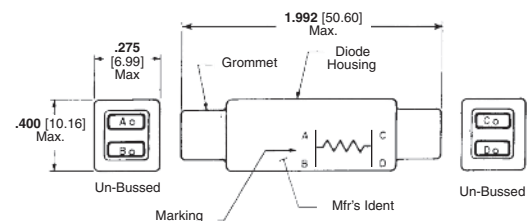
**Fig. 7D**



**Fig. 4D**



**Fig. 8D**



**Fig. 9D**



## Electronic Module Blocks and Splices Part Numbering Information

| Description                    | Figure  | Part Number | RoHS Compliant Part Number | Electrical Information                                       |
|--------------------------------|---------|-------------|----------------------------|--------------------------------------------------------------|
| Module Blocks                  | Fig. 1A | 591872-1    | —                          | R1=1500 $\Omega$ RCR07G152JS                                 |
|                                |         | 591873-1    | —                          | R1=9100 $\Omega$ RLR07C9101GS                                |
|                                |         | 591829-3    | —                          | R1=150 $\Omega$                                              |
|                                |         | 591899-1    | —                          | R=RLR20C10R0GS 10 $\Omega$                                   |
|                                |         | 591892-1    | —                          | R1=R2=127 $\Omega$ RNC55H1270FS                              |
|                                | Fig. 2A | 591898-1    | 5-591898-1                 | R1=R2=10 $\Omega$ RLR20C10R0GS                               |
|                                |         | 591876-1    | —                          | R1=180 $\Omega$ RLR07C1800GS<br>R2=487 $\Omega$ RLR07C4870FS |
|                                |         | 591871-1    | 5-591871-1                 | R1=R2=2200 $\Omega$ RCR07G222JS                              |
|                                |         | 591875-1    | —                          | R1=180 $\Omega$ RLR07C1800GS<br>R2=348 $\Omega$ RLR07C3480FS |
|                                | Fig. 4A | 591911-1    | —                          | R1=34.8 k $\Omega$ R2=21.5 k $\Omega$                        |
|                                | Fig. 5B | 591854-1    | —                          | D1=D2=D3=D4=D5=JAN1N5618                                     |
|                                |         | 591855-1    | —                          | D1=D2=D3=D4=D5=JANTX1N5618                                   |
|                                |         | 591857-2    | —                          | D1=D2=D3=D4=D5=JANTX1N5618                                   |
|                                | Fig. 7B | 592887-1    | —                          | D1=D2=D3=D4=1N4007                                           |
| Module Blocks (Diode Circuits) | Fig. 1B | 591893-2    | —                          | D1=JANTX1N5624                                               |
|                                |         | 591894-2    | —                          | D1=JANTX1N751A                                               |
|                                |         | 591896-2    | —                          | D1=JANTX1N5552                                               |
|                                |         | 591893-2    | —                          | D1=JANTX1N5624                                               |
|                                |         | 591894-2    | —                          | D1=JANTX1N751A                                               |
|                                | Fig. 5B | 591895-2    | 5-591895-2                 | D1=JANTX1N5618                                               |
|                                |         | 591864-1    | 5-591864-1                 | D1=JAN1N5618                                                 |
|                                |         | 591866-1    | —                          | D1=D2=D3=D4=D5=JANTX1N5554                                   |
|                                |         | 591863-1    | 5-591863-1                 | D1=D2=D3=D4=D5=JANTX1N5552                                   |
|                                |         | 591863-4    | —                          | D1=D2=D3=D4=D5=1N4007                                        |
|                                | Fig. 5B | 591865-1    | —                          | D1=D2=D3=D4=D5=JANTX1N5618 Class A                           |
|                                |         | 591855-1    | —                          | D1=D2=D3=D4=D5=JANTX1N5618                                   |
| Splices                        | Fig. 2D | 591917-1    | 5-591917-1                 | R1=RN65C1270F 127 $\Omega$                                   |
|                                |         | 591917-3    | —                          | R1=RNC60J1002FS 10 $\Omega$                                  |
|                                |         | 591917-4    | —                          | R1=RC20GF681J 680 $\Omega$                                   |
|                                |         | 591917-5    | —                          | R1=RLR32C1201GM 1200 $\Omega$                                |
|                                |         | 591917-7    | —                          | R1=RLR32C1000GS 100 $\Omega$                                 |
|                                |         | 1-591917-2  | —                          | R1=RLR07C1001GR 1000 $\Omega$                                |
|                                |         | 1-591917-3  | —                          | R1=RLR32C1000GR 100 $\Omega$                                 |
|                                | Fig. 3D | 591846-2    | —                          | D1=1N5199                                                    |
|                                |         | 591847-3    | —                          | D1=JAN1N5618                                                 |
|                                | Fig. 4D | 591992-1    | —                          | D1=JANTX1N4972<br>D2=JANTX1N5618                             |
|                                | Fig. 5D | 591841-1    | 5-591841-1                 | D1=JAN1N5618                                                 |
|                                |         | 591889-1    | 5-591889-1                 | D1=1N3981                                                    |
|                                |         | 591890-1    | 5-591890-1                 | D1=1N5367B                                                   |
|                                | Fig. 6D | 591842-1    | 5-591842-1                 | D1=D2=JAN1N5618                                              |

## Military Cross Reference

**Note:** Products are also qualified to VG 95212-31/ VG 95231-102/103/105. Please contact TE Connectivity for cross reference.

| Military Part Numbers<br>Feedback Modules | AMP MIL Qualified Part Numbers<br>Feedback Modules | AMP Commercial Part Numbers<br>Feedback Modules |
|-------------------------------------------|----------------------------------------------------|-------------------------------------------------|
| <b>(Class A) Size 22</b>                  |                                                    |                                                 |
| M81714/1-AA1                              | —                                                  | 592634-4                                        |
| M81714/1-AB1                              | —                                                  | 592634-2                                        |
| M81714/1-AB2                              | —                                                  | 1-592634-2                                      |
| M81714/1-AB3                              | —                                                  | 1-592634-7                                      |
| M81714/1-AC1                              | —                                                  | 1-592634-4                                      |
| M81714/1-AC2                              | —                                                  | 1-592634-0                                      |
| M81714/1-AD1                              | —                                                  | 592634-8                                        |
| M81714/1-AE1                              | —                                                  | 592634-6                                        |
| <b>(Class A) Size 21</b>                  |                                                    |                                                 |
| M81714/17-A31                             | 592630-3                                           | 592630-4                                        |
| M81714/17-A32                             | 592630-5                                           | 592630-6                                        |
| M81714/17-A33                             | 592630-7                                           | 592630-8                                        |
| M81714/17-A34                             | 592630-9                                           | 1-592630-0                                      |
| M81714/17-A35                             | 1-592630-1                                         | 1-592630-2                                      |
| M81714/17-A36                             | 1-592630-3                                         | 1-592630-4                                      |
| M81714/17-A37                             | 1-592630-5                                         | 1-592630-6                                      |
| M81714/17-A38                             | 1-592630-7                                         | 1-592630-8                                      |
| M81714/17-A39                             | 1-592630-9                                         | 2-592630-0                                      |
| M81714/17-A40                             | 2-592630-1                                         | 2-592630-2                                      |
| M81714/17-A42                             | 2-592630-3                                         | 2-592630-4                                      |
| M81714/17-A43                             | 4-592630-3                                         | 4-592630-4                                      |
| M81714/17-A44                             | 2-592630-5                                         | 2-592630-6                                      |
| M81714/17-A45                             | 2-592630-7                                         | 2-592630-8                                      |
| <b>(Class A) Size 20</b>                  |                                                    |                                                 |
| M81714/2-AA1                              | 592625-5                                           | 592625-6                                        |
| M81714/2-AB1                              | 592625-3                                           | 592625-4                                        |
| M81714/2-AB2                              | 1-592625-3                                         | 1-592625-4                                      |
| M81714/2-AB3                              | 2-592625-1                                         | 2-592625-2                                      |
| M81714/2-AC1                              | 1-592625-5                                         | 1-592625-6                                      |
| M81714/2-AC2                              | 1-592625-1                                         | 1-592625-2                                      |
| M81714/2-AD1                              | 592625-9                                           | 1-592625-0                                      |
| M81714/2-AE1                              | 592625-7                                           | 592625-8                                        |
| <b>(Class A) Size 16</b>                  |                                                    |                                                 |
| M81714/3-AA1                              | 592621-7                                           | 592621-8                                        |
| M81714/3-AB1                              | 592621-5                                           | 592621-6                                        |
| M81714/3-AB2                              | 1-592621-1                                         | 1-592621-2                                      |
| M81714/3-AC1                              | 1-592621-3                                         | 1-592621-4                                      |
| M81714/3-AC2                              | 592621-9                                           | 1-592621-0                                      |
| M81714/3-AD1                              | 592621-3                                           | 592621-4                                        |
| <b>(Class A) Size 12</b>                  |                                                    |                                                 |
| M81714/4-AA1                              | —                                                  | 592617-8                                        |
| M81714/4-AB1                              | —                                                  | 592617-6                                        |
| M81714/4-AB2                              | —                                                  | 1-592617-2                                      |
| M81714/4-AC1                              | —                                                  | 1-592617-4                                      |
| M81714/4-AC2                              | —                                                  | 1-592617-0                                      |
| M81714/4-AD1                              | —                                                  | 592617-4                                        |
| <b>(Class B) Size 22</b>                  |                                                    |                                                 |
| M81714/1-BA1                              | —                                                  | 592636-4                                        |
| M81714/1-BB1                              | —                                                  | 592636-2                                        |
| M81714/1-BB2                              | —                                                  | 1-592636-2                                      |
| M81714/1-BB3                              | —                                                  | 1-592636-6                                      |
| M81714/1-BC1                              | —                                                  | 1-592636-4                                      |
| M81714/1-BC2                              | —                                                  | 1-592636-0                                      |
| M81714/1-BD1                              | —                                                  | 592636-8                                        |
| M81714/1-BE1                              | —                                                  | 592636-6                                        |
| <b>(Class B) Size 21</b>                  |                                                    |                                                 |
| M81714/17-B31                             | 592631-3                                           | 592631-4                                        |
| M81714/17-B32                             | 592631-5                                           | 592631-6                                        |
| M81714/17-B33                             | 592631-7                                           | 592631-8                                        |

Feedback Modules (Class B) Size 21 Continued on page 8-176

## Military Cross Reference (Continued)

| Military Part Numbers<br>Feedback Modules | AMP MIL Qualified Part Numbers<br>Feedback Modules | AMP Commercial Part Numbers<br>Feedback Modules |
|-------------------------------------------|----------------------------------------------------|-------------------------------------------------|
| <b>(Class B) Size 21 (Continued)</b>      |                                                    |                                                 |
| M81714/17-B34                             | 592631-9                                           | 1-592631-0                                      |
| M81714/17-B35                             | 1-592631-1                                         | 1-592631-2                                      |
| M81714/17-B36                             | 1-592631-3                                         | 1-592631-4                                      |
| M81714/17-B37                             | 1-592631-5                                         | 1-592631-6                                      |
| M81714/17-B38                             | 4-592631-4                                         | —                                               |
| M81714/17-B39                             | 1-592631-7                                         | 1-592631-8                                      |
| M81714/17-B40                             | 4-592631-2                                         | —                                               |
| M81714/17-B42                             | 1-592631-9                                         | 2-592631-0                                      |
| M81714/17-B43                             | 2-592631-1                                         | 2-592631-2                                      |
| M81714/17-B44                             | 2-592631-4                                         | 2-592631-5                                      |
| M81714/17-B45                             | 4-592631-3                                         | —                                               |
| <b>(Class B) Size 20</b>                  |                                                    |                                                 |
| M81714/2-BA1                              | 592627-3                                           | 592627-4                                        |
| M81714/2-BB1                              | 592627-1                                           | 592627-2                                        |
| M81714/2-BB2                              | 1-592627-1                                         | 1-592627-2                                      |
| M81714/2-BB3                              | 1-592627-5                                         | 1-592627-6                                      |
| M81714/2-BC1                              | 1-592627-3                                         | 1-592627-4                                      |
| M81714/2-BC2                              | 592627-9                                           | 1-592627-0                                      |
| M81714/2-BD1                              | 592627-7                                           | 592627-8                                        |
| M81714/2-BE1                              | 592627-5                                           | 592627-6                                        |
| <b>(Class B) Size 16</b>                  |                                                    |                                                 |
| M81714/3-BA1                              | 592623-5                                           | 592623-6                                        |
| M81714/3-BB1                              | 592623-3                                           | 592623-4                                        |
| M81714/3-BB2                              | 592623-9                                           | 1-592623-0                                      |
| M81714/3-BC1                              | 1-592623-1                                         | 1-592623-2                                      |
| M81714/3-BC2                              | 592623-7                                           | 592623-8                                        |
| M81714/3-BD1                              | 592623-1                                           | 592623-2                                        |
| <b>(Class B) Size 12</b>                  |                                                    |                                                 |
| M81714/4-BA1                              | —                                                  | 592619-6                                        |
| M81714/4-BB1                              | —                                                  | 592619-4                                        |
| M81714/4-BB2                              | —                                                  | 1-592619-0                                      |
| M81714/4-BC1                              | —                                                  | 1-592619-2                                      |
| M81714/4-BC2                              | —                                                  | 592619-8                                        |
| M81714/4-BD1                              | —                                                  | 592619-2                                        |
| <b>(Class C) Size 22</b>                  |                                                    |                                                 |
| M81714/1-CA1                              | —                                                  | 592635-4                                        |
| M81714/1-CB1                              | —                                                  | 592635-2                                        |
| M81714/1-CB2                              | —                                                  | 1-592635-2                                      |
| M81714/1-CB3                              | —                                                  | 1-592635-6                                      |
| M81714/1-CC1                              | —                                                  | 1-592635-4                                      |
| M81714/1-CC2                              | —                                                  | 1-592635-0                                      |
| M81714/1-CD1                              | —                                                  | 592635-8                                        |
| M81714/1-CE1                              | —                                                  | 592635-6                                        |
| <b>(Class C) Size 21</b>                  |                                                    |                                                 |
| M81714/17-C31                             | 592632-1                                           | 592632-2                                        |
| M81714/17-C32                             | 4-592632-3                                         | —                                               |
| M81714/17-C33                             | 592632-3                                           | 592632-4                                        |
| M81714/17-C34                             | 592632-5                                           | —                                               |
| M81714/17-C35                             | 592632-6                                           | 592632-7                                        |
| M81714/17-C36                             | 592632-8                                           | 592632-9                                        |
| M81714/17-C37                             | 1-592632-1                                         | 1-592632-2                                      |
| M81714/17-C38                             | 1-592632-3                                         | —                                               |
| M81714/17-C39                             | 4-592632-4                                         | —                                               |
| M81714/17-C40                             | 1-592632-4                                         | 1-592632-5                                      |
| M81714/17-C41                             | 4-592632-1                                         | —                                               |
| M81714/17-C42                             | 4-592632-5                                         | —                                               |
| M81714/17-C43                             | 1-592632-6                                         | 1-592632-7                                      |
| M81714/17-C44                             | 1-592632-8                                         | 1-592632-9                                      |
| M81714/17-C45                             | 4-592632-6                                         | —                                               |

## Military Cross Reference (Continued)

| Military Part Numbers<br>Feedback Modules | AMP MIL Qualified Part Numbers<br>Feedback Modules | AMP Commercial Part Numbers<br>Feedback Modules |
|-------------------------------------------|----------------------------------------------------|-------------------------------------------------|
| <b>(Class C) Size 20</b>                  |                                                    |                                                 |
| M81714/2-CA1                              | 592626-3                                           | 592626-4                                        |
| M81714/2-CB1                              | 592626-1                                           | 592626-2                                        |
| M81714/2-CB2                              | 1-592626-1                                         | 1-592626-2                                      |
| M81714/2-CB3                              | 2-592626-4                                         | 1-592626-5                                      |
| M81714/2-CC1                              | 1-592626-3                                         | 1-592626-4                                      |
| M81714/2-CC2                              | 592626-9                                           | 1-592626-0                                      |
| M81714/2-CD1                              | 592626-7                                           | 592626-8                                        |
| M81714/2-CE1                              | 592626-5                                           | 592626-6                                        |
| <b>(Class C) Size 16</b>                  |                                                    |                                                 |
| M81714/3-CA1                              | 592622-5                                           | 592622-6                                        |
| M81714/3-CB1                              | 592622-3                                           | 592622-4                                        |
| M81714/3-CB2                              | 592622-9                                           | 1-592622-0                                      |
| M81714/3-CC1                              | 1-592622-1                                         | 1-592622-2                                      |
| M81714/3-CC2                              | 592622-7                                           | 592622-8                                        |
| M81714/3-CD1                              | 592622-1                                           | 592622-2                                        |
| <b>(Class C) Size 12</b>                  |                                                    |                                                 |
| M81714/4-CA1                              | —                                                  | 592618-6                                        |
| M81714/4-CB1                              | —                                                  | 592618-4                                        |
| M81714/4-CB2                              | —                                                  | 1-592618-0                                      |
| M81714/4-CC1                              | —                                                  | 1-592618-2                                      |
| M81714/4-CC2                              | —                                                  | 592618-8                                        |
| M81714/4-CD1                              | —                                                  | 592618-2                                        |
| <b>(Class D) Size 22</b>                  |                                                    |                                                 |
| M81714/1-DA1                              | —                                                  | 592633-4                                        |
| M81714/1-DB1                              | —                                                  | 592633-2                                        |
| M81714/1-DB2                              | —                                                  | 1-592633-2                                      |
| M81714/1-DB3                              | —                                                  | 2-592633-0                                      |
| M81714/1-DC1                              | —                                                  | 1-592633-4                                      |
| M81714/1-DC2                              | —                                                  | 1-592633-0                                      |
| M81714/1-DD1                              | —                                                  | 592633-8                                        |
| M81714/1-DE1                              | —                                                  | 592633-6                                        |
| <b>(Class D) Size 21</b>                  |                                                    |                                                 |
| M81714/17-D31                             | 592629-1                                           | 592629-2                                        |
| M81714/17-D32                             | 592629-3                                           | 592629-4                                        |
| M81714/17-D33                             | 592629-5                                           | 592629-6                                        |
| M81714/17-D34                             | 592629-7                                           | 592629-8                                        |
| M81714/17-D35                             | 592629-9                                           | 1-592629-0                                      |
| M81714/17-D36                             | 4-592629-4                                         | —                                               |
| M81714/17-D37                             | 1-592629-1                                         | 1-592629-2                                      |
| M81714/17-D38                             | 1-592629-3                                         | 1-592629-4                                      |
| M81714/17-D39                             | 1-592629-5                                         | 1-592629-6                                      |
| M81714/17-D40                             | 1-592629-7                                         | 1-592629-8                                      |
| M81714/17-D42                             | 4-592629-2                                         | 4-592629-0                                      |
| M81714/17-D43                             | 4-592629-3                                         | —                                               |
| M81714/17-D44                             | 1-592629-9                                         | 2-592629-0                                      |
| M81714/17-D45                             | 4-592629-5                                         | 2-592629-2                                      |
| <b>(Class D) Size 20</b>                  |                                                    |                                                 |
| M81714/2-DA1                              | 592624-3                                           | 592624-4                                        |
| M81714/2-DB1                              | 592624-1                                           | 592624-2                                        |
| M81714/2-DB2                              | 1-592624-0                                         | 1-592624-1                                      |
| M81714/2-DB3                              | 1-592624-8                                         | 1-592624-9                                      |
| M81714/2-DC1                              | 1-592624-2                                         | 1-592624-3                                      |
| M81714/2-DC2                              | 2-592624-2                                         | 592624-9                                        |
| M81714/2-DD1                              | 592624-7                                           | 592624-8                                        |
| M81714/2-DE1                              | 592624-5                                           | 592624-6                                        |

## Military Cross Reference (Continued)

| Military Part Numbers<br>Feedback Modules | AMP MIL Qualified Part Numbers<br>Feedback Modules | AMP Commercial Part Numbers<br>Feedback Modules |
|-------------------------------------------|----------------------------------------------------|-------------------------------------------------|
| <b>(Class D) Size 16</b>                  |                                                    |                                                 |
| M81714/3-DA1                              | 592620-5                                           | 592620-6                                        |
| M81714/3-DB1                              | 592620-3                                           | 592620-4                                        |
| M81714/3-DB2                              | 592620-9                                           | 1-592620-0                                      |
| M81714/3-DC1                              | 1-592620-1                                         | 1-592620-2                                      |
| M81714/3-DC2                              | 592620-7                                           | 592620-8                                        |
| M81714/3-DD1                              | 592620-1                                           | 592620-2                                        |
| M81714/4-DA1                              | —                                                  | 592616-6                                        |
| M81714/4-DB1                              | —                                                  | 592616-4                                        |
| M81714/4-DB2                              | —                                                  | 1-592616-0                                      |
| M81714/4-DC1                              | —                                                  | 1-592616-2                                      |
| M81714/4-DC2                              | —                                                  | 592616-8                                        |
| M81714/4-DD1                              | —                                                  | 592616-1                                        |

| Military Part Numbers<br>Wire Splice | AMP MIL Qualified Part Numbers<br>Wire Splice | AMP Commercial Part Numbers<br>Wire Splice |
|--------------------------------------|-----------------------------------------------|--------------------------------------------|
| <b>(Class A) Size 22</b>             |                                               |                                            |
| M81714/11-22A                        | —                                             | 1-592575-9                                 |
| <b>(Class A) Size 20</b>             |                                               |                                            |
| M81714/11-20A                        | 592575-7                                      | 1-592575-8                                 |
| <b>(Class A) Size 16</b>             |                                               |                                            |
| M81714/11-16A                        | 592575-4                                      | 1-592575-4                                 |
| <b>(Class A) Size 12</b>             |                                               |                                            |
| M81714/11-12A                        | 592575-1                                      | 1-592575-3                                 |
| <b>(Class B) Size 22</b>             |                                               |                                            |
| M81714/11-22B                        | —                                             | 1-592575-6                                 |
| <b>(Class B) Size 20</b>             |                                               |                                            |
| M81714/11-20B                        | 592575-9                                      | 2-592575-2                                 |
| <b>(Class B) Size 16</b>             |                                               |                                            |
| M81714/11-16B                        | 592575-6                                      | 2-592575-0                                 |
| <b>(Class B) Size 12</b>             |                                               |                                            |
| M81714/11-12B                        | 592575-3                                      | —                                          |
| <b>(Class C) Size 22</b>             |                                               |                                            |
| M81714/11-22C                        | —                                             | 1-592575-5                                 |
| <b>(Class C) Size 20</b>             |                                               |                                            |
| M81714/11-20C                        | 592575-8                                      | 2-592575-1                                 |
| <b>(Class C) Size 16</b>             |                                               |                                            |
| M81714/11-16C                        | 592575-5                                      | 1-592575-9                                 |
| <b>(Class C) Size 12</b>             |                                               |                                            |
| M81714/11-12C                        | 592575-2                                      | —                                          |
| <b>(Class D) Size 22</b>             |                                               |                                            |
| M81714/11-22D                        | —                                             | 592583-7                                   |
| <b>(Class D) Size 20</b>             |                                               |                                            |
| M81714/11-20D                        | 592583-3                                      | 592583-6                                   |
| <b>(Class D) Size 16</b>             |                                               |                                            |
| M81714/11-16D                        | 592583-2                                      | 592583-5                                   |
| <b>(Class D) Size 12</b>             |                                               |                                            |
| M81714/11-12D                        | 592583-1                                      | —                                          |

## Military Cross Reference (Continued)

| Military Part Numbers<br>Feedthru Modules | AMP MIL Qualified Part Numbers<br>Feedthru Modules | AMP Commercial Part Numbers<br>Feedthru Modules |
|-------------------------------------------|----------------------------------------------------|-------------------------------------------------|
| <b>(Class A) Size 22</b>                  |                                                    |                                                 |
| M81714/6-AA1                              | —                                                  | 592613-6                                        |
| M81714/6-AB1                              | —                                                  | 592613-4                                        |
| M81714/6-AB2                              | —                                                  | 1-592613-6                                      |
| M81714/6-AB3                              | —                                                  | 2-592613-0                                      |
| M81714/6-AC1                              | —                                                  | 1-592613-8                                      |
| M81714/6-AC2                              | —                                                  | 1-592613-4                                      |
| M81714/6-AD1                              | —                                                  | 1-592613-2                                      |
| M81714/6-AE1                              | —                                                  | 592613-8                                        |
| M81714/6-AJ1                              | —                                                  | 592613-2                                        |
| <b>(Class A) Size 20</b>                  |                                                    |                                                 |
| M81714/7-AA1                              | —                                                  | 592609-6                                        |
| M81714/7-AB1                              | —                                                  | 592609-4                                        |
| M81714/7-AB2                              | —                                                  | 1-592609-4                                      |
| M81714/7-AB3                              | —                                                  | 1-592609-8                                      |
| M81714/7-AC1                              | —                                                  | 1-592609-6                                      |
| M81714/7-AC2                              | —                                                  | 1-592609-2                                      |
| M81714/7-AD1                              | —                                                  | 1-592609-0                                      |
| M81714/7-AE1                              | —                                                  | 592609-8                                        |
| M81714/7-AJ1                              | —                                                  | 592609-2                                        |

## Military Cross Reference (Continued)

| Military Part Numbers<br>Feedthru Modules | AMP MIL Qualified Part Numbers<br>Feedthru Modules | AMP Commercial Part Numbers<br>Feedthru Modules |
|-------------------------------------------|----------------------------------------------------|-------------------------------------------------|
| <b>(Class A) Size 16</b>                  |                                                    |                                                 |
| M81714/8-AA1                              | —                                                  | 592605-8                                        |
| M81714/8-AB1                              | —                                                  | 592605-6                                        |
| M81714/8-AB2                              | —                                                  | 1-592605-2                                      |
| M81714/8-AC1                              | —                                                  | 1-592605-4                                      |
| M81714/8-AC2                              | —                                                  | 1-592605-0                                      |
| M81714/8-AD1                              | —                                                  | 592605-4                                        |
| M81714/8-AH1                              | —                                                  | 592605-2                                        |
| <b>(Class A) Size 12</b>                  |                                                    |                                                 |
| M81714/9-AA1                              | —                                                  | 592601-8                                        |
| M81714/9-AB1                              | —                                                  | 592601-6                                        |
| M81714/9-AB2                              | —                                                  | 1-592601-2                                      |
| M81714/9-AC1                              | —                                                  | 1-592601-4                                      |
| M81714/9-AC2                              | —                                                  | 1-592601-0                                      |
| M81714/9-AD1                              | —                                                  | 592601-4                                        |
| M81714/9-AH1                              | —                                                  | 592601-2                                        |
| <b>(Class B) Size 22</b>                  |                                                    |                                                 |
| M81714/6-BA1                              | —                                                  | 592615-6                                        |
| M81714/6-BB1                              | —                                                  | 592615-4                                        |
| M81714/6-BB2                              | —                                                  | 1-592615-4                                      |
| M81714/6-BB3                              | —                                                  | 1-592615-8                                      |
| M81714/6-BC1                              | —                                                  | 1-592615-6                                      |
| M81714/6-BC2                              | —                                                  | 1-592615-2                                      |
| M81714/6-BD1                              | —                                                  | 1-592615-0                                      |
| M81714/6-BE1                              | —                                                  | 592615-8                                        |
| M81714/6-BJ1                              | —                                                  | 592615-2                                        |
| <b>(Class B) Size 20</b>                  |                                                    |                                                 |
| M81714/7-BA1                              | —                                                  | 592611-6                                        |
| M81714/7-BB1                              | —                                                  | 592611-4                                        |
| M81714/7-BB2                              | —                                                  | 1-592611-4                                      |
| M81714/7-BB3                              | —                                                  | 1-592611-8                                      |
| M81714/7-BC1                              | —                                                  | 1-592611-6                                      |
| M81714/7-BC2                              | —                                                  | 1-592611-2                                      |
| M81714/7-BD1                              | —                                                  | 1-592611-0                                      |
| M81714/7-BE1                              | —                                                  | 592611-8                                        |
| M81714/7-BJ1                              | —                                                  | 592611-2                                        |
| <b>(Class B) Size 16</b>                  |                                                    |                                                 |
| M81714/8-BA1                              | —                                                  | 592607-8                                        |
| M81714/8-BB1                              | —                                                  | 592607-6                                        |
| M81714/8-BB2                              | —                                                  | 1-592607-2                                      |
| M81714/8-BC1                              | —                                                  | 1-592607-4                                      |
| M81714/8-BC2                              | —                                                  | 1-592607-0                                      |
| M81714/8-BD1                              | —                                                  | 592607-4                                        |
| M81714/8-BH1                              | —                                                  | 592607-2                                        |
| <b>(Class B) Size 12</b>                  |                                                    |                                                 |
| M81714/9-BA1                              | —                                                  | 592603-8                                        |
| M81714/9-BB1                              | —                                                  | 592603-6                                        |
| M81714/9-BB2                              | —                                                  | 1-592603-2                                      |
| M81714/9-BC1                              | —                                                  | 1-592603-4                                      |
| M81714/9-BC2                              | —                                                  | 1-592603-0                                      |
| M81714/9-BD1                              | —                                                  | 592603-4                                        |
| M81714/9-BH1                              | —                                                  | 592603-2                                        |



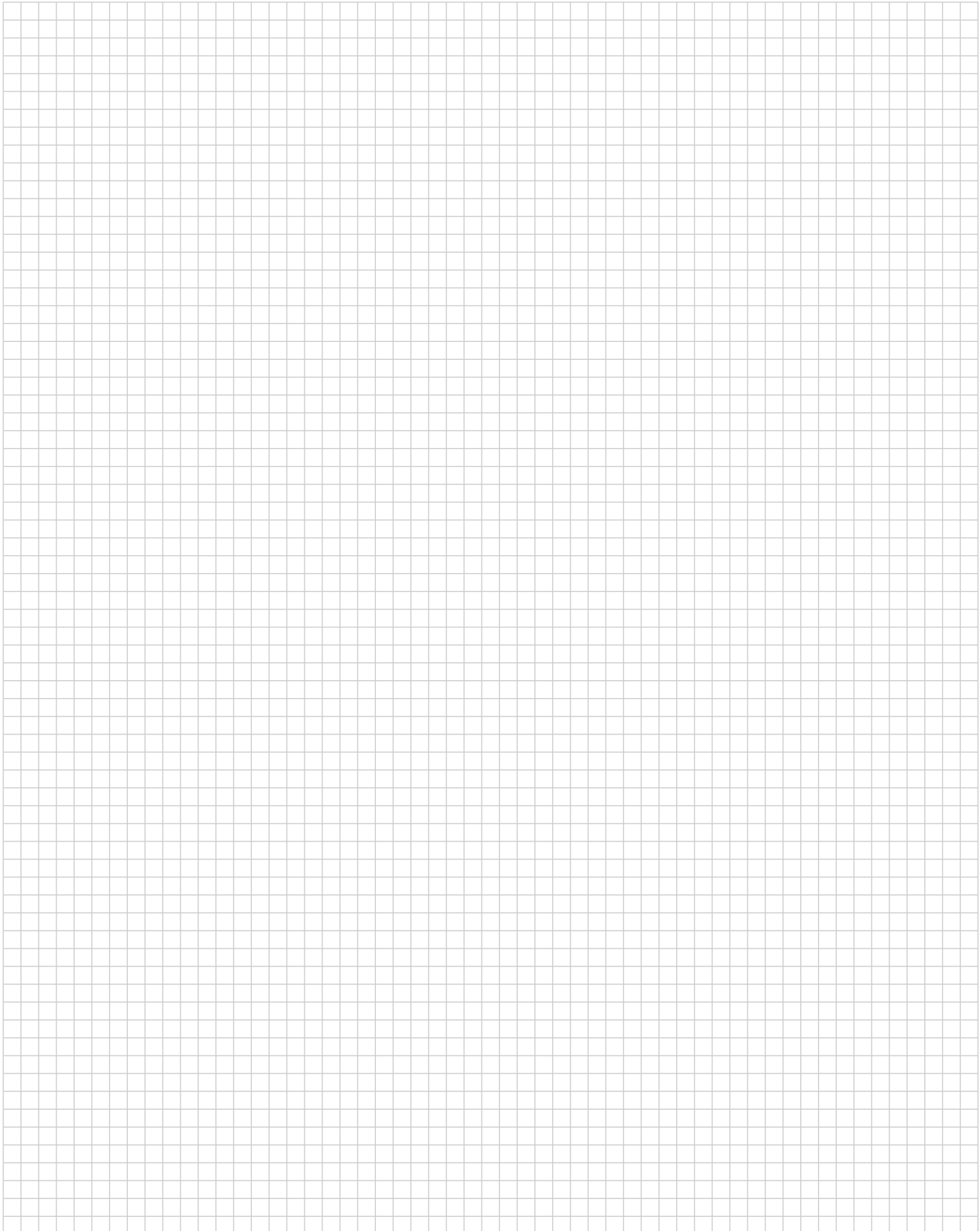
## Military Cross Reference (Continued)

| Military Part Numbers<br>Feedthru Modules | AMP MIL Qualified Part Numbers<br>Feedthru Modules | AMP Commercial Part Numbers<br>Feedthru Modules |
|-------------------------------------------|----------------------------------------------------|-------------------------------------------------|
| <b>(Class C) Size 22</b>                  |                                                    |                                                 |
| M81714/6-CA1                              | —                                                  | 592614-6                                        |
| M81714/6-CB1                              | —                                                  | 592614-4                                        |
| M81714/6-CB2                              | —                                                  | 1-592614-4                                      |
| M81714/6-CB3                              | —                                                  | 1-592614-8                                      |
| M81714/6-CC1                              | —                                                  | 1-592614-6                                      |
| M81714/6-CC2                              | —                                                  | 1-592614-2                                      |
| M81714/6-CD1                              | —                                                  | 1-592614-0                                      |
| M81714/6-CE1                              | —                                                  | 592614-8                                        |
| M81714/6-CJ1                              | —                                                  | 592614-2                                        |
| <b>(Class C) Size 20</b>                  |                                                    |                                                 |
| M81714/7-CA1                              | —                                                  | 592610-6                                        |
| M81714/7-CB1                              | —                                                  | 592610-4                                        |
| M81714/7-CB2                              | —                                                  | 1-592610-5                                      |
| M81714/7-CB3                              | —                                                  | 1-592610-9                                      |
| M81714/7-CC1                              | —                                                  | 1-592610-7                                      |
| M81714/7-CC2                              | —                                                  | 1-592610-3                                      |
| M81714/7-CD1                              | —                                                  | 1-592610-1                                      |
| M81714/7-CE1                              | —                                                  | 592610-8                                        |
| M81714/7-CJ1                              | —                                                  | 592610-2                                        |
| <b>(Class C) Size 16</b>                  |                                                    |                                                 |
| M81714/8-CA1                              | —                                                  | 592606-8                                        |
| M81714/8-CB1                              | —                                                  | 592606-6                                        |
| M81714/8-CB2                              | —                                                  | 1-592606-2                                      |
| M81714/8-CC1                              | —                                                  | 1-592606-4                                      |
| M81714/8-CC2                              | —                                                  | 1-592606-0                                      |
| M81714/8-CD1                              | —                                                  | 592606-4                                        |
| M81714/8-CH1                              | —                                                  | 592606-2                                        |
| <b>(Class C) Size 12</b>                  |                                                    |                                                 |
| M81714/9-CA1                              | —                                                  | 592602-8                                        |
| M81714/9-CB1                              | —                                                  | 592602-6                                        |
| M81714/9-CB2                              | —                                                  | 1-592602-2                                      |
| M81714/9-CC1                              | —                                                  | 1-592602-4                                      |
| M81714/9-CC2                              | —                                                  | 1-592602-0                                      |
| M81714/9-CD1                              | —                                                  | 592602-4                                        |
| M81714/9-CH1                              | —                                                  | 592602-2                                        |

---

## Engineering Notes

---



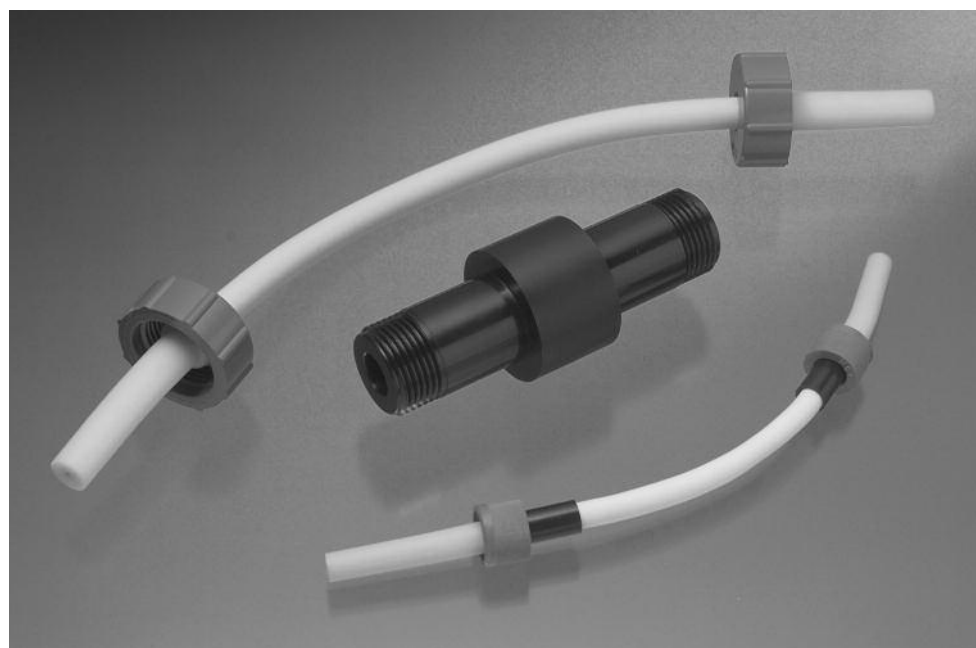
## Table of Contents

|                                                                                              |              |
|----------------------------------------------------------------------------------------------|--------------|
| Introduction .....                                                                           | 9-2 to 9-4   |
| <b>LGH Lead Assemblies and Receptacles</b>                                                   |              |
| 5 KVDC, LGH ¼ .....                                                                          | 9-4          |
| 10 KVDC, LGH ½ .....                                                                         | 9-5 to 9-8   |
| 15 KVDC, LGH ½ L .....                                                                       | 9-9 to 9-11  |
| 20 KVDC, LGH 1 .....                                                                         | 9-12 to 9-15 |
| 25 KVDC, LGH 1 L .....                                                                       | 9-16 to 9-18 |
| 30 KVDC, LGH 2 .....                                                                         | 9-19, 9-20   |
| 40 KVDC, LGH 3 .....                                                                         | 9-21 to 9-23 |
| 50 KVDC, LGH 4 .....                                                                         | 9-24 to 9-26 |
| <b>Commercial Single Line Connectors</b>                                                     |              |
| Introduction .....                                                                           | 9-27         |
| 10 KVDC .....                                                                                | 9-28         |
| 20 KVDC .....                                                                                | 9-29         |
| 30 KVDC .....                                                                                | 9-30         |
| <b>Two-Position Connectors, 10 KVDC</b> .....                                                | 9-31 to 9-33 |
| <b>Multi-Pin Circular Commercial Connectors, 27 KVDC</b> .....                               | 9-34, 9-35   |
| <b>Multi-Line High Voltage Connectors</b> .....                                              | 9-36         |
| <b>5-Pin, Metal-Shell Circular Connectors, Military-Type</b> .....                           | 9-37, 9-38   |
| <b>7-Pin, Metal-Shell Circular Connectors, Military-Type</b> .....                           | 9-39, 9-40   |
| <b>6-Pin, Subminiature Rectangular Connectors</b> .....                                      | 9-41 to 9-45 |
| <b>LGH Micro-Miniature Connectors and Cable Assemblies</b> .....                             | 9-46 to 9-48 |
| <b>Medical Receptacles (Used Primarily for Patient Monitoring)</b> .....                     | 9-49, 9-50   |
| <b>Various Specials</b>                                                                      |              |
| 6 Position LGH Connector .....                                                               | 9-51, 9-52   |
| 3 Position LGH Compact Flange Mounted Connector .....                                        | 9-51, 9-53   |
| Printed Circuit Board Receptacles .....                                                      | 9-54         |
| Multiple Receptacle with Integral, Molded Flange for Bulkhead Applications (Gold Pins) ..... | 9-54         |
| CRT Lead Assemblies .....                                                                    | 9-55, 9-56   |
| CRT-Base Connectors .....                                                                    | 9-57, 9-58   |
| Rack and Panel Connectors .....                                                              | 9-59, 9-60   |
| Heavy Duty (VRL) RFI-Shielded Lead Assemblies and Receptacles .....                          | 9-61         |
| Field Installable Connectors .....                                                           | 9-62         |
| <b>Accessories</b> .....                                                                     | 9-63         |
| <b>LGH Product Worksheet for Ordering Custom Designs</b> .....                               | 9-64         |

## Introduction

### Product Facts

- No exposed high voltage parts
- Space saving — maximum performance from small size and weight
- Fast connect and disconnect
- Wide temperature range — -67°F to +257°F [-55°C to +125°C], continuous
- Positive mating of lead into receptacle
- Hermetically sealed
- RFI shielding — optional
- Fungus, moisture, oil, and chemical resistant
- High altitude operation — at any altitude without voltage derating
- Excellent mechanical strength — resists vibration and shock
- High dielectric strength
- Preamsembled — no tools required
- High reliability — operates under extreme environmental conditions
- Unaffected by ultra-violet light
- Corona resistant — virtually unaffected by ozone or corona
- Radiation resistant
- Lead wire remains flexible to -67°F [-55°C]
- Non-toxic insulation — does not give off toxic fumes when burned
- Excellent shelf life
- Meets applicable military specifications
- Color coded for easy identification
- Quick, easy installation



The development of high voltage hermetically sealed connectors and LGH High Voltage Lead Assemblies and Receptacles represented two major advances in the science of high voltage application — both pioneered by TE Connectivity. As a result of this technological advantage, TE is the leading manufacturer of high voltage, high altitude, high temperature lead assemblies and connectors.

In the field of high voltage application, TE has conducted extensive

research, development, quality studies and reliability programs yielding numerous standard products for military and industrial high voltage applications.

LGH High Voltage Lead Assemblies and Receptacles are used in many systems' designed to meet or exceed military specifications. A sampling of specifications to which samples of these products have been tested, is listed to the right.

For more information contact TE.

### LGH Test Methods and Conditions

LGH Leads and Receptacles, LGH 1/4 through LGH 4

**Product Spec.** — 108-36033  
EIA RS-364

#### Electrical

**Dielectric Withstanding Voltage** — EIA-364-20 Condition I (MS202, Method 301)

**Insulation Resistance** — EIA-364-21, (MS202, Method 302)

#### Mechanical

**Vibration, Sinusoidal** — EIA-364-28, Test Condition I, (MS202, Method 201)

**Shock** — EIA-364-27, Method H

#### Environmental

**Barometric Pressure** — Sea Level to 70,000 feet, MIL-Std-202, Method 105, Condition C

**Thermal Shock** — EIA-364-32, 5 cycles -67°F to +257°F [-55°C to +125°C]

## Introduction (Continued)

### Lead Assemblies and Receptacles

LGH leads and receptacles find wide application where high voltage is used in harsh environments. LGH leads and receptacles are lightweight, miniature, extremely reliable and they maintain peak performance under high temperature, high altitude applications. They are equally applicable to low temperature, low altitude devices.

Leads and receptacles shown on the following pages are commonly used items. Hundreds of variations of these products are available, as well as custom-made units. Consult TE Connectivity for information on high voltage connectors for applications not satisfied by components listed here.

When ordering LGH items: identify item, list TE part number, and specify quantity. Note: Special packaging, special marking and/or special testing of LGH leads and receptacles are available on request, as well as custom-made assemblies. Consult TE for details.

### Voltage Ratings

The voltage ratings tabulated here and noted elsewhere apply to LGH molded-end lead assemblies properly mated with appropriate LGH receptacles, which are properly potted or otherwise protected on the back end.

| LGH Series | Mating Length/Depth | Normal Capacitance |      | Wire Size | Operating Voltage* Kilovolts DC | 3 Min. Hipot** Kilovolts DC |
|------------|---------------------|--------------------|------|-----------|---------------------------------|-----------------------------|
|            |                     | pF/ft.             | pF/m |           |                                 |                             |
| LGH ¼      | .25 [6.35]          | ***                | —    | 22 AWG    | 5                               | 7.5                         |
| LGH ½      | .53 [13.46]         | 55                 | 180  | 16 AWG    | 10                              | 15                          |
| LGH ½ L    | .89 [22.61]         | 55                 | 180  | 16 AWG    | 15                              | 23                          |
| LGH 1      | .88 [22.35]         | 35                 | 115  | 16 AWG    | 20                              | 30                          |
| LGH 1L     | 1.69 [42.93]        | 35                 | 115  | 16 AWG    | 25                              | 38                          |
| LGH 2      | 1.44 [36.58]        | 28                 | 144  | 16 AWG    | 30                              | 45                          |
| LGH 3      | 1.81 [45.97]        | 35                 | 115  | 16 AWG    | 40                              | 55                          |
| LGH 4      | 2.00 [50.80]        | 28                 | 144  | 16 AWG    | 50                              | 60                          |

\*Sea level to 70,000 ft. [21,336 m], -55°C to +125°C [-67°F to +257°F].

\*\*Sea level at 25°C (77°F).

\*\*\*LGH ¼ is not shielded

**LGH Lead Assemblies** are manufactured with a silicone rubber end having a specified mating length (see above table) molded onto a 16 AWG white silicone rubber wire. These assemblies provide extreme reliability and safety for high voltage applications in severe environments.

### Specifications

**Lead Length Tolerance (including pigtail)** — Lengths to 24 [609.6], ±.125 [3.28]; 24 [609.6] and longer, ±1% of length.

**Lead Insulation** — Silicone rubber, durometer reading 60 to 70 (reference MIL-W-16878/8, Type FF); color, white. Lead assemblies with other colors and insulation materials such as PVC and PTFE can be manufactured on request.

**Conductors (per MIL-W-16878/8)** — LGH ½, LGH ½ L, LGH 1, LGH 1L and

LGH 3 lead assemblies contain 41 strands minimum of 32 AWG [0.03 mm<sup>2</sup>] wire, silver plated, to compose a 16 AWG [1.25 mm<sup>2</sup>] stranded conductor .06 nominal O.D. [1.5]; LGH 2 and LGH 4 lead assemblies contain 19 strands minimum of 29 AWG [0.07 mm<sup>2</sup>] wire, silver plated, to compose a 16 AWG [1.25 mm<sup>2</sup>] stranded conductor .06 nominal O.D. [1.5]. Silver plating is per ASTM-B298-58T.

**Pigtail** — Solder dipped

**Socket** — Bronze per ASTM-140, alloy B, gold plated per MIL-G-45204,

Type II, (0.000030 [0.00076] gold over 0.000030 [0.00076] nickel per QQ-N-290). Socket is crimped to lead wire.

**Cap Materials** — Polycarbonate glass-filled polyester or glass-filled epoxy.

**Molded End** — Silicone rubber per ZZ-R-765, Class IIa and IIb, grade 60.

**Positive Stop Ferrule** — Glass-filled polyester

**Marking** — Per MIL-STD-130

**Washer** — TFE, electrical grade

**Minimum Bend Radii, nominal**, for cables without additional covering over silicone insulation and for shielded cable.

| LGH Series | Insulation Type |              |
|------------|-----------------|--------------|
|            | Standard        | Shielded     |
| ¼, ½, ½ L  | .25<br>6.4      | .75<br>19.0  |
| 1, 1L, 3   | .50<br>12.7     | 1.00<br>25.4 |
| 2, 4       | 1.00<br>25.4    | 1.50<br>38.1 |

### Maximum Conductor Resistance

|            |                                        |
|------------|----------------------------------------|
| All Series | 4.75 ohms/1000 ft.<br>15.6 ohms/1000m. |
|------------|----------------------------------------|

### LGH ¼ — 22 AWG (19/34)



Single End Lead Assembly



Single End Lead Assembly with Positive Stop Ferrule



Shielded Lead Assembly



RFI Shielded Lead Assembly

## Introduction (Continued)

**LGH Receptacles** are manufactured in molded glass epoxy having a specified mating depth (see table on previous page). When used with LGH lead assemblies they offer the ultimate in dependability, even under harsh environmental conditions. Typical receptacles are shown here. Specific units, with part numbers, are shown by series in the following pages.

### LGH Receptacles for Canned Units

These receptacles are for hermetically sealed, gas- or oil-filled units, and they are recommended for canned units filled with potting compound.\*\*

**\*\*CAUTION:** Follow manufacturer's instructions on preparing and handling potting. LGH voltage ratings apply only when a proper bond is achieved between the back end of the receptacle and the compound.

### LGH Receptacles for Cast or Encapsulated Units

These units are for use where no metal can is required.

### Specifications (All units)

**Pin Assembly** — Brass per ASTM-B-16 and QQ-B-626; tin plated per MIL-T-10727, Type I or II, .00010" min. thickness.\*

**Body** — Molded glass-filled epoxy

**Marking** — Per MIL-STD-130

### (Canned units only)

**Solder Flange** — Brass per ASTM-B-16 and QQ-B-626; tin plated per MIL-T-10727, Type I or II, .00010" min. thickness

**Hermeticity** — Leak rate less than  $1 \times 10^{-8}$  cc He/sec. per MIL-STD-202, Method 112B, Cond. C.

\*Hermetically sealed receptacles are plated after molding therefore we cannot guarantee the minimum thickness of copper under plating .000100 [0.00254] on the mating end of the pin contact.



Glass-epoxy receptacle for encapsulated units



Glass-epoxy receptacle for splice application



Hermetically sealed, glass-epoxy receptacle for canned units



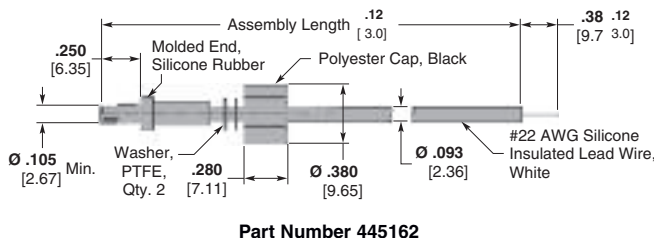
Glass-epoxy, flanged receptacle for bulkhead splice applications



Glass-epoxy, flanged receptacle for bulkhead applications

## LGH Lead Assemblies and Receptacles, 5 KVDC, LGH 1/4

### Single End Lead Assemblies

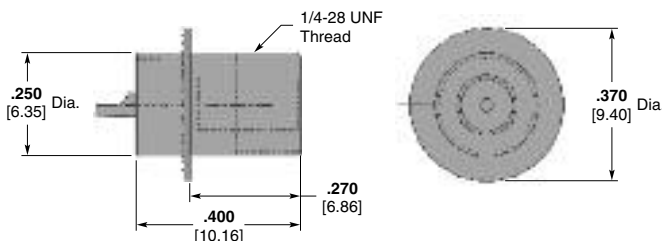


Part Number 445162

| Assembly Length | Part Number |
|-----------------|-------------|
| 6.0             | 445162-1    |
| 12.0            | 445162-2    |
| 304.8           | 5-445162-2* |
| 18.0            | 445162-3    |
| 457.2           |             |
| 24.0            | 445162-4    |
| 609.6           |             |

\*RoHS compliant Part Number.

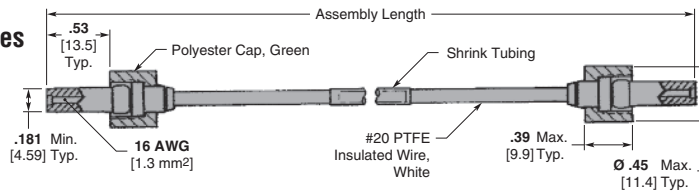
### Receptacle, Metal Flange



Part Number 445159-1 and Part Number 5-445159-1 (RoHS)

## LGH Lead Assemblies and Receptacles, 10 KVDC, LGH 1/2 (Continued)

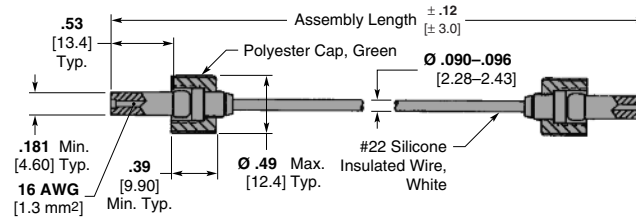
### Double End Lead Assemblies with Positive Stop Ferrules with PTFE Wire



Part Number 860529

| Assembly Length | Part Number |
|-----------------|-------------|
| 6.0<br>152.4    | 860529-2    |
| 7.0<br>177.8    | 860529-6    |
| 10.0<br>254.0   | 860529-8    |
| 13.0<br>330.2   | 1-860529-0  |
| 16.0<br>406.4   | 860529-4    |

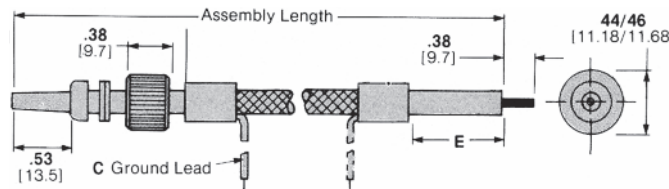
### Double End Lead Assemblies with Positive Stop Ferrules with #22 Wire



Part Number 449578

| Assembly Length           | Part Number |
|---------------------------|-------------|
| 11.0 ± .12<br>279.4 ± 3.0 | 449578-1    |

### Shielded Single End Lead Assemblies with Ground Lead

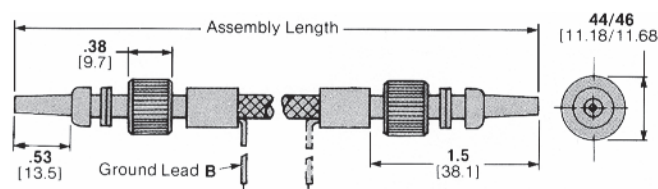


Part Number 846985

| Assembly Length | Dim. C        | Dim. E      | Part Number |
|-----------------|---------------|-------------|-------------|
| 12.0<br>304.8   | 6.0<br>152.4  | 2.0<br>50.8 | 846985-9    |
| 18.0<br>457.2   | 6.0<br>152.4  | 1.5<br>38.1 | 2-846985-2  |
| 24.0<br>609.6   | 6.0<br>152.4  | 1.5<br>38.1 | 2-846985-3  |
| 36.0<br>914.4   | 12.0<br>304.8 | 2.0<br>50.8 | 1-846985-8  |

\*RoHS compliant Part Number.

### Shielded Double End Lead Assemblies with Ground Lead



Part Number 858885

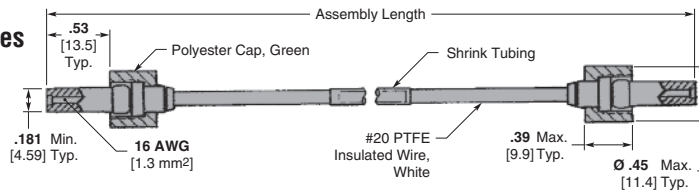
| Assembly Length | Dim. B       | Part Number               |
|-----------------|--------------|---------------------------|
| 12.0<br>304.8   | 8.0<br>203.2 | 858885-3                  |
| 18.0<br>457.2   | 6.0<br>152.4 | 2-858885-7                |
| 24.0<br>609.6   | 8.0<br>203.2 | 858885-4                  |
| 36.0<br>914.4   | 6.0<br>152.4 | 2-858885-5<br>7-858885-5* |
| 48.0<br>1219.2  | 6.0<br>152.4 | 858885-6                  |

\*RoHS compliant Part Number.



## LGH Lead Assemblies and Receptacles, 10 KVDC, LGH 1/2 (Continued)

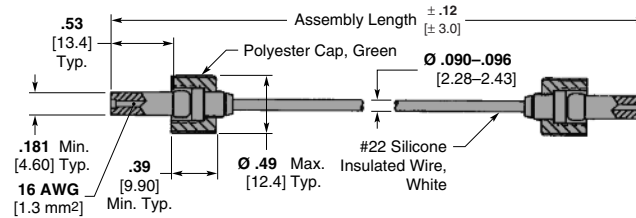
### Double End Lead Assemblies with Positive Stop Ferrules with PTFE Wire



Part Number 860529

| Assembly Length | Part Number |
|-----------------|-------------|
| 6.0<br>152.4    | 860529-2    |
| 7.0<br>177.8    | 860529-6    |
| 10.0<br>254.0   | 860529-8    |
| 13.0<br>330.2   | 1-860529-0  |
| 16.0<br>406.4   | 860529-4    |

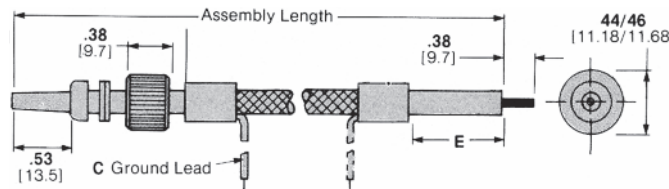
### Double End Lead Assemblies with Positive Stop Ferrules with #22 Wire



Part Number 449578

| Assembly Length           | Part Number |
|---------------------------|-------------|
| 11.0 ± .12<br>279.4 ± 3.0 | 449578-1    |

### Shielded Single End Lead Assemblies with Ground Lead

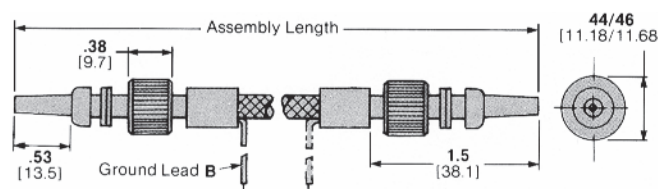


Part Number 846985

| Assembly Length | Dim. C        | Dim. E      | Part Number |
|-----------------|---------------|-------------|-------------|
| 12.0<br>304.8   | 6.0<br>152.4  | 2.0<br>50.8 | 846985-9    |
| 18.0<br>457.2   | 6.0<br>152.4  | 1.5<br>38.1 | 2-846985-2  |
| 24.0<br>609.6   | 6.0<br>152.4  | 1.5<br>38.1 | 2-846985-3  |
| 36.0<br>914.4   | 12.0<br>304.8 | 2.0<br>50.8 | 1-846985-8  |

\*RoHS compliant Part Number.

### Shielded Double End Lead Assemblies with Ground Lead



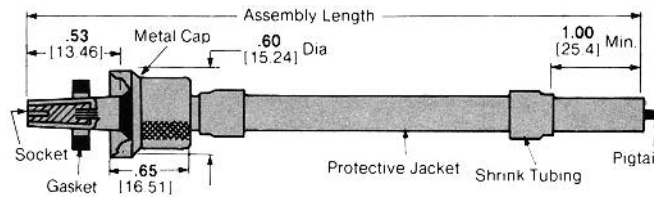
Part Number 858885

| Assembly Length | Dim. B       | Part Number               |
|-----------------|--------------|---------------------------|
| 12.0<br>304.8   | 8.0<br>203.2 | 858885-3                  |
| 18.0<br>457.2   | 6.0<br>152.4 | 2-858885-7                |
| 24.0<br>609.6   | 8.0<br>203.2 | 858885-4                  |
| 36.0<br>914.4   | 6.0<br>152.4 | 2-858885-5<br>7-858885-5* |
| 48.0<br>1219.2  | 6.0<br>152.4 | 858885-6                  |

\*RoHS compliant Part Number.

## LGH Lead Assemblies and Receptacles, 10 KVDC, LGH 1/2 (Continued)

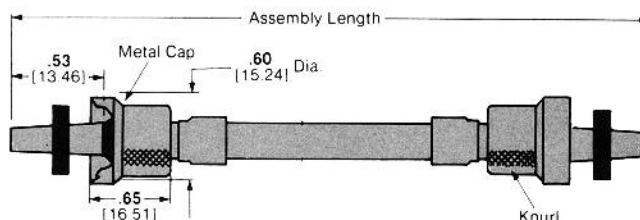
### RFI Shielded Single End Lead Assemblies\*



Part Number 861807

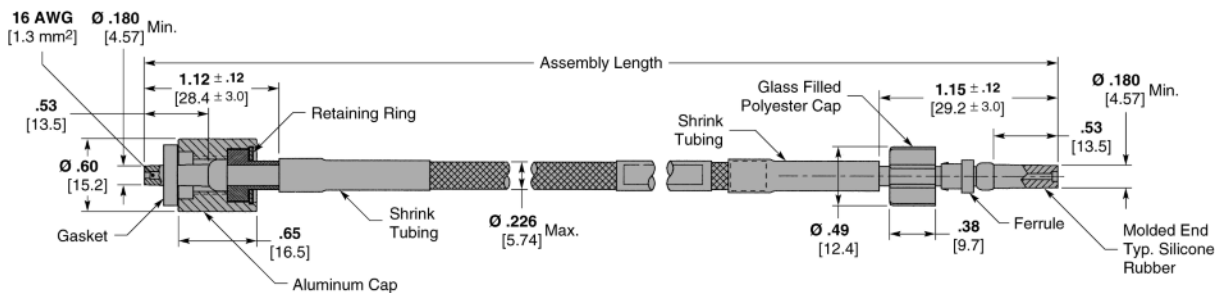
| Assembly Length | Part Number |
|-----------------|-------------|
| 12.0<br>304.8   | 861807-1    |
| 18.0<br>457.2   | 861807-2    |
| 24.0<br>609.6   | 861807-7    |
| 36.0<br>914.4   | 861807-9    |

### RFI Shielded Double End Lead Assemblies\*



Part Number 861808

| Assembly Length | Part Number |
|-----------------|-------------|
| 12.0<br>304.8   | 861808-1    |
| 18.0<br>457.2   | 861808-9    |
| 24.0<br>609.6   | 1-861808-0  |
| 36.0<br>914.4   | 1-861808-2  |
| 48.0<br>1219.2  | 1-861808-6  |



Part Number 863330-1

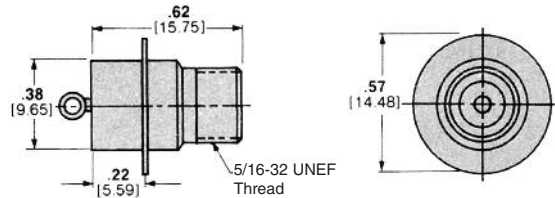
| Assembly Length | Part Number |
|-----------------|-------------|
| 18.0<br>457.2   | 863330-1    |

\* These RFI Shielded Lead Assemblies mate with Receptacle Part Number 861252-1.

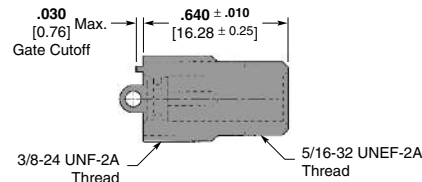
## LGH Lead Assemblies and Receptacles, 10 KVDC, LGH 1/2 (Continued)

### Glass-Epoxy Receptacles with .53 [13.46] Barrel Depth

Flanged, for Hermetic Seal  
Part Number 861252-1  
RoHS Part Number 5-861252-1  
Weight — 2 grams

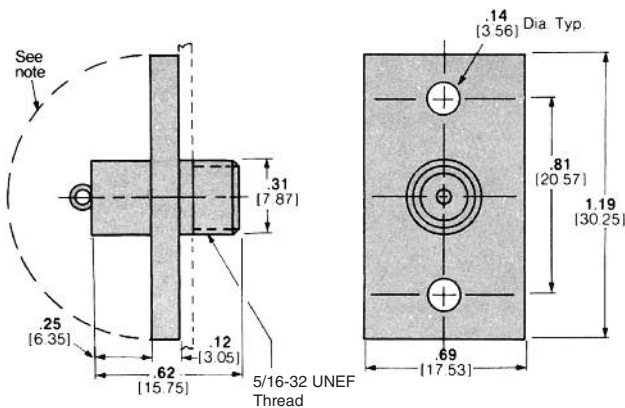


### Special Receptacle Part Number 448462-1

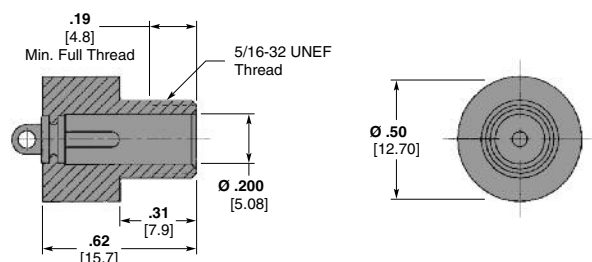


**Note:** Receptacle will accept a LGH 1/2 lead with a .53 [13.5] molded end length.

### Flanged, Bolt Mount Part Number 830395-1 RoHS Part Number 5-830395-1 Weight — 4.2 grams

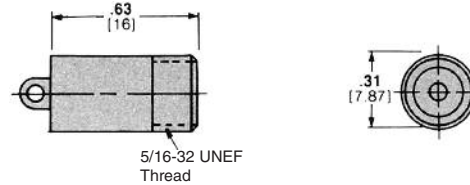


### Receptacle Part Number 830200-1 RoHS Part Number 5-830200-1



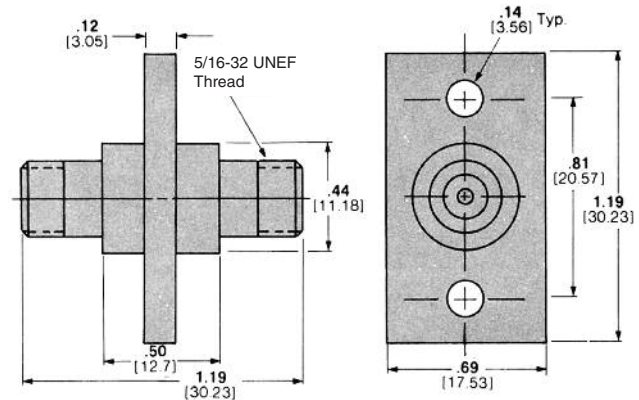
**Note:** Receptacle to mate with LGH 1/2 Lead Assembly.

### For Encapsulated Units Part Number 830178-1 RoHS Part Number 5-830178-1 Weight — 1.2 grams

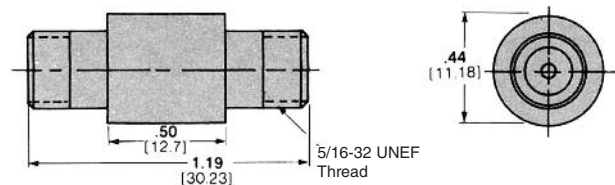


Receptacles are available with gold plated contacts.

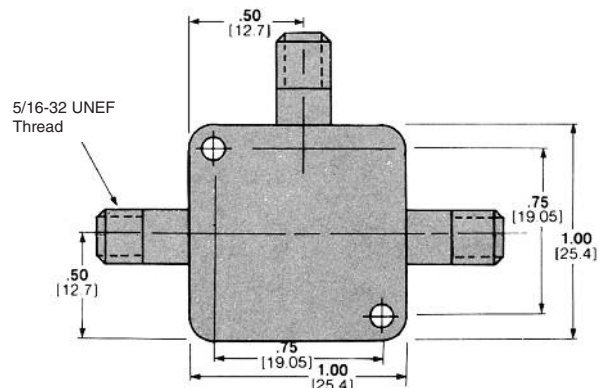
### Bolt-mount, Feed-through Part Number 830174-1 Weight — 5.8 grams



### Splice Part Number 830177-1 Weight — 3.5 grams

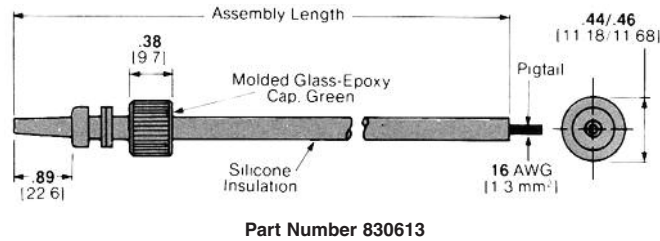


### T Connector Part Number 849418-1 Weight — 15 grams



## LGH Lead Assemblies and Receptacles, 15 KVDC, LGH 1/2 L

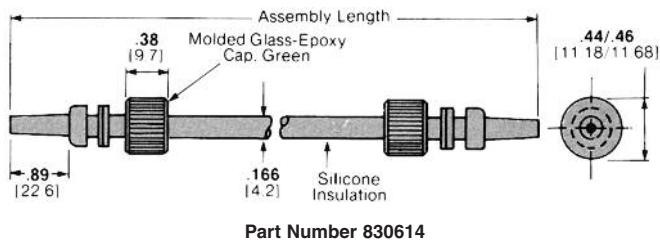
### Single End Lead Assemblies



| Assembly Length | Part Number                |
|-----------------|----------------------------|
| 6.0<br>152.4    | 1-830613-0                 |
| 12.0<br>304.8   | 830613-2<br>5830613-2*     |
| 18.0<br>457.2   | 1-830613-2<br>1-5830613-2* |
| 24.0<br>609.6   | 830613-1<br>5830613-1*     |
| 36.0<br>914.4   | 830613-7<br>5830613-7*     |
| 48.0<br>1219.2  | 1-830613-4<br>1-5830613-4* |

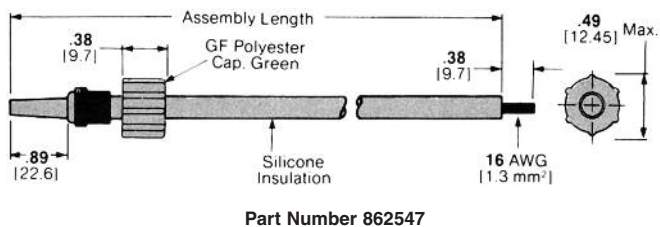
RoHS compliant Part Number.

### Double End Lead Assemblies



| Assembly Length | Part Number |
|-----------------|-------------|
| 6.0<br>152.4    | 1-830614-5  |
| 12.0<br>304.8   | 830614-2    |
| 18.0<br>457.2   | 830614-3    |
| 24.0<br>609.6   | 830614-1    |
| 36.0<br>914.4   | 1-830614-6  |
| 48.0<br>1219.2  | 2-830614-5  |

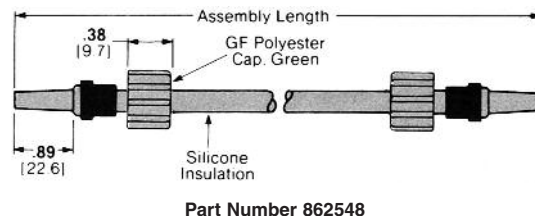
### Single End Lead Assemblies with Positive Stop Ferrules



| Assembly Length | Part Number               |
|-----------------|---------------------------|
| 6.0<br>152.4    | 862547-1                  |
| 12.0<br>304.8   | 862547-4<br>5-862547-4*   |
| 18.0<br>457.2   | 862547-6<br>5-862547-6*   |
| 24.0<br>609.6   | 862547-8                  |
| 36.0<br>914.4   | 862547-9                  |
| 48.0<br>1219.2  | 1-862547-9<br>6-862547-9* |

RoHS compliant Part Number.

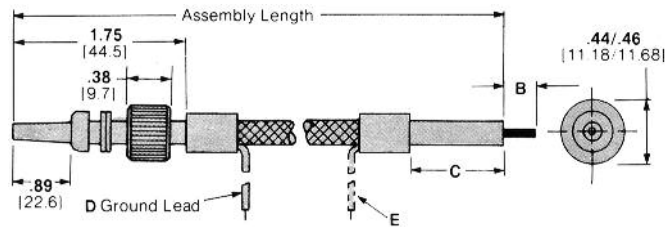
### Double End Lead Assemblies with Positive Stop Ferrules



| Assembly Length | Part Number |
|-----------------|-------------|
| 6.0<br>152.4    | 862548-1    |
| 12.0<br>304.8   | 862548-4    |
| 18.0<br>457.2   | 862548-6    |
| 24.0<br>609.6   | 862548-8    |
| 36.0<br>914.4   | 1-862548-6  |
| 48.0<br>1219.2  | 1-862548-4  |

## LGH Lead Assemblies and Receptacles, 15 KVDC, LGH 1/2 L (Continued)

### Shielded Single End Lead Assemblies



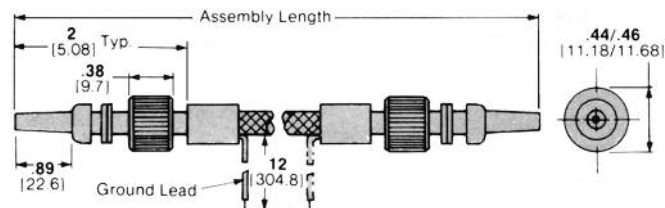
Part Number 858886

| Assembly Length | Terminated End              | Pigtail End  |                  | Part Number | RoHS Part Number |
|-----------------|-----------------------------|--------------|------------------|-------------|------------------|
|                 | Ground Lead Length(s) D & E | C            | Pigtail Length B |             |                  |
| 12.0<br>304.8   | 8.0<br>203.2†               | 1.5<br>38.1  | .25<br>6.4       | 858886-2    | 5-858886-2       |
| 18.0<br>457.2   | 8.0<br>203.2                | 3.0<br>76.2  | .38<br>9.7       | 1-858886-4  | —                |
| 24.0<br>609.6   | 12.0<br>304.8               | 3.0<br>76.2  | .38<br>9.7       | 1-858886-8  | —                |
| 36.0<br>914.4   | 12.0<br>304.8*              | 6.0<br>152.4 | .38<br>9.7       | 858886-1    | —                |
|                 | 8.0<br>203.2†               | 3.0<br>76.2  | .38<br>9.7       | 858886-6    | —                |

\*One ground lead, pigtail end only.

†One ground lead, terminated end only.

### Shielded Double End Lead Assemblies

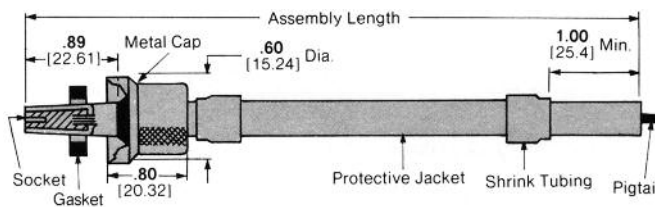


Part Number 858945

| Assembly Length | Part Number |
|-----------------|-------------|
| 12.0<br>304.8   | 1-858945-6  |
| 18.0<br>457.2   | 1-858945-5* |
| 24.0<br>609.6   | 2-858945-1  |
| 36.0<br>914.4   | 858945-3    |
| 48.0<br>1219.2  | 1-858945-4  |

\*Two ground leads, 12.0 [304.8] each.

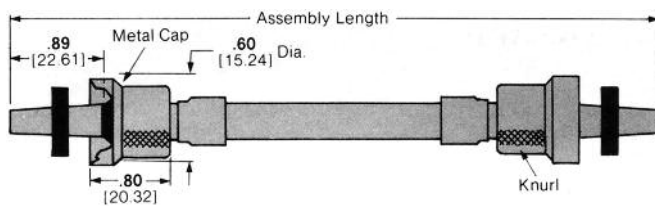
### RFI Shielded Single End Lead Assemblies\*



Part Number 861809

| Assembly Length | Part Number |
|-----------------|-------------|
| 12.0<br>304.8   | 861809-1    |
| 18.0<br>457.2   | 861809-4    |
| 24.0<br>609.6   | 861809-5    |
| 36.0<br>914.4   | 861809-6    |

### RFI Shielded Double End Lead Assemblies\*



Part Number 861810

| Assembly Length | Part Number |
|-----------------|-------------|
| 12.0<br>304.8   | 861810-1    |
| 18.0<br>457.2   | 861810-6    |
| 24.0<br>609.6   | 861810-7    |
| 36.0<br>914.4   | 861810-9    |

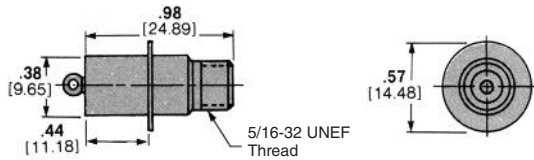
\* These RFI Shielded Lead Assemblies mate with Receptacle Part Number 861253-1.



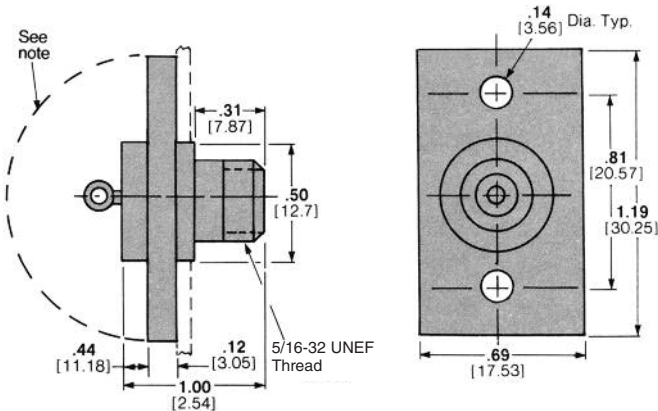
**LGH Lead Assemblies and Receptacles, 15 KVDC, LGH 1/2 L (Continued)**

**Glass-Epoxy Receptacles  
with .89 [22.61] Barrel Depth**

**Flanged, For Hermetic Seal**  
**Part Number 861253-1**  
**RoHS Part Number 5-861253-1**  
**Weight — 3 grams**

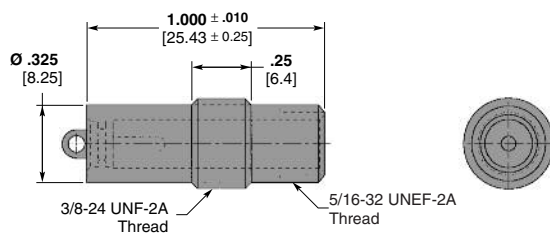


**Flanged, Bolt Mount**  
**Part Number 858857-1**  
**RoHS Part Number 5-858857-1**  
**Weight — 6 grams**



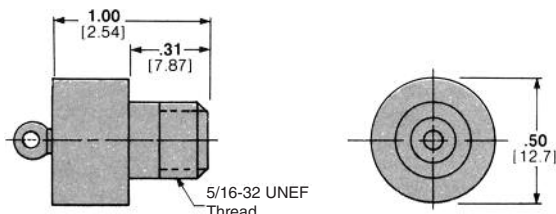
**Note:** If the panel or mounting hardware is at ground potential, guard against arc-over and breakdown within the area defined by this line.

**Special Receptacle**  
**Part Number 448464-1**



**Note:** Receptacle will accept a LGH 1/2 L lead with a .89 [22.6] molded end length.

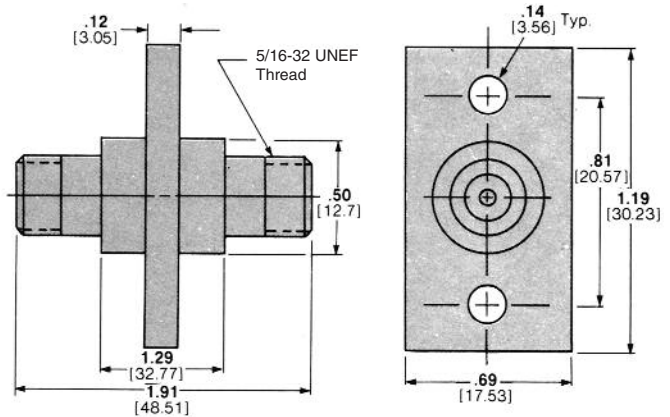
**For Encapsulated Units**  
**Part Number 858855-1**  
**RoHS Part Number 5-858855-1**  
**Weight — 3 grams**



Receptacles are available with gold plated contacts.

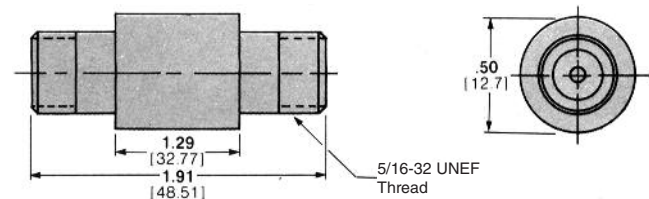
**Bolt-Mount, Feed-Through**  
**Part Number 858856-1**

**Weight — 14 grams**



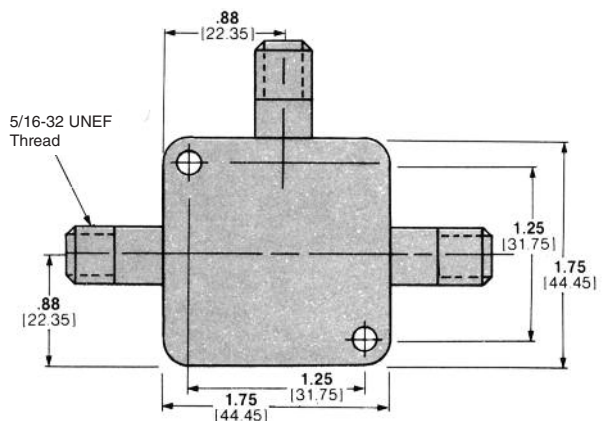
**Splice**  
**Part Number 858082-1**

**Weight — 10.5 grams**



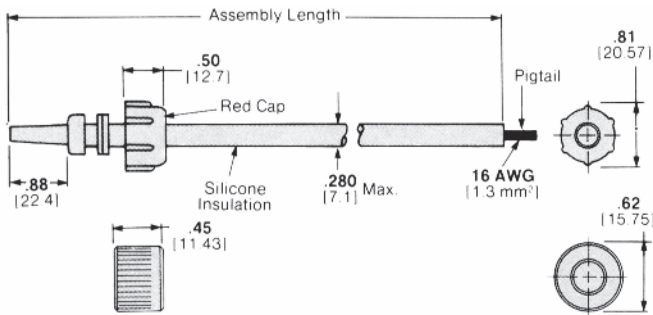
**T Connector**  
**Part Number 850736-1**  
**RoHS Part Number 5-850736-1**

**Weight — 23 grams**



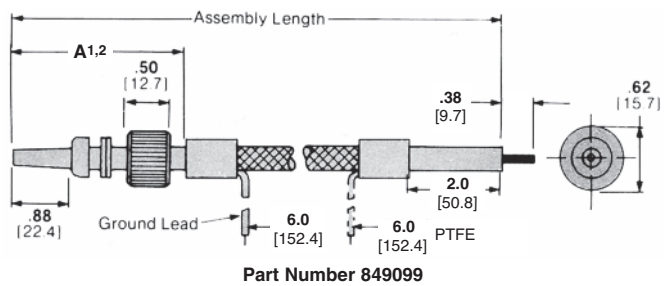
**LGH Lead Assemblies and Receptacles, 20 KVDC, LGH 1**

**Single End Lead Assemblies**



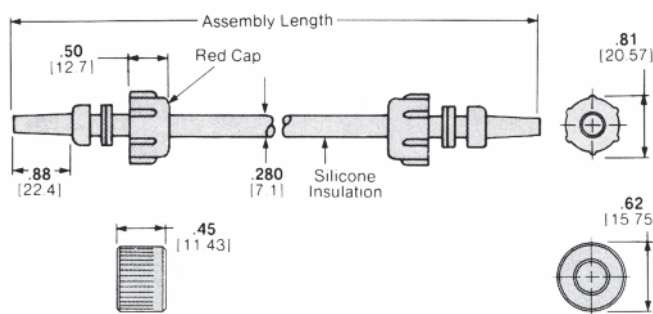
Part Number 837655 and 863701

**Shielded Single End Lead Assemblies**



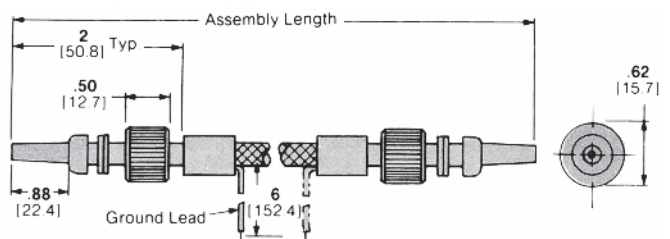
Part Number 849099

**Double End Lead Assemblies**



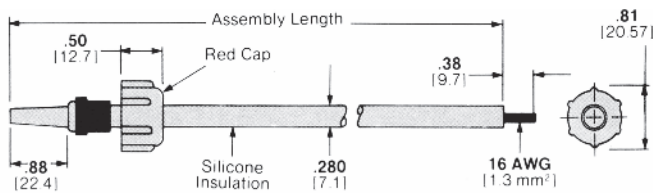
Part Number 830126 and 863702

**Shielded Double End Lead Assemblies**



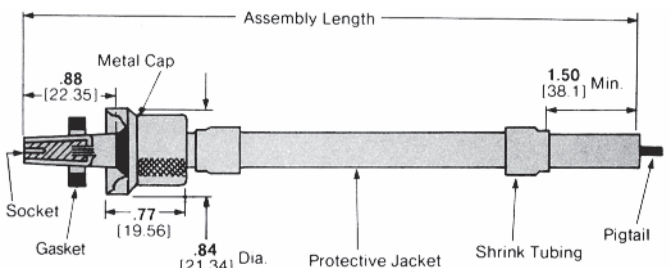
Part Number 849104

**Single End Lead Assemblies with Positive Stop Ferrules**



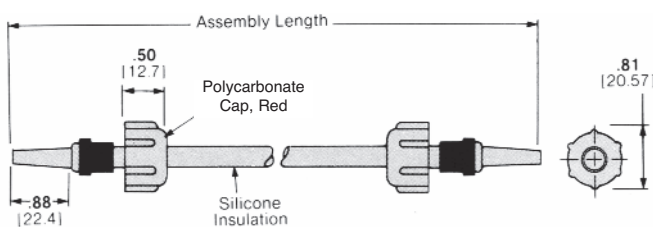
Part Number 862549 and 863703

**RFI Shielded Single End Lead Assemblies\***



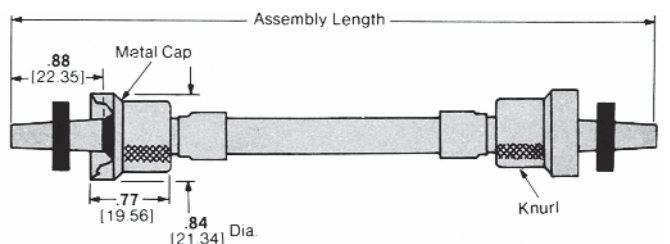
Part Number 861811

**Double End Lead Assemblies with Positive Stop Ferrules**



Part Number 862550

**RFI Shielded Double End Lead Assemblies\***



Part Number 861812

\* These RFI Shielded Lead Assemblies mate with Receptacle Part Number 861254-1.



**LGH Lead Assemblies and Receptacles, 20 KVDC, LGH 1 (Continued)**
**Lead Assemblies (Continued)**

| Description                                              | Assembly Length | Part Numbers      |             |                            |             |                         |                         |
|----------------------------------------------------------|-----------------|-------------------|-------------|----------------------------|-------------|-------------------------|-------------------------|
|                                                          |                 | Polycarbonate Cap |             | Glass-Filled Polyester Cap |             | Glass Epoxy Cap         |                         |
|                                                          |                 | Non-RoHS          | RoHS        | Non-RoHS                   | RoHS        | Non-RoHS                | Metal Cap Non-RoHS      |
| Single End Lead Assemblies                               | 6<br>152.4      | 837655-7          | 5837655-7   | 863701-7                   | —           | —                       | —                       |
|                                                          | 12<br>304.8     | 1-837655-1        | 1-5837655-1 | 1-863701-1                 | 1-5863701-1 | —                       | —                       |
|                                                          | 18<br>457.2     | 1-837655-0        | 1-5837655-0 | 1-863701-0                 | —           | —                       | —                       |
|                                                          | 24<br>609.6     | 837655-8          | —           | 863701-8                   | 5863701-8   | —                       | —                       |
|                                                          | 36<br>914.4     | 837655-5          | 5837655-5   | 863701-5                   | 5863701-5   | —                       | —                       |
|                                                          | 48<br>1219.2    | 1-837655-3        | 1-5837655-3 | 1-863701-3                 | 1-5863701-3 | —                       | —                       |
| Double End Lead Assemblies                               | 6<br>152.4      | —                 | —           | 863702-2                   | —           | 830126-2                | —                       |
|                                                          | 12<br>304.8     | 1-830126-3        | —           | 1-863702-3                 | —           | —                       | —                       |
|                                                          | 18<br>457.2     | 1-830126-2        | —           | 1-863702-2                 | —           | —                       | —                       |
|                                                          | 24<br>609.6     | 1-830126-6        | —           | 1-863702-6                 | —           | —                       | —                       |
|                                                          | 36<br>914.4     | 1-830126-7        | —           | 1-863702-7                 | —           | —                       | —                       |
|                                                          | 48<br>1219.2    | 2-830126-1        | —           | 2-863702-1                 | —           | —                       | —                       |
| Single End Lead Assemblies (with Positive Stop Ferrules) | 6<br>152.4      | 862549-1          | —           | 863703-1                   | —           | —                       | —                       |
|                                                          | 12<br>304.8     | 862549-4          | 5-862549-4  | 863703-4                   | —           | —                       | —                       |
|                                                          | 18<br>457.2     | 862549-6          | —           | 863703-6                   | —           | —                       | —                       |
|                                                          | 24<br>609.6     | 862549-8          | —           | 863703-8                   | —           | —                       | —                       |
|                                                          | 36<br>914.4     | 862549-9          | 5-862549-9  | 863703-9                   | —           | —                       | —                       |
|                                                          | 48<br>1219.2    | —                 | —           | —                          | —           | —                       | —                       |
| Double End Lead Assemblies (with Positive Stop Ferrules) | 6<br>152.4      | 862550-1          | —           | —                          | —           | —                       | —                       |
|                                                          | 12<br>304.8     | 862550-4          | —           | —                          | —           | —                       | —                       |
|                                                          | 18<br>457.2     | 862550-6          | —           | —                          | —           | —                       | —                       |
|                                                          | 24<br>609.6     | 862550-8          | —           | —                          | —           | —                       | —                       |
|                                                          | 36<br>914.4     | 862550-9          | —           | —                          | —           | —                       | —                       |
|                                                          | 48<br>1219.2    | 1-862550-3        | —           | —                          | —           | —                       | —                       |
| Shielded Single End Lead Assemblies                      | 6<br>152.4      | —                 | —           | —                          | —           | 849099-7 <sup>1</sup>   | —                       |
|                                                          | 12<br>304.8     | —                 | —           | —                          | —           | 1-849099-2 <sup>1</sup> | —                       |
|                                                          | 18<br>457.2     | —                 | —           | —                          | —           | 849103-5 <sup>2</sup>   | 5-849103-5 <sup>2</sup> |
|                                                          | 24<br>609.6     | —                 | —           | —                          | —           | 849099-9 <sup>1</sup>   | —                       |
|                                                          | 36<br>914.4     | —                 | —           | —                          | —           | 849103-1† <sup>2</sup>  | —                       |
|                                                          | 48<br>1219.2    | —                 | —           | —                          | —           | 849099-4 <sup>1</sup>   | —                       |
| Shielded Double End Lead Assemblies                      | 6<br>152.4      | —                 | —           | —                          | —           | 1-849103-9 <sup>2</sup> | —                       |
|                                                          | 12<br>304.8     | —                 | —           | —                          | —           | 1-849104-5              | —                       |
|                                                          | 18<br>457.2     | —                 | —           | —                          | —           | 849104-1                | —                       |
|                                                          | 24<br>609.6     | —                 | —           | —                          | —           | 1-849104-6*             | —                       |
|                                                          | 36<br>914.4     | —                 | —           | —                          | —           | 1-849104-7              | 6-849104-7              |
|                                                          | 48<br>1219.2    | —                 | —           | —                          | —           | 1-849104-9*             | —                       |
| RFI Shielded Single End Lead Assemblies**                | 12<br>304.8     | —                 | —           | —                          | —           | 849104-3                | 5-849104-3              |
|                                                          | 18<br>457.2     | —                 | —           | —                          | —           | —                       | 861811-1                |
|                                                          | 24<br>609.6     | —                 | —           | —                          | —           | —                       | 861811-4                |
|                                                          | 48<br>1219.2    | —                 | —           | —                          | —           | —                       | 861811-5                |
| RFI Shielded Double End Lead Assemblies**                | 12<br>304.8     | —                 | —           | —                          | —           | —                       | 861812-1                |
|                                                          | 18<br>457.2     | —                 | —           | —                          | —           | —                       | 861812-4                |
|                                                          | 24<br>609.6     | —                 | —           | —                          | —           | —                       | 861812-3                |
|                                                          | 48<br>1219.2    | —                 | —           | —                          | —           | —                       | 861812-2                |

\*Two ground leads, 6 [152.4] each.

\*\*These RFI Shielded Lead Assemblies mate with Receptacle Part Number 861254-1.

†One ground lead, terminated end only. <sup>1</sup>A dim. 3.0 [76.2]. <sup>2</sup>A dim. 2.0 [50.8].

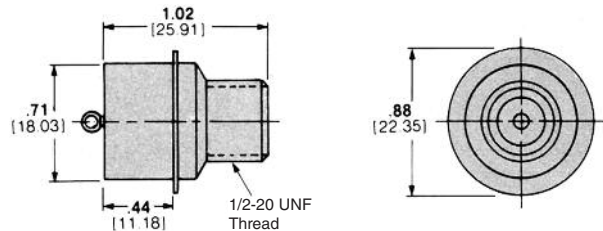
**LGH Lead Assemblies and Receptacles, 20 KVDC, LGH 1 (Continued)**

**Glass-Epoxy Receptacles  
with .88 [22.35] Barrel Depth**

**Flanged, for Hermetic Seal  
Part Number 861254-1**

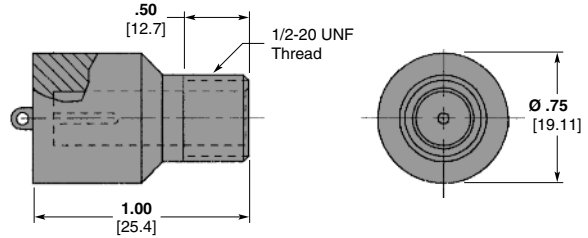
**RoHS Part Number 5-861254-1**

**Weight — 5 grams**

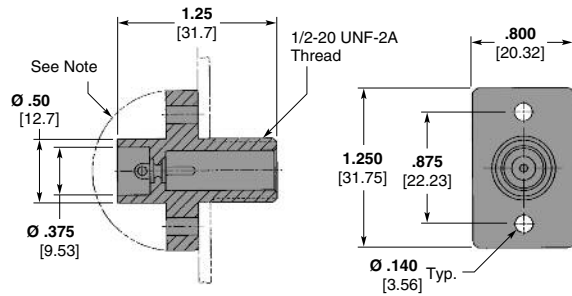


These receptacles are for use with RFI Shielded Lead Assemblies shown on the preceding page.

**Molded Receptacle  
Part Number 850306-3  
RoHS Part Number 5-850306-3**



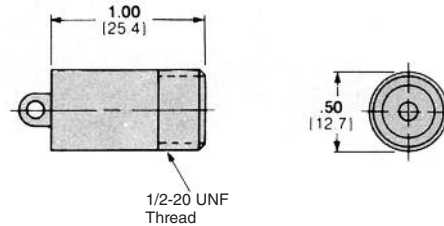
**Bulkhead Receptacle  
Part Number 449690-1  
RoHS Part Number 5-449690-1**



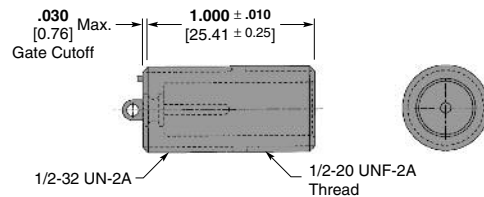
**Note:** Customer must protect back end against arc-over and breakdown if bulkhead and mounting hardware are metallic and at ground potential.

**For Encapsulated Units  
Part Number 834333-2  
RoHS Part Number 5-834333-2**

**Weight — 4 grams**

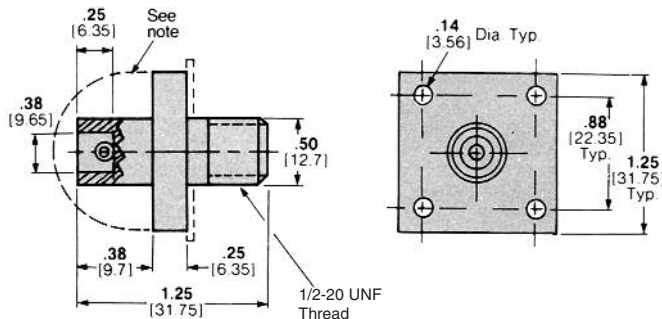


**Special Receptacle  
Part Number 448463-1**



**Flanged, Bolt Mount  
Part Number 858827-1  
RoHS Part Number 5-858827-1**

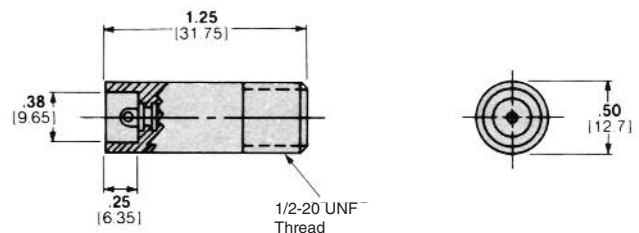
**Weight — 16 grams**



**Note:** If the panel or mounting hardware is at ground potential, guard against arc-over and breakdown within the area defined by this line.

**With Recessed Terminal for  
Encapsulated Units  
Part Number 849610-3  
RoHS Part Number 5-849610-3**

**Weight — 5 grams**

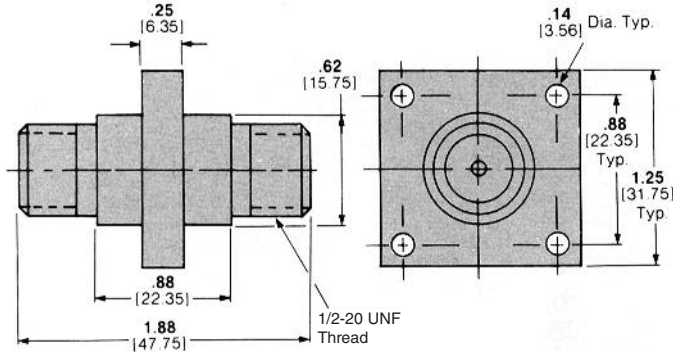


Receptacles are available with gold plated contacts.

**LGH Lead Assemblies and Receptacles, 20 KVDC, LGH 1 (Continued)**

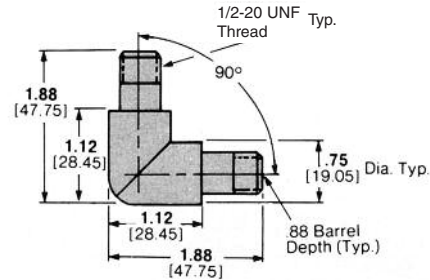
**Glass-Epoxy Receptacles  
with .88 [22.35] Barrel  
Depth (Continued)**

**Bolt Mount, Feed-Through**  
**Part Number 846793-1**  
**Weight — 23 grams**



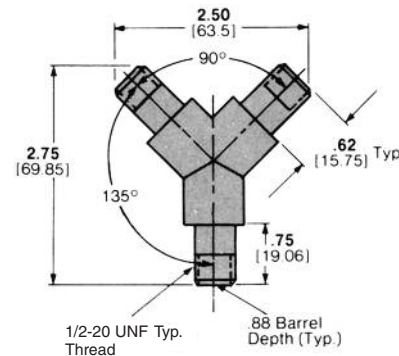
**L-Shape Receptacles  
with .88 [22.35] Barrel Depth**

**Splice**  
**Part Number 849662-1 —**  
**Tin Plated Pins**

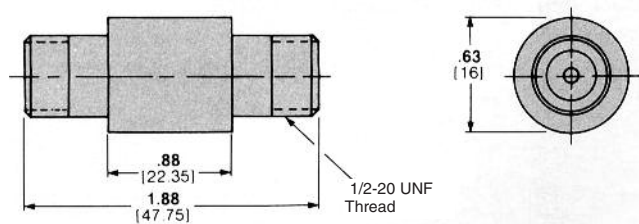


**Y-Shape Receptacles  
with .88 [22.35] Barrel Depth**

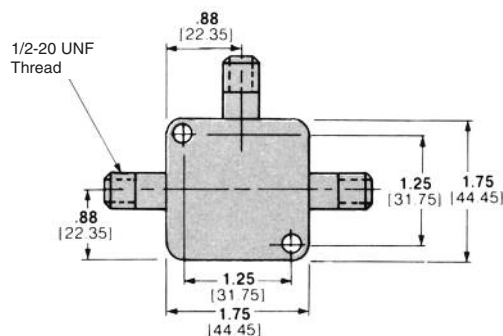
**Splice**  
**Part Number 849693-1 —**  
**Tin Plated Pins**



**Splice**  
**Part Number 830149-1**  
**Weight — 10 grams**

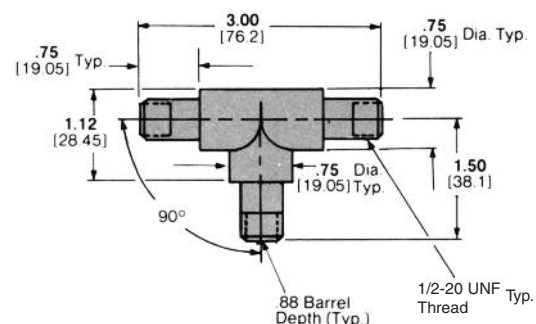


**T-Shape Connector**  
**Part Number 836674-1**  
**RoHS Part Number 5-836674-1**  
**Weight — 100 grams**



**T-Shape Receptacles  
with .88 [22.35] Barrel Depth**

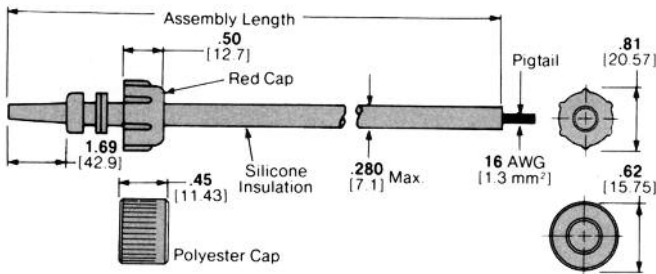
**Splice**  
**Part Number 849671-1 —**  
**Tin Plated Pins**



Receptacles are available with gold plated contacts.

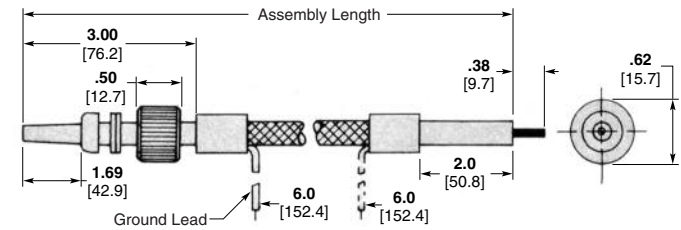
## LGH Lead Assemblies and Receptacles, 25 KVDC, LGH 1 L

### Single End Lead Assemblies



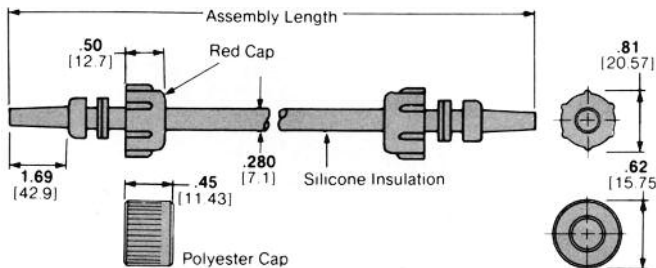
Part Number 830637

### Shielded Single End Lead Assemblies



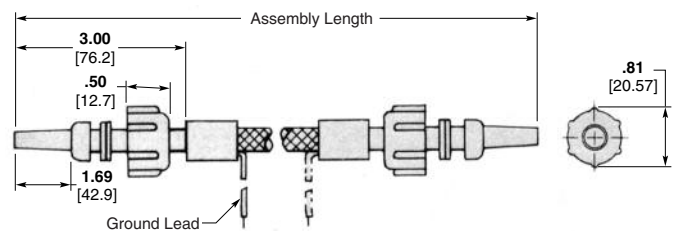
Part Number 846938

### Double End Lead Assemblies



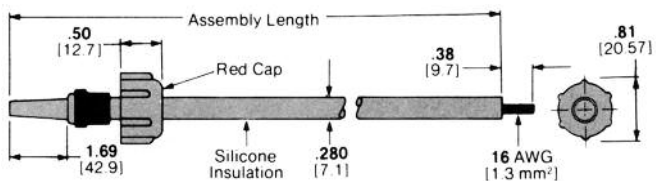
Part Number 830638

### Shielded Double End Lead Assemblies



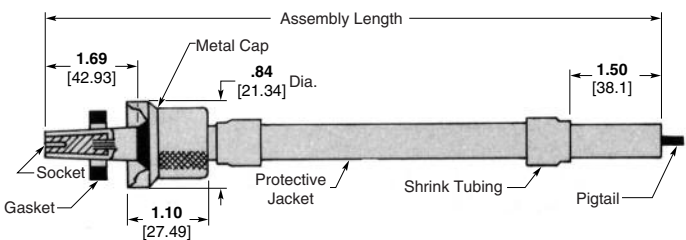
Part Number 849616

### Single End Lead Assemblies with Positive Stop Ferrules



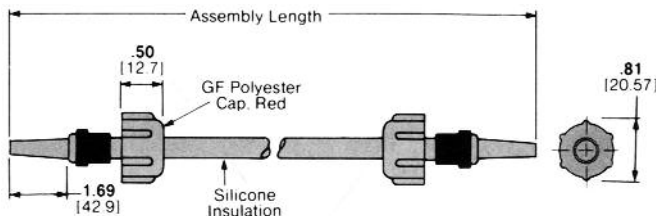
Part Number 862551

### RFI Shielded Single End Lead Assemblies



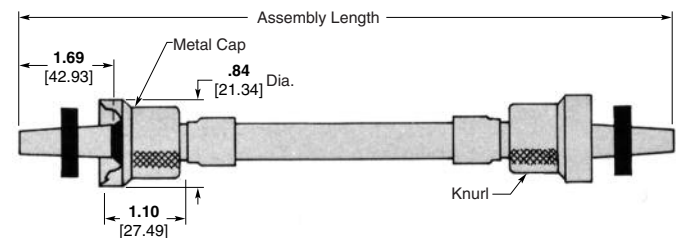
Part Number 861813

### Double End Lead Assemblies with Positive Stop Ferrules



Part Number 862552

### RFI Shielded Double End Lead Assemblies



Part Number 861814

**LGH Lead Assemblies and Receptacles, 25 KVDC, LGH 1 L (Continued)**
**Lead Assemblies (Continued)**

| Description                                              | Assembly Length | Part Numbers      |             |                            |            |                         |                    |
|----------------------------------------------------------|-----------------|-------------------|-------------|----------------------------|------------|-------------------------|--------------------|
|                                                          |                 | Polycarbonate Cap |             | Glass-Filled Polyester Cap |            | Glass Epoxy Cap         |                    |
|                                                          |                 | Non-RoHS          | RoHS        | Non-RoHS                   | RoHS       | Non-RoHS                | Metal Cap Non-RoHS |
| Single End Lead Assemblies                               | 6<br>152.4      | 2-830637-1        | —           | 2-863705-1                 | —          | —                       | —                  |
|                                                          | 12<br>304.8     | 1-830637-2        | 1-5830637-2 | 1-863705-2                 | —          | —                       | —                  |
|                                                          | 18<br>457.2     | 1-830637-3        | 1-5830637-3 | 1-863705-3                 | —          | —                       | —                  |
|                                                          | 24<br>609.6     | 2-830637-8        | 2-5830637-8 | 2-863705-8                 | 7-863705-8 | —                       | —                  |
|                                                          | 36<br>914.4     | 830637-5          | 5830637-5   | 863705-5                   | —          | —                       | —                  |
|                                                          | 48<br>1219.2    | 2-830637-4        | 2-5830637-4 | 2-863705-4                 | —          | —                       | —                  |
| Double End Lead Assemblies                               | 6<br>152.4      | —                 | —           | 863706-2                   | —          | 830638-2                | —                  |
|                                                          | 12<br>304.8     | 1-830638-5        | —           | 1-863706-5                 | —          | —                       | —                  |
|                                                          | 18<br>457.2     | 2-830638-0        | —           | 2-863706-0                 | —          | —                       | —                  |
|                                                          | 24<br>609.6     | 830638-9          | —           | 863706-9                   | —          | —                       | —                  |
|                                                          | 36<br>914.4     | 830638-6          | —           | 863706-6                   | —          | —                       | —                  |
|                                                          | 48<br>1219.2    | 1-830638-9        | —           | 1-863706-9                 | —          | —                       | —                  |
| Single End Lead Assemblies (with Positive Stop Ferrules) | 6<br>152.4      | 862551-1          | —           | 863707-1                   | —          | —                       | —                  |
|                                                          | 12<br>304.8     | 862551-4          | 5-862551-4  | 863707-4                   | —          | —                       | —                  |
|                                                          | 18<br>457.2     | 862551-6          | —           | 863707-6                   | —          | —                       | —                  |
|                                                          | 24<br>609.6     | 862551-8          | —           | 863707-8                   | 5-863707-8 | —                       | —                  |
|                                                          | 36<br>914.4     | 1-862551-5        | —           | 1-863707-5                 | —          | —                       | —                  |
|                                                          | 48<br>1219.2    | 1-862551-2        | —           | 1-863707-2                 | 6-863707-2 | —                       | —                  |
| Double End Lead Assemblies (with Positive Stop Ferrules) | 6<br>152.4      | —                 | —           | —                          | —          | 862552-1                | —                  |
|                                                          | 12<br>304.8     | 862552-4          | —           | —                          | —          | —                       | —                  |
|                                                          | 18<br>457.2     | 862552-6          | —           | —                          | —          | —                       | —                  |
|                                                          | 24<br>609.6     | 862552-8          | —           | —                          | —          | —                       | —                  |
|                                                          | 36<br>914.4     | 1-862552-3        | —           | —                          | —          | —                       | —                  |
|                                                          | 48<br>1219.2    | 1-862552-0        | —           | —                          | —          | —                       | —                  |
| Shielded Single End Lead Assemblies                      | 18<br>457.2     | —                 | —           | —                          | —          | 2-846938-0              | —                  |
|                                                          | 24<br>609.6     | —                 | —           | —                          | —          | 2-846938-1              | —                  |
|                                                          | 36<br>914.4     | —                 | —           | —                          | —          | 1-846938-6††            | —                  |
|                                                          | 48<br>1219.2    | —                 | —           | —                          | —          | 846938-8†               | —                  |
| Shielded Double End Lead Assemblies                      | 12<br>304.8     | —                 | —           | —                          | —          | 849616-7                | —                  |
|                                                          | 18<br>457.2     | —                 | —           | —                          | —          | 1-849616-5              | —                  |
|                                                          | 36<br>914.4     | —                 | —           | —                          | —          | 1-849616-0*             | —                  |
|                                                          | 60<br>1524.0    | —                 | —           | —                          | —          | 2-849616-2* 7-849616-2* | —                  |
| RFI Shielded Single End Lead Assemblies**                | 12<br>304.8     | —                 | —           | —                          | —          | —                       | 861813-1           |
|                                                          | 24<br>609.6     | —                 | —           | —                          | —          | —                       | 861813-2           |
|                                                          | 48<br>1219.2    | —                 | —           | —                          | —          | —                       | 861813-5           |
|                                                          | 12<br>304.8     | —                 | —           | —                          | —          | —                       | 861814-1           |
| RFI Shielded Double End Lead Assemblies                  | 18<br>457.2     | —                 | —           | —                          | —          | —                       | 1-861814-9         |
|                                                          | 24<br>609.6     | —                 | —           | —                          | —          | —                       | 2-861814-1         |
|                                                          | 36<br>914.4     | —                 | —           | —                          | —          | —                       | 1-861814-5         |
|                                                          | 48<br>1219.9    | —                 | —           | —                          | —          | —                       | 1-861814-6         |

\*Two equal length ground leads.

\*\*These RFI Shielded Lead Assemblies mate with Receptacle Part Number 861255-1.

†One ground lead, pigtail end only.

††One ground lead, terminated end only. Pigtail End 13 [330.2].



# LGH Lead Assemblies and Receptacles, 25 KVDC, LGH 1 L (Continued)

## Glass-Epoxy Receptacles with 1.69 [42.93]

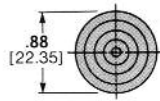
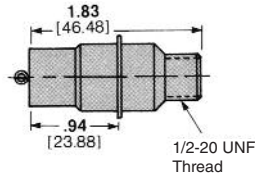
### Barrel Depth

#### Flanged, for Hermetic Seal

Part Number 861255-1

RoHS Part Number 5-861255-1

Weight — 17 grams



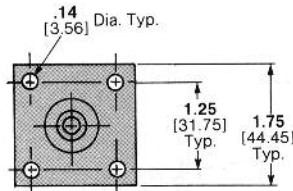
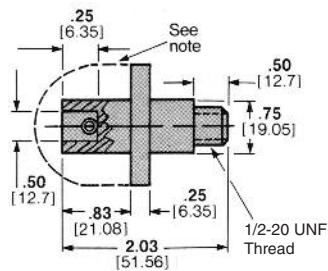
These receptacles are for use with RFI Shielded Leads shown on the preceding page.

#### Flanged, Bolt Mount

Part Number 846814-1

RoHS Part Number 5-846814-1

Weight — 32 grams

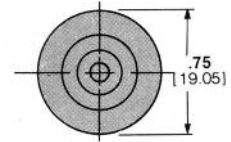
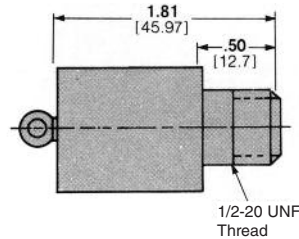


## For Encapsulated Units

Part Number 858868-1

RoHS Part Number 5-858868-1

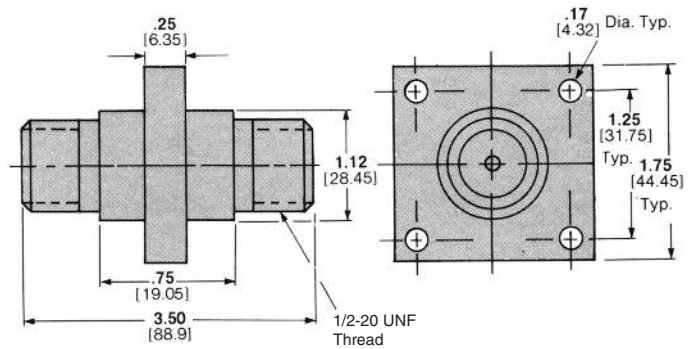
Weight — 15 grams



## Bolt-mount, Feed-through

Part Number 858873-1

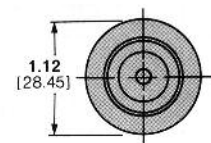
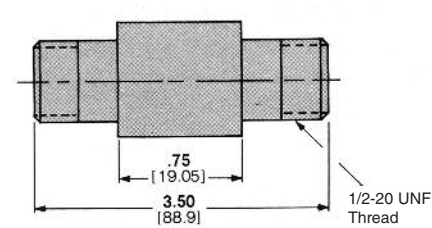
Weight — 70 grams



## Splice

Part Number 858030-1

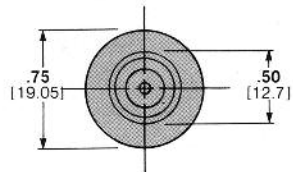
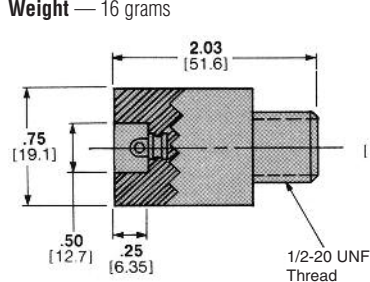
Weight — 52 grams



## With Recessed Terminal for Encapsulated Units

Part Number 859058-3

Weight — 16 grams

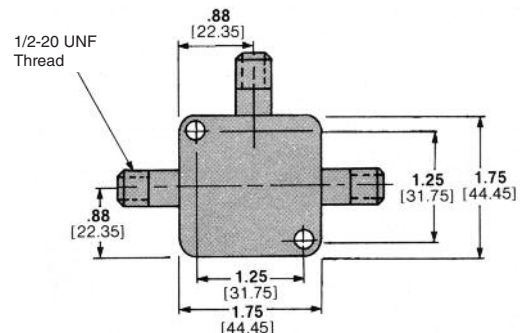


## T-Shape Connector

Part Number 830699-1

RoHS Part Number 5-830699-1

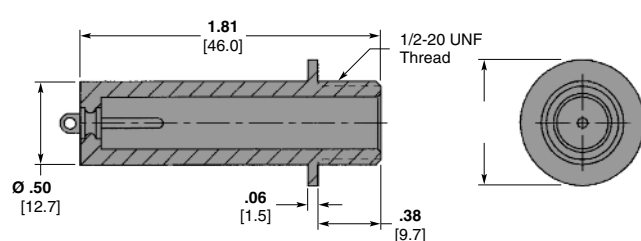
Weight — 110 grams



## Flanged Receptacle

Part Number 449925-1

Color — Red

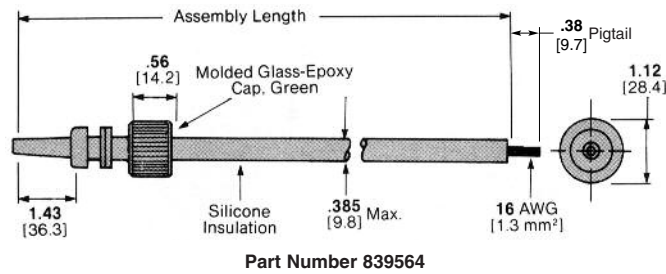


**Note:** If the panel or mounting hardware is at ground potential, guard against arc-over and breakdown within the area defined by this line.

Receptacles are available with gold plated contacts.

## LGH Lead Assemblies and Receptacles, 30 KVDC, LGH 2

### Single End Lead Assemblies

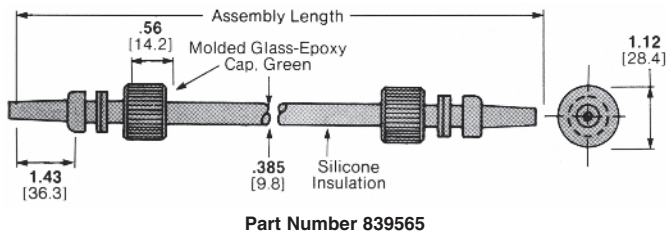


Part Number 839564

| Assembly Length | Part Number               |
|-----------------|---------------------------|
| 6.0<br>152.4    | 1-839564-8                |
| 12.0<br>304.8   | 839564-1<br>5-839564-1*   |
| 18.0<br>457.2   | 2-839564-9                |
| 24.0<br>609.6   | 839564-2<br>5-839564-2*   |
| 36.0<br>914.4   | 1-839564-9<br>6-839564-9* |
| 48.0<br>1219.2  | 1-839564-3<br>6-839564-3* |

\*RoHS compliant Part Number.

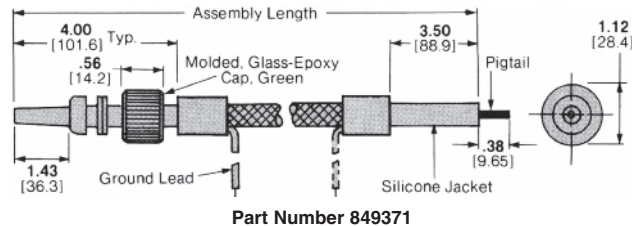
### Double End Lead Assemblies



Part Number 839565

| Assembly Length | Part Number |
|-----------------|-------------|
| 8.0<br>203.2    | 1-839565-3  |
| 12.0<br>304.8   | 839565-1    |
| 18.0<br>457.2   | 2-839565-9  |
| 24.0<br>609.6   | 839565-9    |
| 36.0<br>914.4   | 2-839565-5  |
| 48.0<br>1219.2  | 839565-6    |

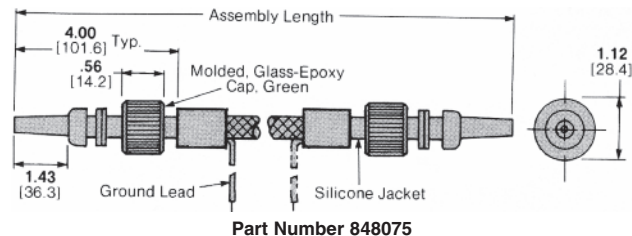
### Shielded Single End Lead Assemblies



Part Number 849371

| Assembly Length | Part Number |
|-----------------|-------------|
| 12.0<br>304.8   | 849371-2    |
| 18.0<br>457.2   | 849371-8    |
| 24.0<br>609.6   | 849371-3    |
| 48.0<br>1219.2  | 849371-9    |

### Shielded Double End Lead Assemblies

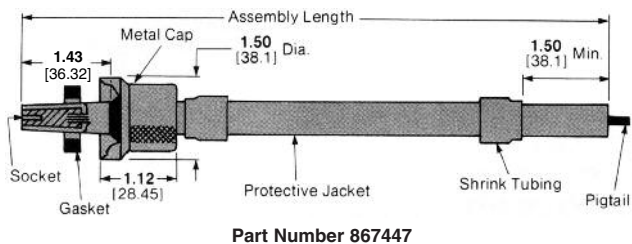


Part Number 848075

| Assembly Length | Part Number  |
|-----------------|--------------|
| 24.0<br>609.6   | 1-848075-5   |
| 36.0<br>914.4   | 1-848075-6   |
| 48.0<br>1219.2  | 2-848075-2** |

\*\*Two ground leads, 6.0 [152.4] each

### RFI Shielded Single End Lead Assemblies\*\*\*



Part Number 867447

| Assembly Length | Part Number |
|-----------------|-------------|
| 12.0<br>304.8   | 867447-1    |
| 24.0<br>609.6   | 867447-2    |
| 36.0<br>914.4   | 867447-3    |
| 48.0<br>1219.2  | 867447-4    |

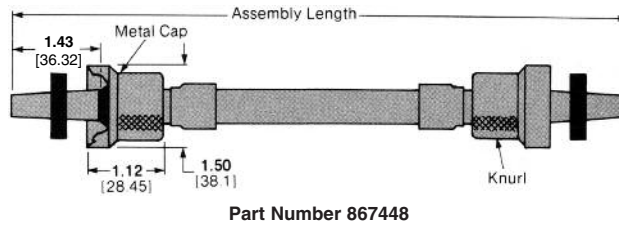
**Note:** Standard length leads are tabulated here. TE Connectivity can make available numerous variations in length and material to suit almost any application. Choices of insulation materials include PTFE, UL listed silicone and UL listed PVC. Other materials, colors, wire and configurations can be used in manufacture. For more information, consult TE.

\*\*\* These RFI Shielded Lead Assemblies mate with Receptacle Part Number 861256-1.



## LGH Lead Assemblies and Receptacles, 30 KVDC, LGH 2 (Continued)

### RFI Shielded Double End Lead Assemblies\*



Part Number 867448

| Assembly Length | Part Number |
|-----------------|-------------|
| 12.0<br>304.8   | 867448-1    |
| 24.0<br>609.6   | 867448-2    |
| 36.0<br>914.4   | 867448-3    |
| 48.0<br>1219.2  | 867448-4    |

**Note:** Standard length leads are tabulated here. TE Connectivity can make available numerous variations in length and material to suit almost any application. Choices of insulation materials include PTFE, UL listed silicone and UL listed PVC. Other materials, colors, wire and configurations can be used in manufacture. For more information, consult TE.  
\* These RFI Shielded Lead Assemblies mate with receptacle 861256-1.

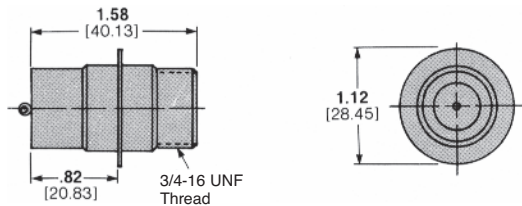
### Glass-Epoxy Receptacles with 1.44 [36.58] Barrel Depth

Flanged, for Hermetic Seal

Part Number 861256-1

RoHS Part Number 5-861256-1

Weight — 20 grams



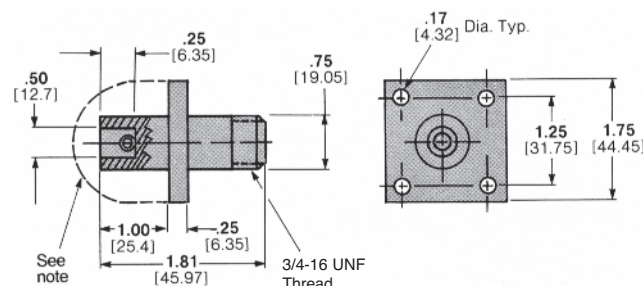
These receptacles are for use with RFI Shielded Leads shown on the preceding page.

Flanged, Bolt Mount

Part Number 850910-1

RoHS Part Number 5-850910-1

Weight — 42 grams



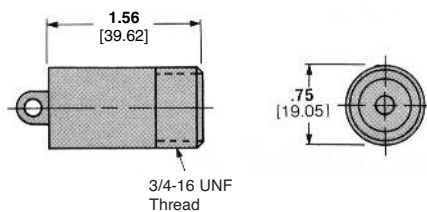
**Note:** If the panel or mounting hardware is at ground potential, guard against arc-over and breakdown within the area defined by this line.

For Encapsulated Units

Part Number 1-849587-1

RoHS Part Number 1-5849587-1

Weight — 17 grams

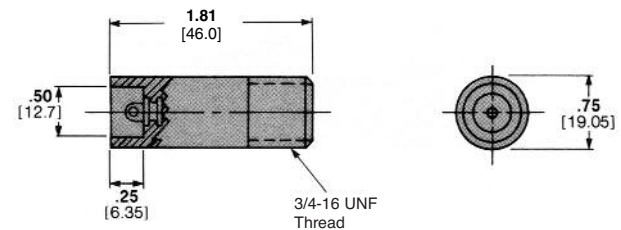


With Recessed Terminal for Encapsulated Units

Part Number 849588-1

RoHS Part Number 5-849588-1

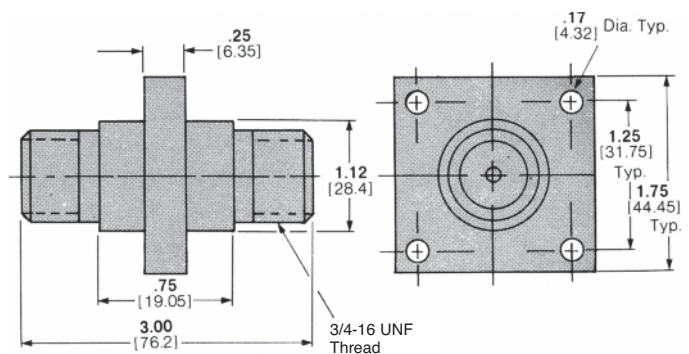
Weight — 20 grams



Bolt-mount, Feed-through

Part Number 850735-1

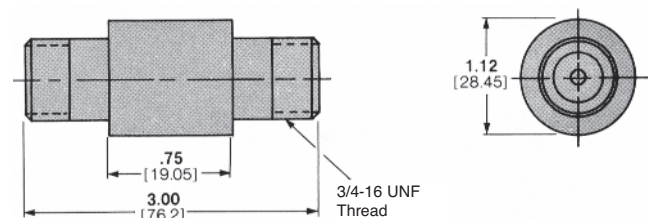
Weight — 70 grams



Splice

Part Number 850555-1

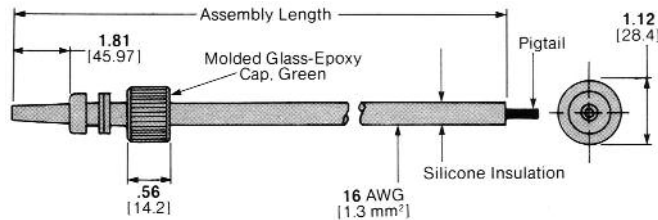
Weight — 43 grams



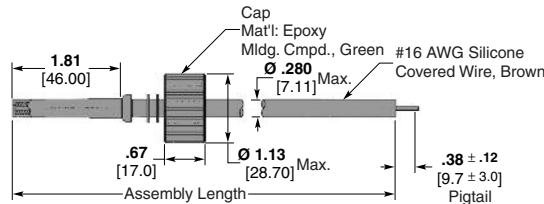
Receptacles are available with gold plated contacts.

## LGH Lead Assemblies and Receptacles, 40 KVDC, LGH 3

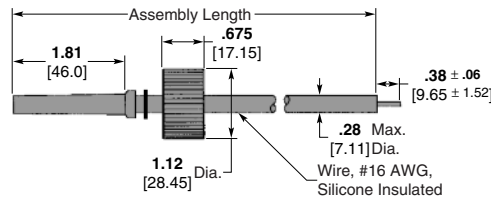
### Single End Lead Assemblies



Part Number 837975



Part Number 868354

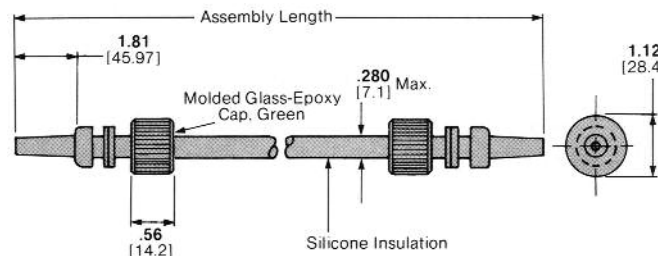


Part Number 869084

| Assembly Length              | Wire Color | Part Number               |
|------------------------------|------------|---------------------------|
| 6.0<br>152.4                 | —          | 837975-6                  |
| 12.0<br>304.8                | —          | 837975-8                  |
| 18.0<br>457.2                | —          | 837975-3<br>5-837975-3*   |
| 24.0<br>609.6                | —          | 1-837975-6<br>6-837975-6* |
| 36.0<br>914.4                | —          | 837975-2                  |
| 48.0<br>1219.2               | —          | 837975-9<br>5-837975-9*   |
| 60.0 ± 1.00<br>1524.0 ± 25.4 | Brown      | 868354-2                  |
| 18.0 ± .25<br>457.2 ± 6.35   | Brown      | 869084-1                  |
| 18.0 ± .25<br>457.2 ± 6.35   | Red        | 869084-2                  |
| 18.0 ± .25<br>457.2 ± 6.35   | Yellow     | 869084-3                  |
| 18.0 ± .25<br>457.2 ± 6.35   | Green      | 869084-4                  |
| 18.0 ± .25<br>457.2 ± 6.35   | White      | 869084-5                  |
| 24.0 ± .25<br>609.6 ± 6.35   | Brown      | 869084-6<br>5-869084-6*   |
| 24.0 ± .25<br>609.6 ± 6.35   | Yellow     | 869084-7<br>5-869084-7*   |
| 24.0 ± .25<br>609.6 ± 6.35   | Green      | 869084-8<br>5-869084-8*   |
| 24.0 ± .25<br>609.6 ± 6.35   | White      | 869084-9<br>5-869084-9*   |
| 36.0 ± .25<br>914.4 ± 6.35   | Brown      | 1-869084-0                |
| 48.0 ± .25<br>1219.2 ± 6.35  | Red        | 1-869084-1                |
| 36.0 ± .25<br>914.4 ± 6.35   | Yellow     | 1-869084-2<br>6-869084-2* |
| 36.0 ± .25<br>914.4 ± 6.35   | Green      | 1-869084-3<br>6-869084-3* |

\*RoHS compliant Part Number.

### Double End Lead Assemblies

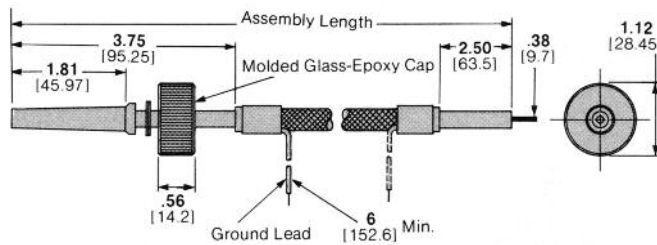


Part Number 830649

| Assembly Length | Part Number |
|-----------------|-------------|
| 12.0<br>304.8   | 830649-1    |
| 18.0<br>457.2   | 830649-3    |
| 24.0<br>609.6   | 1-830649-0  |
| 36.0<br>914.4   | 830649-2    |
| 48.0<br>1219.2  | 830649-6    |

## LGH Lead Assemblies and Receptacles, 40 KVDC, LGH 3 (Continued)

### Shielded Single End Lead Assemblies



Part Number 848076

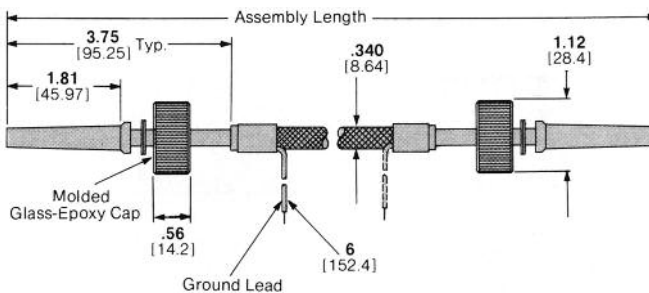
| Assembly Length | Part Number |
|-----------------|-------------|
| 12.0<br>304.8   | 1-848076-1  |
| 18.0<br>457.2   | 848076-5    |
| 24.0<br>609.6   | 848076-1    |
| 36.0<br>914.4   | 848076-8**  |
| 48.0<br>1219.2  | 848076-3    |
| 360.0<br>9144.0 | 5-848076-3* |
| 16.25<br>412.8  | 2-848076-1  |
| 29.75<br>755.7  | 2-848076-2  |
| 20.25<br>514.4  | 7-848076-2* |
| 21.75<br>552.5  | 2-848076-3  |
| 16.25<br>412.8  | 7-848076-3* |
|                 | 2-848076-4  |
|                 | 2-848076-5  |
|                 | 7-848076-5* |
|                 | 2-848076-6  |
|                 | 7-848076-6* |

All leads are shielded and glass braid covered.

\*RoHS compliant Part Number.

\*\*Two ground leads each 7" long.

### Shielded Double End Lead Assemblies



Part Number 848077

| Assembly Length | Part Number |
|-----------------|-------------|
| 12.0<br>304.8   | 848077-4    |
| 24.0<br>609.6   | 848077-1    |
| 48.0<br>1219.2  | 848077-3    |
|                 | 5-848077-3* |

\*RoHS compliant Part Number.

# LGH Lead Assemblies and Receptacles, 40 KVDC, LGH 3 (Continued)

## Glass-Epoxy Receptacles with 1.81 [45.97]

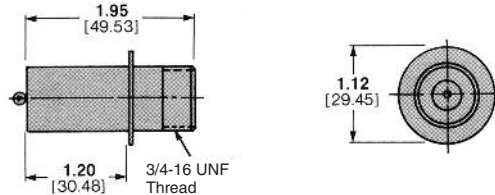
### Barrel Depth

### Flanged, For Hermetic Seal

Part Number 861257-1

RoHS Part Number 5-861257-1

Weight — 32 grams

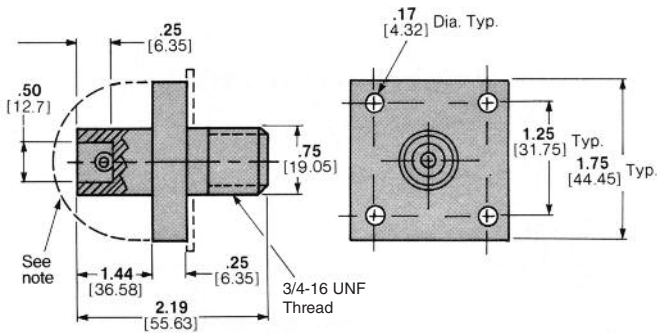


### Flanged, Bolt Mount

Part Number 850911-1

RoHS Part Number 5-850911-1

Weight — 53 grams



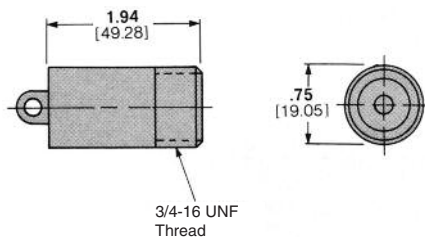
**Note:** If the panel or mounting hardware is at ground potential, guard against arc-over and breakdown within the area defined by this line.

### For Encapsulated Units

Part Number 849587-9

RoHS Part Number 5849587-9

Weight — 28 grams

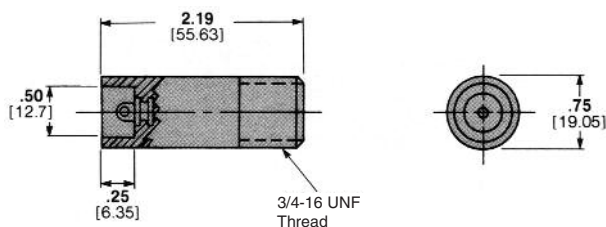


### With Recessed Terminal For Encapsulated Units

Part Number 849588-3

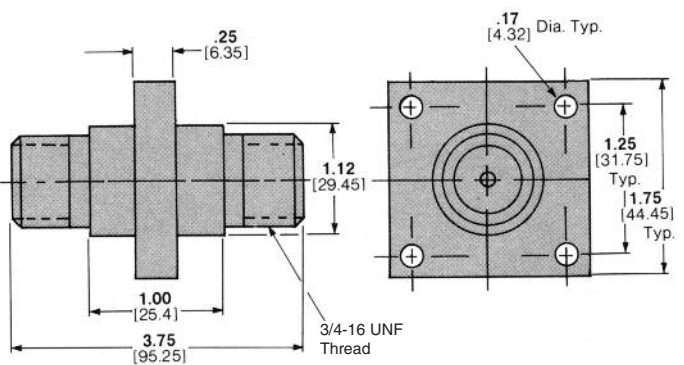
RoHS Part Number 5-849588-3

Weight — 34 grams



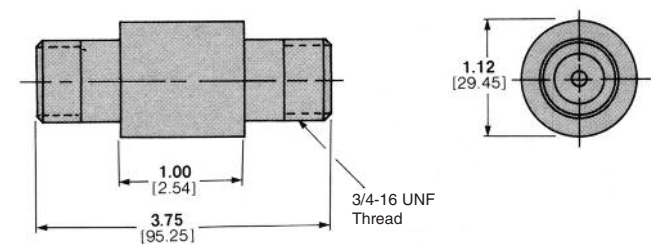
## Bolt-Mount, Feed-Through Part Number 850909-1

Weight — 91 grams



## Splice Part Number 850908-1

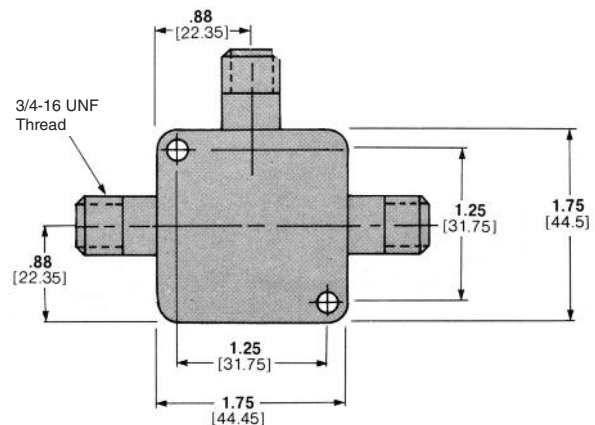
Weight — 65 grams



## T-Shape Connector Part Number 860708-1

RoHS Part Number 5-860708-1

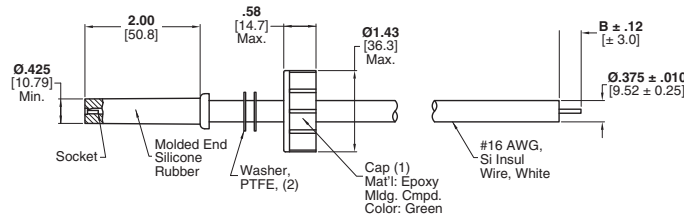
Weight — 135 grams



Receptacles are available with gold plated contacts.

## LGH Lead Assemblies and Receptacles, 50 KVDC, LGH 4

### Single End Lead Assemblies

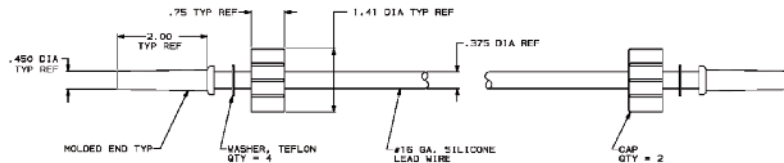


Part Number 846290

| Assembly Length | Part Number               |
|-----------------|---------------------------|
| 6.0<br>152.4    | 1-846290-7                |
| 12.0<br>304.8   | 846290-1<br>5-846290-1*   |
| 18.0<br>457.2   | 1-846290-6<br>6-846290-6* |
| 24.0<br>609.6   | 846290-3<br>5-846290-3*   |
| 36.0<br>914.4   | 846290-6<br>5-846290-6*   |
| 48.0<br>1219.2  | 846290-4<br>5-846290-4*   |

\*RoHS compliant Part Number.

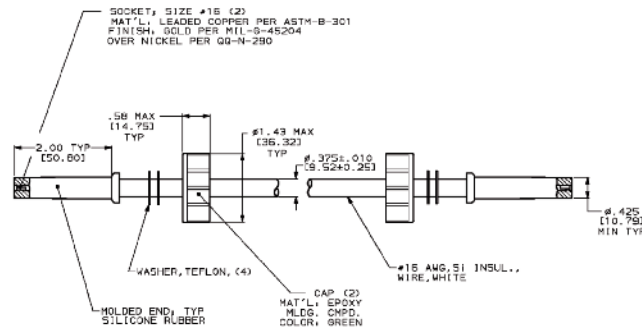
### Double End Lead Assemblies



Part Number 445217

| Assembly Length            | Part Number |
|----------------------------|-------------|
| 18.0 ± .12<br>457.2 ± 3.05 | 445217-2    |
| 24.0 ± .24<br>609.6 ± 6.10 | 445217-1    |

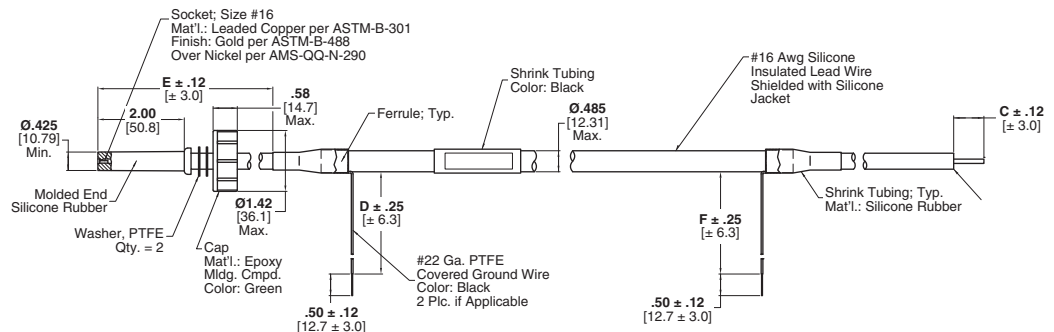
### Double End Lead Assemblies



Part Number 846291

| Assembly Length | Part Number |
|-----------------|-------------|
| 12.0<br>304.8   | 846291-1    |
| 18.0<br>457.2   | 1-846291-1  |
| 24.0<br>609.6   | 846291-3    |
| 36.0<br>914.4   | 846291-4    |

### Shielded Single End Lead Assemblies



Part Number 848078

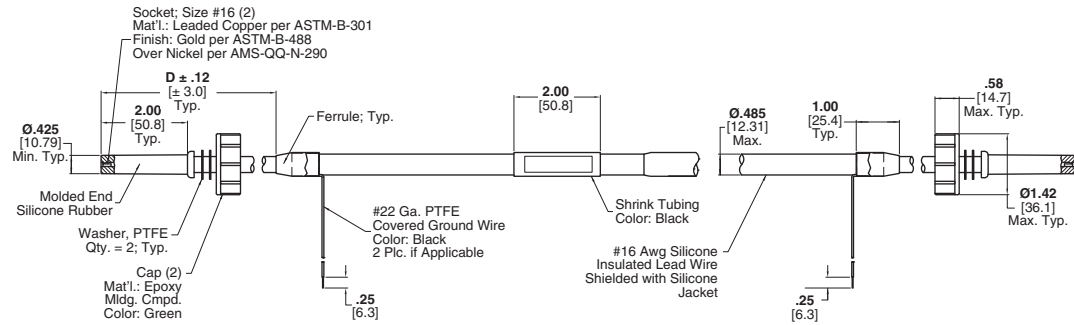
| Assembly Length | Part Number |
|-----------------|-------------|
| 24.0<br>609.6   | 848078-1    |
| 36.0<br>914.4   | 2-848078-0  |
| 48.0<br>1219.2  | 848078-2    |

**Note:** Standard length leads are tabulated here. TE Connectivity can make available numerous variations in length and material to suit almost any application. Choices of insulation materials include PTFE, UL listed silicone and UL listed PVC. Other materials, colors, wire and configurations can be used in manufacture. For more information, consult TE.



## LGH Lead Assemblies and Receptacles, 50 KVDC, LGH 4 (Continued)

### Shielded Double End Lead Assemblies

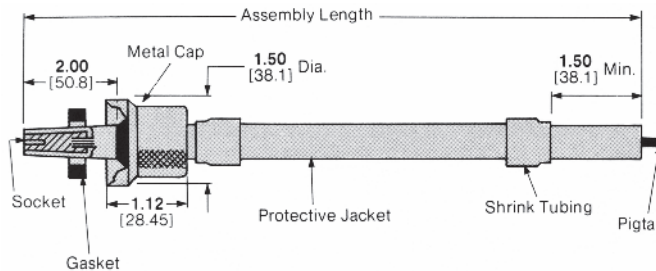


Part Number 846950

| Assembly Length | Part Number |
|-----------------|-------------|
| 12.0            | 846950-6    |
| 304.8           | 846950-7    |
| 48.0            | 1-846950-0  |
| 1219.2          | 6-846950-0* |

\*RoHS compliant Part Number.

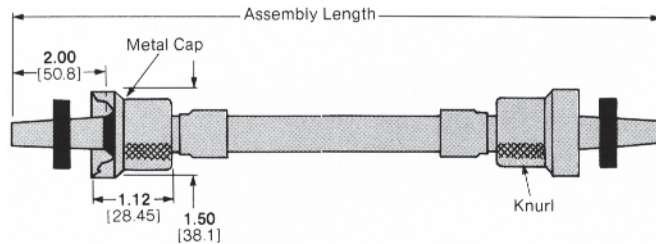
### RFI Shielded Single End Lead Assemblies\*



Part Number 865089

| Assembly Length | Part Number |
|-----------------|-------------|
| 12.0            | 865089-4    |
| 304.8           | 865089-5    |
| 18.0            | 865089-6    |
| 457.2           | 865089-7    |
| 24.0            | 865089-8    |
| 609.6           | 865089-9    |
| 36.0            | 865089-10   |
| 914.4           | 865089-11   |
| 48.0            | 865089-12   |
| 1219.2          | 865089-13   |

### RFI Shielded Double End Lead Assemblies\*



Part Number 865090

| Assembly Length | Part Number |
|-----------------|-------------|
| 12.0            | 865090-4    |
| 304.8           | 865090-7    |
| 18.0            | 865090-1    |
| 457.2           | 865090-2    |
| 24.0            | 865090-3    |
| 609.6           | 865090-4    |
| 36.0            | 865090-5    |
| 914.4           | 5-865090-5* |

\*RoHS compliant Part Number.

**Note:** Standard length leads are tabulated here. TE Connectivity can make available numerous variations in length and material to suit almost any application. Choices of insulation materials include PTFE, UL listed silicone and UL listed PVC. Other materials, colors, wire and configurations can be used in manufacture. For more information, consult TE.  
\* These RFI Shielded Lead Assemblies mate with receptacle 861258-1.

**LGH Lead Assemblies and Receptacles, 50 KVDC, LGH 4 (Continued)**

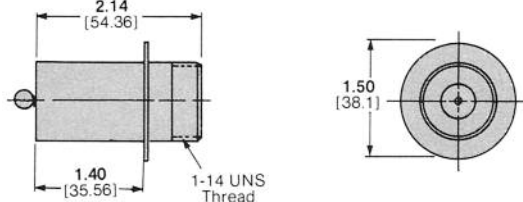
**Glass-Epoxy Receptacles  
with 2.00 [50.8] Barrel Depth**

**Flanged, For Hermetic Seal**

**Part Number 861258-1**

**RoHS Part Number 5-861258-1**

**Weight — 48 grams**



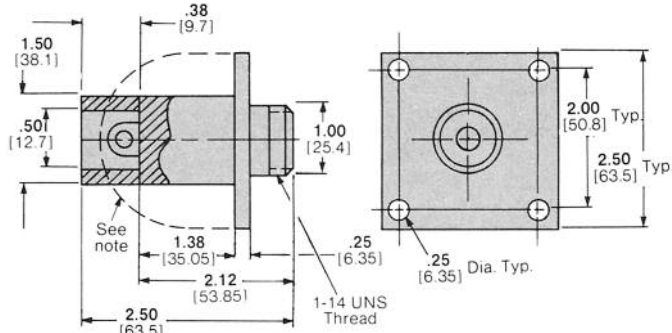
These receptacles are for use with RFI Shielded Leads shown on the preceding page.

**Flanged, Bolt Mount**

**Part Number 850912-1**

**RoHS Part Number 5-850912-1**

**Weight — 100 grams**



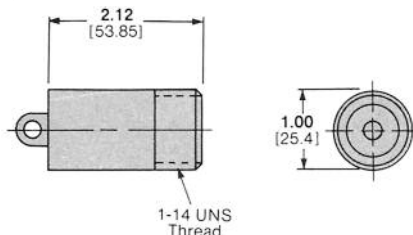
**Note:** If the panel or mounting hardware is at ground potential, guard against arc-over and breakdown within the area defined by this line.

**For Encapsulated Units**

**Part Number 836567-1**

**RoHS Part Number 5-836567-1**

**Weight — 42 grams**



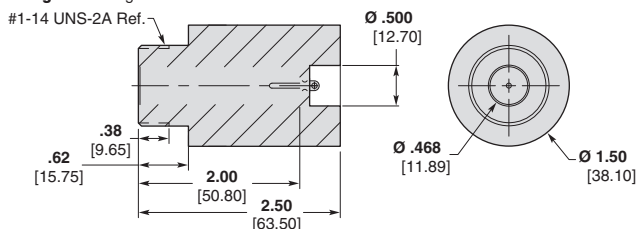
**With Recessed Terminal**

**For Encapsulated Units**

**Part Number 849853-1**

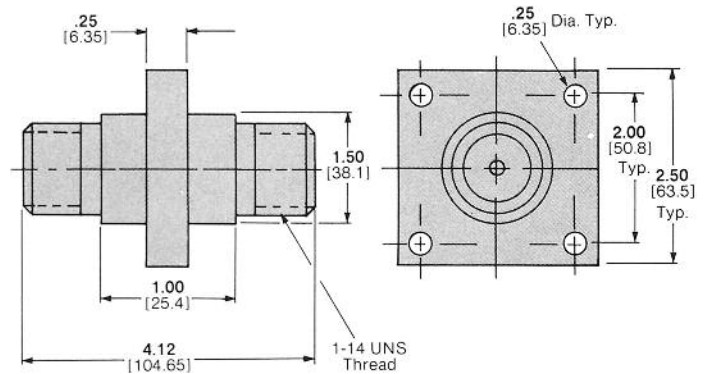
**RoHS Part Number 5-849853-1**

**Weight — 55 grams**



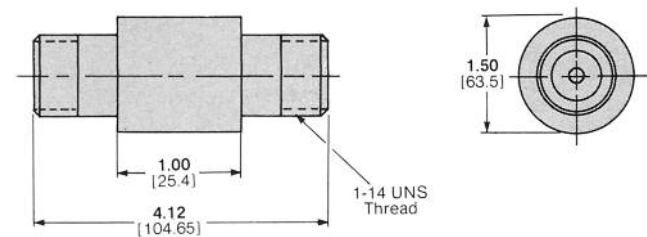
**Bolt-Mount, Feed-Through  
Part Number 840468-1**

**Weight — 137 grams**



**Splice  
Part Number 840467-1**

**Weight — 105 grams**

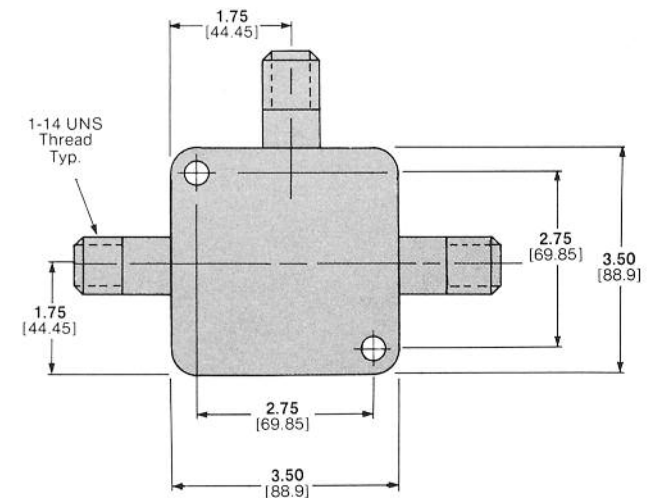


**T-Shape Connector**

**Part Number 850554-1**

**RoHS Part Number 5-850554-1**

**Weight — 315 grams**



Receptacles are available with gold plated contacts.



## Commercial Single Line Connectors

### Product Facts

- All parts made of UL Recognized, 94V-0 rated, plastic material
- Designed to exceed minimum creepage and clearance for specified voltages per applicable international specifications
- Available with or without leads
- Maximum flexibility of application through elimination of predetermined lead lengths
- Machine applied terminations provide for lowest applied cost



The AMP family of Commercial Single Line Connectors provides solutions to high-voltage connection problems at low applied cost. The connectors are excellent for commercial application in industrial environments. Ease of application makes them suitable for large-volume production applications. Crimp, snap-in contacts can be machine terminated or hand-tool crimped.

Housings are self-extinguishing plastic, UL rated 94V-0. 10 KVDC connectors accept 20–24 AWG [0.2–0.6 mm<sup>2</sup>] wires. 20 KVDC connectors have contacts which accept 22–20 AWG [0.3–0.6 mm<sup>2</sup>] and 18–16 AWG [0.8–1.4 mm<sup>2</sup>] conductors. Connectors rated for 30 KVDC offer three choices of contact sizes to cover the 16–8 AWG [1.25–8 mm<sup>2</sup>] range.

### Performance Specifications

#### All Series

**Altitude** — Sea level to 10,000 feet [3048 m]

**Temperature** — 59°F to +185°F [15°C to +85°C]

**Product Specification** — 108-36034

#### 10 KVDC Connectors

**Voltage** — 10 KVDC

**Current** — 5 amperes, continuous, rms

**Dielectric Withstanding Test** — 15 KVDC for 3 minutes at sea level, 77°F [25°C]

**Instruction Sheet** — Part Number 867443-1

#### 20 KVDC Connectors

**Voltage** — 8 KVAC, rms, 60 Hz; 20 KVDC

**Current** — 7.5 amperes, continuous, rms

**Dielectric Withstanding Test** — 12 KVAC, rms, 60 Hz for 3 minutes at sea level, 77°F [25°C]; 30 KVDC for 3 minutes at sea level, 77°F [25°C]

#### Instruction Sheets

Plugs — Part Number 862749-1

Receptacles — Part Number 862755-1

#### 30 KVDC Connectors

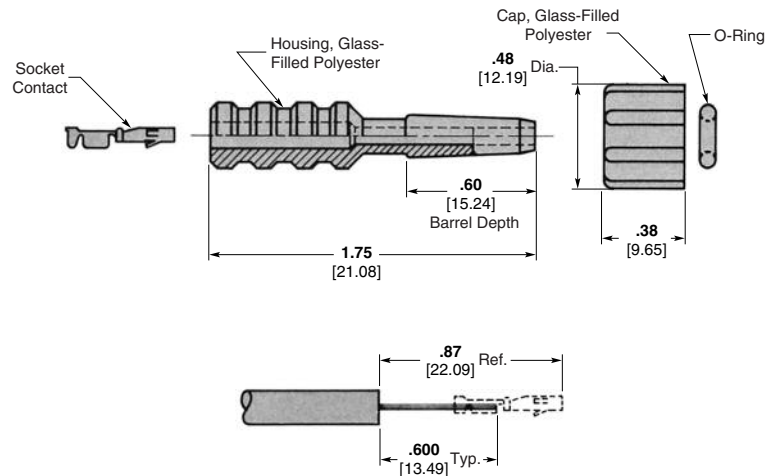
**Voltage** — 12 KVAC, rms, 60 Hz; 30 KVDC

**Current** — 25 amperes, continuous, rms

**Dielectric Withstanding Test** — 16 KVAC, rms, 60 Hz for 3 minutes at sea level, 77°F [25°C]; 40 KVDC for 3 minutes at sea level, 77°F [25°C]

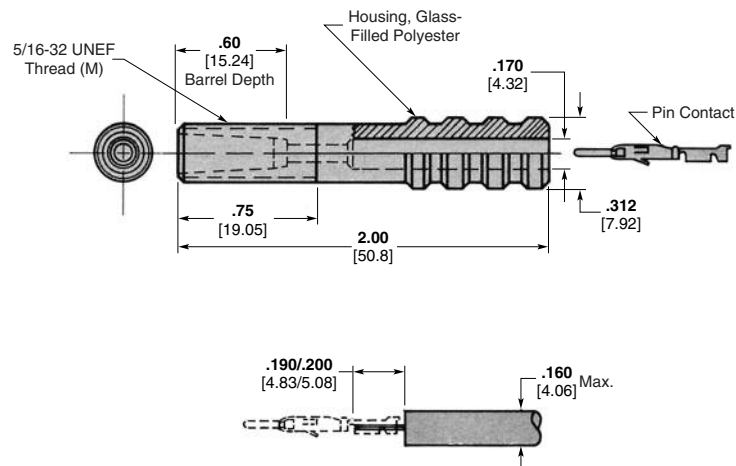
## Commercial Single Line 10 KVDC Connectors

### Plug Kits



**Recommended Wire Preparation**  
(Ref. Socket Contact Part Number 203802-6)

### Receptacle Kit



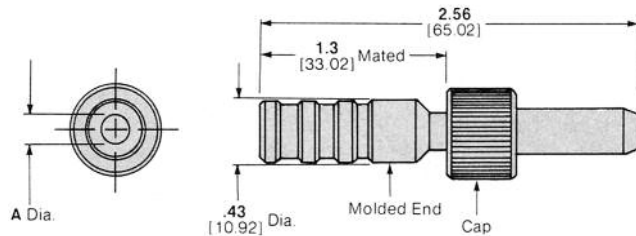
**Recommended Wire Preparation**  
(Ref. Pin Contact Part Number 203816-6)

| Voltage Rating | Description     | Wire Size |                 | Max. Ins. Dia. | Contact Type   | Kit Part Number | Tooling Part Number |                 |
|----------------|-----------------|-----------|-----------------|----------------|----------------|-----------------|---------------------|-----------------|
|                |                 | AWG       | mm <sup>2</sup> |                |                |                 | Hand Tool           | Extraction Tool |
| 10 KVDC        | Plug Kits*      | 20-24     | 0.2-0.6         | .105<br>2.66   | Type XI Socket | 867157-1        | 91544-1             | 91038-3         |
|                |                 |           |                 | .160<br>4.06   | Type XI Socket | 867157-2        | 91544-1             | 91038-3         |
|                | Receptacle Kit* | 20-24     | 0.2-0.6         | .160<br>4.06   | Type XI Pin    | 867156-1        | 91544-1             | 91038-3         |

\* Contact included with kit.

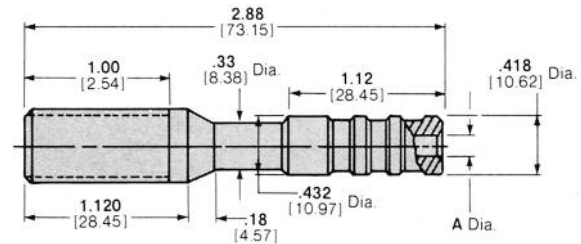
## Commercial Single Line 20 KVDC Connectors

### Plug Kits

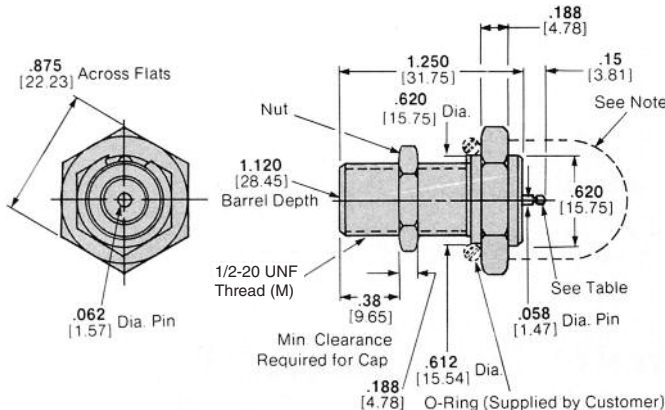


These plugs mate with receptacles shown on this page.

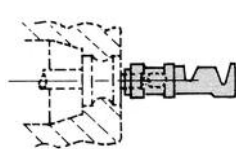
### Free-Hanging Receptacle Kits



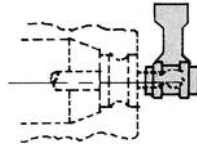
### Bulkhead-Mounted Receptacle Kits



**Note:** If bulkhead and mounting hardware are metal at ground potential, the back end of the receptacle must be protected against arc-over and breakdown.

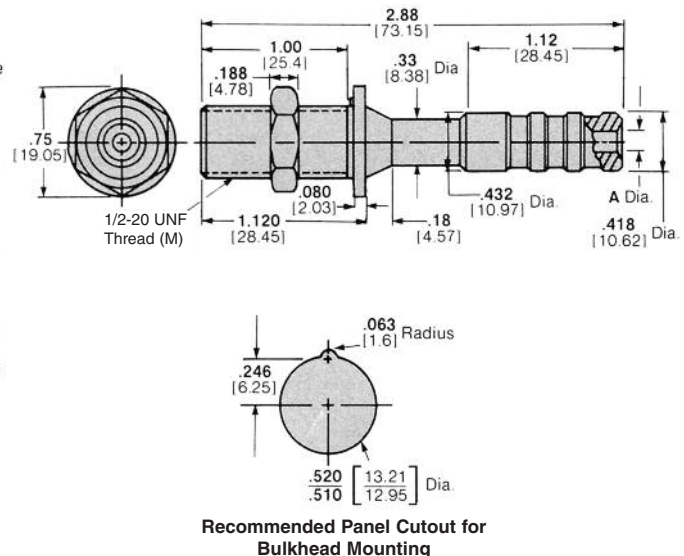


**Straight Socket**  
Part Number 60789-1



**Right-Angle Socket**  
Part Number 61276-2

### Bulkhead-Mounted Receptacle Kits With Rear Insulation Collar



**Recommended Panel Cutout for Bulkhead Mounting**

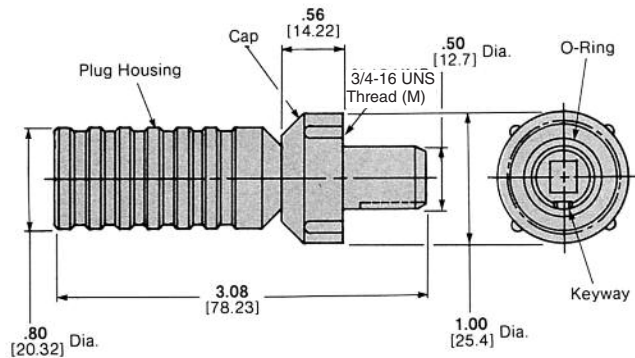
| Voltage Rating | Description                                                     | Wire Size |                 | Max. Ins. Dia.      | Contact Part Number     | Kit Part Number | RoHS Kit Part Number | Tooling Part Number |                 |
|----------------|-----------------------------------------------------------------|-----------|-----------------|---------------------|-------------------------|-----------------|----------------------|---------------------|-----------------|
|                |                                                                 | AWG       | mm <sup>2</sup> |                     |                         |                 |                      | Hand Tool           | Extraction Tool |
| 20 KVDC        | Plug Kits*                                                      | 22-20     | 0.3-0.6         | <b>.185</b><br>4.7  | 66399-1                 | 861610-1        | 5-861610-1           | 91523-1             | 861751-1        |
|                |                                                                 | 18-16     | 0.8-1.4         |                     | 66101-2                 | 861610-3        | 5-861610-3           | 91505-1             | 861751-1        |
|                |                                                                 | —         | —               |                     | none                    | 861610-5        | 5-861610-5           | —                   | 861751-1        |
|                |                                                                 | 22-20     | 0.3-0.6         | <b>.302</b><br>7.67 | 66399-1                 | 861610-4        | 5-861610-4           | 91523-1             | 861751-1        |
|                |                                                                 | 18-16     | 0.8-1.4         |                     | 66101-2                 | 861610-2        | 5-861610-2           | 91505-1             | 861751-1        |
|                |                                                                 | —         | —               |                     | none                    | 861610-6        | —                    | —                   | 861751-1        |
|                | Free-Hanging Receptacle Kits*                                   | 22-20     | 0.3-0.6         | <b>.185</b><br>4.7  | 66400-1                 | 861753-1        | 5-861753-1           | 91523-1             | 861751-1        |
|                |                                                                 | 18-16     | 0.8-1.4         |                     | 66099-2                 | 861753-3        | —                    | 91505-1             | 861751-1        |
|                |                                                                 | 22-20     | 0.3-0.6         |                     | 66400-1                 | 861753-4        | 5-861753-4           | 91523-1             | 861751-1        |
|                |                                                                 | 18-16     | 0.8-1.4         | 7.67                | 66099-2                 | 861753-2        | 5-861753-2           | 91505-1             | 861751-1        |
|                |                                                                 | —         | —               |                     | none                    | 861611-1        | —                    | —                   | —               |
|                |                                                                 | —         | —               |                     | none                    | 861611-2        | —                    | —                   | —               |
|                | Bulkhead-Mounted Receptacle Kits*                               | —         | —               | —                   | 60789-1 (Straight)**    | 861611-2        | —                    | 91507-1             | —               |
|                |                                                                 | —         | —               | —                   | 61276-2 (Right-Angle)** | 861611-3        | —                    | 91507-1             | —               |
|                |                                                                 | —         | —               | —                   | —                       | —               | —                    | —                   | —               |
|                | Bulkhead-Mounted Receptacle Kits* (with Rear Insulation Collar) | 22-20     | 0.3-0.6         | <b>.185</b><br>4.7  | 66400-1                 | 862197-1        | —                    | 91523-1             | 861751-1        |
|                |                                                                 | 18-16     | 0.8-1.4         |                     | 66099-2                 | 862197-3        | —                    | 91505-1             | 861751-1        |
|                |                                                                 | —         | —               |                     | none                    | 862197-5        | —                    | —                   | 861751-1        |
|                |                                                                 | 22-20     | 0.3-0.6         | <b>.302</b><br>7.67 | 66400-1                 | 862197-4        | —                    | 91523-1             | 861751-1        |
|                |                                                                 | 18-16     | 0.8-1.4         |                     | 66099-2                 | 862197-2        | —                    | 91505-1             | 861751-1        |
|                |                                                                 | —         | —               |                     | none                    | 862197-6        | —                    | —                   | 861751-1        |

\* Contact included with kit.

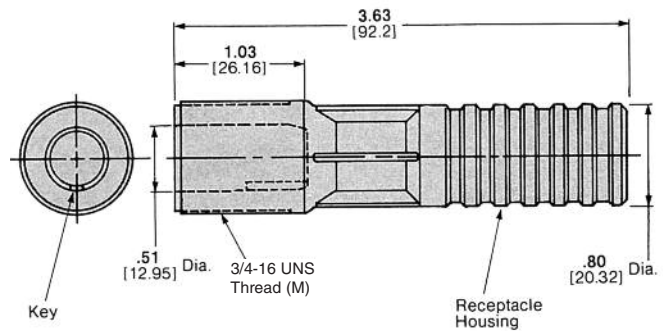
\*\* Crimp-on Contacts.

## Commercial Single Line 30 KVDC Connectors

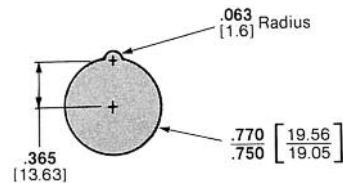
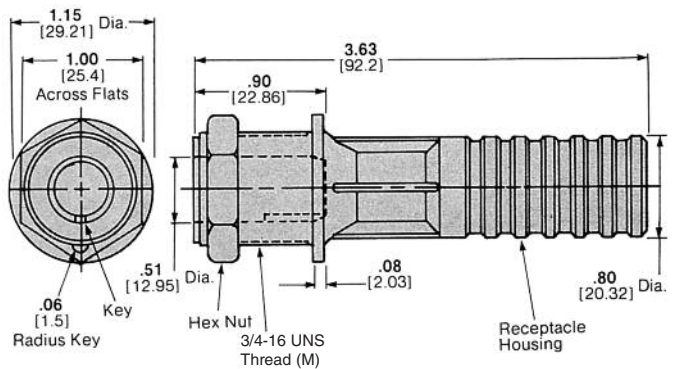
### Plug Kits



### Free-Hanging Receptacle Kit



### Bulkhead-Mounted Receptacle Kits With Rear Insulation Collar



Recommended Panel Cutout for Bulkhead Mounting

| Voltage Rating | Description                       | Wire Size |                 | Max. Ins. Dia. | Contact Part Number |           | Kit Part Number |            | Tooling Part Number |                 |
|----------------|-----------------------------------|-----------|-----------------|----------------|---------------------|-----------|-----------------|------------|---------------------|-----------------|
|                |                                   | AWG       | mm <sup>2</sup> |                | Non-RoHS            | RoHS      | Non-RoHS        | RoHS       | Die Set**           | Extraction Tool |
| 30 KVDC        | Plug Kits*                        | 10        | 5-6             | .50<br>12.7    | 66741-8 (Type XII)  | 2-66741-1 | 863103-1        | 5-863103-1 | 90140-1             | 863558-1        |
|                |                                   | 14-12     | 2-3             |                | 66740-8 (Type XII)  | 2-66740-1 | 863103-2        | 5-863103-2 | 90145-1             | 863558-1        |
|                |                                   | 16        | 1.4             |                | 66740-8 (Type XII)  | 2-66740-1 | 863103-3        | 5-863103-3 | 90145-2             | 863558-1        |
|                | Free Hanging Receptacle Kits*     | 10        | 5-6             | .50<br>12.7    | 66259-1 (Type XII)  | 66259-5   | 863104-1        | 5-863104-1 | 90140-1             | 863558-1        |
|                |                                   | 16        | 1.4             |                | 66261-1 (Type XII)  | —         | 863104-3        | —          | 90145-2             | 863558-1        |
|                | Bulkhead-Mounted Receptacle Kits* | 10        | 5-6             | .50<br>12.7    | 66259-1 (Type XII)  | 66259-5   | 863350-1        | 5-863350-1 | 90140-1             | 863558-1        |
|                |                                   | 14-12     | 2-3             |                | 66261-1 (Type XII)  | 66261-5   | 863350-2        | 5-863350-2 | 90145-1             | 863558-1        |
|                |                                   | 16        | 1.4             |                | 66261-1 (Type XII)  | 66261-5   | 863350-3        | 5-863350-3 | 90145-2             | 863558-1        |

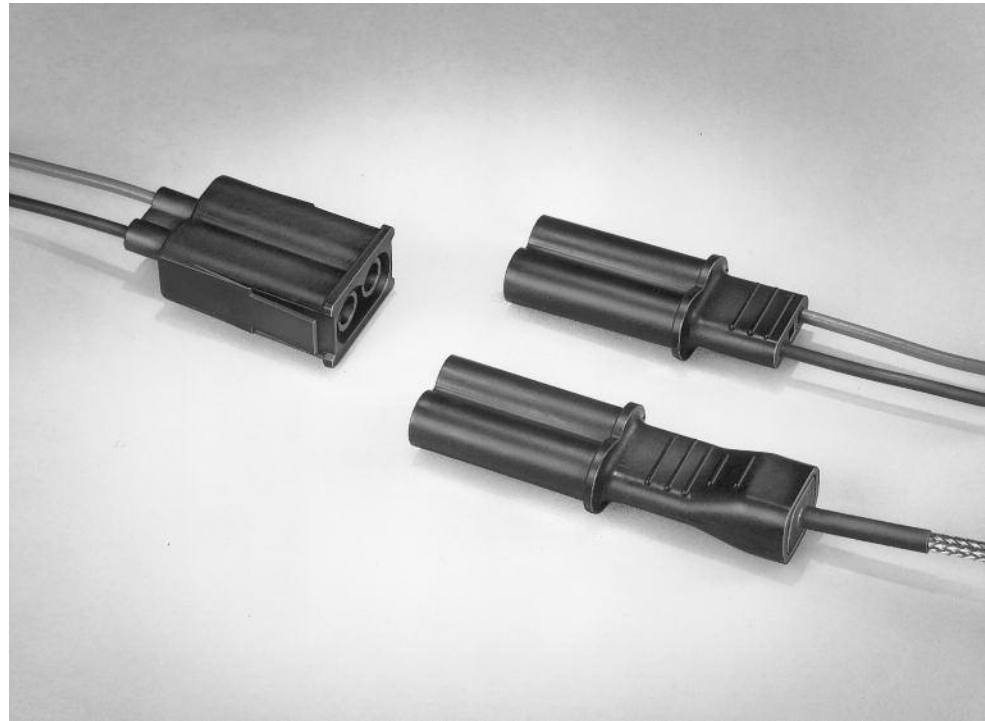
\* Contact included with kit.

\*\* Die Set for Hand Tool Part Number 69710-1 or 626 Pneumatic Tool System.

## Two-Position Connectors, 10 KVDC

### Product Facts

- UL recognized 94V-0 rated glass-filled polyester housing
- Standard housing color is black — other colors available
- Operates up to 10 KVDC
- Will withstand a 15 KVDC hipot 3-minute test
- Safe handling of high voltage — deeply recessed contacts and staggered pins
- Lightweight, compact design
- Preassembled connectors furnished with attached leads of virtually any color/length combination
- Connector kits for shielded and unshielded applications include plug, receptacle and contacts
- Crimp, snap-in contacts; pin diameter .062 [1.57]
- Snap-in panel mount receptacle housings — no mounting hardware required
- Temperature range: 5°F to 185°F [-15°C to +85°C]



The AMP Rectangular Two Position LGH connector is designed for high voltage applications where quick bulkhead mounting is desired; the receptacle half has molded wings which allow it to be snapped into a mounting hole. Operating voltage is 10 KVDC; however, increased voltage ratings and ac operating capabilities are possible for specific applications.

These connectors incorporate many outstanding design features for their complete electrical, mechanical and environmental integrity. Such features include: housings made of UL recognized

94V-0 glass-filled polyester; contacts with a 10-ampere rating which will accommodate wire sizes of No. 22–20 AWG [0.3–0.6 mm<sup>2</sup>] and No. 18–16 AWG [0.8–1.4 mm<sup>2</sup>]; polarized plugs and receptacles for proper connector mating; flanged receptacles to facilitate panel and bulkhead mounting; fully protected pins in the plug half and recessed sockets in the receptacle half for safe high-voltage handling; and quick connect/disconnect capability with ramp-type detent mating. Also for maximum handling safety, the pins in the plug housing are stagger-mounted so that the ground or return line

makes before and breaks after the hot line mates and unmates.

The connectors are supplied preassembled (with attached leads) and in kits for shielded or unshielded applications. Each conveniently packaged kit includes a plug, receptacle and pins and sockets that can be hand-tool or machine crimped or soldered to wire. Pre-assembled connectors can be furnished with leads of virtually any length and color. All are fully tested so that they are of the highest quality and meet all performance specifications.



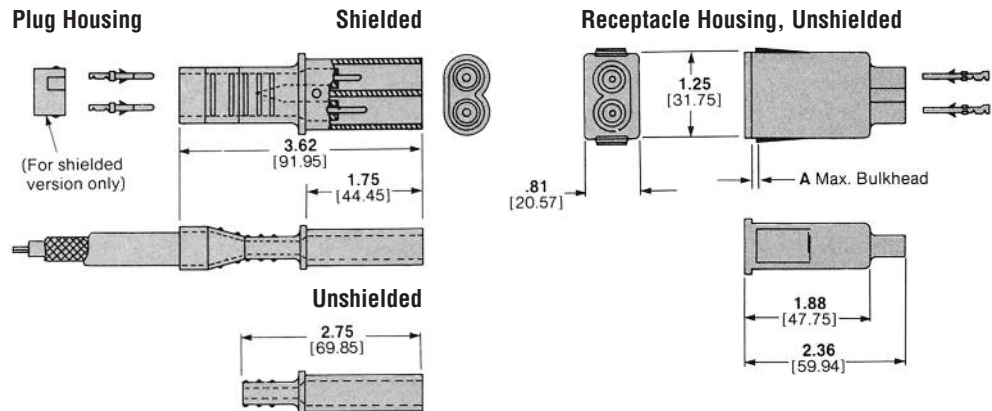
## Two-Position Connectors, 10 KVDC (Continued)

### Connector Kits Shielded and Unshielded

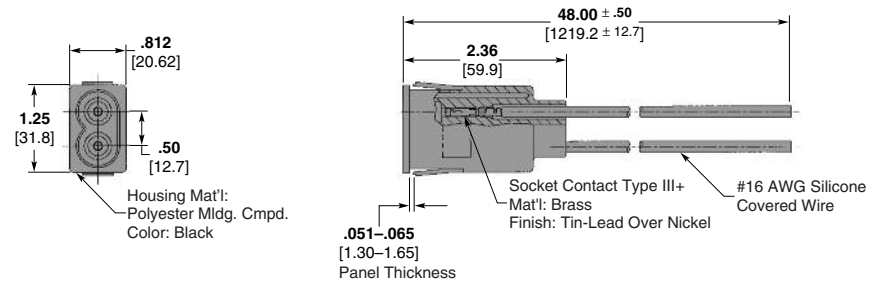
#### Material:

**Housings and End Plate** — Glass filled polyester

**Contacts** — Type III+, tin-plated brass

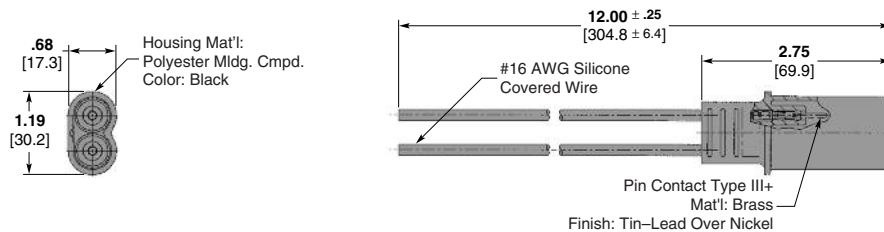


### Receptacle Pre-Wired



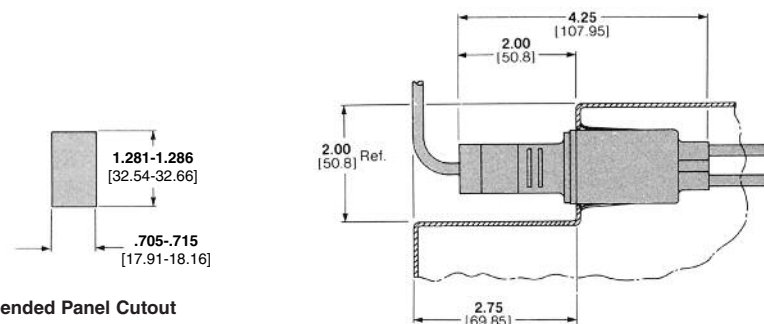
Part Number 443903-1 White Wire  
Part Number 443903-2 UL 3239 Wire, Black  
RoHS Part Number 5-443903-2 UL 3239 Wire, Black

### Plug Pre-Wired



Part Number 443904-1 White Wire  
Part Number 443904-2 UL 3239 Wire, Black  
RoHS Part Number 5-443904-2 UL 3239 Wire, Black

### Mated Dimensions



### Recommended Panel Cutout

## Two-Position Connectors, 10 KVDC (Continued)

| Connector Type | Bulkhead Thickness | Wire Range (AWG)   | Insulation Diameter (Max.) | Plug Part Numbers       |          |                              | Receptacle Part Numbers |          |                                 |
|----------------|--------------------|--------------------|----------------------------|-------------------------|----------|------------------------------|-------------------------|----------|---------------------------------|
|                |                    |                    |                            | Assembly                | Housing  | Pin (Type III+) (2 required) | Assembly                | Housing  | Socket (Type III+) (2 required) |
| Shielded       | .030<br>.762       | 18-16<br>[0.8-1.4] | .125 [3.18]                | 862528-1<br>5-862528-1* | 862498-1 | 66099-2<br>1-66099-5*        | 1-862435-2              | 862382-2 | 66101-2                         |
|                |                    |                    | .200 [5.08]                | 862528-1<br>5-862528-1* | 862498-1 | 66099-2<br>1-66099-5*        | 1-862435-0              | 862382-5 | 66101-2                         |
|                |                    | 22-20<br>[0.3-0.6] | .125 [3.18]                | 862528-2                | 862498-1 | 66400-1                      | 1-862435-3              | 862382-2 | 66399-1                         |
|                |                    |                    | .200 [5.08]                | 862528-2                | 862498-1 | 66400-1                      | 1-862435-1              | 862382-5 | 66399-1                         |
|                |                    | 18-16<br>[0.8-1.4] | .125 [3.18]                | 862528-1<br>5-862528-1* | 862498-1 | 66099-2<br>1-66099-5*        | 862435-1                | 862382-1 | 66101-2                         |
|                |                    |                    | .200 [5.08]                | 862528-1<br>5-862528-1* | 862498-1 | 66099-2<br>1-66099-5*        | 862435-3<br>1-862435-5* | 862382-4 | 66101-2<br>1-66101-9*           |
|                | .062<br>1.57       | 22-20<br>[0.3-0.6] | .125 [3.18]                | 862528-2                | 862498-1 | 66400-1                      | 862435-2                | 862382-1 | 66399-1                         |
|                |                    |                    | .200 [5.08]                | 862528-2                | 862498-1 | 66400-1                      | 862435-4                | 862382-4 | 66399-1                         |
|                |                    | 18-16<br>[0.8-1.4] | .125 [3.18]                | 862528-1<br>5-862528-1* | 862498-1 | 66099-2<br>1-66099-5*        | 862435-8                | 862382-3 | 66101-2                         |
|                |                    |                    | .200 [5.08]                | 862528-1<br>5-862528-1* | 862498-1 | 66099-2<br>1-66099-5*        | 862435-6                | 862382-6 | 66101-2                         |
|                |                    | 22-20<br>[0.3-0.6] | .125 [3.18]                | 862528-2                | 862498-1 | 66400-1                      | 862435-9                | 862382-3 | 66399-1                         |
|                |                    |                    | .200 [5.08]                | 862528-2                | 862498-1 | 66400-1                      | 862435-7                | 862382-6 | 66399-1                         |
| Unshielded     | .030<br>.762       | 18-16<br>[0.8-1.4] | .125 [3.18]                | 862434-1                | 862383-1 | 66099-2                      | 1-862435-2              | 862382-2 | 66101-2                         |
|                |                    |                    | .200 [5.08]                | 862434-3<br>862434-7*   | 862383-2 | 66099-2<br>1-66099-5*        | 1-862435-0              | 862382-5 | 66101-2                         |
|                |                    | 22-20<br>[0.3-0.6] | .125 [3.18]                | 862434-2<br>862434-6*   | 862383-1 | 66400-1                      | 1-862435-3              | 862382-2 | 66399-1                         |
|                |                    |                    | .200 [5.08]                | 862434-4                | 862383-2 | 66400-1                      | 1-862435-1              | 862382-5 | 66399-1                         |
|                |                    | 18-16<br>[0.8-1.4] | .125 [3.18]                | 862434-1                | 862383-1 | 66099-2                      | 862435-1                | 862382-1 | 66101-2                         |
|                |                    |                    | .200 [5.08]                | 862434-3<br>862434-7*   | 862383-2 | 66099-2<br>1-66099-5*        | 862435-3<br>1-862435-5* | 862382-4 | 66101-2<br>1-66101-9*           |
|                | .062<br>1.57       | 22-20<br>[0.3-0.6] | .125 [3.18]                | 862434-2<br>862434-6*   | 862383-1 | 66400-1                      | 862435-2                | 862382-1 | 66399-1                         |
|                |                    |                    | .200 [5.08]                | 862434-4                | 862383-2 | 66400-1                      | 862435-4                | 862382-4 | 66399-1                         |
|                |                    | 18-16<br>[0.8-1.4] | .125 [3.18]                | 862434-1                | 862383-1 | 66099-2                      | 862435-8                | 862382-3 | 66101-2                         |
|                |                    |                    | .200 [5.08]                | 862434-3<br>862434-7*   | 862383-2 | 66099-2<br>1-66099-5*        | 862435-6                | 862382-6 | 66101-2                         |
|                |                    | 22-20<br>[0.3-0.6] | .125 [3.18]                | 862434-2<br>862434-6*   | 862383-1 | 66400-1                      | 862435-9                | 862382-3 | 66399-1                         |
|                |                    |                    | .200 [5.08]                | 862434-4                | 862383-2 | 66400-1                      | 862435-7                | 862382-6 | 66399-1                         |

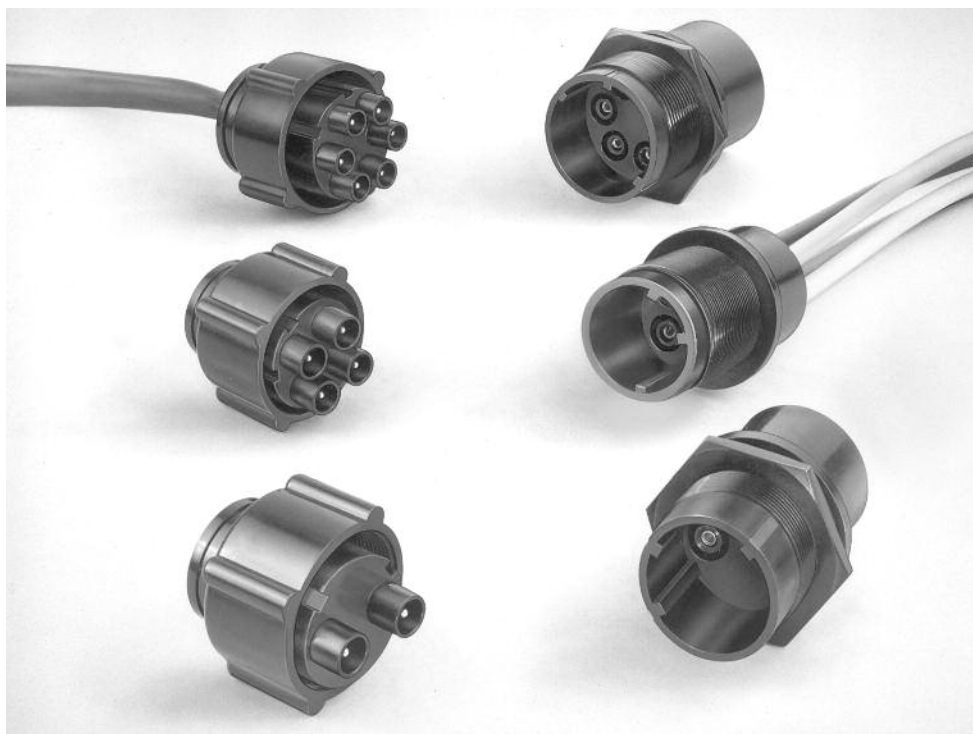
**Notes:** 1. Hand Tool Part Number 90067-2 and Extraction Tool Part Number 861751-1 are recommended for all contacts; contacts can be machine-applied.  
2. Fully assembled connectors terminated on specified length leads are available. Consult TE Connectivity.  
3. Receptacle Housing Dim. (Typ.)—1.25 [31.75] L x 2.36 [59.94] W x .81 [20.57] H.  
\*RoHS compliant Part Number.



## Multi-Pin Circular Commercial Connectors, 27 KVDC

### Product Facts

- Housing made of UL recognized, 94V-0 rated, self-extinguishing polyester materials
- Standard housing color is black — other colors available
- Operating and storage temperature range: -55°C to +125°C [-67°F to +257°F]
- Operates up to 27 KVDC
- Will withstand a 35 KVDC hipot test
- Safe handling of high-voltage — no exposed contacts
- Lightweight, compact design
- Threaded coupling provides positive, quick connect/disconnect
- Resilient silicone rubber “O” rings provide positive sealing for mated connectors
- Can be panel or bulkhead mounted or used in free-hanging applications
- Size 16 gold-plated contacts with 13 ampere rating accommodate wide range of wire sizes — 24-20 AWG and 18-16-14 AWG — may be hand tool or machine crimped or soldered
- Two shell sizes available: smaller size offers 2-, 3- and 4-contact configurations; larger diameter shell contains 6 or 7 contacts



AMP Multi-Pin Circular Connectors provide reliable, safe, low cost means of connecting high voltages in critical applications and environments. They are lightweight, extremely compact and can be operated within a temperature range of -67°F to 257°F [-55°C to +125°C] and to 27 KVDC.

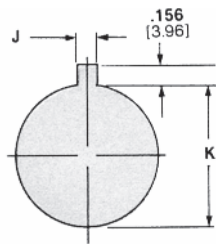
Circular multi-pin high voltage connectors are available in two basic shell sizes offering 2-, 3-, 4-, 6- and 7-

contact configurations. All are equipped with threaded couplings for positive, quick connect/disconnect capability and can be panel or bulkhead mounted or used as free-hanging connectors. They incorporate many outstanding design features to assure their complete electrical, mechanical and environmental integrity.

To satisfy customer requirements, the connectors are supplied pre-assembled

(with attached leads) or in kit form. Each kit includes a plug, receptacle and an appropriate number of pins and sockets that can be hand tool or machine crimped or soldered to wire. Pre-assembled connectors can be furnished with leads of virtually any length and color. All are fully potted and tested so that they are of high quality and meet performance specifications.

## Multi-Pin Circular Commercial Connectors, 27 KVDC (Continued)



**Recommended Panel Cutout for Bulkhead Mounting**

Mounting Nut — maximum torque is 20 in.-lb. [.225 Nm].

### Material

**Housing, Cap Nut and Strain Relief** — Glass-reinforced polyester  
**O-Ring** — Silicone rubber

**Contacts** — Type II, gold plated per MIL-G-45204

**Instruction Sheet** — IS 408-9169

### Hand Tools

**24-20 AWG [0.2-0.6 mm<sup>2</sup>]** —  
 Part Number 58305-1

**18-16 AWG [0.8-1.4 mm<sup>2</sup>]** —  
 Part Number 45098

**14 AWG [2 mm<sup>2</sup>]** —  
 Part Number 45098

### Extraction Tool

Part Number 861751-1

### Component Parts

**Pin (loose piece)** —  
 24-20 AWG [0.2-0.6 mm<sup>2</sup>]  
 Part Number 200679-1  
 18-16 AWG [0.8-1.4 mm<sup>2</sup>]  
 Part Number 200681-1  
 14 AWG [2 mm<sup>2</sup>]  
 Part Number 201645-1

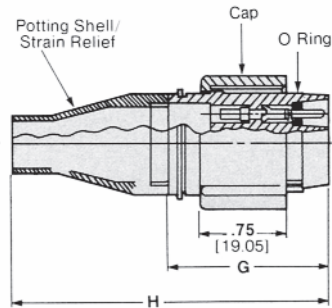
**Socket (loose piece)** —  
 24-20 AWG [0.2-0.6 mm<sup>2</sup>]  
 Part Number 201328-1  
 18-16 AWG [0.8-1.4 mm<sup>2</sup>]  
 Part Number 200333-1  
 14 AWG [2 mm<sup>2</sup>]  
 Part Number 201568-1  
 O-ring (package of 50)  
 Part Number 862798-1

**Potting shell/strain relief (2, 3 and 4 contact plugs)** —  
 Part Number 862544-1

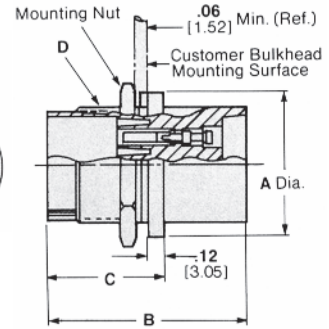
**Potting shell/strain relief (6 and 7 contact plugs)** —  
 Part Number 862695-1

**Potting shell (short, for 6 and 7 contact plugs, 1.125 [28.58] long)** —  
 Part Number 863995-1

### Plug



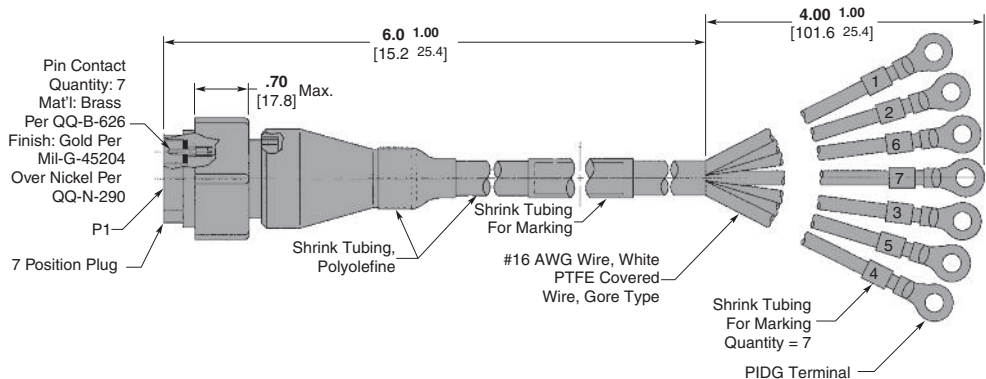
### Receptacle



### Dimensions

| Contacts | A             | B             | C             | D                     | E            | F             | G             | H             | J            | K                          |
|----------|---------------|---------------|---------------|-----------------------|--------------|---------------|---------------|---------------|--------------|----------------------------|
| 2, 3, 4  | 1.25<br>31.75 | 1.75<br>44.45 | 1.00<br>25.4  | 1 (28 UN)<br>25.4     | .125<br>3.18 | 1.31<br>33.27 | 1.38<br>35.05 | 2.00<br>50.8  | 1.56<br>3.96 | 1.015-1.031<br>25.78-26.19 |
| 6, 7     | 1.50<br>38.1  | 2.00<br>50.8  | 1.06<br>26.92 | 1.25 (20 UN)<br>31.75 | .190<br>4.85 | 1.56<br>39.62 | 1.48<br>37.59 | 3.30<br>83.82 | .203<br>5.16 | 1.260-1.270<br>32.00-32.26 |

### Cable Assembly, 7 Pos. Plug



Part Number 447288-1

**Note:** 4-Pos. Receptacle Housing Dim. (Typ.)—1.75 [44.45] L x 1.25 [31.75] Dia.

| Number of Contacts | Wire Range |                 | Receptacle Kit (with sockets) | Plug Kit (with pins) | Plug (with Strain Relief) and Receptacle Kit |
|--------------------|------------|-----------------|-------------------------------|----------------------|----------------------------------------------|
|                    | AWG        | mm <sup>2</sup> |                               |                      |                                              |
| 2                  | 24-20      | 0.2-0.6         | 859529-4                      | 860261-4             | 863015-1                                     |
|                    | 18-16      | 0.8-1.4         | 859529-5                      | 860261-5             | 863015-2                                     |
|                    | 14*        | 2               | 859529-6                      | 860261-6             | 863015-3                                     |
| 3                  | 24-20      | 0.2-0.6         | 859528-4                      | 860263-4             | 863016-1                                     |
|                    | 18-16      | 0.8-1.4         | 859528-5                      | 860263-5             | 863016-2                                     |
|                    | 14*        | 2               | 859528-6                      | 860263-6             | 863016-3                                     |
| 4                  | 24-20      | 0.2-0.6         | 859526-4                      | 860265-4             | 863017-1                                     |
|                    | 18-16      | 0.8-1.4         | 859526-5                      | 860265-5             | 863017-2                                     |
|                    | 14*        | 2               | 859526-6                      | 860265-6             | 863017-3                                     |
| 6                  | 24-20      | 0.2-0.6         | 859527-4                      | 860267-4             | 863018-1                                     |
|                    | 18-16      | 0.8-1.4         | 859527-5                      | 860267-5             | 863018-2                                     |
|                    | 14*        | 2               | 859527-6                      | 860267-6             | 863018-3                                     |
| 7                  | 24-20      | 0.2-0.6         | 861647-7                      | 861648-7             | 863019-1                                     |
|                    | 18-16      | 0.8-1.4         | 861647-8                      | 861648-8             | 863019-2                                     |
|                    | 14*        | 2               | 861647-9                      | 861648-9             | 863019-3                                     |

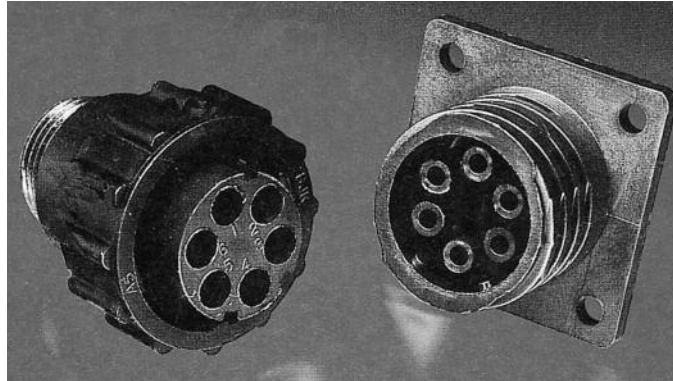
**Note:** Contacts are packaged separately within the connector kit for shipment. Connectors are available with leads attached.

\*Use Type II, Size 16 contacts, with a wire barrel sized to accept 14 AWG conductor.

## Multi-Line High Voltage Connectors

### Product Facts

- User configurable high voltage connector
- Cost effective, 6-position
- Operating voltage: 5,000 volts DC
- Operating current: 3 Amps max.
- Quick-turn threaded coupling
- Accepts Type XI size 20 contacts



A cost-effective approach in a plastic circular connector with crimp snap-in contacts. Wherever high voltage is required, this user friendly configuration can operate up to 5,000 volts DC.

This 6 position connector can be selectively loaded for various high voltage applications such as:

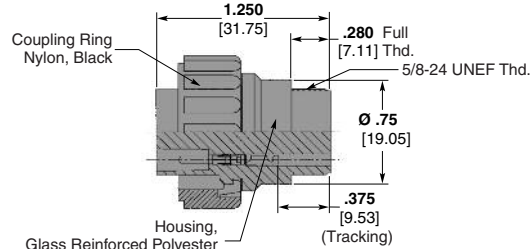
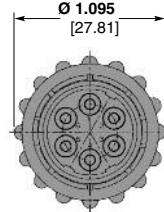
- Materials Handling Equipment
- Medical Equipment
- Computer and Peripheral Equipment
- HV Power Supplies
- Automated Manufacturing Equipment
- Test Equipment

This LGH connector offers an economical solution for your high voltage requirements. This quick-turn coupling connector will also accommodate standard TE Connectivity Circular Plastic Connector backshell accessories.

### Material and Mechanical Characteristics

Housings — UL 94V-0

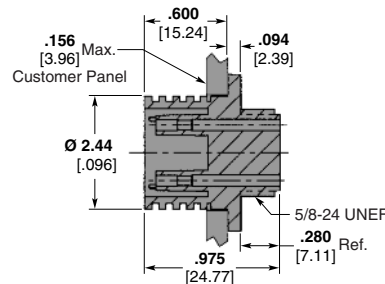
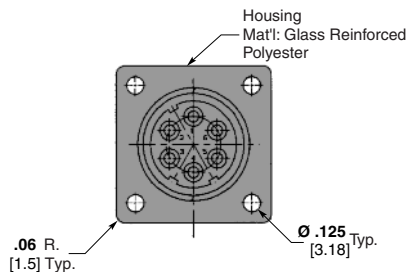
Operating Temperature —  
-5°F to 185°F [-15°C to 85°C]



Part Number 867534-1

Accepts Pin Contact

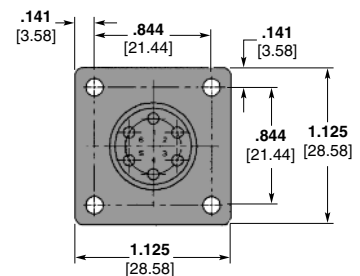
Part Number 203816-6 for 20-24 AWG wire  
(Not Supplied with Plug Kit)



Part Number 867535-1

Accepts Socket Contact

Part Number 203802-6 for 20-24 AWG wire  
(Not Supplied with Receptacle)



## 5-Pin, Metal-Shell Circular Connectors, Military-Type

### Product Facts

- Field installable and repairable
- Environmentally sealed
- Bayonet locking cap
- Single dot polarization helps prevent mismatching
- Accepts any MIL-C-38999 backshell arrangement
- Three insert polarizations available
- Rated for 10 KVDC and 10 amps
- Withstands 15 KVDC hipot test
- Safe handling of high voltage — no exposed contacts
- Lightweight, compact design
- Size 16 gold plated contacts with 10 ampere rating accommodates wire range 24-16 AWG [0.2-1.4 mm<sup>2</sup>] and may be hand tool crimped, machine crimped, or soldered
- Can be panel or bulkhead mounted or used in free-hanging applications
- Preassembled connectors furnished with attached leads of virtually any color/length combination
- Removable inserts interchangeable between shell halves
- Positions numbered for easy circuit identification
- Backshell available for bundle shielding
- Operating and storage temperature range: -67°F to +257°F [-55°C to +125°C]

### Material and Finish

**Shells** — Aluminum chromate coating over nickel plating

**Inserts** — Glass reinforced polyester

**Bayonet Coupling Rings** — Glass reinforced polyester

**O Ring Seals** — Silicone rubber

**Pin and Socket Contacts** — Brass; .00050 [0.013] min. gold plated per MIL-G-45204

**Backshell** — Brass; plated chromate over nickel



AMP 5-Pin Metal Shell Connectors are designed for high voltage circuits, especially in critical applications and harsh environments, such as shipboard applications. The connector is exceptionally lightweight and compact and can be used within a temperature range of -67°F to +257°F [-55°C to +125°C].

The connector incorporates many features for electrical, mechanical and environ-

mental integrity. Such features include: flame retardant, glass-filled thermoplastic polyester inserts; two sets of gold plated size 16 contacts which have a 10 ampere rating and will accommodate a wire size range of 24-16 AWG [0.2-1.4mm<sup>2</sup>]; three insert polarizations; full protection of pins and sockets to permit safer high voltage handling; and resilient seals inside each pin shroud which provide positive sealing for the mated connector.

TE Connectivity supplies the connector either pre-assembled or in kit form. Each conveniently packaged kit includes an appropriate number of pins and sockets that can be hand tool crimped, machine crimped or soldered to wire. Pre-assembled connectors can be furnished with leads of virtually any length. All are tested for highest quality and meets applicable performance specifications.

### Kits

| Description                                   | Part Numbers                                             |            |                                                         |            |
|-----------------------------------------------|----------------------------------------------------------|------------|---------------------------------------------------------|------------|
|                                               | Kit with Contacts for 16 AWG [1.25-1.4 mm <sup>2</sup> ] |            | Kit with Contacts for 20 AWG [0.5-0.6 mm <sup>2</sup> ] |            |
|                                               | Non-RoHS                                                 | RoHS       | Non-RoHS                                                | RoHS       |
| Receptacle, Flange-Mount with Socket Contacts | 863754-1                                                 | 5-863754-1 | 864062-1                                                | 5-864062-1 |
| Plug with Pin Contacts                        | 863753-1                                                 | —          | 864063-1                                                | 5-864063-1 |
| Receptacle, Flange-Mount with Pin Contacts    | 863755-1                                                 | 5-863755-1 | 864064-1                                                | —          |
| Plug with Socket Contacts                     | 863752-1                                                 | 5-863752-1 | 864065-1                                                | —          |

**Note:** Backshell is not included with any kits; any MIL-C-38999 backshell may be used or AMP Part Number 864639-2.

### Tooling

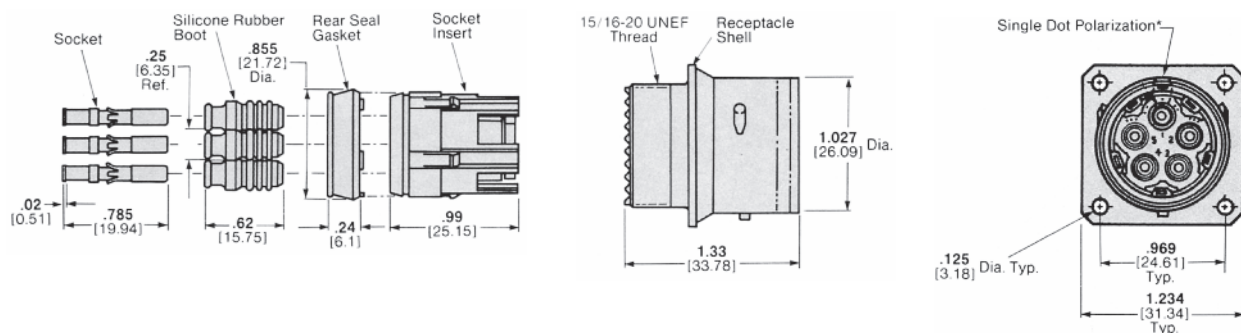
| Tool Application              | Manufacturer's Name | Part Numbers |
|-------------------------------|---------------------|--------------|
| Insert Removal                | AMP                 | 864437-1     |
| Contact Removal               | AMP                 | 305183       |
| Crimp Tool Contact Positioner | Daniels             | TP-581       |
| Crimp Tool                    | Daniels             | M22520/1-01  |
| Instruction Sheet             | AMP                 | 864886       |

For more information on 5-Pin Metal Shell Circular Connector to meet your specific requirements, consult TE.

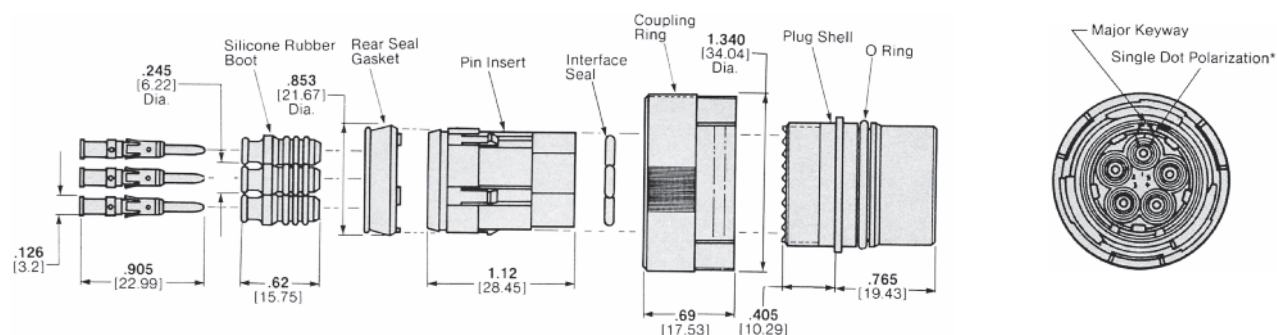


### 5-Pin, Metal-Shell Circular Connectors, Military-Type (Continued)

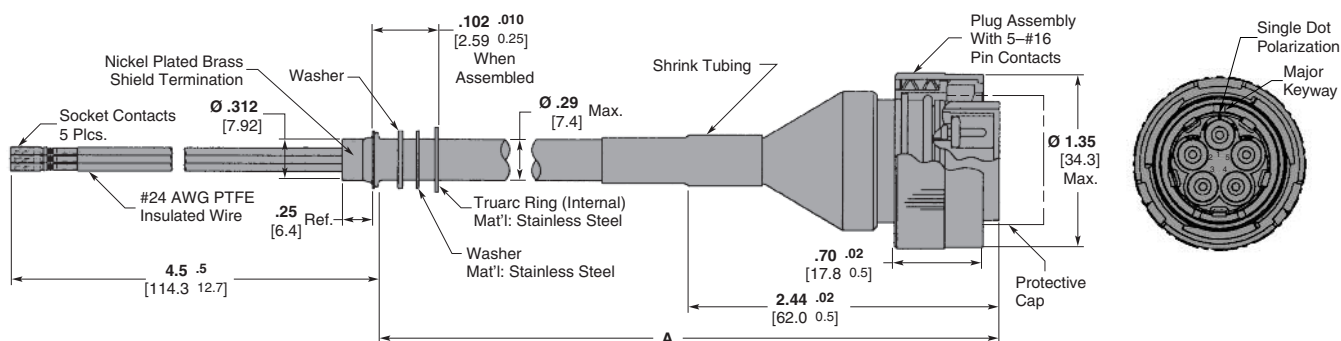
## Receptacle



## Plug



## Shielded Cable Assembly



| Dim.<br>A                                        | Part<br>Number |
|--------------------------------------------------|----------------|
| 12.60 ± .25<br>320.0 ± 6.4                       | 864019-1       |
| 50.00 ± 3.00<br>1270.0 ± 0.00<br>+ 76.2<br>- 0.0 | 864019-2       |
| 17.50 ± .50<br>444.5 ± 12.7                      | 864019-3       |

| Contact No. | Wire Color |
|-------------|------------|
| 1           | Yellow     |
| 2           | Black      |
| 3           | Yellow     |
| 4           | Brown      |
| 5           | Red        |

## 7-Pin, Metal-Shell Circular Connectors, Military-Type

### Product Facts

- 15 KVDC operating voltage, up to 70,000 feet [21,336 m]
- Current carrying capacity — 7.5 A continuous per line for 20 AWG wire
- Metal shell available for complete shielding and rugged operation
- Molded-in Size 20 contacts are fully shrouded
- Molded glass epoxy and silicone rubber interface for positive sealing
- Polarized plug and receptacle housings help prevent mismatching
- Designed to meet applicable specifications
- Hermetically sealed receptacles available
- Operating temperature range from -67°F to +257°F [-55°C to +125°C]
- Moisture resistant
- Corona resistant



Instruction Sheet —  
408-10113

AMP 7-Pin Miniature Circular Connectors, when properly assembled and mated, safely carry 15 KVDC (pin-to-pin and pin-to-ground) through a full range of military environmental requirements. The connectors can carry a continuous current of 7.5 amperes per line when terminated to 20 AWG wire. The receptacle

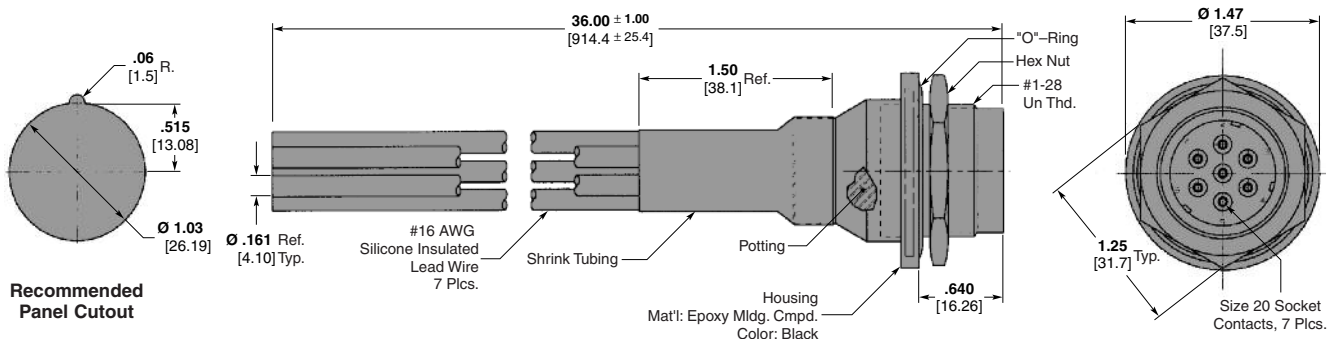
is hermetic and can be mounted with an O-ring flange or solder flange for various industrial and military applications.

This connector family features size 20 gold-plated pins and sockets which are fully shrouded for safe handling, polarized housings to assure proper mating, and

a molded glass epoxy and silicone rubber interface for positive sealing.

AMP 7-Pin Miniature Circular Connectors are available in a wide variety of configurations, including a metal shell version for RFI shielding and rugged handling.

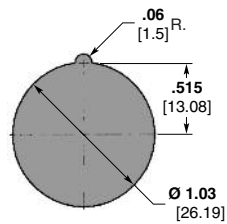
### Receptacle Lead Assembly



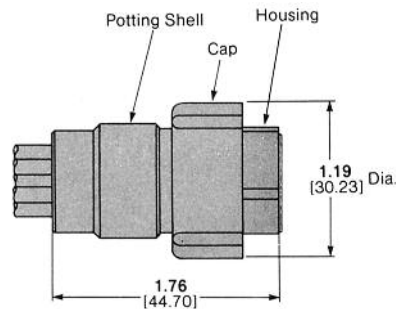
Part Number 867862-1  
RoHS Part Number 5-867862-1

## 7-Pin, Metal-Shell Circular Connectors, Military-Type (Continued)

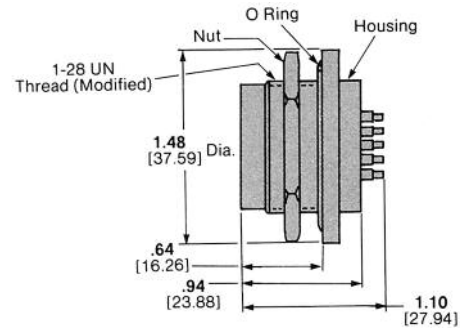
### Plastic Shell



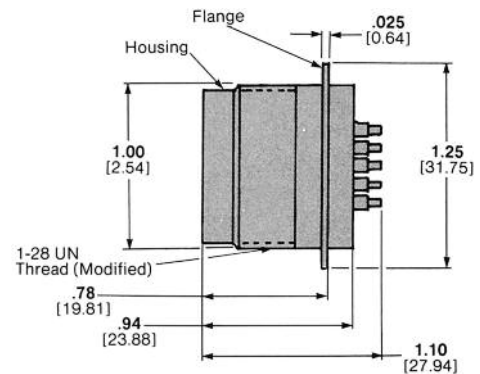
Panel Cutout for Receptacles



**Potted Plug Kit**  
Part Number 865594-1

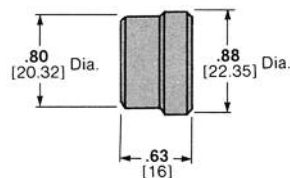


**Potted Receptacle**  
Part Number 861999-1 (Non-hermetic)  
Part Number 862794-1 (Hermetic Seal)

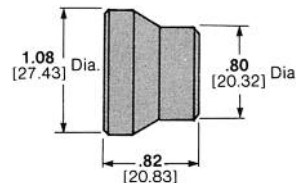


**Receptacle for Hermetic Seal,  
Solder-Flange-Mount**  
Part Number 862005-1

### Potting Shells

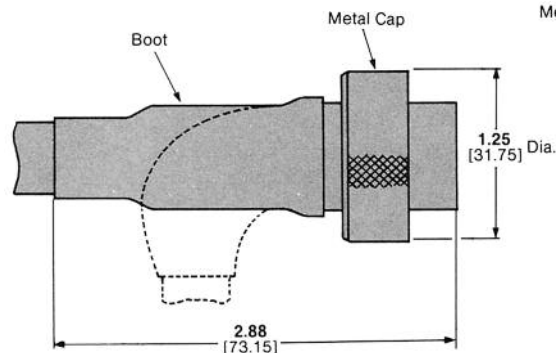


**Plug Potting Shell**  
Part Number 862544-1

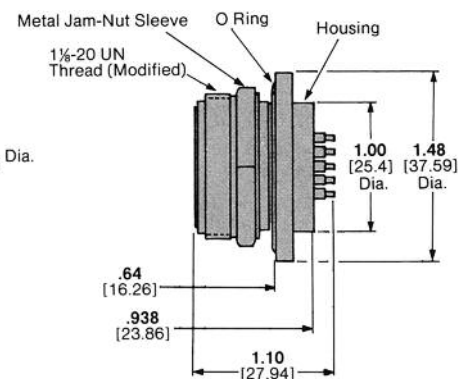


**Receptacle Potting Shell**  
Part Number 862256-1

### Metal Shell



**Plug Kit**  
Part Number 865656-1 (Straight Boot)  
Part Number 865656-2 (Right-Angle Boot)  
Part Number 865656-3 (No Boot)



**Receptacle**  
Part Number 862004-1 (Non-hermetic)  
Part Number 866182-1 (Hermetic Seal)



## 6-Pin, Subminiature Rectangular Connectors

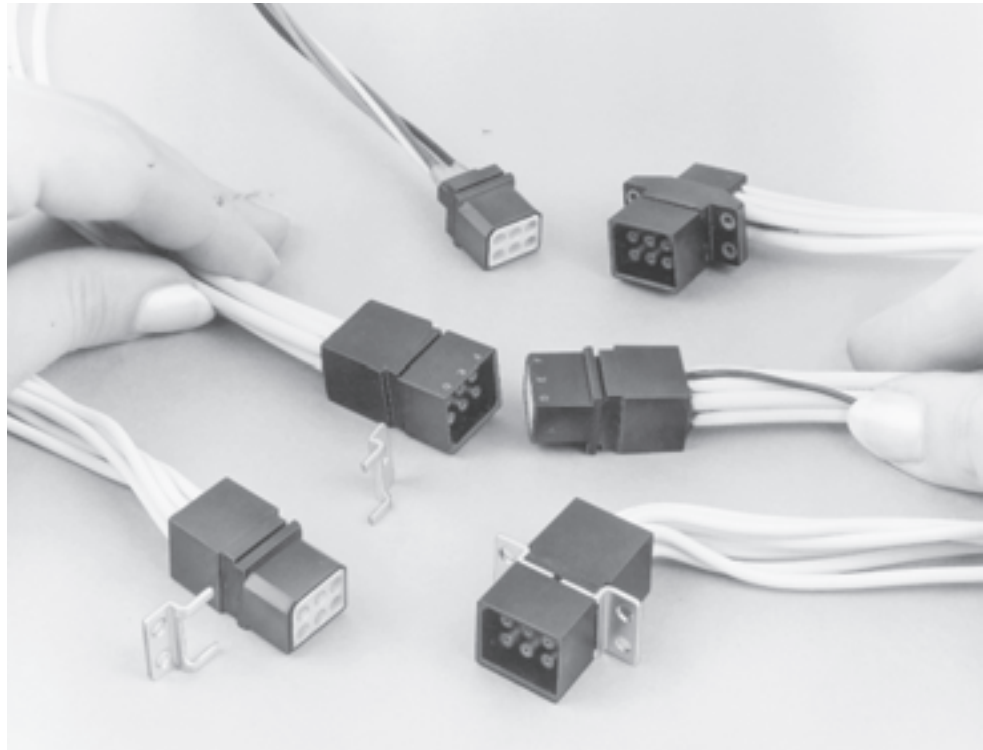
### Product Facts

- **Extremely lightweight** — total weight of mated pair is less than 14 grams
- **Compact design** — requires less than .6 square inch [387 mm<sup>2</sup>] of mounting surface; occupies less than .750 cubic inch [.229 mm<sup>3</sup>] of volume per mated pair
- **Quick connect/disconnect design**
- **Resilient silicone rubber insert in plug half provides positive interfacial seal for mated connector**
- **Withstands 10 KVDC hipot test**
- **Housing styles for potting, chassis slot (channel) mounting, panel mounting and free-hanging applications**
- **Lettered positions for easy circuit identification**
- **Size 22, gold plated contacts with 5 ampere rating accommodate 28 to 22 AWG [0.08 to 0.4 mm<sup>2</sup>] wire**
- **Connectors pre-assembled with leads, fully potted and tested**
- **6 KVDC at 70,000 ft. [21,336m]; -67°F to +257°F [-55°C to +125°C] operating storage temperature**
- **Flame retardant, glass reinforced thermoplastic polyester housings standard color, black**

### Mounting Brackets, Slip-on (For Commercial or Military Assemblies with slotted housings)

**Part Number 861214-2** — Two, .106 [2.69] Dia. Mounting Holes

**Part Number 861215-2** — One, .106 [2.69] Dia. Mounting Hole



AMP Subminiature High Voltage Connectors are designed for use in electronic high voltage circuits, especially in critical applications and harsh environments. It is exceptionally lightweight and compact. Can be operated within a temperature range of -67°F to 257°F [-55°C to +125°C] and up to 6 KVDC at an altitude of 70,000 feet [21,336 meters].

The connector incorporates many features for electrical, mechanical and environmental integrity.

TE Connectivity supplies the Subminiature High Voltage Connector in a 6-position size, pre-

assembled with silicone or PTFE insulation. For optimum versatility, connector housings are available for 180° (straight) or 90° (right-angle) rear-entry wiring and in a choice of styles for potting, chassis-slot (channel) mounting, panel mounting and free-hanging applications. Panel-mounted versions can be furnished either with separate “slip-on” metal mounting brackets or with a molded mounting flange that is an integral part of the connector. All connector styles are fully potted (and have been tested for environmental integrity and reliability of performance).

### Material and Finish

**Housings and Potting Shells** — Thermoplastic polyester, glass-filled, flame retardant; standard color, black

**Contacts** — Beryllium copper; plated .000030 [0.00076] min. gold per MIL-G-45204, over .000030 [0.00076] min. nickel per QQ-N-290

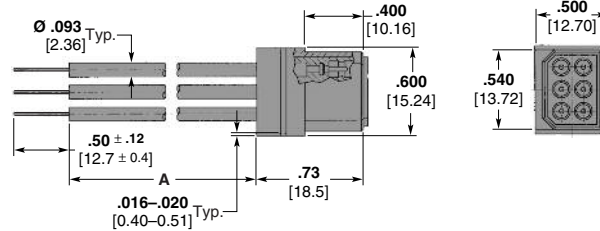
**Mounting Brackets** — Carbon steel, nickel plated

## 6-Pin, Subminiature Rectangular Connectors (Continued)

### Plug Assemblies and Kits

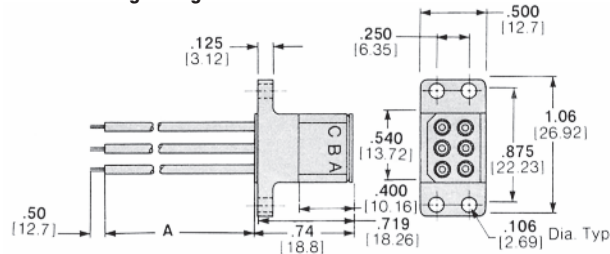
#### Flying Leads

| Assembly A<br>Lead Length   | Assembly with<br>22 AWG Silicone |
|-----------------------------|----------------------------------|
| 15.00 ± .50<br>381.0 ± 12.7 | 867622-1                         |
| 24.00 ± .50<br>609.6 ± 12.7 | 867622-2                         |



| Pin No. | Wire Color |
|---------|------------|
| A       | Yellow     |
| B       | Red        |
| C       | Brown      |
| D       | Blue       |
| E       | Green      |
| F       | Black      |

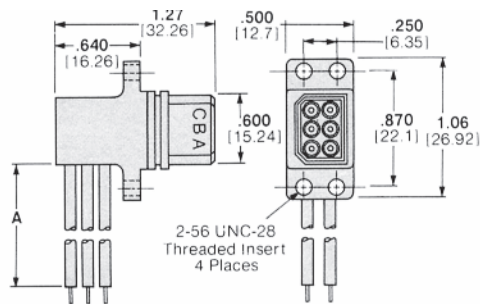
### Molded Mounting Flange



| Assembly Lead<br>Length A | Assembly with<br>22 AWG Silicone | Assembly with<br>24 AWG PTFE |
|---------------------------|----------------------------------|------------------------------|
| 12<br>304.8               | 867465-1<br>5-867465-1*          | 867464-1                     |
| 24<br>609.6               | 867465-2<br>5-867465-2*          | 867464-2                     |
| 36<br>914.4               | 867465-3<br>5-867465-3*          | 867464-3<br>5-867464-3*      |

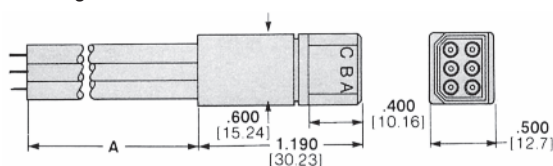
\*RoHS compliant Part Number.

### Right-Angle



| Kit Part<br>Number             |
|--------------------------------|
| 448479-1<br>Kit with<br>Flange |

### Slotted Version with Potting Shell



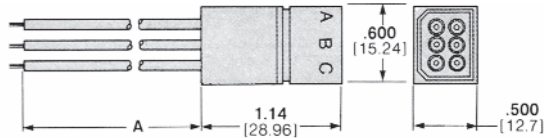
| Kit Part<br>Number | Assembly Lead<br>Length A | Assembly with<br>22 AWG Silicone | Assembly with<br>24 AWG PTFE |
|--------------------|---------------------------|----------------------------------|------------------------------|
| 867482-1           | 12<br>304.8               | 867463-1                         | 867462-1                     |
|                    | 24<br>609.6               | 867463-2<br>5-867463-2*          | 867462-2                     |
|                    | 36<br>914.4               | 867463-3                         | 867462-3                     |

\*RoHS compliant Part Number.

## 6-Pin, Subminiature Rectangular Connectors (Continued)

### Receptacle Assemblies and Kits

#### Slotted



#### Color Coding

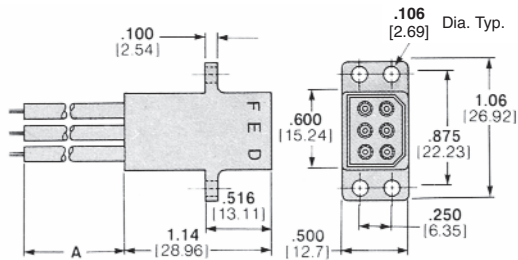
Leads are color coded as tabulated here. Other color leads can be used in custom assemblies.

| Kit Part Number | Assembly Lead Length A | Assembly with 22 AWG Silicone | Assembly with 24 AWG PTFE |
|-----------------|------------------------|-------------------------------|---------------------------|
| 867483-1        | 12<br>304.8            | 867469-1                      | 867468-1<br>5-867468-1*   |
|                 | 24<br>609.6            | 867469-2                      | 867468-2                  |
|                 | 36<br>914.4            | 867469-3                      | 867468-3<br>5-867468-3*   |

\*RoHS compliant Part Number.

| Pin No. | Wire Color |
|---------|------------|
| A       | Brown      |
| B       | Red        |
| C       | Green      |
| D       | Blue       |
| E       | Black      |
| F       | White      |

#### Molded Mounting Flange

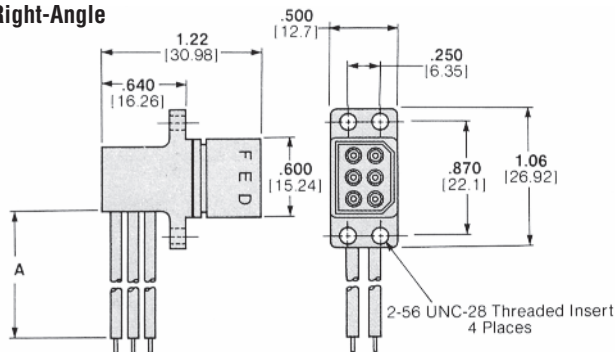


Flange can be placed elsewhere on housing. Consult TE Connectivity.

| Kit Part Number | Assembly Lead Length A | Assembly with 22 AWG Silicone | Assembly with 24 AWG PTFE |
|-----------------|------------------------|-------------------------------|---------------------------|
| 867484-1        | 12<br>304.8            | 867473-1                      | 867472-1<br>5-867472-1*   |
|                 | 24<br>609.6            | 867473-2<br>5-867473-2*       | 867472-2<br>5-867472-2*   |
|                 | 36<br>914.4            | 867473-3                      | 867472-3                  |

\*RoHS compliant Part Number.

#### Right-Angle



#### Color Coding

Leads are color coded as tabulated here. Other color leads can be used in custom assemblies.

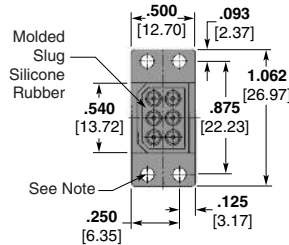
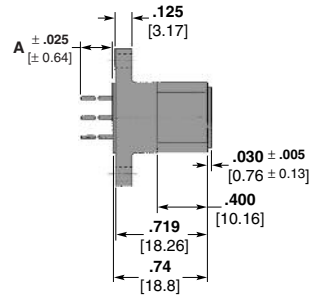
| Kit Part Number | Assembly Lead Length A | Assembly with 22 AWG Silicone |
|-----------------|------------------------|-------------------------------|
| 866047-1        | 12<br>304.8            | 867477-1                      |
|                 | 24<br>609.6            | 867477-2                      |
|                 | 36<br>914.4            | 867477-3                      |

| Pin No. | Wire Color |
|---------|------------|
| A       | Brown      |
| B       | Red        |
| C       | Green      |
| D       | Blue       |
| E       | Black      |
| F       | White      |

## 6-Pin, Subminiature Rectangular Connectors (Continued)

### Plug Assemblies

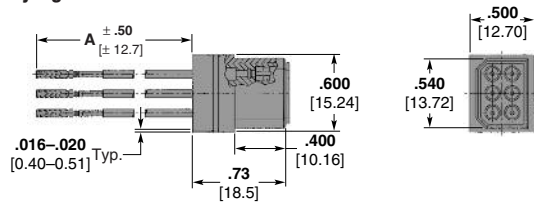
Posts Dia. .025 [0.64]



| Dim. A        | Part Number |
|---------------|-------------|
| .245<br>6.22  | 449810-1    |
| .245<br>6.22  | 449810-2    |
| .750<br>19.05 | 449810-3    |

**Note:** 449810-1 Dia. .106 [2.69], -2 and -3 inserts are #2-56.

### Plug Assemblies with Flying Leads

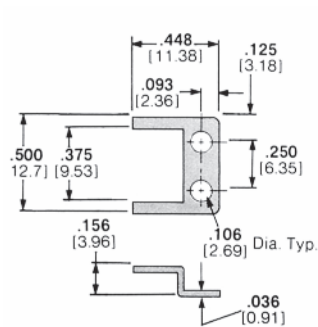


| Dim. A         | Lead Color | Letter Cavity | Part Number             |
|----------------|------------|---------------|-------------------------|
| 4.00<br>101.6  | Yellow     | A             | 868021-1<br>5-868021-1* |
| 4.00<br>101.6  | Red        | B             |                         |
| 4.00<br>101.6  | Brown      | C             |                         |
| 4.00<br>101.6  | Blue       | D             |                         |
| 4.00<br>101.6  | Green      | E             |                         |
| 13.00<br>330.2 | Black      | F             |                         |

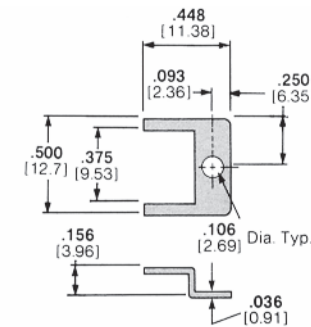
\*RoHS compliant Part Number.

### Mounting Brackets

These brackets are for mounting commercial or military assemblies with slotted housings. They are not included in connector kits, nor with assemblies, and they must be ordered separately.

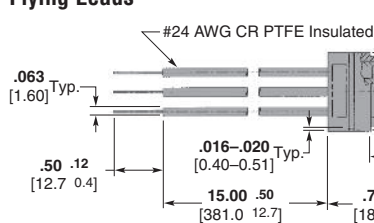


Part Number 861214-2

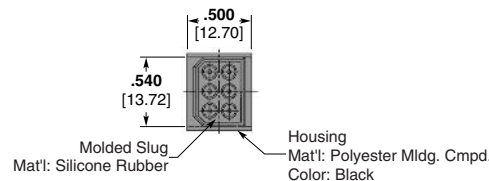


Part Number 861215-2

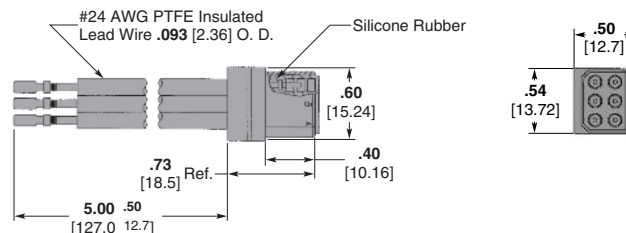
### Flying Leads



Part Number 867761-1



| Pin No. | Wire Color |
|---------|------------|
| A       | Yellow     |
| B       | Red        |
| C       | Brown      |
| D       | Blue       |
| E       | Green      |
| F       | Black      |



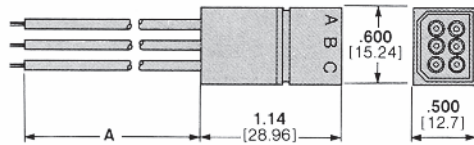
Part Number 445181-1

| Socket No. | Wire Color |
|------------|------------|
| A          | Black      |
| B          | Red        |
| C          | Brown      |
| D          | No Lead    |
| E          | Yellow     |
| F          | Green      |

## 6-Pin, Subminiature Rectangular Connectors (Continued)

### Receptacle Assemblies

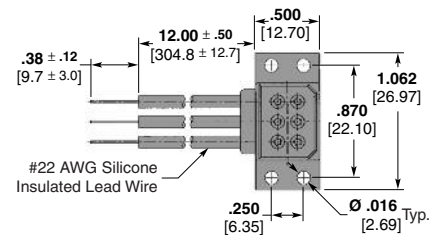
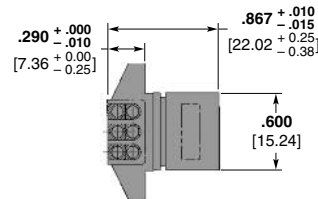
#### Slotted



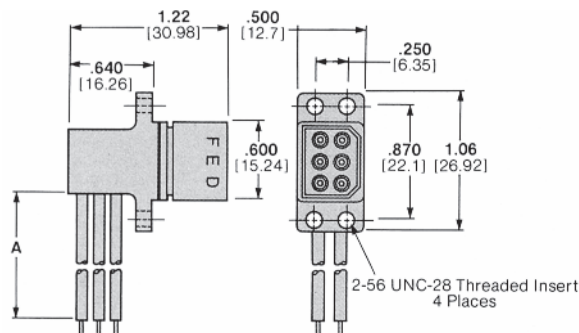
| Assembly Lead Length A | Assembly with 22 AWG Silicone | Assembly with 24 AWG PTFE |
|------------------------|-------------------------------|---------------------------|
| 12<br>304.8            | 867471-1<br>5-867471-1*       | 867470-1                  |
| 24<br>609.6            | 867471-2                      | 867470-2                  |
| 36<br>914.4            | 867471-3                      | 867470-3                  |

\*RoHS compliant Part Number.

#### Right-Angle



Part Number 443832-1  
RoHS Part Number 5-443832-1



| Assembly Lead Length A | Assembly with 22 AWG Silicone | Assembly with 24 AWG PTFE |
|------------------------|-------------------------------|---------------------------|
| 12<br>304.8            | 867479-1<br>5-867479-1*       | 867478-1                  |
| 24<br>609.6            | 867479-2<br>5-867479-2*       | 867478-2                  |
| 36<br>914.4            | 867479-3                      | 867478-3                  |

\*RoHS compliant Part Number.

## LGH Micro-Miniature Connectors and Cable Assemblies

### Product Facts

- LGH leads and receptacles find wide application where high voltage is used in harsh environments
- Small high voltage power supplies
- Back lighting for LCD flat panel displays
- High voltage for flat panel FED (Field Emissive Displays)
- Small CRT's (Cathode Ray Tubes)
- Commercial and Military Avionics
- A series of miniature high voltage connectors for applications where space is limited
- HV performance in a small lightweight connector
- Operating voltages up to 12 KVDC
- Operation to 100,000 ft. [30,480 m] altitude
- Lead wire remains flexible to -67°F [-55°C]
- Color coded for easy identification
- Leads are available with silicone, PTFE or silicone coated PTFE
- Connector is fully insulated
- Connectors are available with 26 thru 22 AWG wire



### Materials

Molded silicone rubber  
Thermoset and thermoplastic polymers  
Socket contacts size 22 per MIL-C-39029 size 22

### Electrical Characteristics

**Operating Voltage** — up to 12 KVDC

**Current Rating** — 5 amps max. with 22 GA wire

### Mechanical Characteristics

Small size outside Dia. of .135 [3.43]

Leads are preassembled

Quick disconnect, push/pull mating

**Operating Temperature** —

-67°F to +257°F [-55°C to +125°C]

### Approvals

Meets applicable military specifications  
AMP product specifications listed below

### Technical Documents

**135 Series (.135 [3.43] Dia.)** — 108-1788

**170 Series (.179 [4.55] Dia.)** — 108-1802

**240 Series (.240 [6.10] Dia.)** — 108-1853

**Surface Mount/Plug Assembly** — 108-1880

**1, 2, and 3 Position** — 108-1812



## LGH Micro-Miniature Connectors and Cable Assemblies (Continued)

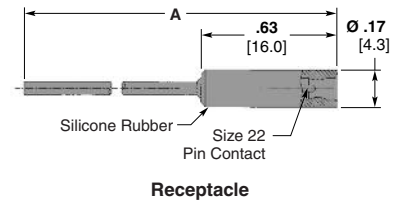
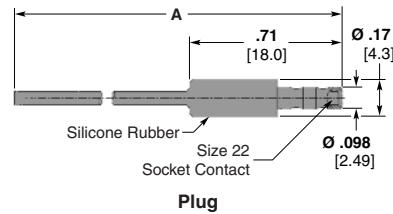
### 170 Series

**Product Specification** — 108-1802

**Operating Voltage** — 6 KVDC

**Test Voltage** — 10 KVDC at 10,000 feet [3,046 m] and -67°F to +257°F [-55°C to +125°C]

**Durability** — 50 matings and unmating



| Wire Description           | Wire Color | Plug        |             | Receptacle    |             |
|----------------------------|------------|-------------|-------------|---------------|-------------|
|                            |            | Dim. A      | Part Number | Dim. A        | Part Number |
| 24 AWG Silicone Coated FEP | Red        | 12.5 ± .12  | 1218147-1   | 12.0 ± .12    | 1218148-1   |
|                            |            | 317.5 ± 3.0 |             | 48.0 ± .48    | 1218148-2   |
|                            |            |             |             | 1219.2 ± 12.2 |             |

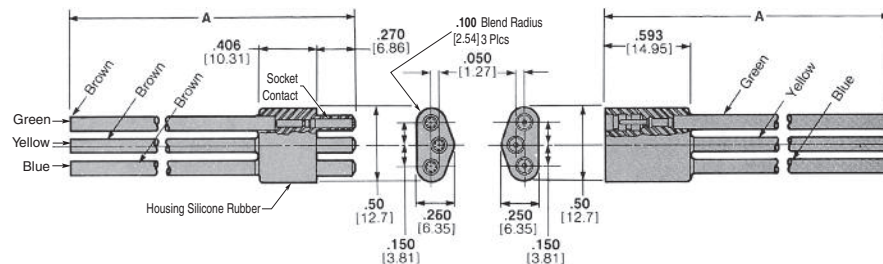
### 1, 2 and 3 Position

**Product Specification** — 108-1812

**Operating Voltage** — 7.5 KVDC

**Test Voltage** — 12 KVDC at 10,000 feet [3,048 m] and 5°F to +185°F [-15°C to +85°C]

### 3-Position Connectors



| Plug   |                         |             |
|--------|-------------------------|-------------|
| Dim. A | Wire Color              | Part Number |
| 12     | Brown                   | 863743-1    |
| 305    |                         | 863743-2    |
| 16     | Brown                   | 863743-2    |
| 406    |                         | 863743-2    |
| 12     | Green<br>Yellow<br>Blue | 862424-1    |
| 305    |                         | 862424-1    |
| 18     |                         | 862424-2    |
| 457    |                         | 862424-2    |
| 48     | Yellow<br>Blue          | 862424-4    |
| 1219   |                         | 862424-4    |

| Receptacle |             |
|------------|-------------|
| Dim. A     | Part Number |
| 12         | 862425-1    |
| 305        | 862425-1    |
| 18         | 862425-2    |
| 457        | 862425-2    |
| 24         | 862425-3    |
| 610        | 862425-3    |
| 48         | 862425-4    |
| 1219       | 862425-4    |



## LGH Micro-Miniature Connectors and Cable Assemblies (Continued)

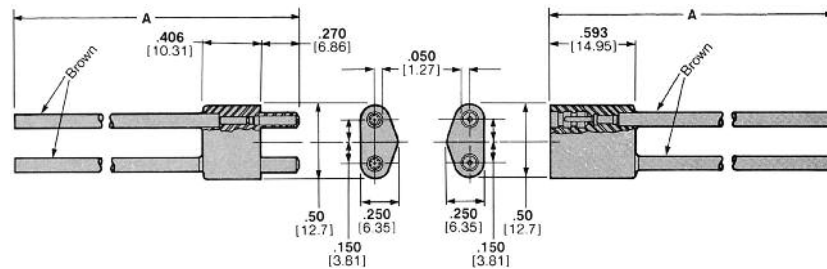
### 1, 2 and 3 Position (Continued)

**Product Specification** — 108-1812

**Operating Voltage** — 7.5 KVDC

**Test Voltage** — 12 KVDC at 10,000 feet [3,048 m] and -5°F to +185°F [-15°C to +85°C]

### 2-Position Connectors



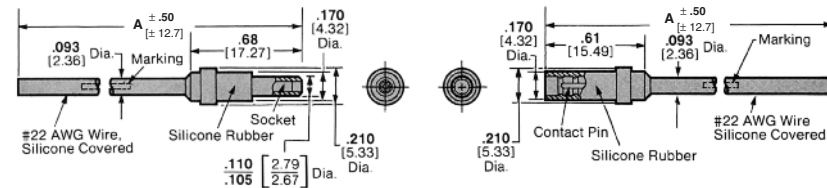
**Plug**

| Dim. A     | Part Number |
|------------|-------------|
| 12<br>305  | 866559-1    |
| 16<br>406  | 866559-5    |
| 18<br>457  | 866559-2    |
| 24<br>610  | 866559-3    |
| 48<br>1219 | 866559-4    |

**Receptacle**

| Dim. A     | Part Number |
|------------|-------------|
| 12<br>305  | 866196-1    |
| 16<br>406  | 866196-5    |
| 18<br>457  | 866196-2    |
| 24<br>610  | 866196-3    |
| 48<br>1219 | 866196-4    |

### 1-Position Connectors



**Plug**

| Dim. A     | Wire Color | Part Number |
|------------|------------|-------------|
| 15<br>381  | White      | 867823-1    |
| 30<br>762  | White      | 867823-2    |
| 36<br>914  | Green      | 867823-3    |
| 36<br>914  | White      | 867823-4    |
| 6<br>152   | White      | 867823-5    |
| 40<br>1016 | White      | 867823-6    |

**Receptacle**

| Dim. A     | Wire Color | Part Number |
|------------|------------|-------------|
| 24<br>610  | White      | 867824-1    |
| 24<br>610  | Green      | 867824-2    |
| 6<br>152   | White      | 867824-3    |
| 40<br>1016 | White      | 867824-4    |

## Medical Receptacles (Used Primarily for Patient Monitoring)

### Product Facts

- Quick connect/disconnect
- 6 and 7 position connector
- Mates to standard medical cable interface
- Operating Voltage — up to 5,000 volts DC
- Operating Temperature — -5°F to 185°F [-15°C to 85°C]
- Operating Current — 10 Amps max.
- Accepts AMP Multi-Mate Pins and Sockets (size 16)
- Four hole flange mount
- Housings made from UL 94V-0 polyester material
- Different colors available
- Polarized for proper mating of connector halves
- TE Connectivity does not manufacture mating plugs or cable assemblies for these receptacles



The AMP line of LGH high voltage products is meeting today's need for medical instrumentation connectors and is prepared for tomorrow's medical breakthroughs.

In use today in a wide variety of medical monitoring equipment, this versatile LGH circular connector offers the industry a wide choice of application options.

### Typical Applications

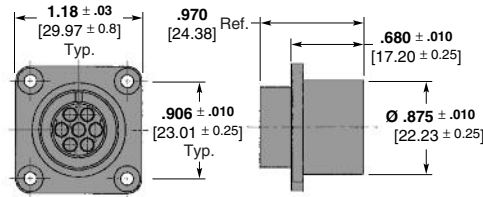
- Medical monitoring equipment
- Mates with "standard" medical cable assemblies

### Versatility

- Choice of crimp or posted, size 16 gold over nickel plated contacts
- Flange mounted for easy installation
- Polarized for safe, positive mating
- Housings available in choice of colors to meet your application

## Medical Receptacles (Used Primarily for Patient Monitoring) (Continued)

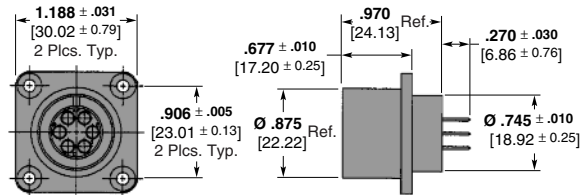
### 7 Position Housing only no contacts



| Housing Color      | Part Number |
|--------------------|-------------|
| Black              | 443065-1    |
| Special Aqua Blue* | 443065-3    |

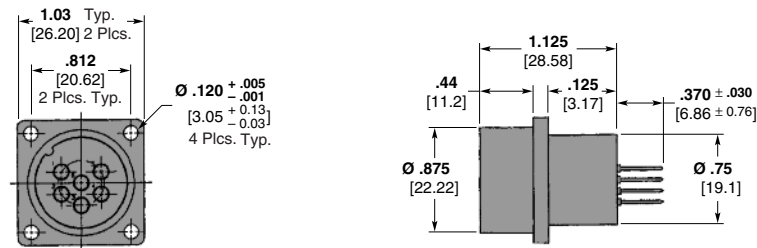
\*PMS (Pantone Matching System) #3145 Uncoated.

### 6 Position Socket contacts with .025 [0.63] Square Posts



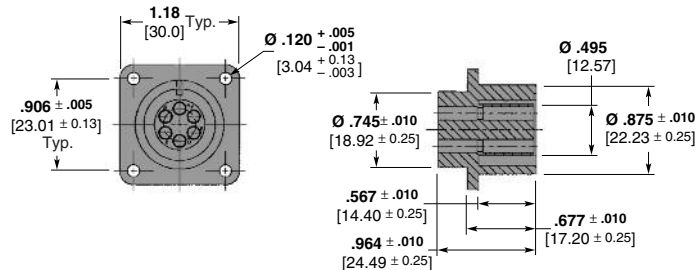
Part Number 447913-1  
RoHS Part Number 5-447913-1

### 6 Position Pin contacts with .025 [0.63] Square Posts



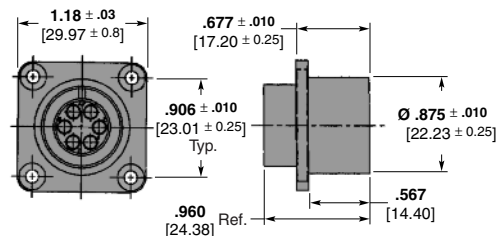
Part Number 447914-1  
RoHS Part Number 5-447914-1

### 6 Position 14S-6S



Part Number 449652-1

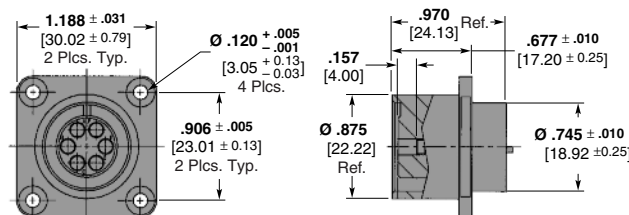
### 6 Position MS3102A-14S-6S Configuration



Part Number 864900-1  
RoHS Part Number 5-864900-1  
(Supplied with Contacts)

Part Number 864900-2  
(Supplied without Contacts)

### 6 Position Special 4mm Recess



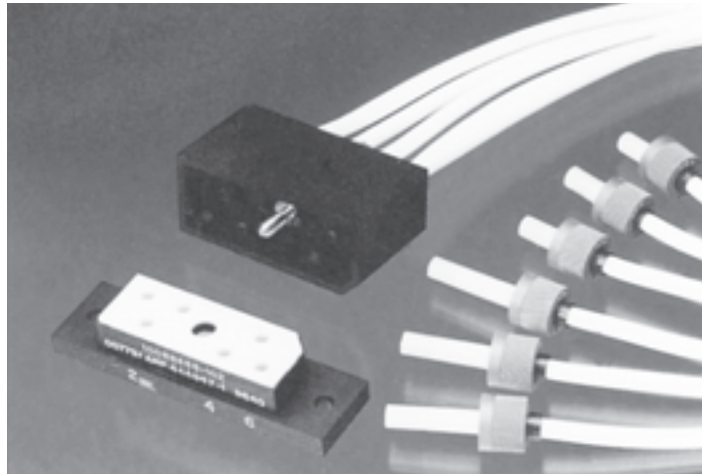
Part Number 1218081-1

## Various Specials

### Product Facts

#### 6 Position LGH Connector

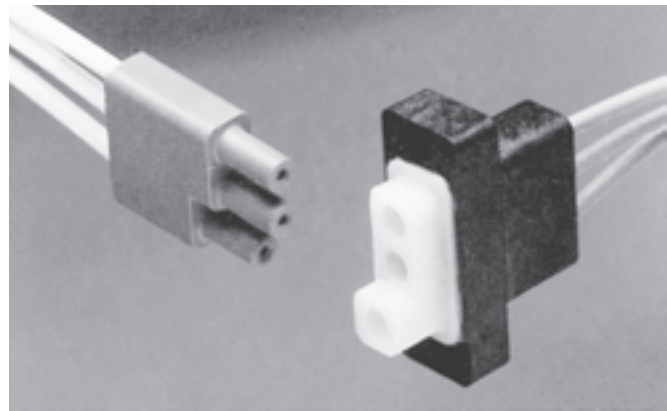
- Laser gyro inertial reference systems application
- Extremely rugged construction
- High flexibility silicone leads
- Size 22 contacts
- No adhesives or potting materials used
- 10,000 volts DC max. operating voltage



6 Position LGH Connector

#### 3 Position LGH Compact Flange Mounted Connector

- Military counter measure systems application
- Missile guidance systems application
- Ultra small diameter silicone coated PTFE wire insulation
- Size 22 contacts
- Plug is available as a kit or with flying leads
- 5,000 volts DC max. operating voltage



3 Position LGH Connector

#### 6 Position LGH Connector brings high voltage to the circuit board

6 LGH leads, insert molded into a glass epoxy housing with a sturdy, center male screwlock form the plug of this extraordinary printed circuit connector system.

#### 3 Position LGH Compact Flange Mounted Connector

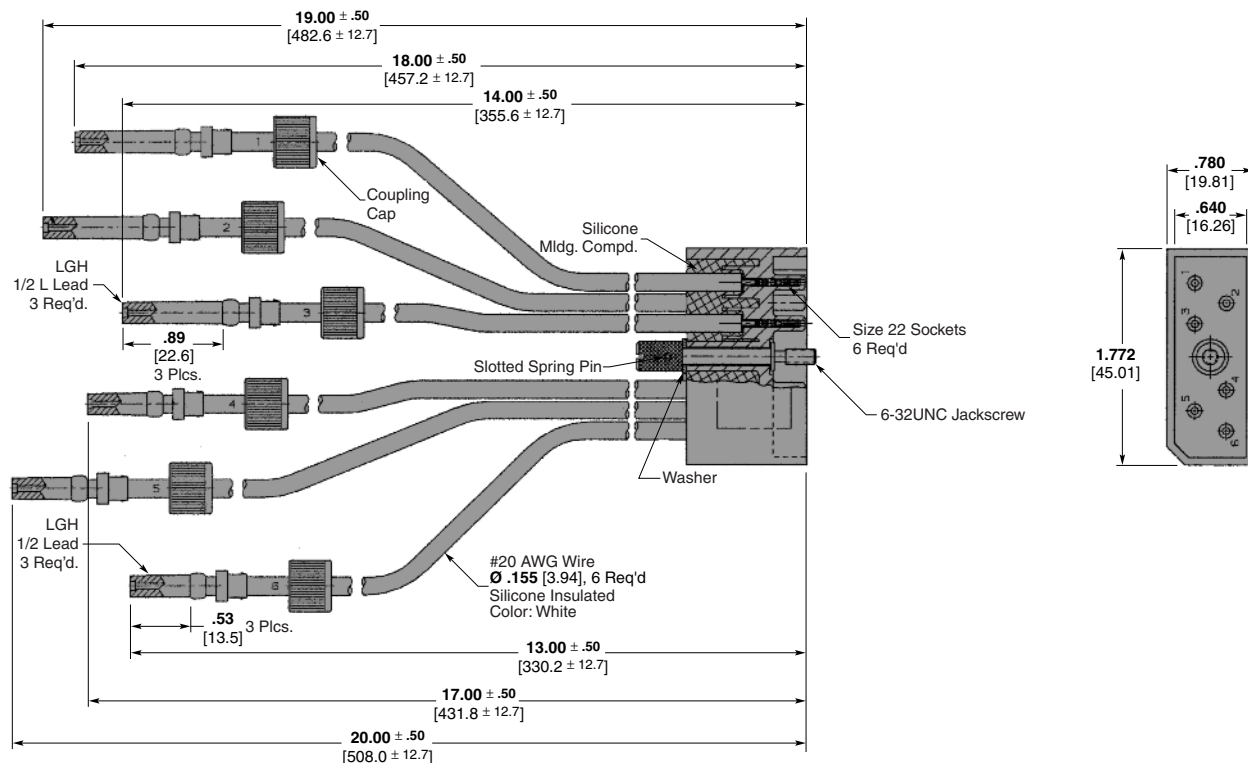
Three molded in flying leads in an extremely tough liquid crystal polymer flanged housing make up the receptacle of this compact high performance high voltage connector.

#### Performance Specifications

- Operating Temperature Range** — -67°F to +257°F [-55°C to +125°C]
  - Operating Altitude Range** — Sea level to 70,000 ft [21336 m].
  - Operating Current** — 5 amps max.
- Polarized interface to assure correct mating

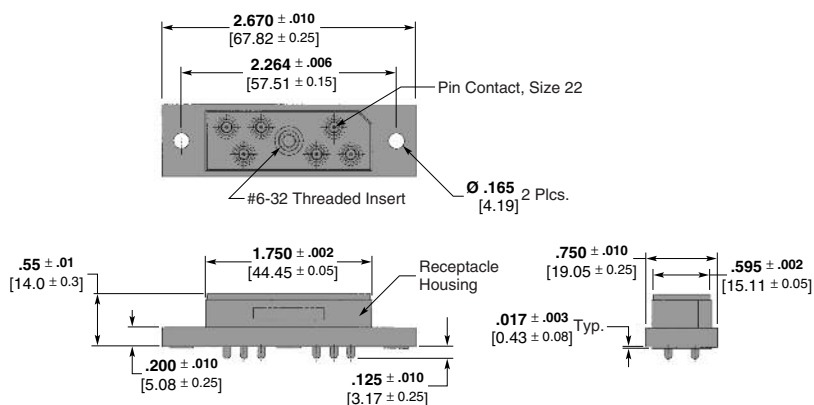
### Various Specials (Continued)

**6 Position, 10 KVDC  
Receptacle, with LGH 1/2 L  
and LGH 1/2 Positive Stop  
Leads**



Part Number 446775-1

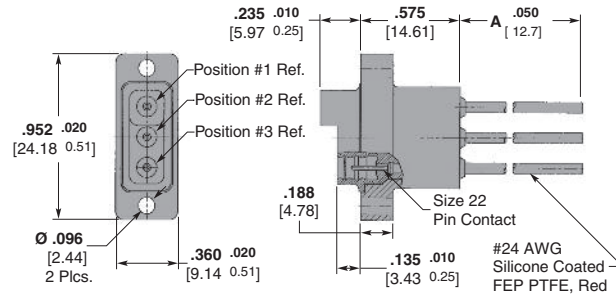
### 6 Position, Rectangular Receptacle



Part Number 446947-1

## Various Specials (Continued)

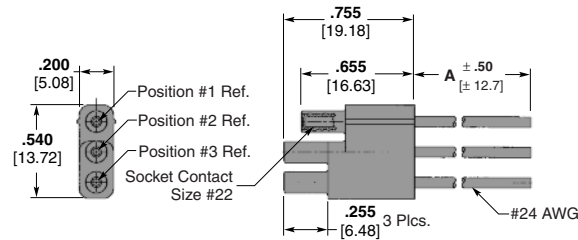
### 3 Position Receptacles



| Dim. A         | Part Number |
|----------------|-------------|
| 24.00<br>609.6 | 443915-1    |
| 18.50<br>469.9 | 443915-2    |

Part Numbers 443915-1, -2

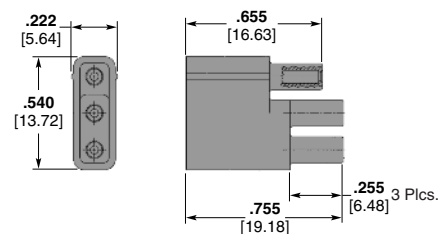
### 3 Position Plug



| Dim. A          | Part Number |
|-----------------|-------------|
| 24.00<br>609.6  | 443916-1    |
| 48.00<br>1219.2 | 443916-2    |

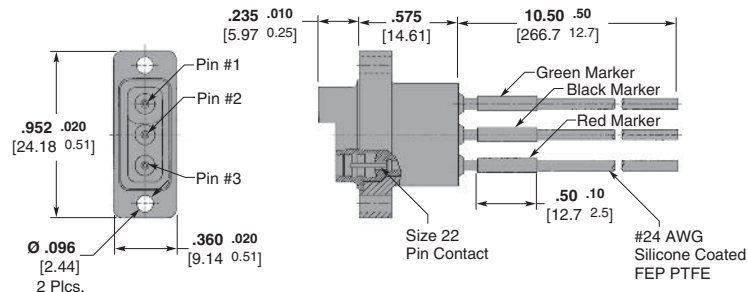
Part Numbers 443916-1, -2

### 3 Position Plug Kit with 3 Size 22 Socket Contacts



Part Numbers 446900-1 and 446900-2 with Slot

### 3 Position Receptacle



Part Number 443815-1

**Various Specials** (Continued)**Printed Circuit Board  
Receptacles****Product Facts**

- Molded epoxy housings per MIL-M-24357 (GEI-5)
- Small, lightweight, leakproof
- 10 KV, LGH 1/2  
Part Number 866803-1 (with mounting holes)  
Part Number 866804-1 (with threaded mounting holes and potting shell)
- 15 KV, LGH 1/2L  
Part Number 866806-1 (with mounting holes)  
Part Number 866805-1 (with threaded mounting holes and potting shell)
- 20 KV, LGH 1  
Part Number 830632-3 (with mounting holes)

**Multiple Receptacle with  
Integral, Molded Flange for  
Bulkhead Applications  
(Gold Pins)**

Single, Part Number 867606-4

Dual, Part Number 861662-4

Triple, Part Number 861660-4

Quadruple,  
Part Number 861658-4

Quintuple,  
Part Number 861657-4

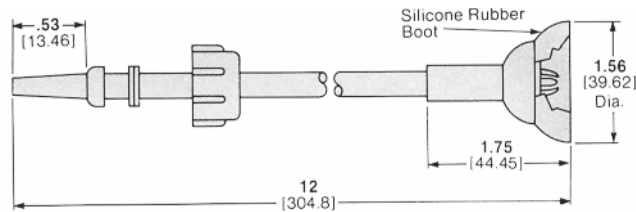




## Various Specials (Continued)

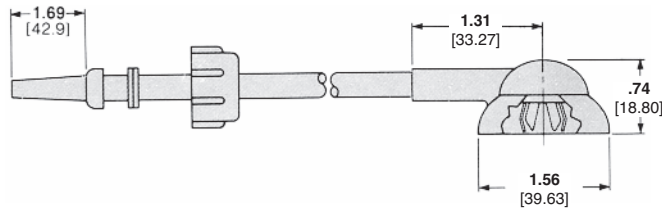
### CRT Lead Assemblies

#### J1-21, 10 KV, LGH 1/2



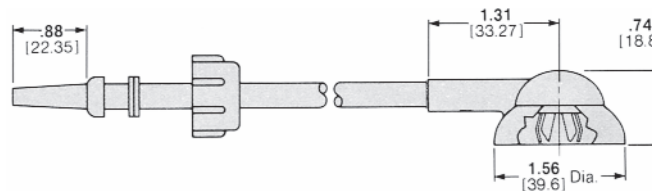
Part Number 848816-2

#### J1-21, 25 KV, LGH 1L



| Assembly Length | Part Number |
|-----------------|-------------|
| 12<br>304.8     | 846977-8    |
| 18<br>457.2     | 1-846977-1  |

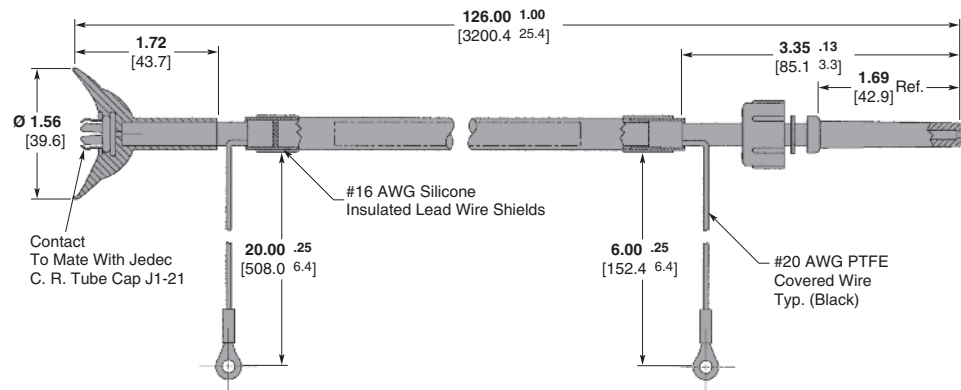
#### J1-21, 20 KV, LGH 1



Part Number 848588

| Assembly Length | Part Number |
|-----------------|-------------|
| 6<br>152.4      | 848588-7    |
| 12<br>304.8     | 848588-1    |
| 18<br>457.2     | 848588-4    |
| 24<br>609.6     | 848588-2    |
| 36<br>914.4     | 848588-3    |
| 48<br>1219.2    | 848588-8    |

#### J1-21, CRT, LGH 1L



Part Number 867615-2

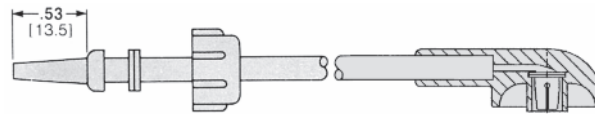
**Note:** Standard length leads are tabulated here. TE Connectivity can make available numerous variations in lengths and material to suit almost any application. Choices of insulation materials include PTFE, UL listed silicone and UL listed PVC. Other materials, colors, wire and configurations can be used in manufacture. For more information, consult TE.

## Various Specials (Continued)

### CRT Lead Assemblies

(Continued)

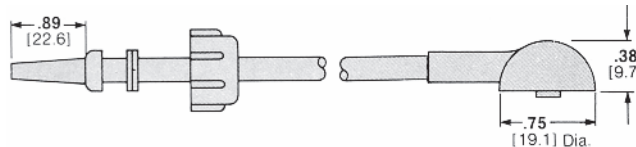
#### J1-22, 10 KV, LGH 1/2 Right-Angle



Part Number 846556

| Assembly Length | Part Number |
|-----------------|-------------|
| 12<br>304.8     | 846556-3    |
| 18<br>457.2     | 846556-5    |
| 24<br>609.6     | 846556-4    |

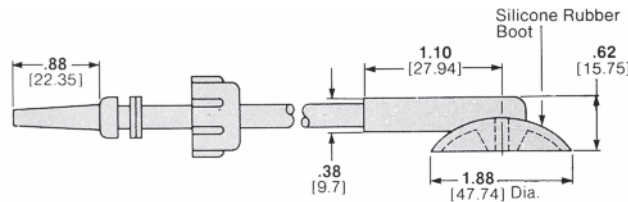
#### J1-22, 15 KV, LGH 1/2L



Part Number 862345

| Assembly Length | Part Number |
|-----------------|-------------|
| 12<br>304.8     | 862345-2    |
| 18<br>457.2     | 862345-1    |

#### J1-22, 20 KV, LGH 1

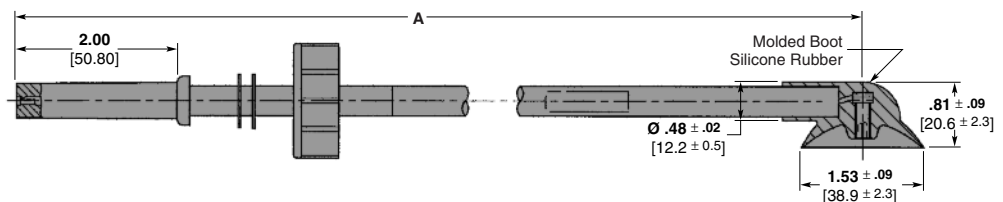


Part Number 849424

| Assembly Length | Part Number             |
|-----------------|-------------------------|
| 12<br>304.8     | 849424-7                |
| 18<br>457.2     | 849424-4<br>5-849424-4* |

\*RoHS compliant Part Number.

#### J1-22, 50 KV, LGH 4



Part Numbers 868373-1, -2

| Assembly Length           | Part Number |
|---------------------------|-------------|
| 36.0 ± .36<br>914.4 ± 9.1 | 868373-1    |
| 24.0 ± .36<br>609.6 ± 9.1 | 868373-2    |

**Note:** Standard length leads are tabulated here. TE Connectivity can make available numerous variations in lengths and material to suit almost any application. Choices of insulation materials include PTFE, UL listed silicone and UL listed PVC. Other materials, colors, wire and configurations can be used in manufacture. For more information, consult TE.

## Various Specials (Continued)

### CRT-Base Connectors

#### Product Facts

- Base connections without potting
- Right-angle and straight connections available
- One-piece molded construction
- Environmentally sealed for trouble-free performance
- Operates at rated DC voltages at 70,000 ft. [21,336 m]
- Operating temperature range: -67°F to +257°F [-55°C to +125°C]
- Withstands shock tests per MIL-STD-202, Test Method 102, Condition C
- Excellent system serviceability
- High reliability
- Fully tested harnesses
- Lower applied cost



AMP molded silicone rubber CRT-base connectors are designed to better eliminate the hand wiring approach for CRT-base connections. These connectors offer greater system serviceability and feature highly reliable performance with complete versatility. They have integrally molded high and low voltage leads, as dictated

by particular applications, and a molded boot design which promotes dust and moisture resistance over a long operational life span.

The versatility of the connector design allows customers to purchase either fully wired connectors, or connectors which can be terminated and potted at

their plant. Currently, LGH molded silicone rubber CRT-base connectors are available for a variety of standard 9, 12 and 14 pin tubes.

Options include a choice of wire, both low and high voltage, as well as the direction of wire exiting from the connector. Each harness is fully tested prior to shipment.

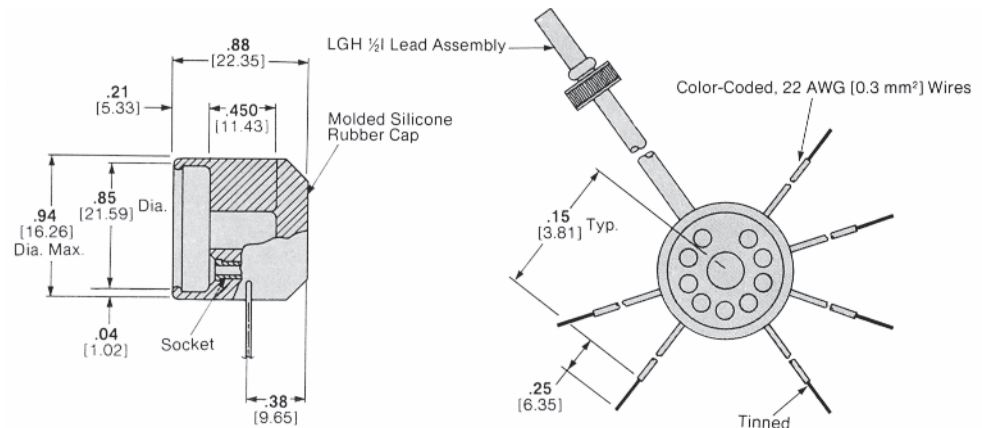
In addition to the connectors listed here, TE Connectivity can furnish a wide variety of CRT-base connectors. Consult TE for details.

## Various Specials (Continued)

### CRT-Base Connectors

(Continued)

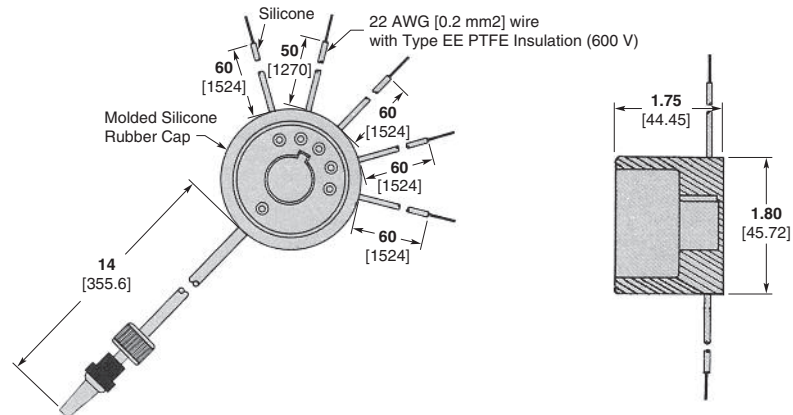
#### 9 Position CRT-Base Connector



**Part Number 862481-1**

This connector is one of many available from TE Connectivity for mating with standard JEDEC tube base E9-37.

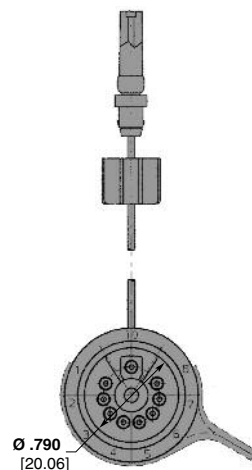
#### Typical Right-Angle Lead Exit CRT-Base Connector



**B6-63 —  
Part Number 867121-1**

This connector is typical of those available from TE for mating with standard JEDEC tube base B5-57, B6-63, B7-51, B10-75, and B12-43.

#### 11 Position CRT-Base Connector



**Part Number 443118-2**

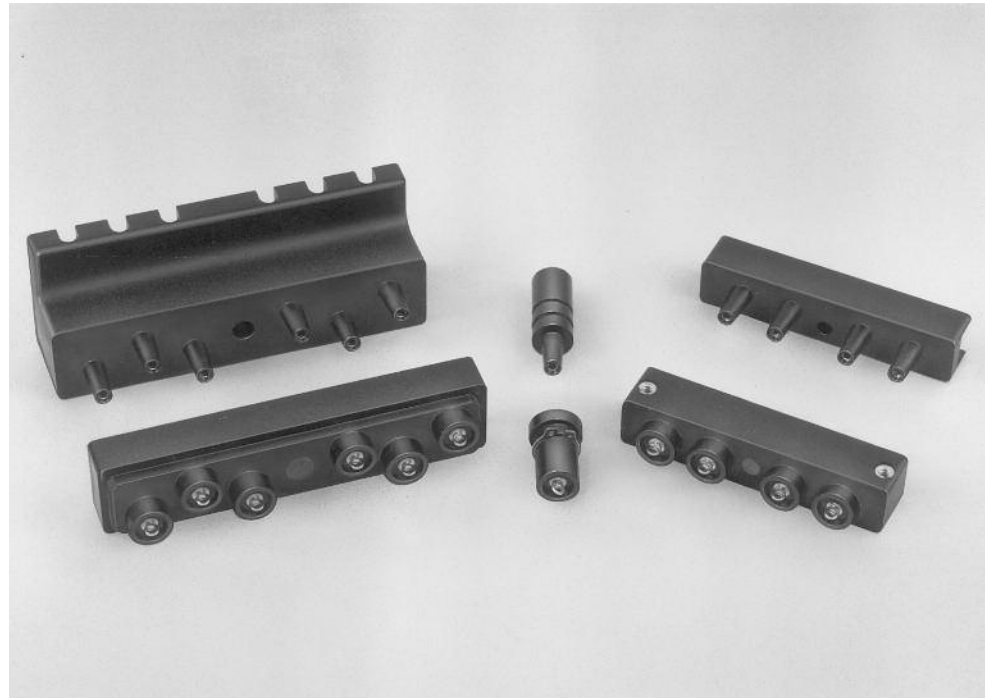
This connector is one of several available from TE for mating with standard JEDEC tube base B9-290. In addition to the connectors listed here, TE can furnish a wide variety of CRT-base connectors. Consult TE for details.

## Various Specials (Continued)

### Rack and Panel Connectors

#### Product Facts

- 10 KVDC rating up to 10,000 feet [3,048 m] (continuous)
- Extremely compact
- All plastic design
- Housings can be molded from a variety of materials
- Provides highly reliable drawer-type connections
- Low insertion and extraction forces
- Hipot — 20 KVDC at sea level, two minutes
- Pins and sockets (10-amp rating) are recessed for maximum safety; will accept conductor sizes to 16 AWG [1.25 mm<sup>2</sup>]
- Hermetically sealed version available for soldering to metal bulkhead on single pin connector
- Available with or without leads
- No tools required for field use
- Can be readily adapted for in-line splice applications



This AMP High Voltage Connector family is specifically designed for military applications. It is extremely compact and has a continuous 15 KVDC rating from sea level to an altitude of up to 10,000 feet [3,048 m].

The connector assembly is a rack and panel type especially suited for drawer mounting or free-hanging plug applications. It incorporates many design features for electrical, mechanical and environmental integrity. Such features include: use of a tapered plug to make exact alignment unnecessary; recessed pin and socket contacts to better prevent high voltage exposure; and a resilient silicone rubber

“O” ring in the receptacle for an interfacial seal for the mated connector.

Plug and receptacle housings are molded from durable glass epoxy; pin and socket contacts are made of fine grade brass, gold plated in the mating areas for maximum conductivity. The solder eyelets are capable of accommodating leads with conductor sizes up to 16 AWG [1.25 mm<sup>2</sup>].

To meet customer's exact requirements, we can supply the High Voltage Rack and Panel Connectors with or without leads. Also, because of the basic design of the connectors, slight modifications can be made for in-line space applications.

#### Materials

**Housings** — Molded glass epoxy per MIL-M-24325 (Ships), GEI-5

**Pin and Socket Contacts** — Brass; gold plated per MIL-G-45204

**Solder Eyelets** — Pre-tinned per MIL-T-10727

**“O” Ring (Receptacle Only)** — Silicone Rubber

**Retaining Ring (Receptacle Only)** — Stainless steel per MS 16624

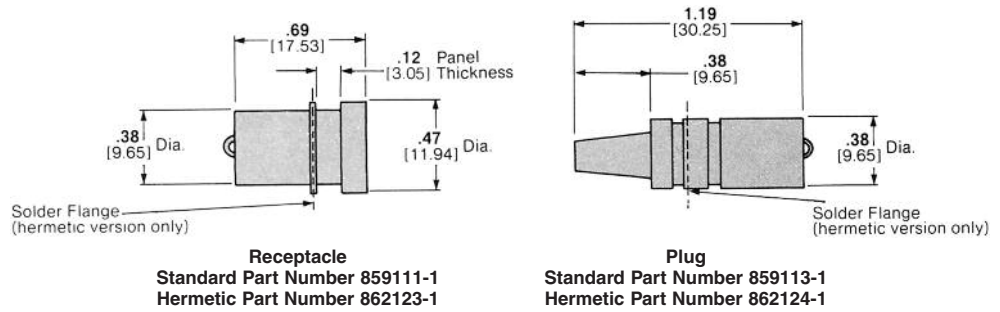


## Various Specials (Continued)

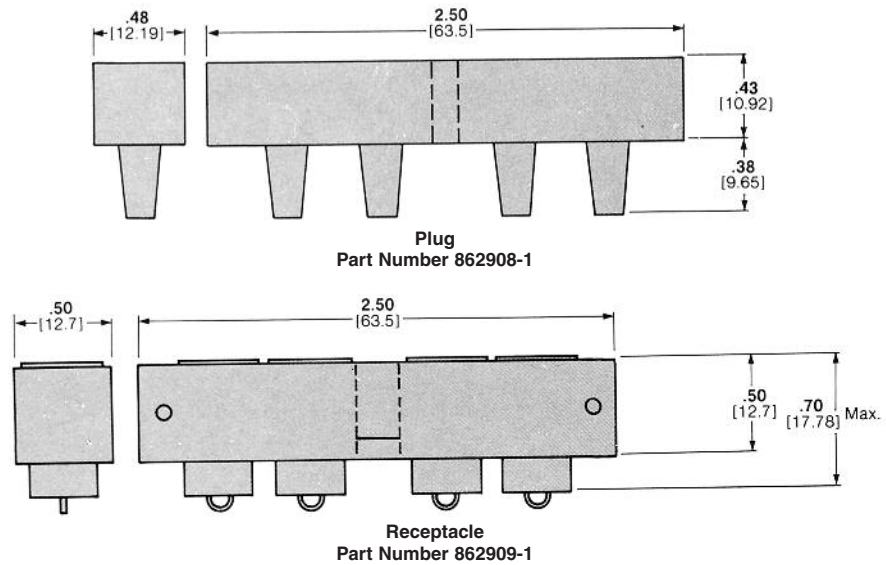
### Rack and Panel Connectors

(Continued)

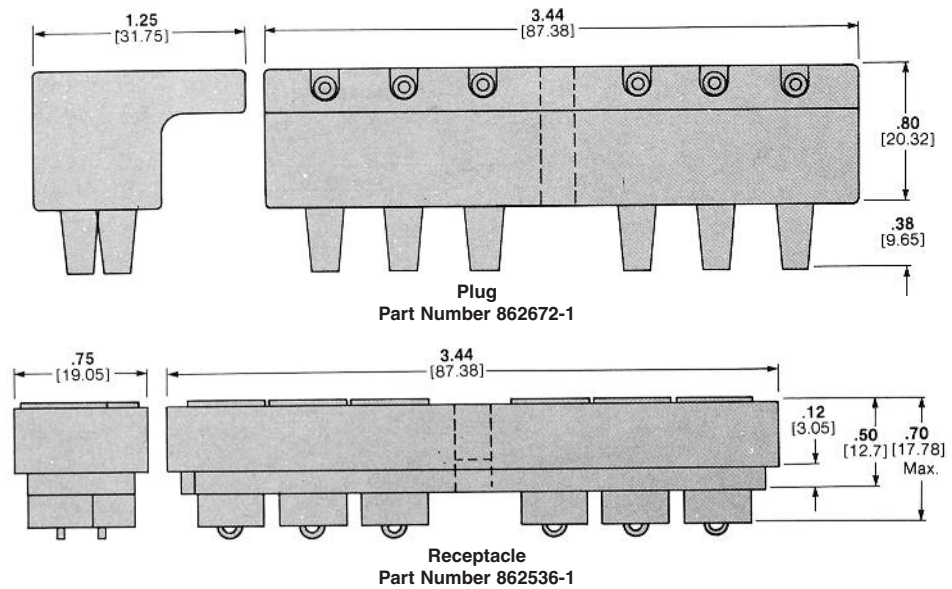
#### Single Pin



#### Four Pin



#### Six Pin



- Notes:** 1. If bulkhead and mounting hardware are metallic and at ground potential, provisions must be made to protect the back end of the receptacle against arc-over and breakdown.  
2. Connectors are available with or without leads. Leads can be furnished in virtually any length, with various insulation materials, in either standard white or a variety of optional colors, and with conductor sizes to 16 AWG [1.25 mm<sup>2</sup>].  
For the High Voltage Rack and Panel Connector to meet your specific requirements, consult TE Connectivity.

## Various Specials (Continued)

### Heavy Duty (VRL) RFI-Shielded Lead Assemblies and Receptacles

#### Product Facts

- Extremely rugged design
- Fully shielded against RFI
- Operating and storage temperature range: -67°F to +257°F [-55°C to +125°C]
- Meets wide range of military requirements
- Metal housings can be readily altered to meet a wide variety of mounting and operational requirements



Versatile ruggedized LGH High Voltage Lead Assemblies and Receptacles are designed specifically for use where vibration, shock and handling conditions exist and are ideally suited for both industrial and military applications. This line of lead assemblies and receptacles carries the same voltage, current and altitude

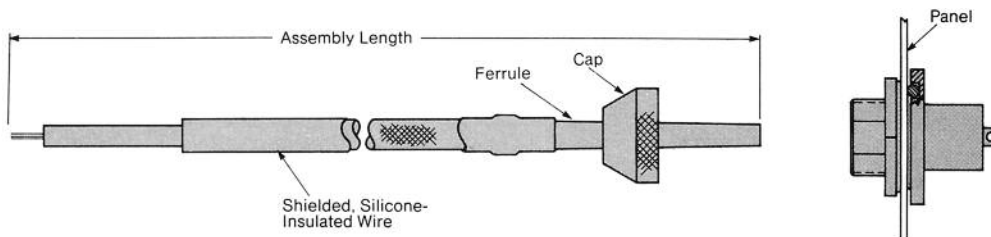
ratings as the corresponding standard LGH connector series when properly mated.

VRL cable assemblies feature the integrally molded end to provide positive mating and an excellent seal. They are completely shielded for RFI when mated with the appropriate receptacle.

The receptacles are of the molded glass epoxy type

with a protective metal shroud that is hermetically sealed between plastic and metal. These receptacles mate with the single-end ruggedized lead assemblies shown in the same series.

Special designs also are available upon request if the standard VRL lead assembly and receptacle designs will not fulfill your immediate needs.



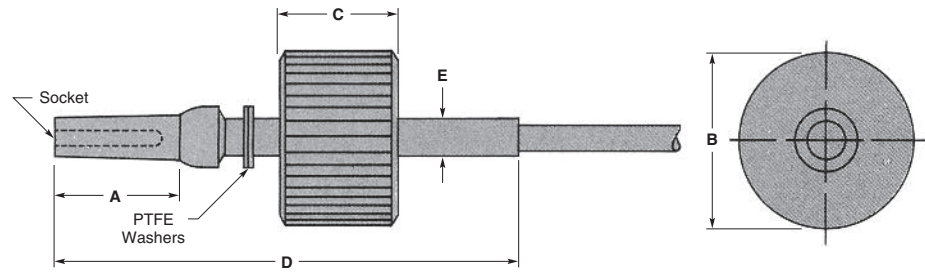
| LGH Connector Series | Lead Assemblies |            |                         | Receptacles             |               |                                                                                   |
|----------------------|-----------------|------------|-------------------------|-------------------------|---------------|-----------------------------------------------------------------------------------|
|                      | Length          | Single End | Double End              | Jam Nut                 | Square Flange | Dimensions                                                                        |
| 1/2 L<br>15 KVDC     | 6<br>152.4      | 862485-8   | —                       | 862295-1                | 862363-1      | 1/2-28 UNEF Thread<br>.60 [15.24] Behind Panel<br>.98 [24.89] Overall Length      |
|                      | 12<br>304.6     | 862485-3   | 862294-4                |                         |               |                                                                                   |
|                      | 18<br>457.2     | —          | 862294-3                |                         |               |                                                                                   |
|                      | 36<br>914.4     | —          | 1-862294-0              |                         |               |                                                                                   |
|                      | 12<br>304.6     | 862484-7   | 862444-3                |                         |               |                                                                                   |
| 1 L<br>25 KVDC       | 24<br>609.6     | 862484-4   | —                       | 862443-1<br>5-862443-1* | 862362-1      | 5/8-18 UNEF Thread<br>1.10 [27.94] Behind Panel<br>1.84 [46.74] Overall Length    |
|                      | 36<br>914.4     | 862484-8   | —                       |                         |               |                                                                                   |
|                      | 12<br>304.6     | 863124-1   | 863254-1                |                         |               |                                                                                   |
| 4<br>50 KVDC         | 24<br>609.6     | 863124-2   | 863254-3                | 863125-1                | 863253-1      | 1-3/16-18 UNEF Thread<br>1.55 [39.37] Behind Panel<br>2.15 [54.61] Overall Length |
|                      | 36<br>914.4     | 863124-3   | —                       |                         |               |                                                                                   |
|                      | 48<br>1219.2    | —          | 863254-4<br>5-863254-4* |                         |               |                                                                                   |
|                      | 12<br>304.6     | 863124-1   | 863254-1                |                         |               |                                                                                   |

\*RoHS compliant Part Number.

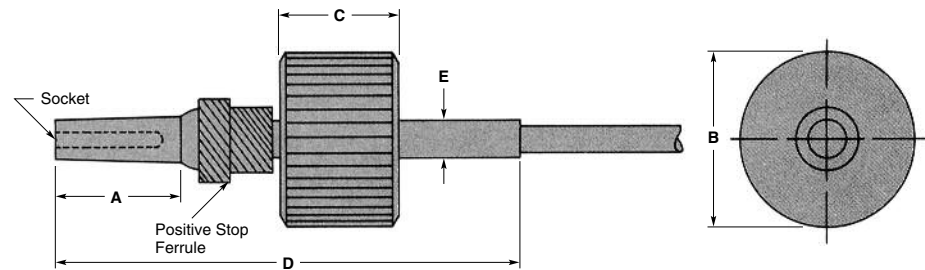


## Various Specials (Continued)

### Field Installable Connectors Kits for PTFE Insulated Wire



Standard Molded End



Positive Stop Molded End

| Connector Description | Dimensions   |              |             |              |              | Wire Diameter          | Part Numbers |               |
|-----------------------|--------------|--------------|-------------|--------------|--------------|------------------------|--------------|---------------|
|                       | A            | B            | C           | D            | E            |                        | Molded End   | Positive Stop |
| LGH 1/2 I             | .53<br>13.5  | .49<br>12.5  | .38<br>9.7  | 2.00<br>50.8 | .160<br>40.6 | .107-.113<br>2.72-3.37 | 861076-1     | —             |
|                       |              |              |             |              |              | .081-.087<br>2.06-2.21 | 861076-2     | —             |
| LGH 1/2 LI            | .89<br>22.6  | .49<br>12.5  | .38<br>9.7  | 2.00<br>50.8 | .160<br>40.6 | .107-.113<br>2.72-3.37 | —            | 862514-1      |
|                       |              |              |             |              |              | .107-.113<br>2.72-3.37 | —            | 862515-1      |
| LGH 1 I               | .88<br>22.4  | .81<br>20.57 | .50<br>12.7 | 3.00<br>76.2 | .280<br>71.1 | .155-.165<br>3.94-4.19 | —            | 862128-1      |
|                       |              |              |             |              |              | .200-.210<br>5.08-5.33 | —            | 862128-2      |
|                       |              |              |             |              |              | .122-.132<br>3.10-3.35 | —            | 862128-3      |
| LGH 1 LI              | 1.69<br>42.9 | .81<br>20.57 | .50<br>12.7 | 3.38<br>85.9 | .280<br>71.1 | .155-.165<br>3.94-4.19 | —            | 862518-1      |

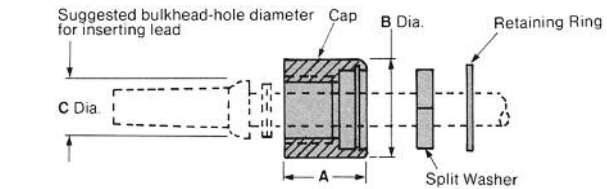
**Note:** These connectors mate with standard LGH receptacles. Recommended cable is W.L. Gore High Voltage Wire or equivalent.

## Accessories

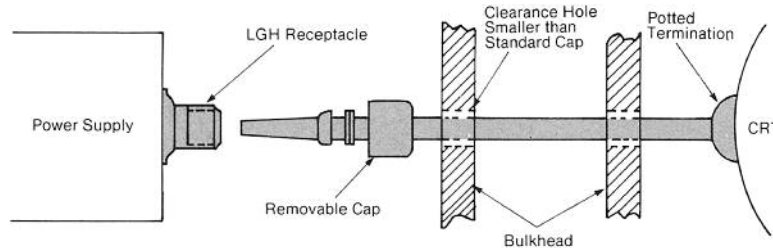
### Removable Cap Kits

These kits provide a quick and easy means of replacing damaged caps on standard LGH molded-end lead assemblies. Removing leads from bulkheads, enlarging holes in bulkheads or disconnecting leads from potted connections is unnecessary. Simple disconnection of the lead with the damaged cap is the only required step before installing the replacement. These cap kits also can be useful for applications which require threading leads through small openings in bulkheads, as illustrated at right.

### Removable Caps



| LGH Series      | Dimensions   |              |              | Kit Part Number |
|-----------------|--------------|--------------|--------------|-----------------|
|                 | A            | B            | C            |                 |
| 1/2 I<br>1/2 LI | .50<br>12.7  | .50<br>12.7  | .28<br>7.11  | 849275-1        |
| 1 I<br>1 LI     | .62<br>15.75 | .75<br>19.05 | .44<br>11.18 | 849267-1        |



### Dirt-Protective Caps

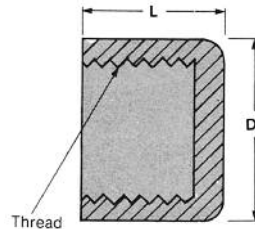
These caps protect LGH receptacles against damage to the threads and provide protection against accumulation of foreign matter on the insulator barrel and male contact. They are especially useful when receptacles are being shipped or stored.

Molded glass-epoxy caps meet specifications for MIL-M-24325 (Ships), GEI-5.

Aluminum caps, anodized black per MIL-A-8625, Type I, has an attached retaining chain. A silicone rubber gasket within provides a moisture and dust-proof seal.

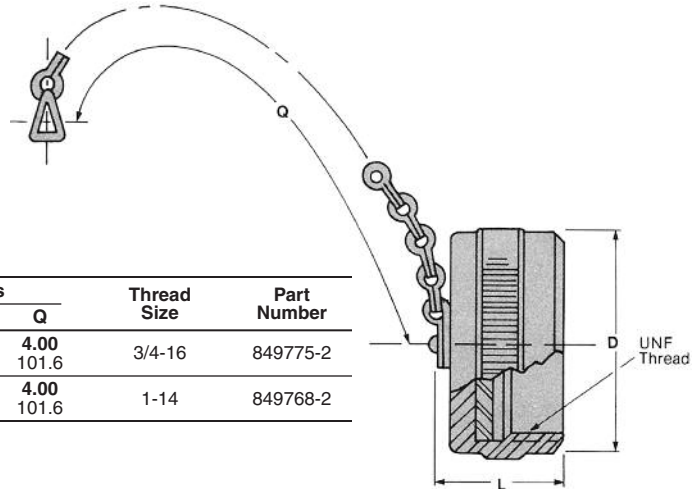
These protective caps do not replace caps provided with LGH lead assemblies.

### Glass-Epoxy Cap



| LGH Series      | Dimensions   |               | Thread Size | Part Number |
|-----------------|--------------|---------------|-------------|-------------|
|                 | L            | D             |             |             |
| 1/2 I<br>1/2 LI | .25<br>6.35  | .44<br>11.18  | 5/16-32 (M) | 850512-1    |
| 1 I<br>1 LI     | .50<br>12.7  | .63<br>16     | 1/2-20 (M)  | 850513-1    |
| 2 I             | .56<br>14.22 | 1.12<br>28.45 | 3/4-16 (M)  | 850514-1    |
| 4 I             | .56<br>14.22 | 1.37<br>34.8  | 1-14 (M)    | 850515-1    |

### Aluminum Cap

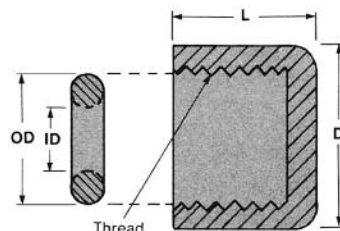


| LGH Series | Dimensions   |               |               | Thread Size | Part Number |
|------------|--------------|---------------|---------------|-------------|-------------|
|            | L            | D             | Q             |             |             |
| 2 I        | .71<br>18.03 | .91<br>23.11  | 4.00<br>101.6 | 3/4-16      | 849775-2    |
| 4 I        | .76<br>19.3  | 1.21<br>30.73 | 4.00<br>101.6 | 1-14        | 849768-2    |

### Arcing-Protective Caps

A multiple output power supply with vacant receptacles can be operated safely at high altitudes without fear of breakdown if floating receptacles are sealed with protective caps shown here.

### Arcing-Protective Cap



| LGH Series      | Dimensions   |               |              |              | Thread Size | Part Number |
|-----------------|--------------|---------------|--------------|--------------|-------------|-------------|
|                 | L            | D             | O.D.         | I.D.         |             |             |
| 1/2 I<br>1/2 LI | .25<br>6.35  | .44<br>11.18  | .28<br>7.11  | .14<br>3.56  | 5/16-32     | 849055-1    |
| 1 I<br>1 LI     | .50<br>12.7  | .62<br>15.75  | .44<br>11.18 | .23<br>5.84  | 1/2-20      | 849252-1    |
| 2 I             | .56<br>14.22 | 1.12<br>28.45 | .69<br>17.53 | .50<br>12.7  | 3/4-16      | 849253-1    |
| 4 I             | .56<br>14.22 | 1.37<br>34.8  | .94<br>23.88 | .75<br>19.05 | 1-14        | 849254-1    |

---

**LGH Product Worksheet for Ordering Custom Designs**

---

1. Customer name and location \_\_\_\_\_
2. Military application? \_\_\_\_\_ Commercial application? \_\_\_\_\_
3. Voltage: Working \_\_\_\_\_ DC \_\_\_\_\_ AC \_\_\_\_\_  
Test (High Potential) \_\_\_\_\_ DC \_\_\_\_\_ AC \_\_\_\_\_  
If AC, what frequency? \_\_\_\_\_ Hz.  
If pulsed DC, what repetition rate and duty cycle? \_\_\_\_\_
4. Current \_\_\_\_\_
5. Temperature: Operating \_\_\_\_\_ °C min. \_\_\_\_\_ °C max.  
Storage \_\_\_\_\_ °C min. \_\_\_\_\_ °C max.
6. Environment: Air \_\_\_\_\_ Oil (specify type) \_\_\_\_\_  
Water/humidity \_\_\_\_\_ Chemical \_\_\_\_\_  
Other (explain) \_\_\_\_\_
7. Altitude: Operating \_\_\_\_\_  
Storage \_\_\_\_\_
8. Hermetic seal required? \_\_\_\_\_ If yes, specify leakage rate: \_\_\_\_\_ ppm
9. What other mechanical or electrical features are required? \_\_\_\_\_
10. Plating desired? \_\_\_\_\_
11. Is a customer specification or drawing attached? \_\_\_\_\_  
If not, what dimensional restrictions apply? \_\_\_\_\_
12. Number of mating cycles needed: \_\_\_\_\_
13. For quoting purposes, what is the initial order quantity? \_\_\_\_\_  
Quantity for first year? \_\_\_\_\_  
Quantity for second year? \_\_\_\_\_
14. When are initial parts required? \_\_\_\_\_

## Table of Contents

|                                                               |      |
|---------------------------------------------------------------|------|
| How to Compute Circular Mil Area of Various Wire Shapes ..... | 10-2 |
| Terminal Stud Hole Size .....                                 | 10-3 |

### AMP Crimp Style

#### SOLISTRAND Uninsulated Terminals and Splices

|                           |            |
|---------------------------|------------|
| Introduction .....        | 10-4       |
| Terminals .....           | 10-5, 10-6 |
| Application Tooling ..... | 10-7       |

#### STRATO-THERM Terminals and Splices for High Temperature Applications

|                                                       |                |
|-------------------------------------------------------|----------------|
| Introduction .....                                    | 10-8 to 10-10  |
| Terminals and Splices .....                           | 10-11 to 10-16 |
| PIDG Terminals and Splices for Thin Wall Cables ..... | 10-17 to 10-20 |
| Application Tooling .....                             | 10-21, 10-22   |

#### COPALUM Sealed Terminals and Splices

|                           |              |
|---------------------------|--------------|
| Introduction .....        | 10-23, 10-24 |
| Terminals .....           | 10-25, 10-26 |
| Splices .....             | 10-27        |
| Application Tooling ..... | 10-28        |

#### PIDG (Pre-Insulated DIAMOND GRIP) Terminals and Splices

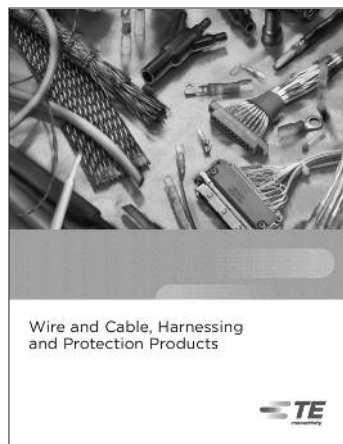
|                           |                |
|---------------------------|----------------|
| Introduction .....        | 10-29          |
| Terminals .....           | 10-30 to 10-35 |
| Splices .....             | 10-36          |
| Application Tooling ..... | 10-37          |

#### Radiation Resistant/302°F [150°C] Pre-Insulated Terminals and Splices

|                           |              |
|---------------------------|--------------|
| Introduction .....        | 10-38        |
| Terminals .....           | 10-39, 10-40 |
| Application Tooling ..... | 10-40        |

#### TERMINYL Insulated Terminals

|                           |       |
|---------------------------|-------|
| Introduction .....        | 10-41 |
| Terminals .....           | 10-42 |
| Application Tooling ..... | 10-41 |



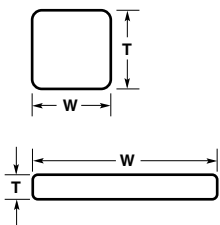
For additional product information on Raychem brand Solder & Crimp Style terminals and splices, refer to catalog 1654025 "Wire and Cable, Harnessing & Protection Products".

Wire and Cable, Harnessing  
and Protection Products



## How to Compute Circular Mil Area of Various Wire Shapes

### Square or Rectangular Wire



### U.S. Customary Dimensions

Multiply the width of the wire cross section in mils by the thickness of the wire cross section in mils by 1.2732 and subtract the radius factor shown below.

$$\text{CMA} = W \times T \times 1.2732 - \text{radius factor}$$

### Metric Dimensions

Multiply the width of the wire cross section in millimeters by the thickness of the wire cross section in millimeters by 1973.525 and subtract the radius factor shown below.

$$\text{CMA} = W \times T \times 1973.525 - \text{radius factor}$$

### Round Solid Wire AWG



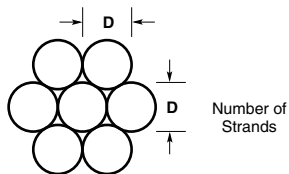
Multiply the diameter in mils by itself.

$$\text{CMA} = D^2$$

Multiply the diameter in millimeters by itself by 1550.003

$$\text{CMA} = D^2 \times 1550.003$$

### Stranded Wire AWG



Multiply the diameter of one strand (in mils) by itself, and then multiply the result by the total number of strands.

$$\text{CMA} = D^2 \times N$$

Multiply the diameter of one strand in millimeters by itself by the number of strands by 1550.003.

$$\text{CMA} = D^2 \times N \times 1550.003$$

### Conversion Table

| To Convert From | To              | Multiply By |
|-----------------|-----------------|-------------|
| CMA             | mm <sup>2</sup> | .0005067075 |
| CMA             | in <sup>2</sup> | .0000007854 |
| mm <sup>2</sup> | in <sup>2</sup> | .001550003  |
| mm <sup>2</sup> | CMA             | 1973.525    |

**Note:** Refer to table listing for circular mil area for common wire sizes.

### Radius Factor, U.S. Customary

| Radius (in.) | Radius Factor To Subtract (CMA) |
|--------------|---------------------------------|
| .010         | 110                             |
| .012         | 158                             |
| .016         | 280                             |
| .020         | 438                             |
| .026         | 740                             |
| .032         | 1121                            |
| .040         | 1752                            |
| .063         | 4346                            |
| .094         | 9675                            |

Radius must be measured.

### Radius Factor, Metric

| Radius (mm) | Radius Factor To Subtract (CMA) |
|-------------|---------------------------------|
| 0.25        | 106                             |
| 0.3         | 153                             |
| 0.35        | 208                             |
| 0.4         | 272                             |
| 0.5         | 424                             |
| 0.6         | 611                             |
| 0.8         | 1086                            |
| 1.2         | 2444                            |

Radius must be measured.

### Cross Reference AMP Closed Barrel Sizes/Metric Cable

| Wire Size in <sup>2</sup> [mm <sup>2</sup> ] | Typical cables (metric) | AMP Code     |
|----------------------------------------------|-------------------------|--------------|
| .00078 [0.5]                                 | 16/0.20                 | 22-16        |
| .00116 [0.75]                                | 24/0.20                 | 22-16        |
| .00155 [1.0]                                 | 32/0.20 1/1.13          | 22-16        |
| .00233 [1.5]                                 | 30/0.25 1/1.38          | 22-16, 16-14 |
| .00388 [2.5]                                 | 50/0.25 1/1.78          | 16-14        |
| .00620 [4.0]                                 | 56/0.30 7/0.85          | 12-10        |
| .00930 [6.0]                                 | 84/0.30 7/1.04          | 12-10        |
| .01550 [10]                                  | 80/0.40 7/1.35          | 8            |
| .02480 [16]                                  | 126/0.40 7/1.70         | 6            |
| .03875 [25]                                  | 196/0.40 7/2.14         | 4            |
| .05425 [35]                                  | 276/0.40 19/1.53        | 2            |
| .07750 [50]                                  | 396/0.40 19/1.78        | 1/0          |
| .10850 [70]                                  | 360/0.50 19/2.14        | 2/0          |
| .14725 [95]                                  | 475/0.50 19/2.52        | 3/0          |
| .18600 [120]                                 | 608/0.50 37/2.93        | 231-300 MCM  |
| .23250 [150]                                 | 756/0.50 37/2.25        | 231-300 MCM  |
| .28675 [185]                                 | 925/0.50 37/2.52        | 300-380 MCM  |
| .37200 [240]                                 | 1221/0.50 61/2.25       | 380-478 MCM  |

### Cross Reference AMP Closed Barrel Sizes/Metric Aircraft Cables

| Wire Size in <sup>2</sup> [mm <sup>2</sup> ] | Typical cables (metric) | AMP Code     |
|----------------------------------------------|-------------------------|--------------|
| .00023 [0.15]                                | 19/0.10                 | 26-22        |
| .00033 [0.21]                                | 19/0.12 7/0.20          | 26-22, 24-22 |
| .00053 [0.34]                                | 19/0.15                 | 24-22        |
| .00093 [0.60]                                | 19/0.20                 | 22-16, 20    |
| .00144 [0.93]                                | 19/0.25                 | 22-16, 18-16 |
| .00207 [1.34]                                | 19/0.30                 | 16-14, 18-16 |
| .00282 [1.82]                                | 37/0.25                 | 16-14, 18-16 |
| .00465 [3.00]                                | 37/0.32 19/0.45         | 12-10, 14-12 |
| .00721 [4.65]                                | 37/0.40                 | 12-10        |
| .01304 [8.41]                                | 119/0.30                | 8            |
| .01993 [12.86]                               | 182/0.30                | 6            |
| .03221 [20.78]                               | 294/0.30                | 4            |
| .05005 [32.29]                               | 203/0.45                | 2            |
| .06040 [38.97]                               | 245/0.45 (Size 1)       | 2            |
| .07938 [51.21]                               | 322/0.45                | 1/0          |
| .10354 [66.80]                               | 420/0.45                | 2/0          |
| .12769 [82.38]                               | 518/0.45                | 3/0          |
| .16393 [105.76]                              | 665/0.45                | 4/0          |

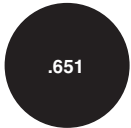
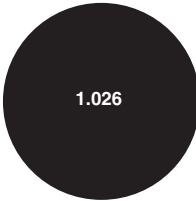
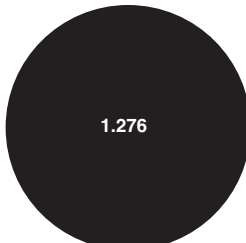
## Terminal Stud Hole Size

### Use to Select Proper Size Terminal

The chart shows sizes and dimensions of various studs and the corresponding terminal stud hole sizes used with AMP devices.

For example, with stud #5 (.125 [3.18] Diameter), use AMP device listed for #5 stud (.129 [3.28] Hole Diameter).

Terminal stud hole sizes may easily be checked by fitting sample terminal to black circle. Chart shows cross reference from BA-US-Metric stud sizes.

| Stud Size |            | Stud Dia. | Minimum Terminal Hole Diameter                                                      | Stud Size  |        | Stud Dia. | Minimum Terminal Hole Diameter                                                        |
|-----------|------------|-----------|-------------------------------------------------------------------------------------|------------|--------|-----------|---------------------------------------------------------------------------------------|
| Imperial  | U.S. Cust. |           |                                                                                     | U.S. Cust. | Metric |           |                                                                                       |
|           | #0         | .060      |    |            |        |           |                                                                                       |
|           | #1         | .073      |    | 5/8"       | M16    | .625      |    |
|           | #2         | .086      |    |            |        |           |                                                                                       |
| 8BA       | #3         | .099      |    |            |        |           |                                                                                       |
| 6BA       | #4         | .112      |    | 3/4"       |        | .750      |    |
|           | #5         | .125      |    |            |        |           |                                                                                       |
| 4BA       | #6         | .138      |    |            |        |           |                                                                                       |
|           | #8         | .164      |    | 7/8"       | M22    | .875      |   |
| 2BA       | #10        | .190      |  |            |        |           |                                                                                       |
|           | #12        | .216      |  |            |        |           |                                                                                       |
|           | #14        | .242      |  | 1"         |        | 1.000     |  |
| 0BA       | 1/4"       | .250      |  |            |        |           |                                                                                       |
|           | 5/16"      | .312      |  |            |        |           |                                                                                       |
|           | 3/8"       | .375      |  | 1 1/8"     |        | 1.125     |  |
|           | 7/16"      | .437      |  |            |        |           |                                                                                       |
|           | 1/2"       | .500      |  | 1 1/4"     |        | 1.250     |  |

## Introduction

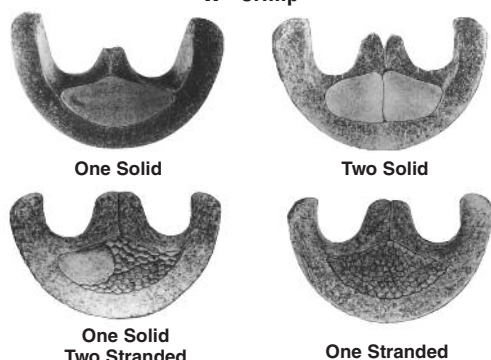
SOLISTRAND terminals and splices are specially designed to terminate solid and stranded wire, irregular shaped conductors, and combinations of these—still retaining the superior performance characteristics of single-purpose terminals and splices. Because we match the terminal to the tool each termination is uniform, making quality control easy and performance consistent. Corrosion resistance, vibration resistance and tensile strength of these terminals and splices are well within the limits of commercial and military specifications. The SOLISTRAND terminals and splice line includes parallel and butt splices, and flag, ring, spade, hooked, and flanged tongue terminals in sizes from 26 AWG [0.1 mm<sup>2</sup>] through 600 MCM [304 mm<sup>2</sup>].

## The Crimp

The “W” Crimp is one of several time-proven crimp types developed by TE Connectivity. It is not just a “kink” in a metal barrel; not something pinched over electrical wire ends. The “W” Crimp is actually two longitudinal crimps applied with precisely controlled pressure so that the conductor within the barrel flows together into the dimples or serrations of the terminal barrel creating one homogeneous mass of metal. The two indents also help to center conductors within the barrel for uniform crimping of the barrel around the wire. Furthermore, the “W” Crimp permits the use of a shorter terminal barrel, an excellent feature for confined area termination.

The “W” Crimp creates terminations of optimum electrical properties and is completely reliable, giving long service in harsh environments.

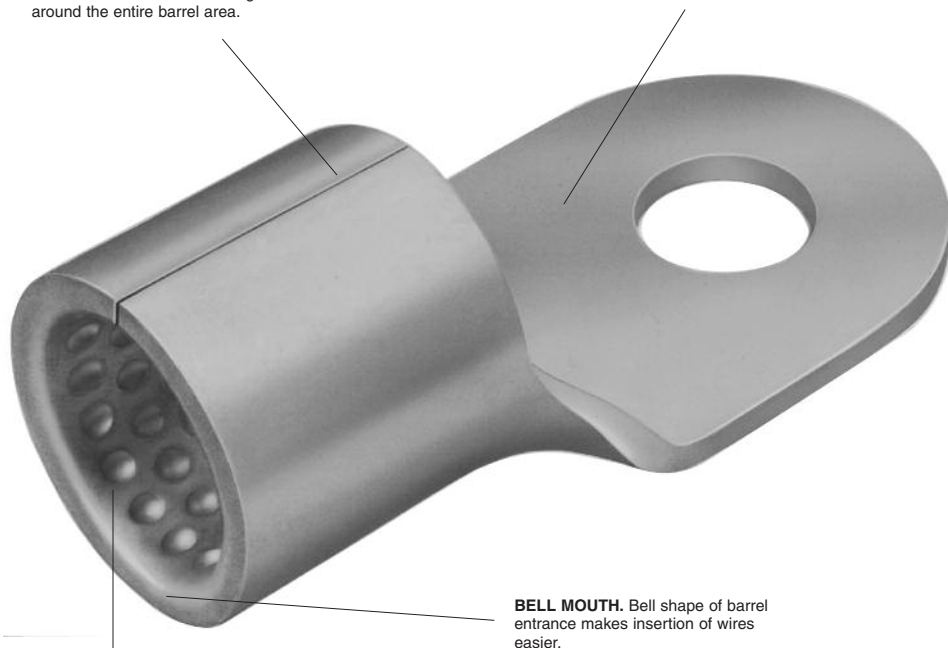
“W” Crimp



**BRAZED SEAM.** The barrel is completely closed and seam is brazed for uniform metal strength around the entire barrel area.

### BASIC TERMINAL MATERIAL.

The basic terminal is constructed of finegrade high conductivity copper per ASTM B-152 and tin-plated per MIL-T-10727. Basic material for Spring Spade Tongue Terminals is phosphor bronze per ASTM B-103 and tin-plated per MIL-T-10727. The AMP special plating process creates durable corrosion resistance to salt spray and most chemical fumes.



**DIMPLES OR SERRATIONS.** Inner surface either dimpled or serrated for optimum tensile strength and maximum electrical contact area after crimping.

**BELL MOUTH.** Bell shape of barrel entrance makes insertion of wires easier.

**SOLISTRAND Terminals meet or exceed the requirements of MIL-T-7928, Type I, Class 1 and 2.**

**Temperature Rating: 338°F [170°C] Max.**

### AMP SOLISTRAND Terminals and Splices (Use SOLISTRAND Tooling)

| AMP Wire Size                      | UL Listed File No. E13288 | SP LR 7189 Certified               |
|------------------------------------|---------------------------|------------------------------------|
| 22–16 Solid or Stranded            | 22–16 Solid or Stranded   | 22–16 Solid or Stranded            |
| 16–14 Solid or Stranded            | 16–14 Solid or Stranded   | 16–14 Solid or Stranded            |
| 16–14 Heavy Duty Solid or Stranded | 16–14 Heavy Duty Stranded | 16–14 Heavy Duty Solid or Stranded |
| 14–12 Solid or Stranded            | 14–12 Stranded            | 14–12 Solid or Stranded            |
| 12–10 Solid or Stranded            | 12–10 Stranded            | 12–10 Solid or Stranded            |
| 8 thru 600 MCM Solid or Stranded   | 8 thru 600 MCM Stranded   | 8 thru 600 MCM Solid or Stranded   |

**Note:** 22-16 terminals and splices are stamped 22-18 in accordance with MIL-T-7928. Commercial wire range is 22-16.

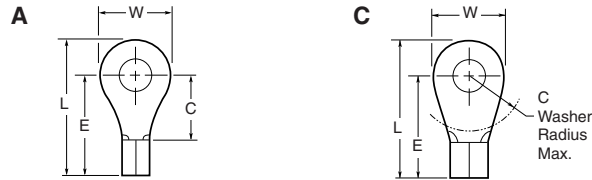


## Ring Tongue Terminals

### Material and Finish

**Terminal Body**—Copper per  
ASTM B-152

**Plating**—Tin per MIL-T-10727



### Military Specification M7928/7

| Wire Size<br>Circular Mils<br>[mm <sup>2</sup> ] | Stud<br>Size | Style | Dimensions    |               |               |               | Material<br>Thickness<br>Max. | Wire Barrel<br>I.D. Min. | Class | M7928/7<br>Dash<br>Number | Part<br>Number        |
|--------------------------------------------------|--------------|-------|---------------|---------------|---------------|---------------|-------------------------------|--------------------------|-------|---------------------------|-----------------------|
|                                                  |              |       | L<br>Max.     | E<br>Max.     | C<br>Min.     | W             |                               |                          |       |                           |                       |
| 22–16<br>509–3,260<br>[0.26–1.65]                | 2<br>M2      | A     | .449<br>11.40 | .337<br>8.56  | .156<br>3.96  | .218<br>5.54  | .033<br>0.84                  | .061<br>1.55             | -     | -                         | 34103<br>2-34103-1    |
|                                                  | 4            | A     | .449<br>11.40 | .337<br>8.56  | .156<br>3.96  | .218<br>5.54  | .033<br>0.84                  | .061<br>1.55             | -     | -                         | 34104*<br>2-34104-6   |
|                                                  | 6<br>M3.5    | A     | .621<br>15.77 | .462<br>11.73 | .281<br>7.14  | .312<br>7.92  | .033<br>0.84                  | .061<br>1.55             | -     | -                         | 34110*<br>2-34110-3   |
|                                                  | 10           | A     | .621<br>15.77 | .462<br>11.73 | .281<br>7.14  | .312<br>7.92  | .033<br>0.84                  | .061<br>1.55             | -     | -                         | 34112*<br>2-34112-2   |
|                                                  | 5/16<br>M8   | A     | .856<br>21.74 | .618<br>15.70 | .437<br>11.10 | .469<br>11.91 | .033<br>0.84                  | .061<br>1.55             | -     | -                         | 34114*<br>2-34114-2   |
|                                                  | 3/8          | A     | .995<br>25.27 | .727<br>18.47 | .546<br>13.87 | .531<br>13.49 | .033<br>0.84                  | .061<br>1.55             | -     | -                         | 34115*<br>2-34115-2   |
| 16–14<br>2,050–5,180<br>[1.04–2.62]              | 4            | A     | .480<br>12.19 | .352<br>8.94  | .171<br>4.34  | .250<br>6.35  | .033<br>0.84                  | .085<br>2.16             | -     | -                         | 34119*<br>2-34119-1   |
|                                                  | 6<br>M3.5    | A     | .590<br>14.99 | .431<br>10.95 | .250<br>6.35  | .312<br>7.92  | .033<br>0.84                  | .085<br>2.16             | -     | -                         | 321684*<br>2-321684-1 |
|                                                  | 10           | A     | .669<br>16.99 | .510<br>12.95 | .250<br>6.35  | .312<br>7.92  | .033<br>0.84                  | .085<br>2.16             | 1     | 8                         | 320093<br>2-320093-1  |
|                                                  | 5/16<br>M8   | A     | .855<br>21.72 | .618<br>15.70 | .437<br>11.10 | .469<br>11.91 | .033<br>0.84                  | .085<br>2.16             | -     | -                         | 34125*<br>2-34125-6   |
|                                                  | 3/8          | A     | .995<br>25.27 | .727<br>18.47 | .546<br>13.87 | .531<br>13.49 | .033<br>0.84                  | .085<br>2.16             | -     | -                         | 34126*<br>2-34126-2   |

**Note:** Part numbers are shown as loose piece over tape mounted product.

\* Part numbers are available in small quantity packages.

### Military Specification MS20659

| Wire Size<br>Circular Mils<br>[mm <sup>2</sup> ] | Stud<br>Size | Style | Dimensions     |                |                |               | Material<br>Thickness<br>Max. | Wire Barrel<br>I.D. Min. | Class | MS20659<br>Dash<br>Number | Part<br>Number        |
|--------------------------------------------------|--------------|-------|----------------|----------------|----------------|---------------|-------------------------------|--------------------------|-------|---------------------------|-----------------------|
|                                                  |              |       | L<br>Max.      | E<br>Max.      | C              | W             |                               |                          |       |                           |                       |
| 12–10<br>5,180–13,100<br>[2.62–6.64]             | 6<br>M3.5    | A     | .630<br>16.00  | .487<br>12.37  | .219<br>5.56   | .281<br>7.14  | .042<br>1.07                  | .129<br>3.28             | -     | -                         | 35476*<br>2-35476-1   |
|                                                  | 10           | A     | .765<br>19.43  | .575<br>14.61  | .302<br>7.67   | .375<br>9.53  | .042<br>1.07                  | .129<br>3.28             | 1     | 105                       | 33457*<br>2-33457-2   |
|                                                  | 5/16<br>M8   | A     | 1.004<br>25.50 | .736<br>18.69  | .468<br>11.89  | .531<br>13.49 | .042<br>1.07                  | .129<br>3.28             | 1     | 106                       | 33459*<br>2-33459-6   |
|                                                  | 3/8          | A     | 1.098<br>27.89 | .799<br>20.29  | .531<br>13.49  | .593<br>15.06 | .042<br>1.07                  | .129<br>3.28             | 1     | 128                       | 33220*                |
|                                                  | 1/2<br>M12   | A     | 1.271<br>32.28 | .893<br>22.68  | .625<br>15.88  | .750<br>19.05 | .042<br>1.07                  | .129<br>3.28             | -     | -                         | 35135                 |
|                                                  | 8<br>M4      | C     | .949<br>24.10  | .743<br>18.87  | .359<br>9.12   | .406<br>10.31 | .051<br>1.30                  | .172<br>4.37             | -     | -                         | 324061*               |
| 8<br>13,100–20,800<br>[6.64–10.5]                | 10           | C     | .949<br>24.10  | .743<br>18.87  | .359<br>9.12   | .406<br>10.31 | .051<br>1.30                  | .172<br>4.37             | -     | -                         | 31807<br>2-31807-2*2  |
|                                                  | 1/4<br>M6    | C     | .933<br>23.70  | .696<br>17.68  | .359<br>9.12   | .469<br>11.91 | .051<br>1.30                  | .172<br>4.37             | -     | -                         | 33461*<br>2-33461-2*1 |
|                                                  | 5/16<br>M8   | A     | 1.074<br>27.28 | .790<br>20.07  | .406<br>10.31  | .562<br>14.27 | .051<br>1.30                  | .172<br>4.37             | -     | -                         | 31808*                |
|                                                  | 3/8          | A     | 1.168<br>29.67 | .868<br>22.05  | .531<br>13.49  | .594<br>15.09 | .051<br>1.30                  | .172<br>4.37             | -     | -                         | 33463*                |
|                                                  | 10           | C     | 1.168<br>29.67 | .931<br>23.65  | .531<br>13.49  | .468<br>11.89 | .060<br>1.52                  | .232<br>5.89             | -     | -                         | 321298*               |
|                                                  | 1/4<br>M6    | C     | 1.168<br>29.67 | .931<br>23.65  | .531<br>13.49  | .468<br>11.89 | .060<br>1.52                  | .232<br>5.89             | -     | -                         | 321598*               |
| 6<br>20,800–33,100<br>[10.5–16.8]                | 5/16<br>M8   | C     | 1.246<br>31.65 | .931<br>23.65  | .531<br>13.49  | .625<br>15.88 | .060<br>1.52                  | .232<br>5.89             | -     | -                         | 33466*<br>2-33466-3   |
|                                                  | 3/8          | C     | 1.246<br>31.65 | .931<br>23.65  | .531<br>13.49  | .625<br>15.88 | .060<br>1.52                  | .232<br>5.89             | -     | -                         | 33467*                |
|                                                  | 1/2<br>M12   | C     | 1.840<br>46.74 | 1.400<br>35.56 | 1.000<br>25.40 | .875<br>22.23 | .060<br>1.52                  | .232<br>5.89             | -     | -                         | 320344*               |

**Note:** Part numbers are shown as loose piece over tape mounted product.

\* Part numbers are available in small quantity packages.

<sup>1</sup> Requires a 69875 standard AMP-TAPETRONIC machine for application.

<sup>2</sup> Requires a 68250-1 Heavy Duty AMP-TAPETRONIC machine for application.

### Ring Tongue Terminals (Continued)

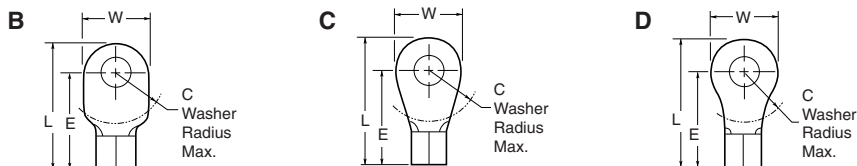
#### Material and Finish

**Terminal Body**—Copper per ASTM B-152

**Plating**—Tin per MIL-T-10727

#### Military Specification

**MS20659** (Continued)



| Wire Size<br>Circular Mils<br>[mm <sup>2</sup> ] | Stud<br>Size | Style | Dimensions     |                |                |                | Material<br>Thickness<br>Max. | Wire Barrel<br>I.D. Min. | Class | MS20659<br>Dash<br>Number | Part<br>Number      |
|--------------------------------------------------|--------------|-------|----------------|----------------|----------------|----------------|-------------------------------|--------------------------|-------|---------------------------|---------------------|
|                                                  |              |       | L<br>Max.      | E<br>Max.      | C              | W              |                               |                          |       |                           |                     |
| 4<br>33,100–52,600<br>[16.8–26.7]                | 10           | C     | 1.199<br>30.45 | .946<br>24.03  | .437<br>11.10  | .500<br>12.70  | .073<br>1.85                  | .280<br>7.11             | -     | -                         | 33114               |
|                                                  | 1/4<br>M6    | C     | 1.199<br>30.45 | .946<br>24.03  | .437<br>11.10  | .500<br>12.70  | .073<br>1.85                  | .280<br>7.11             | -     | -                         | 31811 <sup>†</sup>  |
|                                                  | 5/16<br>M8   | C     | 1.324<br>33.63 | 1.009<br>25.63 | .500<br>12.70  | .625<br>15.88  | .073<br>1.85                  | .280<br>7.11             | -     | -                         | 33115               |
|                                                  | 3/8          | C     | 1.324<br>33.63 | 1.009<br>25.63 | .500<br>12.70  | .625<br>15.88  | .073<br>1.85                  | .280<br>7.11             | -     | -                         | 31812               |
|                                                  | 1/2<br>M12   | B     | 1.902<br>48.31 | 1.462<br>37.13 | 1.000<br>25.40 | .875<br>22.23  | .073<br>1.85                  | .296<br>7.52             | -     | -                         | 327175 <sup>*</sup> |
| 2<br>52,600–83,700<br>[26.7–42.4]                | 10           | B     | 1.527<br>38.79 | 1.212<br>30.78 | .531<br>13.49  | .625<br>15.88  | .073<br>1.85                  | .370<br>9.40             | -     | -                         | 330301              |
|                                                  | 1/4<br>M6    | B     | 1.527<br>38.79 | 1.212<br>30.78 | .531<br>13.49  | .625<br>15.88  | .073<br>1.85                  | .370<br>9.40             | -     | -                         | 320383 <sup>*</sup> |
|                                                  | 5/16<br>M8   | B     | 1.527<br>38.79 | 1.212<br>30.78 | .531<br>13.49  | .625<br>15.88  | .073<br>1.85                  | .370<br>9.40             | -     | -                         | 322870 <sup>*</sup> |
|                                                  | 3/8          | B     | 1.527<br>38.79 | 1.212<br>30.78 | .531<br>13.49  | .625<br>15.88  | .073<br>1.85                  | .370<br>9.40             | -     | -                         | 321600 <sup>*</sup> |
|                                                  | 7/16         | D     | 1.657<br>42.09 | 1.212<br>30.78 | .531<br>13.49  | .890<br>22.61  | .073<br>1.85                  | .370<br>9.40             | -     | -                         | 320741              |
| 1/0<br>83,700–119,500<br>[42.4–60.6]             | 1/4<br>M6    | C     | 1.925<br>48.90 | 1.532<br>38.91 | .625<br>15.88  | .807<br>20.50  | .073<br>1.85                  | .444<br>11.28            | -     | -                         | 321866              |
|                                                  | 5/16<br>M8   | C     | 1.925<br>48.90 | 1.532<br>38.91 | .625<br>15.88  | .807<br>20.50  | .073<br>1.85                  | .444<br>11.28            | -     | -                         | 321867 <sup>*</sup> |
|                                                  | 3/8          | C     | 1.925<br>48.90 | 1.532<br>38.91 | .625<br>15.88  | .807<br>20.50  | .073<br>1.85                  | .444<br>11.28            | -     | -                         | 321868              |
|                                                  | 7/16         | C     | 1.956<br>49.68 | 1.529<br>38.84 | .625<br>15.88  | .875<br>22.23  | .073<br>1.85                  | .444<br>11.28            | -     | -                         | 36918               |
|                                                  | 1/2<br>M12   | C     | 1.956<br>49.68 | 1.529<br>38.84 | .625<br>15.88  | .875<br>22.23  | .073<br>1.85                  | .444<br>11.28            | -     | -                         | 36919 <sup>*</sup>  |
| 2/0<br>119,500–150,500<br>[60.6–76.3]            | 1/4<br>M6    | C     | 1.930<br>49.02 | 1.550<br>39.37 | .625<br>15.88  | .926<br>23.52  | .083<br>2.11                  | .504<br>12.80            | -     | -                         | 321869              |
|                                                  | 5/16<br>M8   | C     | 1.930<br>49.02 | 1.550<br>39.37 | .625<br>15.88  | .926<br>23.52  | .083<br>2.11                  | .504<br>12.80            | -     | -                         | 321870 <sup>*</sup> |
|                                                  | 3/8          | C     | 1.930<br>49.02 | 1.550<br>39.37 | .625<br>15.88  | .926<br>23.52  | .083<br>2.11                  | .504<br>12.80            | -     | -                         | 321871 <sup>*</sup> |
|                                                  | 7/16         | C     | 1.930<br>49.02 | 1.550<br>39.37 | .625<br>15.88  | .926<br>23.52  | .083<br>2.11                  | .504<br>12.80            | -     | -                         | 321872              |
|                                                  | 1/2<br>M12   | C     | 1.930<br>49.02 | 1.550<br>39.37 | .625<br>15.88  | .926<br>23.52  | .083<br>2.11                  | .504<br>12.80            | -     | -                         | 321873 <sup>*</sup> |
| 3/0<br>150,500–190,000<br>[76.3–96.3]            | 5/16<br>M8   | B     | 2.112<br>53.64 | 1.622<br>41.20 | .625<br>15.88  | 1.020<br>25.91 | .094<br>2.39                  | .565<br>14.35            | -     | -                         | 321874              |
|                                                  | 3/8          | B     | 2.112<br>53.64 | 1.622<br>41.20 | .625<br>15.88  | 1.020<br>25.91 | .094<br>2.39                  | .565<br>14.35            | -     | -                         | 321875 <sup>*</sup> |
|                                                  | 7/16         | B     | 2.112<br>53.64 | 1.622<br>41.20 | .625<br>15.88  | 1.020<br>25.91 | .094<br>2.39                  | .565<br>14.35            | -     | -                         | 321876              |
|                                                  | 1/2<br>M12   | B     | 2.112<br>53.64 | 1.622<br>41.20 | .625<br>15.88  | 1.020<br>25.91 | .094<br>2.39                  | .565<br>14.35            | -     | -                         | 321877 <sup>*</sup> |
|                                                  | 5/16<br>M8   | B     | 2.537<br>64.44 | 1.985<br>50.42 | 1.078<br>27.38 | 1.150<br>29.21 | .105<br>2.67                  | .635<br>16.13            | -     | -                         | 321271              |
| 4/0<br>190,000–231,000<br>[96.3–117]             | 3/8          | B     | 2.178<br>55.32 | 1.657<br>42.09 | .625<br>15.88  | 1.087<br>27.61 | .105<br>2.67                  | .635<br>16.13            | -     | -                         | 321878 <sup>*</sup> |
|                                                  | 7/16         | B     | 2.178<br>55.32 | 1.657<br>42.09 | .625<br>15.88  | 1.087<br>27.61 | .105<br>2.67                  | .635<br>16.13            | -     | -                         | 321879              |
|                                                  | 1/2<br>M12   | B     | 2.178<br>55.32 | 1.657<br>42.09 | .625<br>15.88  | 1.087<br>27.61 | .105<br>2.67                  | .635<br>16.13            | -     | -                         | 321880 <sup>*</sup> |
|                                                  | 5/8<br>M16   | B     | 2.206<br>56.03 | 1.644<br>41.76 | .625<br>15.88  | 1.150<br>29.21 | .105<br>2.67                  | .635<br>16.13            | -     | -                         | 36935               |
|                                                  | 3/4          | C     | 2.732<br>69.39 | 2.117<br>53.77 | 1.078<br>27.38 | 1.275<br>32.39 | .105<br>2.67                  | .635<br>16.13            | -     | -                         | 322228              |
|                                                  | 7/8<br>M22   | C     | 2.732<br>69.39 | 2.117<br>53.77 | 1.078<br>27.38 | 1.275<br>32.39 | .105<br>2.67                  | .635<br>16.13            | -     | -                         | 321625              |
|                                                  |              |       |                |                |                |                |                               |                          |       |                           |                     |

\* Part numbers are available in small quantity packages.

## Application Tooling

### Wire Size Range AWG 26 to 6

| Product Type         | Wire Size        | Hand Tools           | Pneumatic Tooling           |                       | Dies for 626, Tool Requires Straight Action Adapter 217200-1 or 318161-1 Dies Also Fit 69710-1 Hand Tool | Tooling For Tape Mounted Products                 |
|----------------------|------------------|----------------------|-----------------------------|-----------------------|----------------------------------------------------------------------------------------------------------|---------------------------------------------------|
|                      |                  |                      | Crimping Heads for 626 Tool |                       |                                                                                                          | Dies for 69875 AMP-TAPETRONIC Requires Applicator |
|                      |                  |                      | Single Wire Range           | Multiple Wire Range   |                                                                                                          | AMPOMATOR CLS IV Requires Applicators             |
| SOLISTRAND terminals | 26-22            | 69363 <sup>2</sup>   | —                           | —                     | —                                                                                                        | 768625-1                                          |
|                      | 24-20            |                      | —                           | —                     | —                                                                                                        |                                                   |
|                      | 22-16            | 49935 <sup>2</sup>   | 314516-1 <sup>4</sup>       | —                     | 47812 <sup>4</sup>                                                                                       | 68240-1                                           |
|                      | 16-14            |                      | 314517-1 <sup>4</sup>       | 679301-1 <sup>4</sup> | 47813 <sup>4</sup>                                                                                       | 68241-1                                           |
|                      | 12-10 & 16-14 HD | 58546-1 <sup>3</sup> | —                           | —                     | 47814 <sup>1, 4</sup>                                                                                    | 68242-1                                           |
|                      | 14-12            | 49592 <sup>2</sup>   | 314518-1 <sup>4</sup>       | —                     | —                                                                                                        | 90566-1                                           |
|                      | 8                | —                    | 1338757-1 <sup>4</sup>      | —                     | —                                                                                                        | 68243-1                                           |
|                      | 6                | —                    | 1338758-1 <sup>5</sup>      | —                     | —                                                                                                        | —                                                 |

<sup>1</sup> For standard wire only.

<sup>2</sup> CERTI-CRIMP Hand Tool.

<sup>3</sup> Contains die set 58545-1. PRO-CRIMPER II commercial tool not approved for UL applications.

<sup>4</sup> Use with 626 Pneumatic Tool 189721-1 or 189722-1.

<sup>5</sup> Use with 626 Pneumatic Tool 189721-2 or 189722-2.

### Wire Size Range AWG 8 to 600 MCM

| Product Type       | Wire Size   | Hand Tool          | Pneumatic Tooling<br>69015 | Hydraulic Tools With Self Contained Dies |            | Hydraulic Tools With Interchangeable Dies                                                |                |                      |                    | Tooling For Tape Mounted Product                                                                     |                |                     |
|--------------------|-------------|--------------------|----------------------------|------------------------------------------|------------|------------------------------------------------------------------------------------------|----------------|----------------------|--------------------|------------------------------------------------------------------------------------------------------|----------------|---------------------|
|                    |             |                    |                            |                                          |            | Hand Tools 1490748-1 and 1490749-1 or Hydraulic Heads 1490745-1, 1490746-1 and 1976230-1 |                | 1752788-1 Latch Head | 1752786-1 "C" Head | 1752868-1 <sup>2</sup> "C" Head                                                                      | Dies for 69875 | Dies for 68250-1 HD |
|                    |             |                    |                            | Hand Tool                                | Latch Head | AMP-TAPETRONIC                                                                           | AMP-TAPETRONIC |                      |                    |                                                                                                      |                |                     |
|                    |             |                    |                            |                                          |            |                                                                                          |                |                      |                    | Listed dies are single indent. See product information for proper tape application tooling selection |                |                     |
| Standard Terminals | 8           | 69355 <sup>1</sup> | 49956                      | 59975-1                                  | 1673672-1  | Nest                                                                                     | Indent         |                      |                    | 69216                                                                                                | 68243-1        | 68312-1             |
|                    | 6           |                    | 48172                      |                                          |            | 1490413-1                                                                                | 1490414-1      |                      |                    | 69217                                                                                                | —              | 68313-1             |
|                    | 4           | 59131              | 48173                      |                                          |            | 1490413-2                                                                                | 1490414-2      |                      |                    | 69218                                                                                                | —              | —                   |
|                    | 2           |                    | 48174                      |                                          |            | 1490413-3                                                                                |                |                      | 45433              | —                                                                                                    | —              |                     |
|                    | 1/0         |                    | 48183                      | 1490413-4                                |            |                                                                                          | 45436          | —                    | —                  |                                                                                                      |                |                     |
|                    | 2/0         |                    |                            | 1490413-5                                |            |                                                                                          | 45439          | —                    | —                  |                                                                                                      |                |                     |
|                    | 3/0         |                    |                            | 1490413-6                                | 1490414-3  |                                                                                          | 45442          | —                    | —                  |                                                                                                      |                |                     |
|                    | 4/0         |                    |                            | 1490413-7                                |            |                                                                                          | 45445          | —                    | —                  |                                                                                                      |                |                     |
|                    |             |                    |                            | 1490413-8                                |            |                                                                                          |                |                      |                    |                                                                                                      |                |                     |
|                    | 250-300 MCM |                    |                            |                                          |            |                                                                                          | 48816          | 69911                |                    |                                                                                                      |                |                     |
|                    | 300-350 MCM |                    |                            |                                          |            |                                                                                          | 48817          | 69912                |                    |                                                                                                      |                |                     |
|                    | 400 MCM     |                    |                            |                                          |            |                                                                                          | 48818          | 69913                |                    |                                                                                                      |                |                     |
|                    | 500-600 MCM |                    |                            |                                          |            |                                                                                          | 48819          | 69914                |                    |                                                                                                      |                |                     |

<sup>1</sup> CERTI-CRIMP Hand Tool.

<sup>2</sup> These crimping heads are recommended for use only with AMP Hydraulic Foot Pump 1583659-1 and Hydraulic Hand Pump 1583661-1, DYNA-CRIMP Hydraulic Power Units 1804700-1 (115 VAC) and 1804700-2 (230 VAC).

[www.tooling.tycoelectronics.com](http://www.tooling.tycoelectronics.com)  
[www.tooling.tycoelectronics.com/europe](http://www.tooling.tycoelectronics.com/europe)

## Introduction

### Product Facts

- Product available in temperature ranges of 500°F [260°C], 550°F [288°C], 650°F [343°C] and 1200°F [649°C]
- Product employs the famous “W” and “C” crimp
- Wide range of wire sizes
- Complete line of related application tooling
- Accommodates solid and/or stranded conductors



Heat...extreme heat... searing temperatures up to 1200°F [649°C]. This is one of the most challenging environments that electrical/electronic circuitry has ever entered.

If heat is an unavoidable dimension in your circuit design and production, this product is an important ally. In this line of STRATO-THERM terminals and splices, you'll find high temperature circuit hardware. You'll also find solutions to other more familiar circuit problems such as vibration, corrosion and flash-over, when they occur at high temperatures.

Different types of high temperature terminals and splices found in this catalog are as follows:

PIDG Terminals and Splices, and Pre-Insulated Spare Wire Caps — 550°F [288°C] Range

PIDG Insulation Restriction Terminals — 550°F [288°C] Range

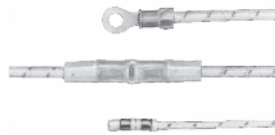
Post-Insulated Terminals and Splices — 550°F [288°C] Range

Uninsulated Terminals and Splices — 650°F [343°C] Range

Uninsulated Terminals and Splices — 1200°F [649°C] Range

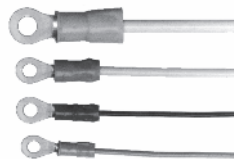
## Introduction (Continued)

### PIDG Terminals and Splices, and Pre-Insulated Spare Wire Caps 550°F [288°C] Range



Designed for reliable performance up to 550°F [288°C], this line of ring-tongue terminals, butt splices and spare wire caps features a pre-insulation sleeve of PTFE TFE insulation material. A special funnel entry feature has been added to promote easy entry and proper seating of wire. The body is copper with a choice of gold over nickel plating or nickel plating. The terminal and splice barrel accommodates stranded wire conductors only. The spare wire caps are designed for unstripped wire.

### PIDG Insulation Restriction Terminals 550°F [288°C] Range



These pre-insulated insulation restriction terminals better prevent the insulation of thin-wall insulation wire from entering the terminal's wire crimp area during the crimping process.

Designed for reliable performance up to 550°F [288°C], these terminals feature a pre-insulation sleeve of PTFE (TFE) insulation material.

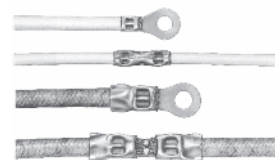
Because of features such as a one-piece constructed inner sleeve and a wide funnel entry design which facilitates wire entry, standard STRATO-THERM PIDG tooling may be used to terminate this product.

### Post-Insulated Terminals and Splices 550°F [288°C] Range



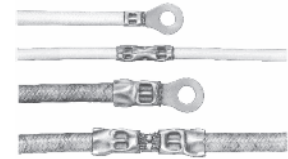
The temperature range of these terminals and splices is 550°F [288°C] for nickel plating and gold over nickel plated copper, and 500°F [260°C] for silver plating. These terminals and splices accommodate solid and/or stranded conductors.

### Uninsulated Terminals and Splices 650°F [343°C] Range



These terminals and splices are available with and without wire insulation support. Both types are manufactured from electrolytic copper, plated with nickel. In the insulation support type, the support sleeve is fabricated from nickel-silver alloy. Both types accommodate solid or stranded conductors in various combinations. Wire size range is listed in the tabular data section.

### Uninsulated Terminals and Splices 1200°F [649°C] Range



Nickel material is used for the body of both the terminal and splice. They are available with or without wire insulation support sleeve of nickel-silver alloy material. Accommodating either solid or stranded conductors in different combinations, these terminals and splices are made to cover a broad wire size range, listed in the tabular data section.

Terminals made of alumel and chromel material with nickel-silver alloy sleeves are available for thermocouple applications. When using either alumel or chromel conductors, a terminal of the same material should be selected.

## Introduction (Continued)

### Ordering Information

All terminals and splices are listed according to wire size and type of terminal or splice. If the part number of the terminal or splice is known, refer to the Numerical Index, at the back of this catalog, for page location of tabular data.

In the Tabular Data Section, part numbers are available in either loose piece or tape mounted form.

When ordering tape mounted part numbers, specify the terminal or splice part number, the total quantity of parts desired (if applicable). The chart to the right lists by wire size the type of packaging available and the quantity per package.

| Wire Range<br>AWG | Standard Quantities |              |
|-------------------|---------------------|--------------|
|                   | Loose Piece         | Tape Mounted |
| 26 – 14           | 1,000               | 5,000        |
| 26 – 22           | —                   | 2,500        |
| 12 – 10           | 500                 | 2,500        |
| 8, 6, 4           | 100                 | —            |
| 2, 1½             | 50                  | —            |

**Note:** Package quantities may vary with specific part numbers.

### The Crimp

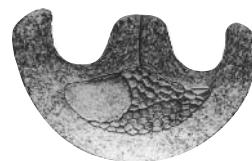
All five types of STRATO-THERM terminals and splices provide optimum corrosion and vibration resistance plus outstanding tensile characteristics.

All types, except the STRATO-THERM PIDG terminals, splices and pre-insulated spare wire caps, employ the famous “W” crimp which creates the precise electromechanical properties necessary for solid and/or stranded conductor combinations. A proper crimp will provide a uniform attachment. When mechanical pressure is applied to the terminal barrel, the wire inside is forced into the serrations or dimples of the barrel. Shown are four typical photomicrographs of the “W” crimp, illustrating the results of crimping various conductor combinations. In each case, the action of the crimp has compressed the conductors and the barrel into a homogenous mass.

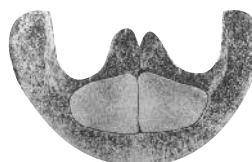
**“W” Crimp**



**One Solid**



**One Solid  
Two Stranded**

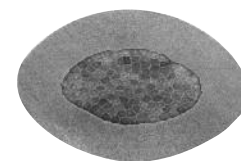


**Two Solid**



STRATO-THERM PIDG terminals and splices employ the equally reliable confined “C” crimp plus multiple position insulation support crimp for today's smaller insulated wires. This “C” crimp is especially suited to crimping the terminal barrel and insulation sleeve to stranded wire conductors. The photomicrograph shows the results of “C” crimping. Virtually the same electromechanical properties are obtained as in the “W” crimp. Pre-insulated spare wire caps and post-insulated splices are crimped with an “O” crimp configuration.

**Confined C**





## Insulated Terminals and Splices

### PIDG (Pre-Insulated DIAMOND GRIP) Ring Tongue Terminals

#### Temperature Rating, Material and Finish

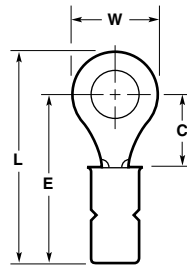
**Insulation** — PTFE

**Terminal Body** — Copper per  
ASTM B152

**Plating** — Nickel per QQ-N-290,  
550°F [288°C]. Gold per MIL-G-  
45204 over Nickel per QQ-N-290  
500°F [260°C]

**Metallic Sleeve** — Copper per  
ASTM B152

**Plating** — Nickel per QQ-N-290,  
550°F [288°C]



#### Related Product Data

**Application Tooling** — pages 10-21  
and 10-22

| Wire Size<br>Circular Mils<br>[mm <sup>2</sup> ] | Tongue<br>Material<br>Thickness<br>Max. | Stud<br>Size | Dimensions    |               |                |                | Terminal<br>Insulation<br>Color | Wire<br>Insulation<br>Diameter<br>Max. | Body<br>Plating <sup>1</sup> | Part Number<br>Loose<br>Piece |
|--------------------------------------------------|-----------------------------------------|--------------|---------------|---------------|----------------|----------------|---------------------------------|----------------------------------------|------------------------------|-------------------------------|
|                                                  |                                         |              | W             | C<br>Min.     | E<br>Max.      | L<br>Max.      |                                 |                                        |                              |                               |
| 18-16<br>1,600-2,800<br>[0.81-1.42]              | .033<br>0.84                            | 4            | .218<br>5.54  | .156<br>3.96  | .560<br>14.22  | .672<br>17.07  | Orange                          | .135<br>3.43                           | Nickel                       | 50834                         |
|                                                  |                                         | 8<br>M4      | .312<br>7.92  | .281<br>7.14  | .685<br>17.40  | .844<br>21.44  | Orange                          | .135<br>3.43                           | Nickel                       | 50836                         |
|                                                  |                                         | 10           | .312<br>7.92  | .281<br>7.14  | .685<br>17.40  | .844<br>21.44  | Orange                          | .135<br>3.43                           | Nickel                       | 50836-1                       |
| 12-10<br>5,180-13,100<br>[2.62-6.64]             | .042<br>1.07                            | 8<br>M4      | .375<br>9.53  | .302<br>7.67  | .893<br>22.68  | 1.083<br>27.51 | Black                           | .214<br>5.44                           | Nickel                       | 50845-1                       |
|                                                  |                                         | 10           | .375<br>9.53  | .302<br>7.67  | .893<br>22.68  | 1.083<br>27.51 | Black                           | .214<br>5.44                           | Nickel                       | 50845-2                       |
|                                                  |                                         | 1/4<br>M6    | .531<br>13.49 | .437<br>11.10 | 1.012<br>25.70 | 1.280<br>32.51 | Black                           | .214<br>5.44                           | Nickel                       | 50846                         |

<sup>1</sup> Nickel plated parts are to be used with nickel plated wire. Gold plated parts are to be used with silver plated wire.

**Note:** "C" dimension applies from edge of metal wire barrel to center of stud hole.

### Pre-Insulated Spare Wire Caps (For Unstripped Wire)

#### Temperature Rating, Material and Finish

**Insulation** — PTFE

**Ring** — Copper per ASTM B152

**Plating** — Nickel per QQ-N-290,  
550°F [288°C]



Tool Part Number  
69272-1

#### Related Product Data

**Application Tooling** — shown to the  
right

| Wire<br>Insulation<br>Diameter<br>Range | Dimension<br>L Max. | Ring<br>Color    | Tool<br>Color<br>Guide | Part<br>Number |
|-----------------------------------------|---------------------|------------------|------------------------|----------------|
| .075 – .087<br>1.91 – 2.21              | .500<br>12.70       | Black and Orange | Orange                 | 328859         |



## Uninsulated Terminals and Splices

### SOLISTRAND Heat Resistant Ring Tongue Terminals

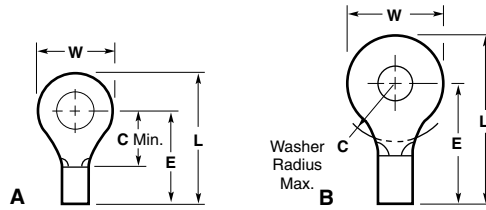
#### Temperature Rating, Material and Finish

**Terminal Body** — Copper per  
ASTM B152

**Plating** — Nickel per QQ-N-290,  
650°F [343°C]

#### Related Product Data

**Application Tooling** — pages 10-21  
and 10-22



**A**  
Non-Insulation Support

**B**  
Non-Insulation Support  
(Wire Range 2 & 1/0)

| Wire Size<br>Circular Mils<br>[mm <sup>2</sup> ] | Tongue<br>Material<br>Thickness<br>Max. | Stud<br>Size | Style | Dimensions    |               |                |                | Part Number<br>Loose<br>Piece |
|--------------------------------------------------|-----------------------------------------|--------------|-------|---------------|---------------|----------------|----------------|-------------------------------|
|                                                  |                                         |              |       | W             | C             | E<br>Max.      | L<br>Max.      |                               |
| 22-16<br>509-3,260<br>[0.26-1.65]                | .033<br>0.84                            | 6<br>M3.5    | A     | .218<br>5.54  | .156<br>3.96  | .337<br>8.56   | .449<br>11.40  | 322797                        |
|                                                  |                                         |              | A     | .281<br>7.14  | .250<br>6.35  | .436<br>11.07  | .574<br>14.58  | 323219                        |
|                                                  |                                         | 8<br>M4      | A     | .250<br>7.14  | .436<br>6.35  | .574<br>11.07  | .574<br>14.58  | 322798                        |
|                                                  |                                         | 10           | A     | .281<br>7.14  | .250<br>6.35  | .436<br>11.07  | .574<br>14.58  | 322799                        |
| 16-14<br>2,050-5,180<br>[1.04-2.62]              | .033<br>0.84                            | 10           | A     | .343<br>8.71  | .281<br>7.14  | .462<br>11.73  | .636<br>16.15  | 322695*                       |
|                                                  |                                         | 1/4<br>M6    | A     | .469<br>11.91 | .437<br>11.10 | .618<br>15.70  | .855<br>21.72  | 322733                        |
| 12-10<br>5,180-13,100<br>[2.62-6.64]             | .042<br>1.07                            | 10           | A     | .375<br>9.53  | .302<br>7.67  | .575<br>14.61  | .765<br>19.43  | 323062                        |
|                                                  |                                         | 5/16<br>M8   | A     | .531<br>13.49 | .468<br>11.89 | .736<br>18.69  | 1.004<br>25.50 | 323064                        |
| 8<br>13,100-20,800<br>[6.64-10.5]                | .051<br>1.30                            | 10           | A     | .406<br>10.31 | .359<br>9.12  | .743<br>18.87  | .949<br>24.10  | 323165                        |
|                                                  |                                         | 1/4<br>M6    | A     | .469<br>11.91 | .359<br>9.12  | .696<br>17.68  | .933<br>23.70  | 323166                        |
|                                                  |                                         | 5/16<br>M8   | A     | .562<br>14.27 | .406<br>10.31 | .790<br>20.07  | 1.074<br>27.28 | 323167                        |
| 6<br>20,800-33,100<br>[10.5-16.8]                | .060<br>1.52                            | 10           | A     | .468<br>11.89 | .531<br>13.49 | .931<br>23.65  | 1.168<br>29.67 | 323169                        |
|                                                  |                                         | 3/8          | A     | .625<br>15.88 | .531<br>13.49 | .931<br>23.65  | 1.246<br>31.65 | 323172                        |
| 4<br>33,100-52,600<br>[16.8-26.7]                | .073<br>1.85                            | 1/4<br>M6    | A     | .500<br>12.70 | .437<br>11.10 | .946<br>24.03  | 1.199<br>30.45 | 323173                        |
| 2<br>52,600-83,700<br>[26.7-42.4]                | .073<br>1.85                            | 3/8          | B     | .625<br>15.88 | .540<br>13.72 | 1.212<br>30.78 | 1.527<br>38.79 | 323177                        |

\*Available in small packaging quantities.

## Uninsulated Terminals and Splices (Continued)

### SOLISTRAND Heat Resistant Splices

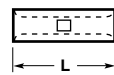
#### Temperature Rating, Material and Finish

**Splice Body** — Copper per  
ASTM B152

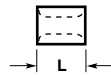
**Plating** — Nickel per QQ-N-290,  
650°F [343°C]

#### Related Product Data

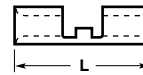
**Application Tooling** — pages 10-21  
and 10-22



**Style-A**  
Non-Insulation  
Support  
Butt Splice



**Style-B**  
Non-Insulation  
Support  
Parallel Splice



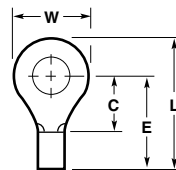
**Style-C**  
Non-Insulation  
Support  
Butt Splice

| Wire Size<br>Circular Mils<br>[mm²]  | Material<br>Thickness<br>Max. | Style | Dimensions           |                     |                     | Part Number<br>Loose<br>Piece |
|--------------------------------------|-------------------------------|-------|----------------------|---------------------|---------------------|-------------------------------|
|                                      |                               |       | L<br>Max.            | ID<br>Min.          | OD<br>Max.          |                               |
| 22-16<br>509-3,260<br>[0.26-1.65]    | <b>.033</b><br>0.84           | A     | <b>.578</b><br>14.68 | <b>.061</b><br>1.55 | <b>.141</b><br>3.58 | 323796                        |
|                                      |                               | B     | <b>.301</b><br>7.65  | <b>.061</b><br>1.55 | <b>.141</b><br>3.58 | 323030                        |
|                                      |                               | C     | <b>.591</b><br>15.01 | <b>.061</b><br>1.55 | <b>.141</b><br>3.58 | 322822                        |
| 16-14<br>2,050-5,180<br>[1.04-2.62]  | <b>.033</b><br>0.84           | A     | <b>.567</b><br>14.40 | <b>.085</b><br>2.16 | <b>.165</b><br>4.19 | 323795                        |
|                                      |                               | B     | <b>.301</b><br>7.65  | <b>.085</b><br>2.16 | <b>.165</b><br>4.19 | 323794                        |
| 12-10<br>5,180-13,100<br>[2.62-6.64] | <b>.042</b><br>1.07           | A     | <b>.565</b><br>14.35 | <b>.129</b><br>3.28 | <b>.226</b><br>5.74 | 323755                        |
|                                      |                               | B     | <b>.333</b><br>8.46  | <b>.129</b><br>3.28 | <b>.226</b><br>5.74 | 323754                        |
| 8<br>13,100-20,800<br>[6.64-10.5]    | <b>.051</b><br>1.30           | B     | <b>.375</b><br>9.53  | <b>.172</b><br>4.37 | <b>.296</b><br>7.52 | 2-34318-1                     |

### SOLISTRAND High Temperature Ring Tongue Terminals

#### Temperature Rating and Material

**Terminal Body** — Nickel per  
ASTM B162, 1200°F [649°C]



Non-Insulation Support

#### Related Product Data

**Application Tooling** — pages 10-21  
and 10-22

| Wire Size<br>Circular Mils<br>[mm²] | Tongue<br>Material<br>Thickness<br>Max. | Color<br>Code | Stud<br>Size | Dimensions           |                      |                      |                      | Part Number<br>Loose<br>Piece |
|-------------------------------------|-----------------------------------------|---------------|--------------|----------------------|----------------------|----------------------|----------------------|-------------------------------|
|                                     |                                         |               |              | W                    | C<br>Min.            | E<br>Max.            | L<br>Max.            |                               |
| 22-16<br>509-3,260<br>[0.26-1.65]   | <b>.033</b><br>0.84                     | Orange        | 4            | <b>.218</b><br>5.54  | <b>.156</b><br>3.96  | <b>.337</b><br>8.56  | <b>.449</b><br>11.40 | 321884                        |
|                                     |                                         |               | 5<br>M3      | <b>.218</b><br>5.54  | <b>.156</b><br>3.96  | <b>.337</b><br>8.56  | <b>.449</b><br>11.40 | 321885                        |
|                                     |                                         |               | 6<br>M3.5    | <b>.281</b><br>7.14  | <b>.250</b><br>6.35  | <b>.431</b><br>10.95 | <b>.574</b><br>14.58 | 321889*                       |
|                                     |                                         |               | 8<br>M4      | <b>.281</b><br>7.14  | <b>.250</b><br>6.35  | <b>.431</b><br>10.95 | <b>.574</b><br>14.58 | 321890*                       |
|                                     |                                         |               | 10           | <b>.281</b><br>7.14  | <b>.250</b><br>6.35  | <b>.431</b><br>10.95 | <b>.574</b><br>14.58 | 321891*                       |
|                                     |                                         |               | 6<br>M3.5    | <b>.250</b><br>6.35  | <b>.171</b><br>4.34  | <b>.352</b><br>8.94  | <b>.480</b><br>12.19 | 322329                        |
| 16-14<br>2,050-5,180<br>[1.04-2.62] | <b>.033</b><br>0.84                     | Orange        | 8<br>M4      | <b>.343</b><br>8.71  | <b>.281</b><br>7.14  | <b>.462</b><br>11.73 | <b>.636</b><br>16.15 | 322334*                       |
|                                     |                                         |               | 10           | <b>.343</b><br>8.71  | <b>.281</b><br>7.14  | <b>.462</b><br>11.73 | <b>.636</b><br>16.15 | 322335*                       |
|                                     |                                         |               | 1/4<br>M6    | <b>.468</b><br>11.89 | <b>.437</b><br>11.10 | <b>.618</b><br>15.70 | <b>.855</b><br>21.72 | 322339                        |
|                                     |                                         |               |              |                      |                      |                      |                      |                               |

\*Available in small packaging quantities.

## Uninsulated Terminals and Splices (Continued)

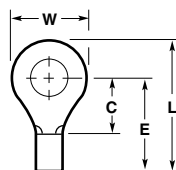
**SOLISTRAND**  
High Temperature  
Ring Tongue Terminals

**Temperature Rating  
and Material**

**Terminal Body** — Nickel per  
ASTM B162, 1200°F [649°C]

**Related Product Data**

**Application Tooling** — pages 10-21  
and 10-22



Non-Insulation Support

| Wire Size<br>Circular Mils<br>[mm²]  | Tongue<br>Material<br>Thickness<br>Max. | Color<br>Code | Stud<br>Size | Dimensions    |               |               |                | Part Number<br>Loose<br>Piece |
|--------------------------------------|-----------------------------------------|---------------|--------------|---------------|---------------|---------------|----------------|-------------------------------|
|                                      |                                         |               |              | W             | C<br>Min.     | E<br>Max.     | L<br>Max.      |                               |
| 12-10<br>5,180-13,100<br>[2.62-6.64] | .042<br>1.07                            | Orange        | 8<br>M4      | .375<br>9.53  | .281<br>7.14  | .549<br>13.94 | .739<br>18.77  | 323745*                       |
|                                      |                                         |               | 10           | .375<br>9.53  | .281<br>7.14  | .549<br>13.94 | .739<br>18.77  | 323680*                       |
|                                      |                                         |               | 1/4<br>M6    | .531<br>13.49 | .468<br>11.89 | .736<br>18.69 | 1.004<br>25.50 | 323683*                       |
| 8<br>13,100-20,800<br>[6.64-10.5]    | .051<br>1.30                            | Orange        | 10           | .406<br>10.31 | .359<br>9.12  | .743<br>18.87 | .949<br>24.10  | 328822                        |

\*Available in small packaging quantities.

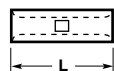
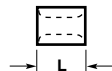
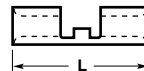
**SOLISTRAND**  
High Temperature  
Splices

**Temperature Rating  
and Material**

**Splice Body** — Nickel per  
ASTM B162, 1200°F [649°C]

**Related Product Data**

**Application Tooling** — pages 10-21  
and 10-22


**Style-A**  
Non-Insulation  
Support  
Butt Splice

**Style-B**  
Non-Insulation  
Support  
Parallel Splice

**Style-C**  
Non-Insulation  
Support  
Butt Splice

| Wire Size<br>Circular Mils<br>[mm²]  | Material<br>Thickness<br>Max. | Color<br>Code | Style | Dimensions    |              |              | Part Number<br>Loose<br>Piece |
|--------------------------------------|-------------------------------|---------------|-------|---------------|--------------|--------------|-------------------------------|
|                                      |                               |               |       | L<br>Max.     | ID<br>Min.   | OD<br>Max.   |                               |
| 22-16<br>509-3,260<br>[0.26-1.65]    | .033<br>0.84                  | Orange        | A     | .578<br>14.68 | .061<br>1.55 | .141<br>3.58 | 322324*                       |
|                                      |                               |               | B     | .301<br>7.65  | .061<br>1.55 | .141<br>3.58 | 322326                        |
| 16-14<br>2,050-5,180<br>[1.04-2.62]  | .033<br>0.84                  | Orange        | A     | .567<br>14.40 | .085<br>2.16 | .165<br>4.19 | 322345                        |
|                                      |                               |               | B     | .301<br>7.65  | .085<br>2.16 | .165<br>4.19 | 322347                        |
|                                      |                               |               | C     | .529<br>13.44 | .085<br>2.16 | .165<br>4.19 | 323878                        |
| 12-10<br>5,180-13,100<br>[2.62-6.64] | .042<br>1.07                  | Orange        | A     | .567<br>14.40 | .129<br>3.28 | .226<br>5.74 | 323696*                       |
|                                      |                               |               | B     | .333<br>8.46  | .129<br>3.28 | .226<br>5.74 | 323672                        |
|                                      |                               |               | C     | .703<br>17.86 | .129<br>3.28 | .226<br>5.74 | 323698                        |

\*Available in small packaging quantities.

## Uninsulated Terminals and Splices (Continued)

### DIAMOND GRIP Heat Resistant Ring Tongue Terminals

#### Temperature Rating, Material and Finish

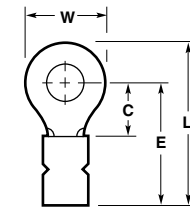
**Terminal Body**—Copper per  
ASTM B152

**Plating**—Nickel per QQ-N-290,  
650°F [343°C]

**Metallic Sleeve**—Nickel Silver per  
ASTM B122

#### Related Product Data

**Application Tooling**—pages 10-21  
and 10-22

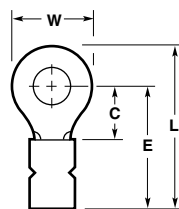


Insulation Support

| Wire Size<br>Circular Mils<br>[mm <sup>2</sup> ] | Tongue<br>Material<br>Thickness<br>Max. | Stud<br>Size | Dimensions    |               |                |                | Wire<br>Insulation<br>Diameter<br>Max. | Part Numbers   |                 |
|--------------------------------------------------|-----------------------------------------|--------------|---------------|---------------|----------------|----------------|----------------------------------------|----------------|-----------------|
|                                                  |                                         |              | W             | C<br>Min.     | E<br>Max.      | L<br>Max.      |                                        | Loose<br>Piece | Tape<br>Mounted |
| 22-16<br>509-3,260<br>[0.26-1.65]                | .033<br>0.84                            | 4            | .218<br>5.54  | .156<br>3.96  | .512<br>13.00  | .624<br>15.85  | .140<br>3.56                           | 322363         | —               |
|                                                  |                                         | 6            | .218<br>5.54  | .156<br>3.96  | .530<br>13.46  | .645<br>16.38  | .110<br>2.79                           | 323151         | —               |
|                                                  |                                         | M3.5         | .281<br>7.14  | .250<br>6.35  | .611<br>15.52  | .749<br>19.02  | .140<br>3.56                           | 323199         | —               |
|                                                  |                                         | 8            | .281<br>7.14  | .250<br>6.35  | .611<br>15.52  | .749<br>19.02  | .140<br>3.56                           | 322365         | —               |
|                                                  |                                         | M4           | .281<br>7.14  | .250<br>6.35  | .629<br>15.98  | .770<br>19.56  | .110<br>2.79                           | 323152         | —               |
|                                                  |                                         | 10           | .281<br>7.14  | .250<br>6.35  | .611<br>15.52  | .749<br>19.02  | .140<br>3.56                           | 322366         | —               |
|                                                  |                                         |              | .281<br>7.14  | .250<br>6.35  | .629<br>15.98  | .770<br>19.56  | .110<br>2.79                           | 323153         | —               |
|                                                  |                                         | 10           | .343<br>8.71  | .281<br>7.14  | .637<br>16.18  | .811<br>20.60  | .170<br>4.32                           | 322375         | —               |
|                                                  |                                         |              | .343<br>8.71  | .281<br>7.14  | .659<br>16.74  | .836<br>21.23  | .130<br>3.30                           | 323161         | —               |
|                                                  |                                         | 6            | .375<br>9.53  | .302<br>7.67  | .841<br>21.36  | 1.034<br>26.26 | .230<br>5.84                           | 323066         | —               |
|                                                  |                                         | M3.5         | .375<br>9.53  | .302<br>7.67  | .841<br>21.36  | 1.034<br>26.26 | .230<br>5.84                           | 323068         | 323068-1        |
|                                                  |                                         | 10           | .375<br>9.53  | .302<br>7.67  | .841<br>21.36  | 1.034<br>26.26 | .230<br>5.84                           | 323069         | —               |
| 16-14<br>2,050-5,180<br>[1.04-2.62]              | .033<br>0.84                            | 10           | .343<br>8.71  | .281<br>7.14  | .637<br>16.18  | .811<br>20.60  | .170<br>4.32                           | 322375         | —               |
|                                                  |                                         |              | .343<br>8.71  | .281<br>7.14  | .659<br>16.74  | .836<br>21.23  | .130<br>3.30                           | 323161         | —               |
| 12-10<br>5,180-13,100<br>[2.62-6.64]             | .042<br>1.07                            | 6            | .375<br>9.53  | .302<br>7.67  | .841<br>21.36  | 1.034<br>26.26 | .230<br>5.84                           | 323066         | —               |
|                                                  |                                         | M3.5         | .375<br>9.53  | .302<br>7.67  | .841<br>21.36  | 1.034<br>26.26 | .230<br>5.84                           | 323068         | 323068-1        |
| 12-10<br>5,180-13,100<br>[2.62-6.64]             | .042<br>1.07                            | 10           | .375<br>9.53  | .302<br>7.67  | .841<br>21.36  | 1.034<br>26.26 | .230<br>5.84                           | 323068         | 323068-1        |
|                                                  |                                         | M6           | .531<br>13.49 | .468<br>11.89 | 1.002<br>25.45 | 1.273<br>32.33 | .230<br>5.84                           | 323069         | —               |

**Note:** "C" dimension applies from edge of metal wire barrel to center of stud hole.

### DIAMOND GRIP High Temperature Ring Tongue Terminals



Insulation Support

#### Temperature Rating and Material

**Terminal Body**—See table, 1200°F  
[649°C], Nickel per ASTM B162,  
Alumel—, Chromel—

**Metallic Sleeve**—Nickel Silver per  
ASTM B122

#### Related Product Data

**Application Tooling**—pages 10-21  
and 10-22

| Wire Size<br>Circular Mils<br>[mm <sup>2</sup> ] | Tongue<br>Material<br>Thickness<br>Max. | Stud<br>Size | Dimensions    |               |               |                | Body<br>Material | Sleeve<br>Color<br>Code | Wire<br>Insulation<br>Diameter<br>Max. | Part Number<br>Loose<br>Piece |
|--------------------------------------------------|-----------------------------------------|--------------|---------------|---------------|---------------|----------------|------------------|-------------------------|----------------------------------------|-------------------------------|
|                                                  |                                         |              | W             | C<br>Min.     | E<br>Max.     | L<br>Max.      |                  |                         |                                        |                               |
| 22-16<br>509-3,260<br>[0.26-1.65]                | .033<br>0.84                            | 6            | .281<br>7.14  | .250<br>6.35  | .611<br>15.52 | .749<br>19.02  | Nickel           | Orange                  | .140<br>3.56                           | 321892                        |
|                                                  |                                         | M3.5         | .281<br>7.14  | .250<br>6.35  | .611<br>15.52 | .749<br>19.02  | Nickel           | Orange                  | .140<br>3.56                           | 321893                        |
|                                                  |                                         | 8            | .312<br>7.92  | .281<br>7.14  | .637<br>16.18 | .796<br>20.22  | Nickel           | Orange                  | .140<br>3.56                           | 321897                        |
|                                                  |                                         | M4           | .312<br>7.92  | .281<br>7.14  | .637<br>16.18 | .796<br>20.22  | Chromel          | Gray                    | .140<br>3.56                           | 1-321897-0                    |
|                                                  |                                         | 10           | .281<br>7.14  | .250<br>6.35  | .611<br>15.52 | .749<br>19.02  | Nickel           | Orange                  | .140<br>3.56                           | 321894                        |
|                                                  |                                         |              | .312<br>7.92  | .281<br>7.14  | .637<br>16.18 | .796<br>20.22  | Nickel           | Orange                  | .140<br>3.56                           | 321898                        |
|                                                  |                                         |              | .312<br>7.92  | .281<br>7.14  | .637<br>16.18 | .796<br>20.22  | Alumel           | Green                   | .140<br>3.56                           | 1-321898-0                    |
|                                                  |                                         | 1/4          | .468<br>11.89 | .437<br>11.10 | .793<br>20.14 | 1.031<br>26.19 | Nickel           | Orange                  | .140<br>3.56                           | 322320                        |
|                                                  |                                         | M6           | .468<br>11.89 | .437<br>11.10 | .793<br>20.14 | 1.031<br>26.19 | Nickel           | Orange                  | .140<br>3.56                           | 322320                        |

**Note:** "C" dimension applies from edge of metal wire barrel to center of stud hole.

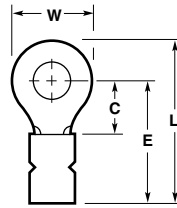
## Uninsulated Terminals and Splices (Continued)

### DIAMOND GRIP High Temperature Ring Tongue Terminals

#### Temperature Rating and Material

**Terminal Body** — See table, 1200°F  
[649°C], Nickel per ASTM B162,  
Alumel —, Chromel —

**Metallic Sleeve** — Nickel Silver per  
ASTM B122



Insulation Support

#### Related Product Data

**Application Tooling** — pages 10-21  
and 10-22

| Wire Size<br>Circular Mils<br>[mm <sup>2</sup> ] | Tongue<br>Material<br>Thickness<br>Max. | Stud<br>Size | Dimensions    |               |                |                | Body<br>Material | Sleeve<br>Color<br>Code | Wire<br>Insulation<br>Diameter<br>Max | Part Number<br>Loose<br>Piece |
|--------------------------------------------------|-----------------------------------------|--------------|---------------|---------------|----------------|----------------|------------------|-------------------------|---------------------------------------|-------------------------------|
|                                                  |                                         |              | W             | C<br>Min.     | E<br>Max.      | L<br>Max.      |                  |                         |                                       |                               |
| 16-14<br>2,050-5,180<br>[1.04-2.62]              | .033<br>0.84                            | 8<br>M4      | .343<br>8.71  | .281<br>7.14  | .637<br>16.18  | .811<br>20.60  | Nickel           | Orange                  | .170<br>4.32                          | 322337                        |
|                                                  |                                         | 10           | .343<br>8.71  | .281<br>7.14  | .637<br>16.18  | .811<br>20.60  | Nickel           | Orange                  | .170<br>4.32                          | 322338                        |
| 12-10<br>5,180-13,100<br>[2.62-6.64]             | .042<br>1.07                            | 8<br>M4      | .375<br>9.53  | .281<br>7.14  | .815<br>20.70  | 1.008<br>25.60 | Nickel           | Orange                  | .230<br>5.84                          | 323749                        |
|                                                  |                                         |              | .375<br>9.53  | .281<br>7.14  | .815<br>20.70  | 1.008<br>25.60 | Chromel          | Gray                    | .230<br>5.84                          | 2-323749-1                    |
|                                                  |                                         | 10           | .375<br>9.53  | .281<br>7.14  | .815<br>20.70  | 1.008<br>25.60 | Nickel           | Orange                  | .230<br>5.84                          | 323750                        |
|                                                  |                                         |              | .375<br>9.53  | .281<br>7.14  | .815<br>20.70  | 1.008<br>25.60 | Alumel           | Green                   | .230<br>5.84                          | 2-323750-1                    |
|                                                  |                                         | 1/4<br>M6    | .531<br>13.49 | .468<br>11.89 | 1.002<br>25.45 | 1.273<br>32.33 | Nickel           | Orange                  | .230<br>5.84                          | 323751                        |

**Note:** "C" dimension applies from edge of metal wire barrel to center of stud hole.

## PIDG Terminals and Splices for Thin Wall Cables

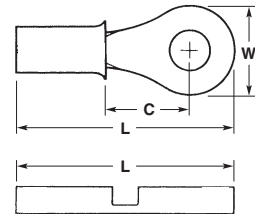
### Product Facts

- All high and low temperature PIDG STRATO-THERM Terminals and Splices conform to BS 2G 178 — crimped joints for aircraft cables and wires — and meets the requirements of BS G 204, class II
- Temperature Range — -67° to +221°/+302°F [-55° to +105°/+150°C]
- European military & civil program cross references available, i.e. Pannavia, Eurofighter, Concorde, Airbus and other customer platforms
- 302°F [150°C] — High temperature
  - D.D.P. No.: GP 10 D
  - Nickel plating over copper barrel PTFE sleeve
  - Not tested up to 190°C and 260°C as set out in BS 2G 178
- 221°F [105°C] — Low temperature
  - D.D.P. No.: GP 17
  - Tin plating over copper barrel
  - Nylon sleeve
  - Compatible with all BS 2G 178 fluids, except BS 3150 and BS M 26
- Dot code feature for additional visual verification of correct cavity to terminal

association after crimp possible

- Instruction Sheet — 408-1049
- Insulated sleeves are color coded for easy identification
- Used for thin wall cable with tin or nickel plated conductors
- Nickel plated Terminals and Splices are not recommended to crimp with silver plated conductors. Gold plating is recommended for silver plated conductors.
- Inner serrated wire barrel for improved electrical conductivity and high tensile strength

The special PIDG STRATO-THERM Terminal & Splice line for thin wall aircraft cables and wires is used in nearly every Aerospace & Defense platform in Europe. We do offer this line in a low temperature 221°F [105°C] and high temperature 302°F [150°C] profile.



### Low Temperature Range

#### Related Product Data

Application Tooling — pages 10-21 and 10-22

| Wire Size | Stud Size         |        |      |      | Dimensions (Max.) |               |               | Color Code | Wire Insulation Outside Dia. | Part Number |
|-----------|-------------------|--------|------|------|-------------------|---------------|---------------|------------|------------------------------|-------------|
|           | +/- .03 [+/- 0.8] | Metric | BA # | UN # | W                 | L             | C             |            |                              |             |
| 22-24     | .119<br>3.02      | M2.5   | 6    | 4    | .281<br>7.14      | .780<br>19.80 | .25<br>6.35   | Black      | .035-.075<br>0.90-1.90       | 151438      |
|           |                   |        |      |      | .218<br>5.54      | .746<br>18.94 | .265<br>6.73  |            |                              | 151458      |
|           |                   |        |      |      | .218<br>5.54      | .652<br>16.56 | .166<br>4.22  |            |                              | 151437      |
|           | .145<br>3.68      | M3     | 4    | 6    | .281<br>7.14      | .780<br>19.80 | .25<br>6.35   |            |                              | 151439      |
|           | .171<br>4.34      | M4     | 3    | 8    | .281<br>7.14      | .780<br>19.80 | .25<br>6.35   |            |                              | 151440      |
| 20        | .197<br>5.00      | —      | 2    | 10   | .281<br>7.14      | .780<br>19.80 | .25<br>6.35   | Purple     | .043-.079<br>1.10-2.00       | 151441      |
|           | .093<br>2.36      | M2     | 8    | 2    | .218<br>5.54      | .662<br>16.81 | .166<br>4.22  |            |                              | 152899      |
|           | .122<br>3.10      | M2.5   | 6    | 4    | .218<br>5.54      | .662<br>16.81 | .166<br>4.22  |            |                              | 152898      |
|           | .119<br>3.02      | M2.5   | 6    | 4    | .240<br>6.09      | .882<br>22.40 | .36<br>9.14   |            |                              | 154924      |
|           | .148<br>3.76      | M3     | 4    | 6    | .281<br>7.14      | .787<br>20.00 | .25<br>6.35   |            |                              | 152895      |
|           | .145<br>3.68      | M3     | 4    | 6    | .250<br>6.35      | .882<br>22.40 | .36<br>9.14   |            |                              | 152896      |
|           | .148<br>3.76      | M3     | 4    | 6    | .218<br>5.54      | .662<br>16.81 | .166<br>4.22  |            |                              | 152897      |
|           | .171<br>4.34      | M4     | 3    | 8    | .281<br>7.14      | .787<br>20.00 | .26<br>6.60   |            |                              | 152894      |
|           |                   |        |      |      | .312<br>7.92      | .834<br>21.18 | .291<br>7.39  |            |                              | 152893      |
|           | .200<br>5.08      | —      | 2    | 10   | .312<br>7.92      | .834<br>21.18 | .291<br>7.39  |            |                              | 152891      |
|           | .199<br>5.06      | —      | 2    | 10   | .281<br>7.14      | .787<br>20.00 | .26<br>6.60   |            |                              | 152892      |
|           | .268<br>6.81      | M6     | 0    | 1/4  | .469<br>11.91     | 1.07<br>27.13 | .447<br>11.35 |            |                              | 152890      |
|           | .331<br>8.41      | M8     | 5/15 | 5/16 | .469<br>11.91     | 1.07<br>27.13 | .447<br>11.35 |            |                              | 152889      |
|           | .393<br>9.98      | M9.5   | 3/8  | 3/8  | .469<br>11.91     | 1.07<br>27.13 | .447<br>11.35 |            |                              | 152888      |

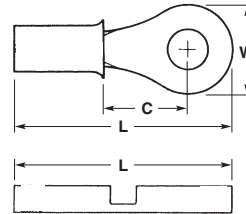
## PIDG Terminals and Splices for Thin Wall Cables (Continued)

## Low Temperature Range

(Continued)

## Related Product Data

Application Tooling — page 10-22



| Wire Size | Stud Size         |        |      |      | Dimensions (Max.) |               |               | Color Code | Wire Insulation Outside Dia. | Part Number |
|-----------|-------------------|--------|------|------|-------------------|---------------|---------------|------------|------------------------------|-------------|
|           | +/- .03 [+/- 0.8] | Metric | BA # | UN # | W                 | L             | C             |            |                              |             |
| 18-16     | .122<br>3.10      | M2.5   | 6    | 4    | .218<br>5.54      | .680<br>17.27 | .166<br>4.22  | Orange     | .055-.106<br>1.40-2.70       | 152887      |
|           | .125<br>3.18      | M2.5   | 6    | 4    | .240<br>6.09      | .90<br>22.86  | .360<br>9.14  |            |                              | 154927      |
|           |                   |        |      |      | .281<br>7.14      | .805<br>20.44 | .26<br>6.60   |            |                              | 152884      |
|           | .145<br>3.68      | M3     | 4    | 6    | .132<br>3.35      | .90<br>22.86  | .37<br>9.39   |            |                              | 152885      |
|           |                   |        |      |      | .218<br>5.54      | .680<br>17.27 | .166<br>4.22  |            |                              | 152886      |
|           | .171<br>4.34      | M4     | 3    | 8    | .312<br>7.92      | .852<br>21.64 | .291<br>7.39  |            |                              | 152882      |
|           |                   |        |      |      | .281<br>7.14      | .805<br>20.44 | .268<br>6.80  |            |                              | 152883      |
|           | .197<br>5.00      | —      | 2    | 10   | .312<br>7.92      | .852<br>21.64 | .291<br>7.39  |            |                              | 152880      |
|           |                   |        |      |      | .281<br>7.14      | .805<br>20.44 | .26<br>6.60   |            |                              | 152881      |
|           | .265<br>6.73      | M6     | 0    | 1/4  | .469<br>11.91     | 1.09<br>27.58 | .447<br>11.35 |            |                              | 152879      |
|           | .328<br>8.33      | M8     | 5/16 | 5/16 | .469<br>11.91     | 1.09<br>27.58 | .447<br>11.35 |            |                              | 152878      |
|           | .390<br>9.90      | M9.5   | 3/8  | 3/8  | .531<br>13.48     | 1.23<br>31.14 | .556<br>14.12 |            |                              | 152877      |
| 14-12     | .199<br>3.02      | M2.5   | 6    | 4    | .240<br>6.09      | .974<br>24.73 | .447<br>11.35 | White      | .091-.126<br>2.30-3.20       | 154930      |
|           |                   |        |      |      | .250<br>6.35      | .711<br>18.05 | .181<br>4.59  |            |                              | 152876      |
|           | .145<br>3.68      | M3     | 4    | 6    | .343<br>8.71      | .867<br>22.02 | .291<br>7.39  |            |                              | 152874      |
|           |                   |        |      |      | .250<br>6.35      | .711<br>18.05 | .181<br>4.59  |            |                              | 152875      |
|           | .171<br>4.34      | M4     | 3    | 8    | .343<br>8.71      | .867<br>22.02 | .291<br>7.39  |            |                              | 152873      |
|           | .197<br>5.00      | —      | 2    | 10   | .343<br>8.71      | .867<br>22.02 | .291<br>7.39  |            |                              | 152872      |
|           | .265<br>6.73      | M6     | 0    | 1/4  | .469<br>11.91     | 1.09<br>27.58 | .447<br>11.35 |            |                              | 152871      |
|           | .328<br>8.33      | M8     | 5/16 | 5/16 | .469<br>11.91     | 1.09<br>27.58 | .447<br>11.35 |            |                              | 152870      |
|           | .390<br>9.90      | M9.5   | 3/8  | 3/8  | .531<br>13.48     | 1.22<br>31.04 | .556<br>14.12 |            |                              | 152869      |

## Splices

| Wire Size | Stud Size         |        |      |      | Dimensions (Max.) |                |   | Color Code | Wire Insulation Outside Dia. | Part Number |
|-----------|-------------------|--------|------|------|-------------------|----------------|---|------------|------------------------------|-------------|
|           | +/- .03 [+/- 0.8] | Metric | BA # | UN # | W                 | L              | C |            |                              |             |
| 24-22     | —                 | —      | —    | —    | —                 | 1.125<br>28.58 | — | Black      | .035-.075<br>0.90-1.90       | 153400      |
| 20        | —                 | —      | —    | —    | —                 | 1.135<br>28.82 | — | Purple     | .043-.079<br>1.10-2.00       | 153401      |
| 18-16     | —                 | —      | —    | —    | —                 | .996<br>25.30  | — | Orange     | .055-.106<br>1.40-2.70       | 153402      |
| 14-12     | —                 | —      | —    | —    | —                 | .996<br>25.30  | — | White      | .091-.126<br>2.30-3.20       | 153403      |

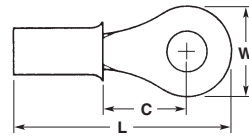


## PIDG Ring Tongue Terminals for Thin Wall Cables

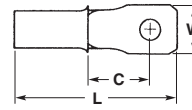
### High Temperature Range

#### Related Product Data

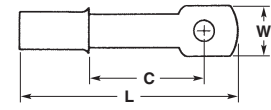
Application Tooling — page 10-22



Style A



Style B



Style C

| Wire Size | Stud Size         |        |      | Dimensions (Max.) |               |               | Color Code | Wire Insulation Outside Dia. | Style | Part Number |
|-----------|-------------------|--------|------|-------------------|---------------|---------------|------------|------------------------------|-------|-------------|
|           | +/- .03 [+/- 0.8] | Metric | BA # | UN #              | W             | L             |            |                              |       |             |
| 22-24     | .119<br>3.02      | M2.5   | 6    | 4                 | .218<br>5.54  | .657<br>16.68 | Brown      | .035-.075<br>0.90-1.90       | A     | 152642      |
|           |                   |        |      |                   | .281<br>7.14  | .787<br>19.98 |            |                              |       | 152644      |
|           |                   |        |      |                   | .218<br>5.54  | .751<br>19.08 |            |                              |       | 152648      |
|           | .145<br>3.68      | M3     | 4    | 6                 | .218<br>5.54  | .657<br>16.68 |            |                              |       | 152643      |
|           |                   |        |      |                   | .281<br>7.14  | .787<br>19.98 |            |                              |       | 152645      |
|           |                   |        |      |                   | .281<br>7.14  | .787<br>19.98 |            |                              |       | 152646      |
| 20        | 1.97<br>5.00      | —      | 2    | 10                | .281<br>7.14  | .787<br>20.0  | Grey       | .043-.079<br>1.10-2.00       | A     | 152647      |
|           | .093<br>2.36      | M2     | 8    | 2                 | .218<br>5.54  | .680<br>17.27 |            |                              |       | 152660      |
|           |                   |        |      |                   | .281<br>7.14  | .787<br>19.98 |            |                              |       | 152654      |
|           |                   |        |      |                   | .218<br>5.54  | .680<br>17.27 |            |                              |       | 152659      |
|           | .148<br>3.76      | M3     | 4    | 6                 | .281<br>7.14  | .787<br>19.98 |            |                              |       | 152655      |
|           |                   |        |      |                   | .218<br>5.54  | .680<br>17.27 |            |                              |       | 152658      |
|           |                   |        |      |                   | .281<br>7.14  | .787<br>19.98 |            |                              |       | 152656      |
|           | .199<br>5.06      | —      | 2    | 10                | .281<br>7.14  | .787<br>19.98 |            |                              |       | 152657      |
|           |                   |        |      |                   | .469<br>11.91 | 1.08<br>27.58 |            |                              |       | 152661      |
|           |                   |        |      |                   | .469<br>11.91 | 1.08<br>27.58 |            |                              |       | 152662      |
|           | .393<br>9.98      | M9.5   | 3/8  | 3/8               | .469<br>11.91 | 1.08<br>27.58 |            |                              |       | 152663      |
|           |                   |        |      |                   | .218<br>5.54  | .746<br>18.94 |            |                              | B     | 153493      |
|           |                   |        |      |                   | .218<br>5.54  | .681<br>17.30 |            |                              |       | 153103      |
| 18-16     | .145<br>3.68      | M3     | 4    | 6                 | .281<br>7.10  | .807<br>20.50 | Orange     | .055-.106<br>1.40-2.70       | A     | 153104      |
|           |                   |        |      |                   | .312<br>7.92  | .854<br>21.70 |            |                              |       | 153105      |
|           |                   |        |      |                   | .312<br>7.92  | .854<br>21.70 |            |                              |       | 153106      |
|           | .265<br>6.73      | M6     | 0    | 1/4               | .469<br>11.91 | 1.09<br>27.70 |            |                              |       | 153107      |
|           |                   |        |      |                   | .469<br>11.91 | 1.09<br>27.70 |            |                              |       | 153108      |
|           |                   |        |      |                   | .531<br>13.48 | 1.21<br>30.79 |            |                              |       | 153109      |
|           | .328<br>8.33      | M8     | 5/16 | 5/16              | .469<br>11.91 | 1.09<br>27.70 |            |                              |       | 153108      |
|           |                   |        |      |                   | .531<br>13.48 | 1.21<br>30.79 |            |                              |       | 153109      |
|           |                   |        |      |                   | .223<br>5.66  | .902<br>22.90 |            |                              | C     | 153475      |

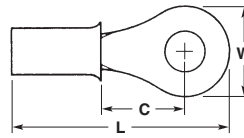
**PIDG Ring Tongue Terminals for Thin Wall Cables (Continued)**

**High Temperature Range**

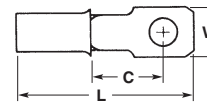
(Continued)

**Related Product Data**

Application Tooling — page 10-22



Style A



Style D

| Wire Size | Stud Size         |        |      |      | Dimensions (Max.) |               |               | Color Code | Wire Insulation Outside Dia. | Style | Part Number |
|-----------|-------------------|--------|------|------|-------------------|---------------|---------------|------------|------------------------------|-------|-------------|
|           | +/- .03 [+/- 0.8] | Metric | BA # | UN # | W                 | L             | C             |            |                              |       |             |
| 14-12     | .119<br>3.02      | M2.5   | 6    | 4    | .25<br>6.35       | .711<br>18.06 | .181<br>4.59  | White      | .091-.126<br>2.30-3.20       | A     | 153110      |
|           | .145<br>3.68      | M3     | 4    | 6    | .25<br>6.35       | .711<br>18.06 | .181<br>4.59  |            |                              |       | 153111      |
|           | .171<br>4.34      | M4     | 3    | 8    | .343<br>8.71      | .867<br>22.02 | .291<br>7.39  |            |                              |       | 153112      |
|           | .197<br>5.00      | —      | 2    | 10   | .343<br>8.71      | .867<br>22.02 | .291<br>7.39  |            |                              |       | 153113      |
|           | .265<br>6.73      | M6     | 0    | 1/4  | .469<br>11.91     | 1.08<br>27.58 | .448<br>11.39 |            |                              |       | 153114      |
|           | .328<br>8.33      | M8     | 5/16 | 5/16 | .469<br>11.91     | 1.08<br>27.58 | .448<br>11.39 |            |                              |       | 153115      |
|           | .390<br>9.90      | M9.5   | 3/8  | 3/8  | .531<br>13.48     | 1.21<br>30.76 | .531<br>13.48 |            |                              |       | 153116      |
|           | .119<br>3.02      | M2.5   | 6    | 4    | .218<br>5.44      | .798<br>20.26 | .291<br>7.39  |            |                              | D     | 153476      |
| 10        | .119<br>3.02      | M2.5   | 6    | 4    | .280<br>7.10      | .937<br>23.79 | .213<br>5.40  | Black      | .102-.150<br>2.60-3.80       | A     | 50844       |
|           | .145<br>3.68      | M3     | 4    | 6    | .374<br>9.50      | 1.08<br>27.50 | .295<br>7.50  |            |                              |       | 50845       |
|           | .171<br>4.34      | M4     | 3    | 8    | .374<br>9.50      | 1.08<br>27.50 | .295<br>7.50  |            |                              |       | 50845-1     |
|           | .197<br>5.00      | —      | 2    | 10   | .374<br>9.50      | 1.08<br>27.50 | .295<br>7.50  |            |                              |       | 50845-2     |
|           | .265<br>6.73      | M6     | 0    | 1/4  | .531<br>13.48     | 1.28<br>32.51 | .429<br>10.90 |            |                              |       | 50846       |
|           | .328<br>8.33      | M8     | 5/16 | 5/16 | .531<br>13.48     | 1.33<br>33.70 | .461<br>11.70 |            |                              |       | 50847       |
|           | .390<br>9.90      | M9.5   | 3/8  | 3/8  | .593<br>15.06     | 1.40<br>35.68 | .531<br>13.48 |            |                              |       | 50848       |
|           |                   |        |      |      |                   |               |               |            |                              |       |             |

| NSA936501 | Part Number PEEK | Color | Size  | PTFE Equivalent | Hand Tool                      |
|-----------|------------------|-------|-------|-----------------|--------------------------------|
| TA 2201   | 1577616-1        | Brown | 24-22 | 152642          | AWG 24 and<br>AWG 22<br>576778 |
| TA 2202   | 1577617-1        | Brown | 24-22 | 152643          |                                |
| TA 2203   | 1577618-1        | Brown | 24-22 | 152644          |                                |
| TA 2204   | 1577619-1        | Brown | 24-22 | 152645          |                                |
| TA 2205   | 1577620-1        | Brown | 24-22 | 152646          |                                |
| TA 2206   | 1577621-1        | Brown | 24-22 | 152647          |                                |
| TA 2001   | 1577622-1        | Grey  | 20    | 152654          | AWG 20<br>576779               |
| TA 2003   | 1577623-1        | Grey  | 20    | 152656          |                                |
| TA 2004   | 1577624-1        | Grey  | 20    | 152657          |                                |
| TA 2005   | 1577625-1        | Grey  | 20    | 152658          |                                |
| TA 2006   | 1577626-1        | Grey  | 20    | 152659          |                                |
| TA 2008   | 1577627-1        | Grey  | 20    | 152661          |                                |
| TA 2009   | 1577628-1        | Grey  | 20    | 152662          |                                |
| TA 2010   | 1577629-1        | Grey  | 20    | 152663          |                                |

| NSA936501 | Part Number PEEK | Color  | Size  | PTFE Equivalent | Hand Tool                      |
|-----------|------------------|--------|-------|-----------------|--------------------------------|
| TA 1601   | 1577630-1        | Orange | 18-16 | 153103          | AWG 18 576780<br>AWG 16 576781 |
| TA 1602   | 1577631-1        | Orange | 18-16 | 153104          |                                |
| TA 1603   | 1577632-1        | Orange | 18-16 | 153105          |                                |
| TA 1604   | 1577633-1        | Orange | 18-16 | 153106          |                                |
| TA 1605   | 1577634-1        | Orange | 18-16 | 153107          |                                |
| TA 1606   | 1577635-1        | Orange | 18-16 | 153108          |                                |
| TA 1607   | 1577636-1        | Orange | 18-16 | 153109          | AWG 14 576782<br>AWG 12 576783 |
| TA 1401   | 1577637-1        | Beige  | 14-12 | 153110          |                                |
| TA 1402   | 1577638-1        | Beige  | 14-12 | 153111          |                                |
| TA 1403   | 1577639-1        | Beige  | 14-12 | 153112          |                                |
| TA 1404   | 1577640-1        | Beige  | 14-12 | 153113          |                                |
| TA 1405   | 1577641-1        | Beige  | 14-12 | 153114          |                                |
| TA 1406   | 1577642-1        | Beige  | 14-12 | 153115          | AWG 10 576784                  |
| TA 1407   | 1577643-1        | Beige  | 14-12 | 153116          |                                |
| TA 1001   | 1577644-1        | Black  | 10    | 50844           |                                |
| TA 1002   | 1577645-1        | Black  | 10    | 50845           |                                |
| TA 1003   | 1577646-1        | Black  | 10    | 50845-1         |                                |
| TA 1004   | 1577647-1        | Black  | 10    | 134265-1        |                                |
| TA 1005   | 1577648-1        | Black  | 10    | 50846           | AWG 10 576784                  |
| TA 1006   | 1577649-1        | Black  | 10    | 50847           |                                |
| TA 1007   | 1577650-1        | Black  | 10    | 50848           |                                |

## Application Tooling

### Wire Size Range AWG 26-10

| Product Type            | Wire Size | Hand Tools | Pneumatic Tooling                                                                                                                                                         | Tooling For Tape Mounted Products                                                                                               |
|-------------------------|-----------|------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|
|                         |           |            | Dies for 626 Pneumatic Tools 189721-[ ] and 189722-[ ] require Straight Action Adapter <sup>1</sup> 217200-1 or "C" Head Adapter 318161-1 Dies also fit 69710-1 Hand Tool | Dies for 69875 AMP-TAPETRONIC AMP-O-LECTRIC <sup>2</sup> Requires Applicator AMPOMATOR CLS IV <sup>2</sup> Requires Applicators |
| Pre-Insulated Terminals | 26-24     | 69692-1    | 69731                                                                                                                                                                     | —                                                                                                                               |
|                         | 22-20     |            | 69732                                                                                                                                                                     | 69936                                                                                                                           |
|                         | 18-16     | 69693-1    | 69733                                                                                                                                                                     | 69937                                                                                                                           |
|                         | 14        |            | 69734                                                                                                                                                                     | —                                                                                                                               |
| Pre-Insulated Splices   | 12-10     | —          | 69735                                                                                                                                                                     | —                                                                                                                               |
|                         | 22-20     | —          | 69327                                                                                                                                                                     | —                                                                                                                               |
|                         | 18-16     | —          | 69328                                                                                                                                                                     | —                                                                                                                               |
|                         | 14-12     | —          | 69329                                                                                                                                                                     | —                                                                                                                               |

<sup>1</sup> Straight Action Adapter 217200-1 is used with Tools 189721-1 or 189722-1. "C" Head Adapter 318161-1 is used with Tools 189721-2 or 189722-2. Both adapters require the use of non-ratchet tool holder 189928-1 or ratchet tool holder 356304-1.

<sup>2</sup> Call Technical Support for Machine and Applicator part numbers.

### Wire Size Range AWG 26-6

| Product Type                         | Wire Size | Hand Tools                | Hydraulic Tools With Interchangeable Dies |
|--------------------------------------|-----------|---------------------------|-------------------------------------------|
|                                      |           |                           | 1752868-1 <sup>2</sup> "C" Head           |
| Post Insulated Terminals and Splices | 26-24     | 45730                     | —                                         |
|                                      | 22-20     | 46467, 46468 <sup>1</sup> | —                                         |
|                                      | 18-16     | 46468                     | —                                         |
|                                      | 8         | —                         | 69216                                     |
|                                      | 6         | —                         | 69217                                     |

<sup>1</sup> Part Number 55235-1 only

<sup>2</sup> These crimping heads are recommended for use only with AMP Hydraulic Foot Pump 1583659-1, Hydraulic Hand Pump 1583661-1, DYNA-CRIMP Hydraulic Power Units 1804700-1 (115 VAC) and 1804700-2 (230 VAC).

### Wire Size Range AWG 22-10

| Product Type                                                  | Wire Size | Hand Tools    | Pneumatic Tooling                                                        | Tooling For Tape Mounted Products                                                                                               |
|---------------------------------------------------------------|-----------|---------------|--------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|
|                                                               |           |               | Crimping Heads for 626 Pneumatic Tool 189721-1 and 189722-1 <sup>1</sup> | Dies for 69875 AMP-TAPETRONIC AMP-O-LECTRIC <sup>2</sup> Requires Applicator AMPOMATOR CLS IV <sup>2</sup> Requires Applicators |
| Uninsulated Terminals and Splices with Insulation Support     | 22-16     | 46673 46673-1 | —                                                                        | 69930                                                                                                                           |
|                                                               | 16-14     | 46988 59294   | —                                                                        | 69931                                                                                                                           |
|                                                               | 12-10     | 59461         | 904870-1                                                                 | 69932                                                                                                                           |
| Uninsulated Terminals and Splices with Non-Insulation Support | 22-16     | 46447         | 217206-1                                                                 | 69954                                                                                                                           |
|                                                               | 16-14     |               |                                                                          | 69955                                                                                                                           |
|                                                               | 12-10     |               |                                                                          | 69956                                                                                                                           |

<sup>1</sup> Crimping Heads require the use of non-ratchet tool holder 189767-1 or ratchet tool holder 356302-1.

<sup>2</sup> Call Technical Support for Machine and Applicator part numbers.

[www.tooling.tycoelectronics.com](http://www.tooling.tycoelectronics.com)  
[www.tooling.tycoelectronics.com/europe](http://www.tooling.tycoelectronics.com/europe)

## Application Tooling (Continued)

### Wire Size Range AWG 8-1/0

| Product Type                                                  | Wire Size | Hand Tools         | Pneumatic Tooling | Hydraulic Tools With Self Contained Dies |            | Hand Tools 1490748-1 and 1490749-1 or Hydraulic Heads 1490745-1, 1490746-1, and 1976230-1 |           | Hydraulic Tools with Interchangeable Dies |
|---------------------------------------------------------------|-----------|--------------------|-------------------|------------------------------------------|------------|-------------------------------------------------------------------------------------------|-----------|-------------------------------------------|
|                                                               |           |                    | 69015 Head        | Hand Tool                                | Latch Head | Nest                                                                                      | Indent    | 1752868-1 "C" Head                        |
| Uninsulated Terminals and Splices with Non-Insulation Support | 8         | 69355 <sup>1</sup> | 49956             | 59975-1                                  | 1673672-1  | 1490413-1                                                                                 | 1490414-1 | 69216                                     |
|                                                               | 6         | —                  | 48172             |                                          |            | 1490413-2                                                                                 |           | 69217                                     |
|                                                               | 4         | —                  | 48173             |                                          |            | 1490413-3                                                                                 | 1490414-2 | 69218                                     |
|                                                               | 2         | —                  | 48174             |                                          |            | 1490413-4                                                                                 |           | 45433                                     |
|                                                               | 1/0       | —                  | 48183             | —                                        | —          | 1490413-5                                                                                 | 1490414-3 | 45436                                     |

<sup>1</sup> CERTI-CRIMP Hand Tool.

<sup>2</sup> These crimping heads are recommended for use only with AMP Hydraulic Hand Pump 1583661-1 and Hydraulic Foot Pump 1583659-1, DYNA-CRIMP Hydraulic Power Units 1804700-1 (115 VAC) and 1804700-2 (230 VAC).

### Tooling for Insulated Terminals

In order to obtain the best results from AMP terminals and splices, it is important to choose the correct tooling. Each terminal manufactured is matched to a compatible tool. By using

the guidelines, it's easy to select the correct tool for your application. Different types of tooling are available including hand, pneumatic, or hydraulic. So whether you are involved

in large production runs or just maintenance and repair there is a matched tool ideal for your application.



Heavy Head Tool

### Hand Tooling

For repair, general maintenance or small production runs, hand tooling is the best way to a reliable termination. Easy to use, requiring no external power source, they can be easily carried from job to job. Precision crimp dies ensure a perfect termination.

AMP hand tooling meets all these requirements and more. Our un-surpassed expertise in connection technology has been used to benefit our complete range of tooling. Take for example the CERTI-CRIMP hand tool. There is a CERTI-CRIMP tool available for each terminal range. Every precision die has been constructed to the

finest engineering standards and is strong enough to be used through thousands of crimp terminations. Our ratchet device provides that the crimp cycle is completed before releasing, so it is not either under, or over-crimp any terminal.

For larger terminals a heavy duty hand tool is available which also features a similar patented ratchet device.

| Terminal Type                                                | Wire Size mm <sup>2</sup> | Single Die |           |          |
|--------------------------------------------------------------|---------------------------|------------|-----------|----------|
|                                                              |                           | AWG        | Hand Tool | Dot Code |
| PIDG Terminals for Thin Wall Cables High and Low Temperature | 0.25-0.4                  | 24-22      | 576778    | 2 dots   |
|                                                              | 0.6                       | 20         | 576779    | 1 dot    |
|                                                              | 1.0                       | 18         | 576780    | 2 dots   |
|                                                              | 1.2                       | 16         | 576781    | 1 dot    |
|                                                              | 2.0                       | 14         | 576782    | 2 dots   |
|                                                              | 3.0                       | 12         | 576783    | 1 dot    |
|                                                              | 6.0                       | 10         | 576784    | 1 dot    |

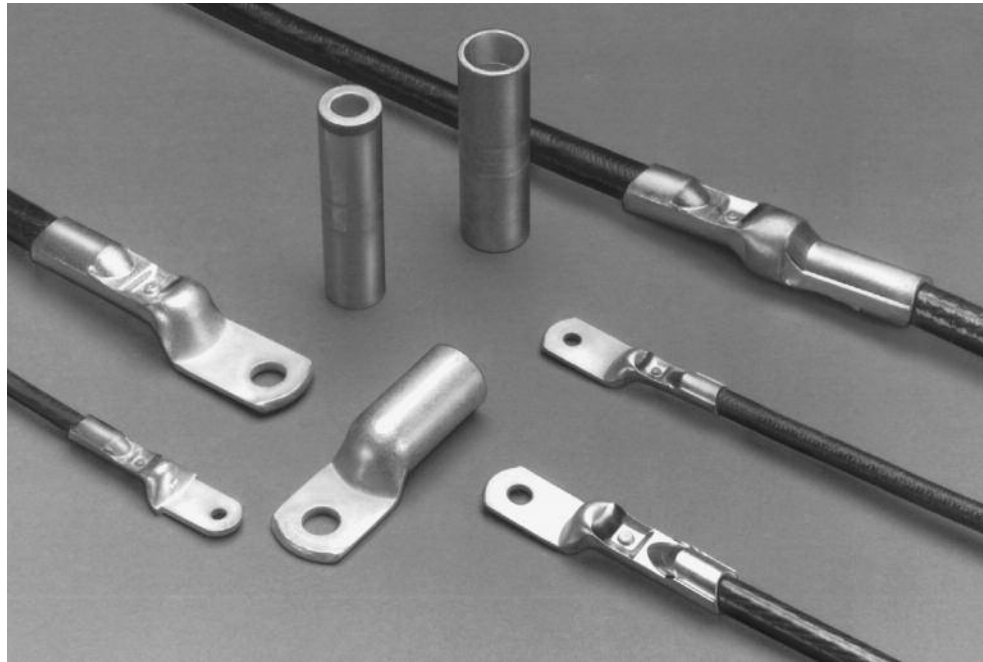
[www.tooling.tycoelectronics.com](http://www.tooling.tycoelectronics.com)

[www.tooling.tycoelectronics.com/europe](http://www.tooling.tycoelectronics.com/europe)

## Introduction

### Product Facts

- No need for inhibitor agents, thanks to our “dry crimp” technique
- Terminating/splicing capabilities for stranded aluminum wire, plus splicing of aluminum wire to copper wire conductors
- Wide wire-size range — aluminum 8 to 4/0 [8.6 to 110.9 mm<sup>2</sup>] and copper 10 to 3/0 [4.8 to 85.9 mm<sup>2</sup>]
- Efficient production rates, uniform reliability, at low cost — all because of AMP electro-hydraulic DYNA-CRIMP Tooling
- Optimum electrical, environmental, and mechanical performance crimps from AMP three-stage dies
- Portable battery powered hydraulic unit is available and low pressure crimp dies for 2/0 size



AMP COPALUM Sealed Terminals and Splices are designed especially for solving the inherent problems of terminating aluminum conductors. These connectors are terminated to stranded aluminum wire using a “dry crimp.” This technique eliminates the need for an inhibitor agent to break down the highly tenacious and inert oxides that form on aluminum conductors. An extremely efficient and reliable crimping method, the dry crimp also produces a sealed connection that better prevents re-oxidation and corrosion when intimate terminal/conductor contact is achieved.

AMP COPALUM Sealed Terminals and Splices are available for terminating and splicing stranded aluminum wire in sizes ranging from 8 to 4/0 [8.6 to 110.9 mm<sup>2</sup>] and copper 10 to 3/0 [4.8 to 85.9 mm<sup>2</sup>]. With the capability of splicing aluminum wire to copper wire, these connectors are generally applicable wherever aluminum wire or cable is

used. AMP COPALUM Sealed Terminals and Splices are especially suited for the aerospace industry.

Each connector body is constructed of tin-plated copper and houses a nickel-plated brass insert and funnel. The funnel is designed to better prevent wire strands from hanging up when inserted into the wire barrel. The perforated insert enhances reliability for the terminal and splice when crimped to the aluminum/copper conductors.

During the crimping operation, the relatively soft conductor material extrudes through the insert holes, causing the brittle oxide to be sheared, and clean conductor metal to be brought into intimate contact with the inner surfaces of the body and insert. These areas of extrusion form an air- and moisture-tight seal, minimizing oxidation and corrosion.

Stranded-wire crimping also produces “cold welding” or solid-phase bonding

between each wire strand. During the crimping process, deformation pressure is applied from several planes, causing sufficient plastic flow of the conductor material. This fractures the oxide film on each wire strand and induces different rates of extrusion. The resulting wiping action under pressure produces interstrand bonding, yielding many contact surfaces and a substantial increase in the contact area. Excellent electrical characteristics are thus achieved.

The increase in contact area also decreases the chances of electrical malfunction due to creep, differences in thermal expansion, and corrosion. Also the insert grips the conductor securely, providing a good mechanical connection.

Economical termination of these connectors becomes a reality with the use of the AMP electro-hydraulic DYNA-CRIMP Tool. This tool is equipped with a uniquely designed die that simultaneously produces three distinct crimps.

### Technical Documents

#### Instruction Sheets

- 408-2281 — Application Terminals and Splices Tooling
- 408-2453 — Tool 69066/Crimping Die
- 408-9535 — Tool 58422-1

#### Product Specifications

- 108-11011 — Overall Aluminum Wires
- 108-11011-1 — Copper Wires
- 108-11011-2 — High Temp. Wires with Flag Terminals

#### Application Specifications

- 114-2134

---

**Introduction** (Continued)

---

**Product Evolution**

The AMP Sealed COPALUM terminal and splice product line was established in the 1950's. Originally it had two separate product lines, one for aluminum wire and one for copper wire. Each line had butt connectors and terminals.

The Aluminum wire connector bodies were made of stamped and formed aluminum strip stock and COPALUM terminal connector bodies were made of stamped and formed copper strip stock.

Both products contained a closed cup (cartridge) installed within each wire barrel. This cartridge contained an oxide inhibiting compound with abrasive particles that flowed during crimping into the strand voids (interstices) and mechanically abraded the wire and barrel oxide surfaces. The oxide inhibitor protected the contact surfaces from further oxidation and formed a temporary partial seal between the conductor and the crimped insulation support.

The crimp dies were the two stage type and of the confined crescent design. The first stage crimped the wire barrel and cartridge, while the second stage crimped only the flared cartridge end. This second stage crimp produced the insulation support which was designed as a strain relief.

In the 60's, all copper bodies and perforated inserts were introduced. The industry wanted a dry crimp with a fully sealed body. Some important advantages of the copper design are:

1. Almost all buss contacts are copper. The plated terminal tongue needs no special contact surface treatment against the bolted copper buss. This is the (dynamic), disconnectable part of the connection.
2. The copper wire barrel allows for a natural two step down capacity from an equivalent aluminum wire to copper wire.  
Example—#4 aluminum down to #6 copper.
3. The more dense copper has 100% electrical conductivity compared to aluminum at 61% maximum. Copper compared to aluminum has hardly any mechanical creep; therefore, with the proper crimp, it provides a much more stable crimped (static), permanently sealed connection.
4. Within the circuit design there is always a need to change from high temperature copper wires to lower temperature aluminum wires. With the copper connector, we have the choices of "optional" (4 AL-6 CU) or "primary" (4 AL-4 AL) or "secondary" (6 CU-6CU) all within the same wire barrel and crimp die envelope.
5. During crimping, the hard nickel plated perforated insert digs into and intimately connects the wire and copper body while at the same time increasing the fresh surface contact areas via the holes and extrusion. With this feature, we now have a preferred "dry" connection with the copper to aluminum transition occurring inside the connector body where it is protected and controlled.
6. The barrier walls of the terminal and splice body provide the blind hole required for an environmentally-sealed crimp.
7. The product has a three stage simultaneous crimp design which allows for a very secure electrical crimp, a smooth transition crimp which goes up to the full round sealing crimp. It also has an identification feature and maintains maximum connector wall thickness after crimp.

We made several changes to the product line in the 80's and also changed the part numbers as listed below.

1. The perforated insert was modified without causing a change in connector performance.
2. The internal components were oriented and permanently locked in place during manufacture.
3. Clearer, more permanent marking was introduced with the straight knurl stripes replacing the blue ink stripe guides used to show crimp location.

TE Connectivity continually monitors incoming material for material conformance. Consolidation of production facilities and improved equipment produce more accurate component parts which, after heat treatment and plating, yield an overall higher quality assembly. All customer drawings are now on new formats and are on CAD. Catalog and instructional materials are regularly updated.

In April 1993, a new application sheet 114-2134 was completed. Also in 1993, we released a whole line of two stud hole terminals, silver plated with high temperature terminals, two 4/0 AL style terminals, a new crimp die, and various sheared tongue styles.

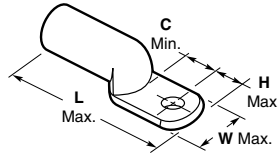
Using engineering tools like CAE/CAD/CAM, thermography, and computer driven image analysis on crimp cross-sections, we are able to arrive at and maintain optimum product integrity and reliability.

As with all AMP products, we have a continuing program of product and process improvements to promote maximum performance to meet customer's needs.

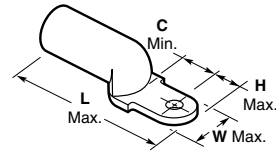


## Single Hole Ring Tongue Terminals

Standard Tongue



Sheared Tongue

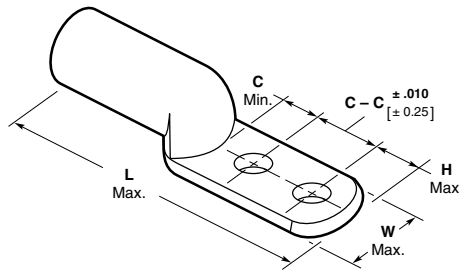


| Wire Size<br>Circular Mils<br>mm <sup>2</sup> |        | Insul.<br>Dia.<br>Range  | Tongue<br>Thickness<br>(Nom.) | Stud<br>Size | Tongue<br>Type   | Dimensions    |               |               |              | Part<br>Number       | Weight<br>Grams* | Tooling for<br>Power Unit<br>1804700-1 or -2 |                           |
|-----------------------------------------------|--------|--------------------------|-------------------------------|--------------|------------------|---------------|---------------|---------------|--------------|----------------------|------------------|----------------------------------------------|---------------------------|
| Aluminum                                      | Copper |                          |                               |              |                  | H<br>Max.     | L<br>Max.     | W<br>Max.     | C<br>Min.    |                      |                  | Heads                                        | Die                       |
| 8                                             | 10     | .182-.200<br>4.62-5.08   | .069<br>1.75                  | 10           | —                | .291<br>7.39  | 1.66<br>42.16 | .592<br>15.04 | .50<br>12.70 | 277147-1             | 11.0             | 1752877-1<br>or<br>1752787-1                 | 68006                     |
|                                               |        |                          |                               | 1/4<br>6.35  |                  |               |               |               |              | 277147-3             | —                |                                              |                           |
|                                               |        |                          |                               | 3/8<br>9.52  |                  |               |               |               |              | 277147-2             | 10.0             |                                              |                           |
|                                               |        |                          |                               | 10           | Sheared          | .250<br>6.35  | 1.63<br>41.40 | .492<br>12.50 | .54<br>13.72 | 277147-5             | 10.3             |                                              |                           |
| 6                                             | 8      | .225-.250<br>5.72-6.35   | .088<br>2.24                  | 10           | —                | .310<br>7.88  | 1.90<br>48.26 | .627<br>15.92 | .47<br>11.94 | 277148-1             | 16.8             | 1752877-1<br>or<br>1752787-1                 | 68007                     |
|                                               |        |                          |                               | 1/4<br>6.35  |                  |               |               |               |              | 277148-2             | 16.6             |                                              |                           |
|                                               |        |                          |                               | 5/16<br>7.92 |                  |               |               |               |              | 277148-3             | 16.2             |                                              |                           |
|                                               |        |                          |                               | 3/8<br>9.52  |                  |               |               |               |              | 277148-4             | 15.3             |                                              |                           |
| 4                                             | 6      | .276-.305<br>7.01-7.75   | .082<br>2.08                  | 10           | —                | .310<br>7.88  | 2.00<br>50.8  | .627<br>15.92 | .53<br>13.46 | 277154-1             | 15.2             | 1752877-1<br>or<br>1752787-1                 | 68008                     |
|                                               |        |                          |                               | 1/4<br>6.35  |                  |               |               |               |              | 277148-7             | 15.0             |                                              |                           |
|                                               |        |                          |                               | 5/16<br>7.92 |                  |               |               |               |              | 277149-2             | 19.4             |                                              |                           |
|                                               |        |                          |                               | 3/8<br>9.52  |                  |               |               |               |              | 277149-3             | 18.9             |                                              |                           |
| 2                                             | 4      | .340-.380<br>8.64-9.65   | .093<br>2.36                  | 10           | —                | .310<br>7.88  | 2.00<br>50.8  | .627<br>15.92 | .53<br>13.46 | 277149-4             | 18.5             | 1752877-1<br>or<br>1752787-1                 | 68009                     |
|                                               |        |                          |                               | 1/4<br>6.35  |                  |               |               |               |              | 277149-8             | 18.5             |                                              |                           |
|                                               |        |                          |                               | 3/8<br>9.52  |                  |               |               |               |              | 277150-1             | 36.0             |                                              |                           |
|                                               |        |                          |                               | 1/4<br>6.35  |                  |               |               |               |              | 277150-3             | 34.0             |                                              |                           |
| 1/0                                           | 2      | .425-.470<br>10.79-11.94 | .101<br>2.57                  | 10           | Short            | .250<br>6.35  | 2.30<br>58.42 | .492<br>12.50 | .60<br>15.24 | 277155-1             | 33.5             | 1752877-1<br>or<br>1752787-1                 | 68010-1                   |
|                                               |        |                          |                               | 1/4<br>6.35  |                  |               |               |               |              | 277151-3             | —                |                                              |                           |
|                                               |        |                          |                               | 3/8<br>9.52  |                  |               |               |               |              | 277151-1             | 53.3             |                                              |                           |
|                                               |        |                          |                               | 5/16<br>7.92 |                  |               |               |               |              | 277151-7             | —                |                                              |                           |
| 2/0                                           | 1/0    | .500-.550<br>12.7-13.97  | .128<br>3.25                  | 10           | Long             | .448<br>11.38 | 2.73<br>69.34 | .812<br>20.62 | .72<br>18.29 | 277151-5             | 57.0             | 1752877-1<br>or<br>1752787-1                 | 314964-1<br>or<br>68011-1 |
|                                               |        |                          |                               | 1/4<br>6.35  |                  |               |               |               |              | 277152-1             | —                |                                              |                           |
|                                               |        |                          |                               | 3/8<br>9.52  |                  |               |               |               |              | 277152-2             | 76.3             |                                              |                           |
|                                               |        |                          |                               | 5/16<br>7.92 |                  |               |               |               |              | 277152-3             | 80.0             |                                              |                           |
| 3/0                                           | 2/0    | .520-.645<br>13.21-16.38 | .132<br>3.35                  | 10           | Long<br>(Narrow) | .451<br>11.46 | 3.05<br>77.47 | .911<br>23.14 | .75<br>19.05 | 277152-4             | 81.0             | 1752877-1<br>or<br>1752787-1                 | 314964-1<br>or<br>68011-1 |
|                                               |        |                          |                               | 1/4<br>6.35  |                  |               |               |               |              | 277152-5             | 78.0             |                                              |                           |
|                                               |        |                          |                               | 3/8<br>9.52  |                  |               |               |               |              | 55944-1              | 81.0             |                                              |                           |
|                                               |        |                          |                               | 1/2<br>12.7  |                  |               |               |               |              | 277153-1             | 103.0            |                                              |                           |
| 4/0                                           | 3/0    | .590-.680<br>14.99-17.27 | .177<br>4.50                  | 10           | —                | .440<br>11.18 | 3.21<br>81.53 | 1.00<br>25.4  | .73<br>18.54 | 277153-1             | 103.0            | 1752787-1                                    | 59877-1                   |
|                                               |        |                          |                               | 1/4<br>6.35  |                  |               |               |               |              | 55995-1<br>(55995-2) | 100              |                                              |                           |
|                                               |        |                          |                               | 3/8<br>9.52  |                  |               |               |               |              | 184113-1             | 98.0             |                                              |                           |
|                                               |        |                          |                               | 1/2<br>12.7  |                  |               |               |               |              |                      |                  |                                              |                           |

\*Aluminum 8 to 2 = ±3 grams; aluminum 1/0 to 3/0 = ±5 grams



## Double Hole Ring Tongue Terminals

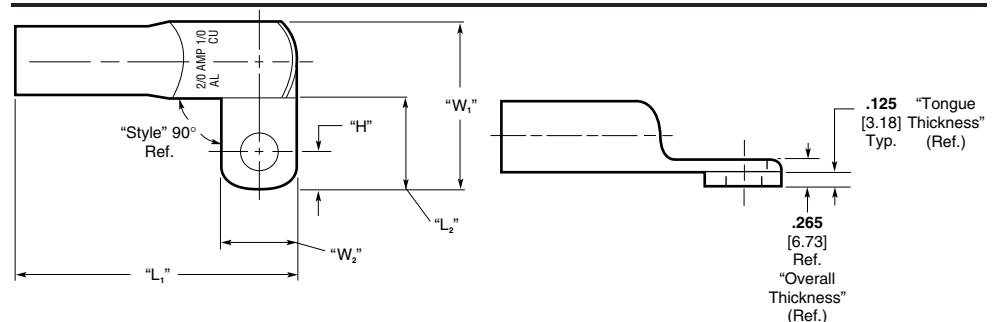


| Wire Size<br>Circular Mils<br>mm <sup>2</sup> |                        | Insul.<br>Dia.<br>Range  | Tongue<br>Thickness<br>(Nom.) | Stud<br>Size               | Tongue<br>Type | Dimensions  |               |              |              |              | Part<br>Number                               | Weight<br>Grams* | Tooling for<br>Power Unit<br>1804700-1 or -2 |                           |
|-----------------------------------------------|------------------------|--------------------------|-------------------------------|----------------------------|----------------|-------------|---------------|--------------|--------------|--------------|----------------------------------------------|------------------|----------------------------------------------|---------------------------|
| Aluminum                                      | Copper                 |                          |                               |                            |                | H<br>Max.   | L<br>Max.     | W<br>Max.    | C - C        | C<br>Min.    |                                              |                  | Heads                                        | Die                       |
| 6<br>28280<br>14.6                            | 8<br>16983<br>8.8      | .225-.250<br>5.72-6.35   | .088<br>2.24                  | 1/4<br>6.35<br>3/8<br>9.52 | Two<br>Hole    | .38<br>9.65 | 2.89<br>73.41 | .63<br>16.00 | 1.00<br>25.4 | .44<br>11.18 | 55832-1<br>55832-2                           | 24<br>23         | 1752877-1<br>or<br>1752787-1                 | 68007                     |
| 4<br>42420<br>21.9                            | 6<br>26818<br>13.8     | .276-.305<br>7.01-7.75   | .082<br>2.08                  | 1/4<br>6.35<br>3/8<br>9.52 | Two<br>Hole    | .38<br>9.65 | 2.94<br>74.68 | .63<br>16.00 | 1.00<br>25.4 | .44<br>11.18 | 55833-1<br>(55834-1)<br>55833-2<br>(55834-2) | 26<br>25         | 1752877-1<br>or<br>1752787-1                 | 68008                     |
| 2<br>67872<br>35.0                            | 4<br>42615<br>22.0     | .340-.380<br>8.64-9.65   | .093<br>2.36                  | 1/4<br>6.35<br>3/8<br>9.52 | Two<br>Hole    | .38<br>9.65 | 3.27<br>83.06 | .68<br>17.27 | 1.00<br>25.4 | .44<br>11.18 | 55835-1<br>(55836-1)<br>55835-2<br>(55836-2) | 44<br>43         | 1752877-1<br>or<br>1752787-1                 | 68009                     |
| 1/0<br>107464<br>55.5                         | 2<br>66500<br>34.3     | .425-.470<br>10.79-11.94 | .101<br>2.57                  | 3/8<br>9.52                | Two<br>Hole    | .38<br>9.65 | 3.39<br>86.11 | .81<br>20.57 | 1.00<br>25.4 | .44<br>11.18 | 55837-1<br>(55838-1)                         | 62               | 1752877-1<br>or<br>1752787-1                 | 68010-1                   |
| 2/0<br>138168<br>71.3                         | 1/0<br>104500<br>53.9  | .500-.550<br>12.7-13.97  | .128<br>3.25                  | 3/8<br>9.52                | Two<br>Hole    | .38<br>9.65 | 3.66<br>92.96 | .91<br>23.11 | 1.00<br>25.4 | .44<br>11.18 | 55839-1<br>(55844-1)                         | 91               | 1752877-1<br>or<br>1752787-1                 | 314964-1<br>or<br>68011-1 |
| 3/0<br>168872<br>87.2                         | 2/0<br>133000<br>68.6  | .520-.645<br>13.21-16.38 | .132<br>3.35                  | 3/8<br>9.52                | Two<br>Hole    | .38<br>9.65 | 3.82<br>97.03 | 1.00<br>25.4 | 1.00<br>25.4 | .44<br>11.18 | 55840-1                                      | 113              | 1752787-1                                    | 59877-1                   |
| 4/0<br>214928<br>110.94                       | 3/0<br>166500<br>85.94 | .590-.680<br>14.99-17.27 | .177<br>4.50                  | 3/8<br>9.52                | Two<br>Hole    | .38<br>9.65 | 3.72<br>94.49 | 1.00<br>25.4 | 1.00<br>25.4 | .44<br>11.18 | (55841-1)                                    | 113              | 1752787-1                                    | 314948-1                  |

**Note:** Part numbers with ( ) are silver plated, part numbers without are tin plated.

\* Aluminum 8 to 2 = ±3 grams; aluminum 1/0 to 4/0 = ±5 grams.

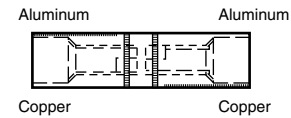
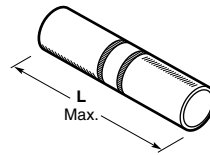
## Flag Terminals



| Wire Size<br>Circular Mils<br>mm <sup>2</sup> |                       | Insul.<br>Dia.<br>Range | Tongue<br>Thickness<br>(Ref.) | Stud<br>Size | Tongue<br>Style                  | Dimensions  |                        |                        |                        |                        | Part<br>Number | Weight<br>Grams* | Tooling for<br>Power Unit<br>1804700-1 or -2 |                           |
|-----------------------------------------------|-----------------------|-------------------------|-------------------------------|--------------|----------------------------------|-------------|------------------------|------------------------|------------------------|------------------------|----------------|------------------|----------------------------------------------|---------------------------|
| Aluminum                                      | Copper                |                         |                               |              |                                  | H<br>Max.   | L <sub>2</sub><br>Max. | L <sub>2</sub><br>Min. | W <sub>1</sub><br>Max. | W <sub>2</sub><br>Max. |                |                  | Heads                                        | Die                       |
| 2/0<br>138168<br>71.3                         | 1/0<br>104500<br>53.9 | .500-.550<br>12.7-13.97 | .125<br>3.18                  | 3/8<br>9.52  | One Hole<br>90°<br>Right<br>Hand | .43<br>10.9 | 3.185<br>80.90         | .970<br>24.64          | 1.870<br>47.50         | .850<br>21.59          | 55982-1        | 109              | 1752877-1<br>or<br>1752787-1                 | 314964-1<br>or<br>68011-1 |

\* Aluminum 8 to 2 = ±3 grams; aluminum 1/0 to 4/0 = ±5 grams.

## Standard Butt Splices

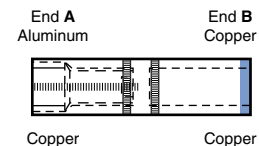
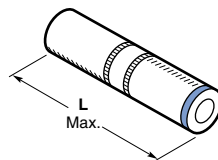


| Wire Size*<br>Circular Mils<br>mm <sup>2</sup> |                       | Insul.<br>Dia.<br>Range  | L<br>Max.     | Part<br>Number | Weight<br>Grams** | Tooling for<br>Power Unit<br>1804700-1 or -2 |                           |
|------------------------------------------------|-----------------------|--------------------------|---------------|----------------|-------------------|----------------------------------------------|---------------------------|
| Aluminum                                       | Copper                |                          |               |                |                   | Heads                                        | Die                       |
| 8<br>16564<br>8.6                              | 10<br>9354<br>4.8     | .182-.200<br>4.62-5.08   | 1.41<br>35.81 | 277156-1       | 10.2              | 1752877-1<br>or<br>1752787-1                 | 68006                     |
| 6<br>28280<br>14.6                             | 8<br>16983<br>8.8     | .225-.250<br>5.72-6.35   | 1.80<br>45.72 | 277157-1       | 16.9              | 1752877-1<br>or<br>1752787-1                 | 68007                     |
| 4<br>42420<br>21.9                             | 6<br>26818<br>13.8    | .276-.305<br>7.01-7.75   | 2.17<br>55.12 | 277158-1       | 26.8              | 1752877-1<br>or<br>1752787-1                 | 68008                     |
| 2<br>67872<br>35.0                             | 4<br>42615<br>22.0    | .340-.380<br>8.64-9.65   | 2.54<br>64.52 | 277159-1       | 50.3              | 1752877-1<br>or<br>1752787-1                 | 68009                     |
| 1/0<br>107464<br>55.5                          | 2<br>66500<br>34.3    | .425-.470<br>10.79-11.94 | 2.67<br>67.82 | 277160-1       | 76.0              | 1752877-1<br>or<br>1752787-1                 | 68010-1                   |
| 2/0<br>138168<br>71.3                          | 1/0<br>104500<br>53.9 | .500-.550<br>12.70-13.97 | 3.01<br>76.45 | 277161-1       | 107.7             | 1752877-1<br>or<br>1752787-1                 | 68011-1<br>or<br>314964-1 |
| 3/0<br>168872<br>87.2                          | 2/0<br>133000<br>68.6 | .520-.645<br>13.21-16.38 | 3.26<br>82.80 | 277162-1       | 127.5             | 1752787-1                                    | 59877-1                   |

\* For aluminum-to-aluminum applications, splices will accept the same wire size at either end. For aluminum-to-copper applications, however, the size of the copper wire must be "stepped down" two wire sizes to compensate for differences in the electrical ratings of copper and aluminum.

\*\* Aluminum 8 to 2 = ±3 grams; aluminum 1/0 to 3/0 = ±5 grams

## Transitional Butt Splices



| Wire Size<br>Circular Mils<br>mm <sup>2</sup> |                       | Insul. Dia.<br>Range     |                          | L<br>Max.     | Part<br>Numbers | Weight<br>Grams* | Tooling for<br>Power Unit<br>1804700-1 or -2 |         |
|-----------------------------------------------|-----------------------|--------------------------|--------------------------|---------------|-----------------|------------------|----------------------------------------------|---------|
| End A                                         | End B                 | End A                    | End B                    |               |                 |                  | Heads                                        | Die     |
| 6<br>28280<br>14.6                            | 6<br>26818<br>13.8    | .225-.250<br>5.72-6.35   | .225-.250<br>5.72-6.35   | 1.80<br>45.72 | 55984-1**       | 16               | 1752877-1<br>or<br>1752787-1                 | 68007   |
| 4<br>42420<br>21.9                            | 8<br>16983<br>8.8     | .276-.305<br>7.01-7.75   | .210-.255<br>5.33-6.48   | 1.91<br>48.51 | 277164-1        | 26.5             | 1752877-1<br>or<br>1752787-1                 | 68008   |
| 4<br>42420<br>21.9                            | 4<br>42615<br>22.0    | .276-.305<br>7.01-7.75   | .276-.305<br>7.01-7.75   | 2.17<br>55.12 | 277165-1**      | 26.0             | 1752877-1<br>or<br>1752787-1                 | 68008   |
| 1/0<br>107464<br>55.5                         | 4<br>42615<br>22.0    | .425-.470<br>10.80-11.94 | .276-.305<br>7.01-7.75   | 2.70<br>68.58 | 277163-1        | 92.5             | 1752877-1<br>or<br>1752787-1                 | 68010-1 |
| 3/0<br>168872<br>87.2                         | 1/0<br>104500<br>53.9 | .520-.645<br>13.21-16.38 | .430-.495<br>10.92-12.57 | 3.26<br>82.80 | 277168-1        | 128.5            | 1752787-1                                    | 59877-1 |

\* ±10 grams

\*\* Transitional splice test amperage is for aluminum wire.

## Application Tooling

The AMP COPALUM Sealed Terminals and Splices are designed to be terminated with precision die sets, crimping heads, and hydraulic power units. The die set to use will depend on the conductor material size to be terminated. Both crimping heads can be used for the smaller conductor sizes. The largest conductor sizes will require the use of the heavier head. Hydraulic power can be provided by either the Electric/Hydraulic Power Unit or the Hydraulic Foot Pump.



**Crimping Head  
1752787-1**  
(408-8914)



**Crimping Head  
1752877-1**  
(408-8956)



**Typical Die Set**  
(408-2281)

### DYNA-CRIMP Electric-Hydraulic Power Unit

The DYNA-CRIMP Power Unit is an electric hydraulic tool. It can accommodate various heads and dies for terminating AMP terminals and splices ranging in size from 8 to 1500 MCM. A complete accessory line is also available with the tool for use in portable and stationary applications as well as for multiple-head crimping.



**DYNA-CRIMP Electric-Hydraulic  
Power Unit**  
(Includes Pressure Release)  
**115 Volts (60 Hz) — 1804700-1**  
**230 Volts (50/60 Hz) — 1804700-2**  
(409-10081)



**Hydraulic Hand Pump**  
**1583661-1**



**Hydraulic Foot Pump**  
**1583659-1**

Use with Hose Assembly 1583662-[ ]

| Wire Size<br>AWG |        | Crimp Tool Components |                                 |                                           |
|------------------|--------|-----------------------|---------------------------------|-------------------------------------------|
| Aluminum         | Copper | Die Sets              | Heads                           | Power Units                               |
| 8                | 10     | 68006                 |                                 |                                           |
| 6                | 8      | 68007                 |                                 |                                           |
| 4                | 6      | 68008                 |                                 |                                           |
| 2                | 4      | 68009                 |                                 |                                           |
| 1/0              | 2      | 68010-1               | 1752877-1*<br>or<br>1752787-1** | 1804700-1<br>1804700-2<br>or<br>1583659-1 |
| 2/0              | 1/0    | 68011-1               |                                 |                                           |
|                  |        | 314964-1              |                                 |                                           |
| 3/0              | 2/0    | 59877-1               |                                 |                                           |
| 4/0              | 3/0    | 314948-1              |                                 |                                           |

\*For aluminum conductor range of 8 through 1/0 and copper conductor range of 10 through 2.

\*\*For aluminum conductor range of 8 through 4/0 and copper conductor range of 10 through 3/0.

\*\*\*Portable—low pressure crimp die.

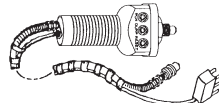
### Accessory Power Controls and Hoses For DYNA-CRIMP Electric-Hydraulic Power Unit

Consult the table to the right for accessory power controls and hoses. Control and hose accessories must be ordered separately.

If electric hydraulic tool is to be used in portable applications, a handle control and hose assembly should be used.

For stationary applications, a foot switch assembly and hose assembly will be necessary.

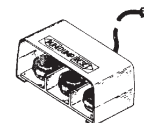
Multidirectional valves are used when more than one crimping head is permanently attached to the tool.



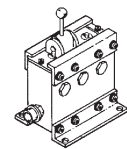
**Handle  
Control**



**Hose  
Assembly**



**Foot  
Control**



**Multidirectional  
Valve**

| For use with<br>Power Unit No. | Accessory<br>Description                              | Accessory<br>Part Number | Remarks                                                                              |
|--------------------------------|-------------------------------------------------------|--------------------------|--------------------------------------------------------------------------------------|
| 1804700-1<br>1804700-2         | 7 ft. [2.13 m] Handle Control Assembly—Hose and Cord  | 1901775-1                | Pressure Release<br>included with handle<br>control                                  |
|                                | 15 ft. [4.57 m] Handle Control Assembly—Hose and Cord | 1901776-1                |                                                                                      |
|                                | 21 ft. [6.4 m] Handle Control Assembly—Hose and Cord  | 1901777-1                |                                                                                      |
|                                | 15 ft. [4.57 m] Foot Switch Assembly                  | 68284-1                  | Needs Hose<br>Assembly                                                               |
|                                | 6 ft. [1.83 m] Hose Assembly                          | 1583662-1                | 68284-1 Foot Switch<br>or Foot Pump Assembly<br>needed with these<br>Hose Assemblies |
|                                | 10 ft. [3.05 m] Hose Assembly                         | 1583662-2                |                                                                                      |
|                                | 20 ft. [6.10 m] Hose Assembly                         | 1583662-3                |                                                                                      |
| 1804700-1                      | 3-Way Multi-Directional Valve                         | 1901782-1                | For use with<br>Foot Switch only                                                     |
| 1804700-2                      | 3-Way Multi-Directional Valve (Elec. Control)         | 1901783-1                |                                                                                      |

[www.tooling.tycoelectronics.com](http://www.tooling.tycoelectronics.com)

[www.tooling.tycoelectronics.com/europe](http://www.tooling.tycoelectronics.com/europe)

## Introduction

### Product Facts

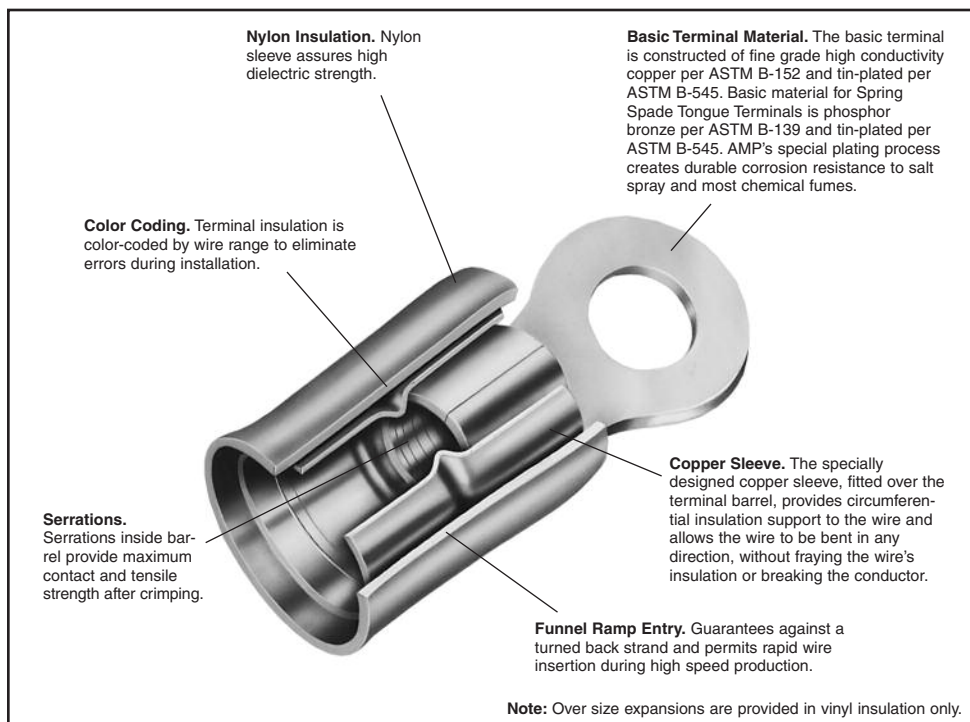
- Pre-insulated terminal designed for complete and uniform reliability in difficult circuit environments
- PIDG Terminals consist of tin plated copper or tin plated phosphor bronze body for spring spades with a copper sleeve and insulation sleeve fitted over terminal barrel
- Design of the tool dies and construction of the terminal ensures uniform insulation thickness under crimping pressure, transmitting this pressure evenly to the center of the crimp area

### The AMP Mated Tool/Terminal Concept

- AMP compression crimping produces crimps for a given size wire and terminal that are precisely alike in appearance and performance
- Terminal and crimping tool are designed as precisely matched devices
- Dies are precision-engineered from the finest hard-metal alloys
- Crimping pressure is controlled by a ratchet device on the hand tool or a corresponding pre-calibration in the crimping jaws of AMP automated crimping machines

### The Crimp

- Crimping pressure can neither overstress nor understress the terminal barrel — machined dies fully bottom to the precise crimp height
- Resulting termination is free of contamination
- Resistant to shock and critical environments
- Tensile strength approaches that of the wire itself
- PIDG Terminals meet or exceed the requirements of MIL-T-7928, Type II, Class 1 and 2



### Temperature Rating: 221°F [105°C] Max.

#### AMP PIDG Terminals (Use PIDG Tooling)

| AMP Wire Range | UL Listed               | LR7189 Certified                 |
|----------------|-------------------------|----------------------------------|
| 22-16          | 22-16 Solid or Stranded | 300 V Max.,                      |
| 16-14          | 16-14 Solid or Stranded | 221°F [105°C]. Max. <sup>1</sup> |
| 12-10          | 12-10 Solid or Stranded |                                  |

Note: 22-16 terminals are stamped 22-18 in accordance with MIL-T-7928.

<sup>1</sup>UL & CSA — Nylon

#### AMP PIDG Nylon Butt Window Splice (Use PIDG Tooling)

| AMP Wire Range | UL Listed               | LR7189 Certified    |
|----------------|-------------------------|---------------------|
| 22-16          | 22-16 Stranded or Solid | 300 V Max.,         |
| 16-14          | 16-14 Stranded or Solid | 221°F [105°C]. Max. |
| 12-10          | 12-10 Stranded or Solid |                     |

Note: 22-16 splices are stamped 22-18 in accordance with MIL-T-7928.

## Ring Tongue Terminals — Nylon

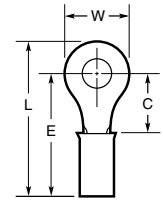
### Material and Finish

Insulation — Nylon

Terminal Body and Metallic

Sleeve — Copper per ASTM B-152

Plating — Tin per ASTM B-545



### Military Specifications MS25036

| Wire Size<br>Circular Mils<br>[mm <sup>2</sup> ] | Tongue<br>Material<br>Thickness<br>Max. | Stud<br>Size | Dimensions    |               |               |                | Terminal<br>Insulation<br>Color | Wire<br>Insulation<br>Diameter<br>Max. | Class              | MS25036<br>Dash<br>Numbers | Part Numbers   |                 |
|--------------------------------------------------|-----------------------------------------|--------------|---------------|---------------|---------------|----------------|---------------------------------|----------------------------------------|--------------------|----------------------------|----------------|-----------------|
|                                                  |                                         |              | W             | C<br>Min.     | E<br>Max.     | L<br>Max.      |                                 |                                        |                    |                            | Loose<br>Piece | Tape<br>Mounted |
| 26-24<br>238-475<br>[0.12-0.24]                  | .029<br>0.74                            | 2<br>M2      | .203<br>5.16  | .211<br>5.36  | .632<br>16.05 | .739<br>18.77  | Yellow                          | .105<br>2.67                           | 1 & 2              | 143                        | 54310-1†       | —               |
|                                                  |                                         | 4            | .203<br>5.16  | .211<br>5.36  | .632<br>16.05 | .736<br>18.69  | Yellow                          | .105<br>2.67                           | 1 & 2              | 144                        | 52189†         | —               |
|                                                  |                                         | 6<br>M3.5    | .250<br>6.35  | .243<br>6.17  | .664<br>16.87 | .792<br>20.12  | Yellow                          | .105<br>2.67                           | 1 & 2              | 145                        | 53073†         | —               |
|                                                  |                                         | 8<br>M4      | .281<br>7.14  | .250<br>6.35  | .671<br>17.04 | .814<br>20.68  | Yellow                          | .105<br>2.67                           | 1 & 2              | 146                        | 54311-1†       | —               |
|                                                  |                                         | 10           | .312<br>7.92  | .281<br>7.14  | .702<br>17.83 | .868<br>22.05  | Yellow                          | .105<br>2.67                           | $\frac{1 \& 2}{2}$ | 147                        | 54312-1†<br>—  | —<br>54312-2†   |
| 26-22<br>202-810<br>[0.10-0.41]                  | .020<br>0.51                            | 2<br>M2      | .203<br>5.16  | .211<br>5.36  | .542<br>13.77 | .646<br>16.41  | Yellow                          | .082<br>2.08                           | 2                  | 143                        | 323913         | —               |
|                                                  |                                         | 4            | .203<br>5.16  | .211<br>5.36  | .542<br>13.77 | .646<br>16.41  | Yellow                          | .082<br>2.08                           | 2                  | 144                        | 323914*        | 2-323914-1      |
|                                                  |                                         | 8<br>M4      | .250<br>6.35  | .281<br>7.14  | .612<br>15.54 | .740<br>18.80  | Yellow                          | .082<br>2.08                           | 2                  | 146                        | 323916         | 2-323916-1      |
|                                                  |                                         | 10           | .250<br>6.35  | .281<br>7.14  | .612<br>15.54 | .740<br>18.80  | Yellow                          | .082<br>2.08                           | 2                  | 147                        | 324075*        | 2-324075-1      |
| 22-16<br>509-3,260<br>[0.26-1.65]                | .033<br>0.84                            | 4            | .218<br>5.54  | .156<br>3.96  | .560<br>14.22 | .672<br>17.07  | Red                             | .125<br>3.18                           | $\frac{1 \& 2}{2}$ | 148                        | 320553<br>—    | —<br>2-320553-2 |
|                                                  |                                         |              | .218<br>5.54  | .156<br>3.96  | .560<br>14.22 | .672<br>17.07  | Red                             | .140<br>3.56                           | $\frac{1 \& 2}{2}$ | 148                        | 31880*<br>—    | —<br>2-31880-1  |
|                                                  |                                         | 6<br>M3.5    | .218<br>5.54  | .156<br>3.96  | .560<br>14.22 | .672<br>17.07  | Red                             | .125<br>3.18                           | $\frac{1 \& 2}{2}$ | 101                        | 36149*<br>—    | —<br>2-36149-2  |
|                                                  |                                         |              | .218<br>5.54  | .156<br>3.96  | .560<br>14.22 | .672<br>17.07  | Red                             | .140<br>3.56                           | $\frac{1 \& 2}{2}$ | 101                        | 36150*<br>—    | —<br>2-36150-1  |
|                                                  |                                         | 8<br>M4      | .250<br>6.35  | .250<br>6.35  | .654<br>16.61 | .782<br>19.86  | Red                             | .125<br>3.18                           | $\frac{1 \& 2}{2}$ | 102                        | 51863*<br>—    | —<br>51863-1    |
|                                                  |                                         |              | .312<br>7.92  | .281<br>7.14  | .685<br>17.40 | .844<br>21.44  | Red                             | .125<br>3.18                           | $\frac{1 \& 2}{2}$ | 149                        | 320551*<br>—   | —<br>2-320551-1 |
|                                                  |                                         | 10           | .312<br>7.92  | .281<br>7.14  | .685<br>17.40 | .844<br>21.44  | Red                             | .140<br>3.56                           | $\frac{1 \& 2}{2}$ | 149                        | 31890*<br>—    | —<br>2-31890-2  |
|                                                  |                                         |              | .312<br>7.92  | .281<br>7.14  | .685<br>17.40 | .844<br>21.44  | Red                             | .125<br>3.18                           | $\frac{1 \& 2}{2}$ | 103                        | 36153*<br>—    | —<br>2-36153-2  |
|                                                  |                                         | 1/4<br>M6    | .312<br>7.92  | .281<br>7.14  | .685<br>17.40 | .844<br>21.44  | Red                             | .140<br>3.56                           | $\frac{1 \& 2}{2}$ | 103                        | 36154*<br>—    | —<br>2-36154-2  |
|                                                  |                                         |              | .469<br>11.91 | .437<br>11.10 | .841<br>21.36 | 1.078<br>27.38 | Red                             | .125<br>3.18                           | $\frac{1 \& 2}{2}$ | 150                        | 320571*<br>—   | —<br>2-320571-2 |
|                                                  |                                         | 5/16<br>M8   | .469<br>11.91 | .437<br>11.10 | .841<br>21.36 | 1.078<br>27.38 | Red                             | .140<br>3.56                           | $\frac{1 \& 2}{2}$ | 150                        | 31894*<br>—    | —<br>2-31894-2  |
|                                                  |                                         |              | .469<br>11.91 | .437<br>11.10 | .841<br>21.36 | 1.078<br>27.38 | Red                             | .125<br>3.18                           | $\frac{1 \& 2}{2}$ | 104                        | 320572*<br>—   | —<br>2-320572-1 |
|                                                  |                                         | 3/8          | .469<br>11.91 | .437<br>11.10 | .841<br>21.36 | 1.078<br>27.38 | Red                             | .140<br>3.56                           | $\frac{1 \& 2}{2}$ | 104                        | 31895*<br>—    | —<br>2-31895-1  |
|                                                  |                                         |              | .531<br>13.49 | .546<br>13.87 | .950<br>24.13 | 1.218<br>30.94 | Red                             | .125<br>3.18                           | $\frac{1 \& 2}{2}$ | 105                        | 320573*<br>—   | —<br>2-320573-4 |
|                                                  |                                         | 1/2<br>M12   | .531<br>13.49 | .546<br>13.87 | .950<br>24.13 | 1.218<br>30.94 | Red                             | .140<br>3.56                           | $\frac{1 \& 2}{2}$ | 105                        | 31897*<br>—    | —<br>2-31897-2  |
|                                                  |                                         |              | .713<br>18.11 | .530<br>13.46 | .934<br>23.72 | 1.293<br>32.84 | Red                             | .125<br>3.18                           | 1 & 2              | 151                        | 328975*        | —               |

\*Available in small packaging quantities.

Note: "C" dimension applies from edge of metal wire barrel to center of stud hole.

†Must be crimped with 22-18 or 22-16 PIDG (red) Tooling.

## Ring Tongue Terminals — Nylon (Continued)

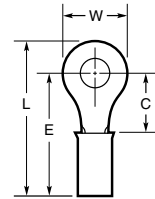
### Material and Finish

Insulation — Nylon

Terminal Body and Metallic

Sleeve — Copper per ASTM B-152

Plating — Tin per ASTM B-545



### Military Specifications MS25036 (Continued)

| Wire Size<br>Circular Mils<br>[mm <sup>2</sup> ] | Tongue<br>Material<br>Thickness<br>Max. | Stud<br>Size | Dimensions    |               |                |                | Terminal<br>Insulation<br>Color | Wire<br>Insulation<br>Diameter<br>Max. | Class      | MS25036<br>Dash<br>Numbers | Part Numbers   |                 |
|--------------------------------------------------|-----------------------------------------|--------------|---------------|---------------|----------------|----------------|---------------------------------|----------------------------------------|------------|----------------------------|----------------|-----------------|
|                                                  |                                         |              | W             | C<br>Min.     | E<br>Max.      | L<br>Max.      |                                 |                                        |            |                            | Loose<br>Piece | Tape<br>Mounted |
| 16-14<br>2,050-5,180<br>[1.04-2.62]              | .033<br>0.84                            | 4            | .250<br>6.35  | .171<br>4.34  | .575<br>14.61  | .703<br>17.86  | Blue                            | .150<br>3.81                           | 1 & 2      | 152                        | 324159*        | —               |
|                                                  |                                         | 6            | .250<br>6.35  | .171<br>4.34  | .575<br>14.61  | .703<br>17.86  | Blue                            | .150<br>3.81                           | 1 & 2<br>2 | 106                        | 320561         | —               |
|                                                  |                                         | M3.5         | .312<br>7.92  | .281<br>7.14  | .685<br>17.40  | .844<br>21.44  | Blue                            | .150<br>3.81                           | 1 & 2<br>2 | 107                        | 51864*         | —               |
|                                                  |                                         | 8            | .312<br>7.92  | .281<br>7.14  | .685<br>17.40  | .844<br>21.44  | Blue                            | .150<br>3.81                           | 1 & 2<br>2 | 153                        | 51864-1*       | —               |
|                                                  |                                         | M4           | .312<br>7.92  | .281<br>7.14  | .685<br>17.40  | .844<br>21.44  | Blue                            | .150<br>3.81                           | 1 & 2<br>2 | 108                        | 51864-2*       | —               |
|                                                  |                                         | 10           | .312<br>7.92  | .281<br>7.14  | .685<br>17.40  | .844<br>21.44  | Blue                            | .150<br>3.81                           | 1 & 2<br>2 | 154                        | 320563*        | —               |
|                                                  |                                         | M6           | .469<br>11.91 | .437<br>11.10 | .841<br>21.36  | 1.078<br>27.38 | Blue                            | .150<br>3.81                           | 1 & 2<br>2 | 109                        | —              | 2-320563-2      |
|                                                  |                                         | 5/16         | .469<br>11.91 | .437<br>11.10 | .841<br>21.36  | 1.078<br>27.38 | Blue                            | .150<br>3.81                           | 1 & 2<br>2 | 110                        | 320575*        | —               |
|                                                  |                                         | M8           | .531<br>13.49 | .546<br>13.87 | .950<br>24.13  | 1.218<br>30.94 | Blue                            | .150<br>3.81                           | 1 & 2<br>2 | 111                        | 320564*        | —               |
|                                                  |                                         | 3/8          | .531<br>13.49 | .546<br>13.87 | .950<br>24.13  | 1.218<br>30.94 | Blue                            | .150<br>3.81                           | 1 & 2<br>2 | 155                        | —              | 2-320564-3      |
| 12-10<br>5,180-13,100<br>[2.62-6.64]             | .042<br>1.07                            | 1/2          | .713<br>18.11 | .530<br>13.46 | .934<br>23.72  | 1.293<br>32.84 | Blue                            | .150<br>3.81                           | 1 & 2      | 111                        | 328976         | —               |
|                                                  |                                         | M12          | .375<br>9.53  | .302<br>7.67  | .893<br>22.68  | 1.083<br>27.51 | Yellow                          | .230<br>5.84                           | 1 & 2<br>2 | 111                        | 320567*        | —               |
|                                                  |                                         | 6            | .375<br>9.53  | .302<br>7.67  | .893<br>22.68  | 1.083<br>27.51 | Yellow                          | .230<br>5.84                           | 1 & 2<br>2 | 111                        | —              | 2-320567-2      |
|                                                  |                                         | M3.5         | .375<br>9.53  | .302<br>7.67  | .893<br>22.68  | 1.083<br>27.51 | Yellow                          | .250<br>6.35                           | 1 & 2<br>2 | 111                        | 35107          | —               |
|                                                  |                                         | 8            | .375<br>9.53  | .302<br>7.67  | .893<br>22.68  | 1.083<br>27.51 | Yellow                          | .250<br>6.35                           | 1 & 2<br>2 | 111                        | —              | 2-35107-1       |
|                                                  |                                         | M4           | .375<br>9.53  | .302<br>7.67  | .893<br>22.68  | 1.083<br>27.51 | Yellow                          | .230<br>5.84                           | 1 & 2<br>2 | 156                        | 320568*        | —               |
|                                                  |                                         | 10           | .375<br>9.53  | .302<br>7.67  | .893<br>22.68  | 1.083<br>27.51 | Yellow                          | .230<br>5.84                           | 1 & 2<br>2 | 156                        | —              | 2-320568-1      |
|                                                  |                                         | 10           | .375<br>9.53  | .302<br>7.67  | .893<br>22.68  | 1.083<br>27.51 | Yellow                          | .250<br>6.35                           | 1 & 2<br>2 | 156                        | 35108*         | —               |
|                                                  |                                         | 1/4          | .531<br>13.49 | .468<br>11.89 | 1.054<br>26.77 | 1.322<br>33.58 | Yellow                          | .230<br>5.84                           | 1 & 2<br>2 | 156                        | —              | 2-35108-1       |
|                                                  |                                         | M6           | .531<br>13.49 | .468<br>11.89 | 1.054<br>26.77 | 1.322<br>33.58 | Yellow                          | .230<br>5.84                           | 1 & 2<br>2 | 112                        | 36161*         | —               |
|                                                  |                                         | 5/16         | .531<br>13.49 | .468<br>11.89 | 1.054<br>26.77 | 1.322<br>33.58 | Yellow                          | .230<br>5.84                           | 1 & 2<br>2 | 112                        | —              | 2-36161-2       |
|                                                  |                                         | M8           | .375<br>9.53  | .302<br>7.67  | .893<br>22.68  | 1.083<br>27.51 | Yellow                          | .250<br>6.35                           | 1 & 2<br>2 | 112                        | 35109*         | —               |
|                                                  |                                         | 3/8          | .593<br>15.06 | .531<br>13.49 | 1.115<br>28.32 | 1.414<br>35.92 | Yellow                          | .230<br>5.84                           | 1 & 2<br>2 | 112                        | —              | 2-35109-1       |
|                                                  |                                         | 1/2          | .715<br>18.16 | .474<br>12.04 | 1.065<br>27.05 | 1.414<br>35.92 | Yellow                          | .230<br>5.84                           | 1 & 2<br>2 | 113                        | 320569*        | —               |
|                                                  |                                         | M12          | .531<br>13.49 | .468<br>11.89 | 1.054<br>26.77 | 1.322<br>33.58 | Yellow                          | .230<br>5.84                           | 1 & 2<br>2 | 157                        | —              | 2-320569-3      |
|                                                  |                                         | 10           | .531<br>13.49 | .468<br>11.89 | 1.054<br>26.77 | 1.322<br>33.58 | Yellow                          | .250<br>6.35                           | 1 & 2<br>2 | 157                        | 35110*         | —               |
|                                                  |                                         | 5/16         | .531<br>13.49 | .468<br>11.89 | 1.054<br>26.77 | 1.322<br>33.58 | Yellow                          | .250<br>6.35                           | 1 & 2<br>2 | 157                        | —              | 2-35110-1       |
|                                                  |                                         | M8           | .531<br>13.49 | .468<br>11.89 | 1.054<br>26.77 | 1.322<br>33.58 | Yellow                          | .230<br>5.84                           | 1 & 2<br>2 | 113                        | 320576*        | —               |
|                                                  |                                         | 3/8          | .593<br>15.06 | .531<br>13.49 | 1.115<br>28.32 | 1.414<br>35.92 | Yellow                          | .230<br>5.84                           | 1 & 2<br>2 | 113                        | —              | 2-320576-1      |
|                                                  |                                         | 1/2          | .715<br>18.16 | .474<br>12.04 | 1.065<br>27.05 | 1.414<br>35.92 | Yellow                          | .250<br>6.35                           | 1 & 2<br>2 | 113                        | 35111*         | —               |
|                                                  |                                         | M12          | .593<br>15.06 | .531<br>13.49 | 1.115<br>28.32 | 1.414<br>35.92 | Yellow                          | .250<br>6.35                           | 1 & 2<br>2 | 113                        | —              | 2-35111-1       |
|                                                  |                                         | 10           | .593<br>15.06 | .531<br>13.49 | 1.115<br>28.32 | 1.414<br>35.92 | Yellow                          | .230<br>5.84                           | 1 & 2<br>2 | 114                        | 320577*        | —               |
|                                                  |                                         | 5/16         | .593<br>15.06 | .531<br>13.49 | 1.115<br>28.32 | 1.414<br>35.92 | Yellow                          | .250<br>6.35                           | 1 & 2<br>2 | 114                        | —              | 2-320577-3      |
|                                                  |                                         | 3/8          | .593<br>15.06 | .531<br>13.49 | 1.115<br>28.32 | 1.414<br>35.92 | Yellow                          | .250<br>6.35                           | 1 & 2<br>2 | 114                        | 35112*         | —               |
|                                                  |                                         | 1/2          | .715<br>18.16 | .474<br>12.04 | 1.065<br>27.05 | 1.414<br>35.92 | Yellow                          | .230<br>5.84                           | 2          | 158                        | 52077          | —               |

\*Available in small packaging quantities.

Note: "C" dimension applies from edge of metal wire barrel to center of stud hole.



## Ring Tongue Terminals — Insulation Restricting

### Material and Finish

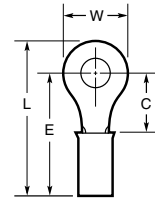
**Insulation** — Nylon

**Terminal Body** — Copper per  
ASTM B-152

**Plating** — Tin per ASTM B-545

**Metallic Sleeve** — Copper per  
ASTM B-152

**Plating** — Nickel per QQ-N-290 or  
Tin per ASTM B-545



### Military Specifications M7928/1

| Wire Size<br>Circular Mils<br>[mm <sup>2</sup> ] | Tongue<br>Material<br>Thickness<br>Max. | Stud<br>Size | Dimensions    |               |                |                | Terminal<br>Insulation<br>Color<br>Solid/Stripe | Wire<br>Insulation<br>Diameter<br>Max. | Class      | M7928/1<br>Dash<br>Numbers | Part Numbers     |                 |
|--------------------------------------------------|-----------------------------------------|--------------|---------------|---------------|----------------|----------------|-------------------------------------------------|----------------------------------------|------------|----------------------------|------------------|-----------------|
|                                                  |                                         |              | W             | C<br>Min.     | E<br>Max.      | L<br>Max.      |                                                 |                                        |            |                            | Loose<br>Piece   | Tape<br>Mounted |
| 26<br>304<br>[0.15]                              | .029<br>0.74                            | 2<br>M2      | .203<br>5.16  | .211<br>5.36  | .632<br>16.05  | .739<br>18.77  | Yellow/Black                                    | .026-.055<br>0.66-1.40                 | 1 & 2      | 1                          | 53078†           | —               |
|                                                  |                                         | 4            | .203<br>5.16  | .211<br>5.36  | .632<br>16.05  | .736<br>18.69  | Yellow/Black                                    | .026-.055<br>0.66-1.40                 | 1 & 2      | 2                          | 53049†           | —               |
|                                                  |                                         | 6<br>M3.5    | .250<br>6.35  | .243<br>6.17  | .664<br>16.87  | .792<br>20.12  | Yellow/Black                                    | .026-.055<br>0.66-1.40                 | 1 & 2      | 3                          | 53050†           | —               |
|                                                  |                                         | 8<br>M4      | .281<br>7.14  | .250<br>6.35  | .671<br>17.04  | .814<br>20.68  | Yellow/Black                                    | .026-.055<br>0.66-1.40                 | 1 & 2      | 4                          | 53051†           | —               |
|                                                  |                                         | 10           | .312<br>7.92  | .281<br>7.14  | .702<br>17.83  | .863<br>21.92  | Yellow/Black                                    | .026-.055<br>0.66-1.40                 | 1 & 2      | 5                          | 53057†           | —               |
| 24<br>475<br>[0.24]                              | .029<br>0.74                            | 2<br>M2      | .203<br>5.16  | .211<br>5.36  | .632<br>16.05  | .739<br>18.77  | Yellow/Blue                                     | .031-.055<br>0.79-1.40                 | 1 & 2      | 6                          | 53053†           | —               |
|                                                  |                                         | 4            | .203<br>5.16  | .211<br>5.36  | .632<br>16.05  | .736<br>18.69  | Yellow/Blue                                     | .031-.055<br>0.79-1.40                 | 1 & 2      | 7                          | 53054†           | —               |
|                                                  |                                         | 6<br>M3.5    | .250<br>6.35  | .243<br>6.17  | .664<br>16.87  | .792<br>20.12  | Yellow/Blue                                     | .031-.055<br>0.79-1.40                 | 1 & 2      | 8                          | 53055†           | —               |
|                                                  |                                         | 8<br>M4      | .281<br>7.14  | .250<br>6.35  | .671<br>17.04  | .814<br>20.68  | Yellow/Blue                                     | .031-.055<br>0.79-1.40                 | 1 & 2      | 9                          | 53056†           | —               |
|                                                  |                                         | 10           | .312<br>7.92  | .281<br>7.14  | .702<br>17.83  | .860<br>21.84  | Yellow/Blue                                     | .031-.055<br>0.79-1.40                 | 1 & 2      | 10                         | 53057†           | —               |
| 22<br>754<br>[0.38]                              | .033<br>0.84                            | 4            | .218<br>5.54  | .156<br>3.96  | .622<br>15.80  | .734<br>18.64  | Red/Green                                       | .038-.110<br>0.97-2.79                 | 1 & 2      | 11                         | 52273*           | —               |
|                                                  |                                         | 6<br>M3.5    | .218<br>5.54  | .156<br>3.96  | .622<br>15.80  | .734<br>18.64  | Red/Green                                       | .038-.110<br>0.97-2.79                 | 1 & 2      | 12                         | 2-36149-3*       | —               |
|                                                  |                                         | 8<br>M4      | .250<br>6.35  | .250<br>6.35  | .716<br>18.19  | .844<br>21.44  | Red/Green                                       | .038-.110<br>0.97-2.79                 | 1 & 2<br>2 | 13                         | 51863-2*<br>—    | 51863-5         |
|                                                  |                                         | 1/4<br>M6    | .312<br>7.92  | .281<br>7.14  | .747<br>18.97  | .906<br>23.01  | Red/Green                                       | .038-.110<br>0.97-2.79                 | 1 & 2<br>2 | 14                         | 1-320551-2*<br>— | 1-320551-5      |
|                                                  |                                         | 5/16<br>M8   | .469<br>11.91 | .437<br>11.10 | .903<br>22.94  | 1.140<br>28.96 | Red/Green                                       | .038-.110<br>0.97-2.79                 | 1 & 2      | 16                         | 2-320571-3       | —               |
|                                                  |                                         | 3/8          | .531<br>13.49 | .546<br>13.87 | 1.012<br>25.70 | 1.280<br>32.51 | Red/Green                                       | .038-.110<br>0.97-2.79                 | 1 & 2      | 17                         | 2-320572-2       | —               |
|                                                  |                                         | 1/2<br>M12   | .713<br>18.11 | .530<br>13.46 | .996<br>25.30  | 1.355<br>34.42 | Red/Green                                       | .038-.110<br>0.97-2.79                 | 1 & 2      | 18                         | 2-320573-1       | —               |
|                                                  |                                         | 10           | .312<br>7.92  | .281<br>7.14  | .747<br>18.97  | .906<br>23.01  | Red/Green                                       | .038-.110<br>0.97-2.79                 | 1 & 2<br>2 | 19                         | 2-328975-1       | —               |
|                                                  |                                         | 10           | .312<br>7.92  | .281<br>7.14  | .747<br>18.97  | .906<br>23.01  | Red/Green                                       | .038-.110<br>0.97-2.79                 | 1 & 2<br>2 | 15                         | 2-36153-3*<br>—  | 2-36153-6       |
|                                                  |                                         | 4            | .218<br>5.54  | .156<br>3.96  | .622<br>15.80  | .734<br>18.64  | Red/Red                                         | .046-.110<br>1.17-2.79                 | 1 & 2      | 20                         | 52273-1*         | —               |
|                                                  |                                         | 6<br>M3.5    | .218<br>5.54  | .156<br>3.96  | .622<br>15.80  | .734<br>18.64  | Red/Red                                         | .046-.110<br>1.17-2.79                 | 1 & 2      | 21                         | 2-36149-4*       | —               |
|                                                  |                                         | 8<br>M4      | .250<br>6.35  | .250<br>6.35  | .716<br>18.19  | .844<br>21.44  | Red/Red                                         | .046-.110<br>1.17-2.79                 | 1 & 2<br>2 | 22                         | 51863-3<br>—     | 51863-6         |
| 20<br>1,186<br>[0.60]                            | .033<br>0.84                            | 10           | .312<br>7.92  | .281<br>7.14  | .747<br>18.97  | .906<br>23.01  | Red/Red                                         | .046-.110<br>1.17-2.79                 | 1 & 2      | 23                         | 1-320551-3*      | —               |
|                                                  |                                         | 10           | .312<br>7.92  | .281<br>7.14  | .747<br>18.97  | .906<br>23.01  | Red/Red                                         | .046-.110<br>1.17-2.79                 | 1 & 2<br>2 | 24                         | 2-36153-4*<br>—  | 2-36153-8       |
|                                                  |                                         | 1/4<br>M6    | .469<br>11.91 | .437<br>11.10 | .903<br>22.94  | 1.140<br>28.96 | Red/Red                                         | .046-.110<br>1.17-2.79                 | 1 & 2      | 25                         | 2-320571-4       | —               |
|                                                  |                                         | 5/16<br>M8   | .469<br>11.91 | .437<br>11.10 | .903<br>22.94  | 1.140<br>28.96 | Red/Red                                         | .046-.110<br>1.17-2.79                 | 1 & 2      | 26                         | 2-320572-3       | —               |
|                                                  |                                         | 3/8          | .531<br>13.49 | .546<br>13.87 | 1.012<br>25.70 | 1.280<br>32.51 | Red/Red                                         | .046-.110<br>1.17-2.79                 | 1 & 2      | 27                         | 2-320573-2       | —               |
|                                                  |                                         | 1/2<br>M12   | .713<br>18.11 | .530<br>13.46 | .996<br>25.30  | 1.355<br>34.42 | Red/Red                                         | .046-.110<br>1.17-2.79                 | 1 & 2      | 28                         | 2-328975-2       | —               |

\*Available in small packaging quantities.

†Must be crimped with 22-18 or 22-16 PIDG (red) Tooling.

**Note:** "C" dimension applies from edge of metal wire barrel to center of stud hole.



## Ring Tongue Terminals — Insulation Restricting (Continued)

### Material and Finish

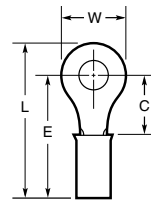
**Insulation** — Nylon

**Terminal Body** — Copper per  
ASTM B-152

**Plating** — Tin per ASTM B-545

**Metallic Sleeve** — Copper per  
ASTM B-152

**Plating** — Nickel per QQ-N-290 or  
Tin per ASTM B-545



### Military Specifications M7928/1 (Continued)

| Wire Size<br>Circular Mils<br>[mm <sup>2</sup> ] | Tongue<br>Material<br>Thickness<br>Max. | Stud<br>Size | Dimensions    |               |                |                | Terminal<br>Insulation<br>Color<br>Solid/Stripe | Wire<br>Insulation<br>Diameter<br>Max. | Class      | M7928/1<br>Dash<br>Numbers | Part Numbers     |                 |
|--------------------------------------------------|-----------------------------------------|--------------|---------------|---------------|----------------|----------------|-------------------------------------------------|----------------------------------------|------------|----------------------------|------------------|-----------------|
|                                                  |                                         |              | W             | C<br>Min.     | E<br>Max.      | L<br>Max.      |                                                 |                                        |            |                            | Loose<br>Piece   | Tape<br>Mounted |
| 18<br>1,900<br>[0.96]                            | .033<br>0.84                            | 4            | .218<br>5.54  | .156<br>3.96  | .622<br>15.80  | .734<br>18.64  | Red/White                                       | .056-.110<br>1.42-2.79                 | 1 & 2      | 29                         | 52273-2*         | —               |
|                                                  |                                         | 6            | .218<br>5.54  | .156<br>3.96  | .622<br>15.80  | .734<br>18.64  | Red/White                                       | .056-.110<br>1.42-2.79                 | 1 & 2      | 30                         | 2-36149-5*       | —               |
|                                                  |                                         | M3.5         | .250<br>6.35  | .250<br>6.35  | .716<br>18.19  | .844<br>21.44  | Red/White                                       | .056-.110<br>1.42-2.79                 | 1 & 2<br>2 | 31                         | 51863-4*<br>—    | —<br>51863-7    |
|                                                  |                                         | 8<br>M4      | .312<br>7.92  | .281<br>7.14  | .747<br>18.97  | .906<br>23.01  | Red/White                                       | .056-.110<br>1.42-2.79                 | 1 & 2<br>2 | 32                         | 1-320551-4*<br>— | —<br>1-320551-8 |
|                                                  |                                         | 10           | .312<br>7.92  | .281<br>7.14  | .747<br>18.97  | .906<br>23.01  | Red/White                                       | .056-.110<br>1.42-2.79                 | 1 & 2<br>2 | 33                         | 2-36153-5*<br>—  | —<br>2-36153-9  |
|                                                  |                                         | 1/4<br>M6    | .469<br>11.91 | .437<br>11.10 | .903<br>22.94  | 1.140<br>28.96 | Red/White                                       | .056-.110<br>1.42-2.79                 | 1 & 2      | 34                         | 2-320571-5       | —               |
|                                                  |                                         | 5/16<br>M8   | .469<br>11.91 | .437<br>11.10 | .903<br>22.94  | 1.140<br>28.96 | Red/White                                       | .056-.110<br>1.42-2.79                 | 1 & 2      | 35                         | 2-320572-4       | —               |
|                                                  |                                         | 3/8          | .531<br>13.49 | .546<br>13.87 | 1.012<br>25.70 | 1.280<br>32.51 | Red/White                                       | .056-.110<br>1.42-2.79                 | 1 & 2      | 36                         | 2-320573-3       | —               |
|                                                  |                                         | 1/2<br>M12   | .713<br>18.11 | .530<br>13.46 | .996<br>25.30  | 1.355<br>34.42 | Red/White                                       | .056-.110<br>1.42-2.79                 | 1 & 2      | 37                         | 2-328975-3       | —               |
|                                                  |                                         | 4            | .250<br>6.35  | .171<br>4.34  | .637<br>16.18  | .765<br>19.43  | Blue/Blue                                       | .063-.130<br>1.60-3.30                 | 1 & 2      | 38                         | 52274            | —               |
|                                                  |                                         | 6            | .250<br>6.35  | .171<br>4.34  | .637<br>16.18  | .765<br>19.43  | Blue/Blue                                       | .063-.130<br>1.60-3.30                 | 1 & 2      | 39                         | 2-320561-3*      | —               |
|                                                  |                                         | M3.5         | .312<br>7.92  | .281<br>7.14  | .747<br>18.97  | .906<br>23.01  | Blue/Blue                                       | .063-.130<br>1.60-3.30                 | 1 & 2<br>2 | 40                         | 51864-6*<br>—    | —<br>1-51864-2  |
| 16<br>2,800<br>[1.42]                            | .033<br>0.84                            | 8<br>M4      | .312<br>7.92  | .281<br>7.14  | .747<br>18.97  | .906<br>23.01  | Blue/Blue                                       | .063-.130<br>1.60-3.30                 | 1 & 2      | 41                         | 1-51864-0*       | —               |
|                                                  |                                         | 10           | .312<br>7.92  | .281<br>7.14  | .747<br>18.97  | .906<br>23.01  | Blue/Blue                                       | .063-.130<br>1.60-3.30                 | 1 & 2<br>2 | 42                         | 51864-7*<br>—    | —<br>1-51864-3  |
|                                                  |                                         | 1/4<br>M6    | .469<br>11.91 | .437<br>11.10 | .903<br>22.94  | 1.140<br>28.96 | Blue/Blue                                       | .063-.130<br>1.60-3.30                 | 1 & 2      | 43                         | 2-320563-3       | —               |
|                                                  |                                         | 5/16<br>M8   | .469<br>11.91 | .437<br>11.10 | .903<br>22.94  | 1.140<br>28.96 | Blue/Blue                                       | .063-.130<br>1.60-3.30                 | 1 & 2      | 44                         | 2-320575-2       | —               |
|                                                  |                                         | 3/8          | .531<br>13.49 | .546<br>13.87 | 1.012<br>25.70 | 1.280<br>32.51 | Blue/Blue                                       | .063-.130<br>1.60-3.30                 | 1 & 2      | 45                         | 2-320564-1       | —               |
|                                                  |                                         | 1/2<br>M12   | .713<br>18.11 | .530<br>13.46 | .996<br>25.30  | 1.355<br>34.42 | Blue/Blue                                       | .063-.130<br>1.60-3.30                 | 1 & 2      | 46                         | 2-328976-1       | —               |
|                                                  |                                         | 4            | .250<br>6.35  | .171<br>4.34  | .637<br>16.18  | .765<br>19.43  | Blue/Green                                      | .078-.130<br>1.98-3.30                 | 1 & 2      | 47                         | 52274-1          | —               |
|                                                  |                                         | 6            | .250<br>6.35  | .171<br>4.34  | .637<br>16.18  | .765<br>19.43  | Blue/Green                                      | .078-.130<br>1.98-3.30                 | 1 & 2      | 48                         | 2-320561-4       | —               |
|                                                  |                                         | M3.5         | .312<br>7.92  | .281<br>7.14  | .747<br>18.97  | .906<br>23.01  | Blue/Green                                      | .078-.130<br>1.98-3.30                 | 1 & 2      | 49                         | 51864-8*         | —               |
|                                                  |                                         | 8<br>M4      | .312<br>7.92  | .281<br>7.14  | .747<br>18.97  | .906<br>23.01  | Blue/Green                                      | .078-.130<br>1.98-3.30                 | 1 & 2<br>2 | 50                         | 1-51864-1*<br>—  | —<br>1-51864-7  |
|                                                  |                                         | 10           | .312<br>7.92  | .281<br>7.14  | .747<br>18.97  | .906<br>23.01  | Blue/Green                                      | .078-.130<br>1.98-3.30                 | 1 & 2<br>2 | 51                         | 51864-9*<br>—    | —<br>1-51864-5  |
|                                                  |                                         | 1/4<br>M6    | .469<br>11.91 | .437<br>11.10 | .903<br>22.94  | 1.140<br>28.96 | Blue/Green                                      | .078-.130<br>1.98-3.30                 | 1 & 2      | 52                         | 2-320563-4       | —               |
| 14<br>4,234<br>[2.15]                            | .033<br>0.84                            | 5/16<br>M8   | .469<br>11.91 | .437<br>11.10 | .903<br>22.94  | 1.140<br>28.96 | Blue/Green                                      | .078-.130<br>1.98-3.30                 | 1 & 2      | 53                         | 2-320575-3       | —               |
|                                                  |                                         | 3/8          | .531<br>13.49 | .546<br>13.87 | 1.012<br>25.70 | 1.280<br>32.51 | Blue/Green                                      | .078-.130<br>1.98-3.30                 | 1 & 2      | 54                         | 2-320564-2       | —               |
|                                                  |                                         | 1/2<br>M12   | .713<br>18.11 | .530<br>13.46 | .996<br>25.30  | 1.355<br>34.42 | Blue/Green                                      | .078-.130<br>1.98-3.30                 | 1 & 2      | 55                         | 2-328976-2       | —               |

\*Available in small packaging quantities.

**Note:** "C" dimension applies from edge of metal wire barrel to center of stud hole.

## Ring Tongue Terminals — Insulation Restricting (Continued)

### Material and Finish

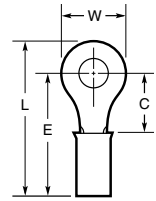
**Insulation** — Nylon

**Terminal Body** — Copper per  
ASTM B-152

**Plating** — Tin per ASTM B-545

**Metallic Sleeve** — Copper per  
ASTM B-152

**Plating** — Nickel per QQ-N-290 or  
Tin per ASTM B-545



### Military Specifications M7928/1 (Continued)

| Wire Size<br>Circular Mils<br>[mm <sup>2</sup> ] | Tongue<br>Material<br>Thickness<br>Max. | Stud<br>Size | Dimensions    |               |                |                | Terminal<br>Insulation<br>Color<br>Solid/Stripe | Wire<br>Insulation<br>Diameter<br>Max. | Class      | M7928/1<br>Dash<br>Numbers | Part Numbers     |                 |
|--------------------------------------------------|-----------------------------------------|--------------|---------------|---------------|----------------|----------------|-------------------------------------------------|----------------------------------------|------------|----------------------------|------------------|-----------------|
|                                                  |                                         |              | W             | C<br>Min.     | E<br>Max.      | L<br>Max.      |                                                 |                                        |            |                            | Loose<br>Piece   | Tape<br>Mounted |
| 12<br>6,654<br>[3.37]                            | .042<br>1.07                            | 6<br>M3.5    | .375<br>9.53  | .302<br>7.67  | .958<br>24.33  | 1.148<br>29.16 | Yellow/Yellow                                   | .095-.200<br>2.41-5.08                 | 1 & 2      | 56                         | 2-36161-5        | —               |
|                                                  |                                         | 8<br>M4      | .375<br>9.53  | .302<br>7.67  | .958<br>24.33  | 1.148<br>29.16 | Yellow/Yellow                                   | .095-.200<br>2.41-5.08                 | 1 & 2      | 57                         | 2-320568-2*      | —               |
|                                                  |                                         | 10           | .375<br>9.53  | .302<br>7.67  | .958<br>24.33  | 1.148<br>29.16 | Yellow/Yellow                                   | .095-.200<br>2.41-5.08                 | 1 & 2      | 58                         | 2-36161-3*       | —               |
|                                                  |                                         | 1/4<br>M6    | .531<br>13.49 | .468<br>11.89 | 1.124<br>28.55 | 1.392<br>35.36 | Yellow/Yellow                                   | .095-.200<br>2.41-5.08                 | 1 & 2      | 59                         | 2-320569-5       | —               |
|                                                  |                                         | 5/16<br>M8   | .531<br>13.49 | .468<br>11.89 | 1.124<br>28.55 | 1.392<br>35.36 | Yellow/Yellow                                   | .095-.200<br>2.41-5.08                 | 1 & 2      | 60                         | 2-320576-2       | —               |
|                                                  |                                         | 3/8          | .593<br>15.06 | .531<br>13.49 | 1.187<br>30.15 | 1.486<br>37.74 | Yellow/Yellow                                   | .095-.200<br>2.41-5.08                 | 1 & 2      | 61                         | 2-320577-1       | —               |
|                                                  |                                         | 1/2<br>M12   | .715<br>18.16 | .474<br>12.04 | 1.130<br>28.70 | 1.490<br>37.85 | Yellow/Yellow                                   | .095-.200<br>2.41-5.08                 | 2          | 62                         | 52077-1          | —               |
|                                                  |                                         | 6<br>M3.5    | .375<br>9.53  | .302<br>7.67  | .958<br>24.33  | 1.148<br>29.16 | Yellow/Brown                                    | .119-.200<br>3.02-5.08                 | 1 & 2      | 63                         | 2-36161-6        | —               |
| 10<br>12,066<br>[6.11]                           | .042<br>1.07                            | 8<br>M4      | .375<br>9.53  | .302<br>7.67  | .958<br>24.33  | 1.148<br>29.16 | Yellow/Brown                                    | .119-.200<br>3.02-5.08                 | 1 & 2      | 64                         | 2-320568-3*<br>— | —<br>2-36161-8  |
|                                                  |                                         | 10           | .375<br>9.53  | .302<br>7.67  | .958<br>24.33  | 1.148<br>29.16 | Yellow/Brown                                    | .119-.200<br>3.02-5.08                 | 1 & 2<br>2 | 65                         | 2-36161-4<br>—   | —               |
|                                                  |                                         | 1/4<br>M6    | .531<br>13.49 | .468<br>11.89 | 1.124<br>28.55 | 1.392<br>35.36 | Yellow/Brown                                    | .119-.200<br>3.02-5.08                 | 1 & 2<br>2 | 66                         | 2-320569-6<br>—  | —<br>2-320569-8 |
|                                                  |                                         | 5/16<br>M8   | .531<br>13.49 | .468<br>11.89 | 1.124<br>28.55 | 1.392<br>35.36 | Yellow/Brown                                    | .119-.200<br>3.02-5.08                 | 1 & 2      | 67                         | 2-320576-3       | —               |
|                                                  |                                         | 3/8          | .593<br>15.06 | .531<br>13.49 | 1.187<br>30.15 | 1.486<br>37.74 | Yellow/Brown                                    | .119-.200<br>3.02-5.08                 | 1 & 2      | 68                         | 2-320577-2       | —               |
|                                                  |                                         | 1/2<br>M12   | .715<br>18.16 | .474<br>12.04 | 1.130<br>28.70 | 1.490<br>37.85 | Yellow/Brown                                    | .119-.200<br>3.02-5.08                 | 2          | 69                         | 52077-2          | —               |

\*Available in small packaging quantities.

**Note:** "C" dimension applies from edge of metal wire barrel to center of stud hole.

## Rectangular Tongue Terminals

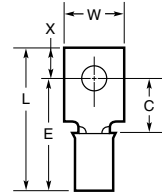
### Material and Finish

Insulation — Nylon

Terminal Body and Metallic

Sleeve — Copper per ASTM B-152  
except where noted.

Plating — Tin per ASTM B-545



### Military Specifications MS17143

| Wire Size<br>Circular Mils<br>[mm²]  | Tongue<br>Material<br>Thickness<br>Max. | Stud<br>Size                        | Dimensions   |               |                |                |               | Terminal<br>Insulation<br>Color | Wire<br>Insulation<br>Diameter<br>Max. | Class              | M17143<br>Dash<br>Numbers | Part Numbers       |                 |                 |                 |
|--------------------------------------|-----------------------------------------|-------------------------------------|--------------|---------------|----------------|----------------|---------------|---------------------------------|----------------------------------------|--------------------|---------------------------|--------------------|-----------------|-----------------|-----------------|
|                                      |                                         |                                     | W            | C<br>Min.     | E<br>Max.      | L<br>Max.      | X             |                                 |                                        |                    |                           | Loose<br>Piece     | Tape<br>Mounted |                 |                 |
| 22-16<br>500<br>[0.26-1.65]          | .033<br>0.84                            | 4                                   | .237<br>6.02 | .237<br>6.02  | .643<br>16.33  | .796<br>20.22  | .143<br>3.63  | Red                             | .140<br>3.56                           | 1 & 2              | 19                        | 2-327968-1         | —               |                 |                 |
|                                      |                                         |                                     | .237<br>6.02 | .404<br>10.26 | .810<br>20.57  | 1.015<br>25.78 | .195<br>4.95  | Red                             | .140<br>3.56                           | 1 & 2              | 16                        | 327962             | —               |                 |                 |
|                                      |                                         | 5<br>M3                             | .277<br>7.04 | .277<br>7.04  | .702<br>17.83  | .855<br>21.72  | .143<br>3.63  | Red                             | .140<br>3.56                           | 1 & 2              | 10                        | 2-327950-1         | —               |                 |                 |
|                                      |                                         | 6<br>M3.5                           | .237<br>6.02 | .404<br>10.26 | .810<br>20.57  | 1.015<br>25.78 | .195<br>4.95  | Red                             | .140<br>3.56                           | 1 & 2              | 13                        | 2-327956-1         | —               |                 |                 |
|                                      |                                         |                                     | .302<br>7.67 | .465<br>11.81 | .872<br>22.15  | 1.109<br>28.17 | .227<br>5.77  | Red                             | .140<br>3.56                           | $\frac{1 \& 2}{2}$ | 4                         | 2-327938-1<br>—    | —<br>2-327938-2 |                 |                 |
|                                      |                                         | 8<br>M4                             | .302<br>7.67 | .465<br>11.81 | .872<br>22.15  | 1.109<br>28.17 | .227<br>5.77  | Red                             | .140<br>3.56                           | $\frac{1 \& 2}{2}$ | 7                         | 327944*<br>—       | —<br>2-327944-2 |                 |                 |
|                                      |                                         |                                     | .390<br>9.91 | .621<br>15.77 | 1.039<br>26.39 | 1.359<br>34.52 | .310<br>7.87  | Red                             | .140<br>3.56                           | 1 & 2              | 1                         | 327932             | —               |                 |                 |
|                                      |                                         | 16-14<br>2,050-5,180<br>[1.04-2.62] | .033<br>0.84 | 4             | .237<br>6.02   | .237<br>6.02   | .643<br>16.33 | .796<br>20.22                   | .143<br>3.63                           | Blue               | .150<br>3.81              | 1 & 2              | 20              | 2-327970-4      | —               |
|                                      |                                         |                                     |              |               | .237<br>6.02   | .404<br>10.26  | .810<br>20.57 | 1.015<br>25.78                  | .195<br>4.95                           | Blue               | .150<br>3.81              | 1 & 2              | 17              | 2-327964-4      | —               |
|                                      |                                         |                                     |              | 5<br>M3       | .277<br>7.04   | .277<br>7.04   | .702<br>17.83 | .855<br>21.72                   | .143<br>3.63                           | Blue               | .150<br>3.81              | $\frac{1 \& 2}{2}$ | 11              | 2-327952-2<br>— | —<br>2-327952-6 |
| 6<br>M3.5                            | .237<br>6.02                            |                                     |              | .404<br>10.26 | .810<br>20.57  | 1.015<br>25.78 | .195<br>4.95  | Blue                            | .150<br>3.81                           | 1 & 2              | 14                        | 2-327958-4         | —               |                 |                 |
|                                      | .302<br>7.67                            |                                     |              | .465<br>11.81 | .872<br>22.15  | 1.109<br>28.17 | .227<br>5.77  | Blue                            | .150<br>3.81                           | 1 & 2              | 5                         | 2-327940-4         | —               |                 |                 |
| 8<br>M4                              | .302<br>7.67                            |                                     |              | .465<br>11.81 | .872<br>22.15  | 1.109<br>28.17 | .227<br>5.77  | Blue                            | .150<br>3.81                           | 1 & 2              | 8                         | 2-327946-4         | —               |                 |                 |
|                                      | .390<br>9.91                            |                                     |              | .621<br>15.77 | 1.039<br>26.39 | 1.359<br>34.52 | .310<br>7.87  | Blue                            | .150<br>3.81                           | 1 & 2              | 2                         | 2-327934-2         | —               |                 |                 |
| 12-10<br>5,180-13,100<br>[2.62-6.64] | .042<br>1.07                            |                                     |              | 4             | .237<br>6.02   | .237<br>6.02   | .831<br>21.11 | .984<br>24.99                   | .143<br>3.63                           | Yellow             | .230<br>5.84              | 1 & 2              | 21              | 327972          | —               |
|                                      |                                         |                                     |              |               | .237<br>6.02   | .404<br>10.26  | .998<br>25.35 | 1.203<br>30.56                  | .195<br>4.95                           | Yellow             | .230<br>5.84              | 1 & 2              | 18              | 327966          | —               |
|                                      |                                         |                                     |              | 5<br>M3       | .277<br>7.04   | .277<br>7.04   | .889<br>22.58 | 1.042<br>26.47                  | .143<br>3.63                           | Yellow             | .230<br>5.84              | $\frac{1 \& 2}{2}$ | 12              | 327954<br>—     | —<br>2-327954-2 |
|                                      |                                         | 6<br>M3.5                           | .237<br>6.02 | .404<br>10.26 | .998<br>25.35  | 1.203<br>30.56 | .195<br>4.95  | Yellow                          | .230<br>5.84                           | $\frac{1 \& 2}{2}$ | 15                        | 2-327960-1<br>—    | —<br>2-327960-2 |                 |                 |
|                                      |                                         |                                     | .302<br>7.67 | .465<br>11.81 | 1.044<br>26.52 | 1.281<br>32.54 | .227<br>5.77  | Yellow                          | .230<br>5.84                           | 1 & 2              | 6                         | 327942             | —               |                 |                 |
|                                      |                                         | 8<br>M4                             | .302<br>7.67 | .465<br>11.81 | 1.044<br>26.52 | 1.281<br>32.54 | .227<br>5.77  | Yellow                          | .230<br>5.84                           | 1 & 2              | 9                         | 327948             | —               |                 |                 |
|                                      |                                         |                                     | .390<br>9.91 | .621<br>15.77 | 1.211<br>30.76 | 1.531<br>38.89 | .310<br>7.87  | Yellow                          | .230<br>5.84                           | 1 & 2              | 3                         | 327936             | —               |                 |                 |

\*Available in small packaging quantities.

Note: "C" dimension applies from edge of metal wire barrel to center of stud hole.

## Butt Splices

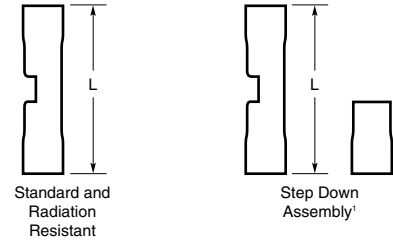
### Material and Finish

**Insulation Sleeve** —  
Standard, Step Down Assembly  
and Nylon

**Radiation Resistant** —  
Polyvinylidene Fluoride (PVF<sub>2</sub>)

**Splice Body and Insulation  
Support Sleeve** — Copper per ASTM  
B-152

**Plating** — Tin per ASTM B-545



### Military Specifications M7928/5

| Wire Size<br>Circular Mils <sup>1</sup><br>[mm <sup>2</sup> ] | Style    | Dimension<br>L<br>Max. | Splice<br>Insulation<br>Color | Wire Insulation<br>Diameter<br>Max. | Class              | M7928/5<br>Dash<br>Numbers | Part Numbers   |                 |
|---------------------------------------------------------------|----------|------------------------|-------------------------------|-------------------------------------|--------------------|----------------------------|----------------|-----------------|
|                                                               |          |                        |                               |                                     |                    |                            | Loose<br>Piece | Tape<br>Mounted |
| 26-24 <sup>2</sup><br>238-475<br>[0.12-0.24]                  | Standard | .890<br>22.61          | Yellow                        | .082<br>2.08                        | 1 & 2              | 1                          | 323994         | —               |
| 24-20<br>320-1,290<br>[0.16-0.65]                             |          | 1.035<br>26.29         | Natural                       | .100<br>2.54                        | $\frac{1 \& 2}{2}$ | 2                          | 323975<br>—    | —<br>2-323975-3 |
| 22-16 <sup>3</sup><br>509-3,260<br>[0.26-1.65]                |          | 1.265<br>32.13         | Red                           | .125<br>3.18                        | $\frac{1 \& 2}{2}$ | 3                          | 320559*<br>—   | —<br>2-320559-4 |
| 16-14<br>2,050-5,180<br>[1.04-2.62]                           |          | 1.265<br>32.13         | Blue                          | .150<br>3.81                        | $\frac{1 \& 2}{2}$ | 4                          | 320562*<br>—   | —<br>2-320562-3 |
| 12-10<br>5,180-13,100<br>[2.62-6.64]                          |          | 1.656<br>42.06         | Yellow                        | .220<br>5.59                        | 1 & 2              | 5                          | 320570*        | —               |

\*Available in small packaging quantities.

<sup>1</sup> When using two or more wires in either end of a butt splice, the combined cross sectional area must be within the (CMA) circular mil area range listed.

<sup>2</sup> 26-24 range in accordance with MIL-T-7928.

<sup>3</sup> 22-16 splices are 22-18 range in accordance with MIL-T-7928.

### Military Specifications M7928/6

| Wire Size<br>Circular Mils <sup>1</sup><br>[mm <sup>2</sup> ] | Style                  | Dimension<br>L<br>Max. | Splice<br>Insulation<br>Color | Wire Insulation<br>Diameter<br>Max. | Class              | M7928/6<br>Dash<br>Numbers | Part Numbers   |                 |
|---------------------------------------------------------------|------------------------|------------------------|-------------------------------|-------------------------------------|--------------------|----------------------------|----------------|-----------------|
|                                                               |                        |                        |                               |                                     |                    |                            | Loose<br>Piece | Tape<br>Mounted |
| 26-24 <sup>2</sup><br>238-475<br>[0.12-0.24]                  | Radiation<br>Resistant | .890<br>22.61          | Natural w/<br>Yellow Stripes  | .082<br>2.08                        | 1 & 2              | 1                          | 53546-1        | —               |
| 24-20<br>320-1,290<br>[0.16-0.65]                             |                        | 1.035<br>26.29         | Natural w/<br>White Stripes   | .100<br>2.54                        | $\frac{1 \& 2}{2}$ | 2                          | 53547-1<br>—   | —<br>53547-2    |
| 22-16 <sup>3</sup><br>509-3,260<br>[0.26-1.65]                |                        | 1.265<br>32.13         | Natural w/<br>Red Stripes     | .125<br>3.18                        | $\frac{1 \& 2}{2}$ | 3                          | 53548-1*<br>—  | —<br>53548-2    |
| 16-14<br>2,050-5,180<br>[1.04-2.62]                           |                        | 1.265<br>32.13         | Natural w/<br>Blue Stripes    | .150<br>3.81                        | 1 & 2              | 4                          | 53549-1*       | —               |

\*Available in small packaging quantities.

<sup>1</sup> When using two or more wires in either end of a butt splice, the combined cross sectional area must be within the (CMA) circular mil area range listed.

<sup>2</sup> 26-24 range in accordance with MIL-T-7928.

<sup>3</sup> 22-16 splices are 22-18 range in accordance with MIL-T-7928.

## Application Tooling

### Insulated Terminals and Splices — 30 to 10 AWG Wire Range

| Description              | Wire Range | Tools for Loose Piece Termination              |                                                                    |                                 |                                |                                                     | Tools for Tape Mounted Terminations                    |                                                                     |                                                        |                                                                     |
|--------------------------|------------|------------------------------------------------|--------------------------------------------------------------------|---------------------------------|--------------------------------|-----------------------------------------------------|--------------------------------------------------------|---------------------------------------------------------------------|--------------------------------------------------------|---------------------------------------------------------------------|
|                          |            | Hand Tools                                     |                                                                    | Pneumatic Tools                 |                                |                                                     | Tape Dies for 69875 TAPETRONIC No Applicator Required  | Tape Dies for 354500-1 AMP-O-ELECTRIC Model "G" Applicator 567200-3 | Tape Dies for AMPOMATOR CLS IV* Applicator 687658-1    | Tape Dies for 354500-1 AMP-O-ELECTRIC Model "K" Applicator 567200-2 |
|                          |            | Single Wire Range                              | Multi-Wire Range                                                   | Heads for 626 Single Wire Range | Heads for 626 Multi-Wire Range | Dies for 69710-1 <sup>3</sup> 217200-1 <sup>4</sup> |                                                        |                                                                     |                                                        |                                                                     |
| PIDG Terminals & Splices | 30-26      | 69163—uses 26-22 Terms.                        | —                                                                  | —                               | —                              | —                                                   | —                                                      | —                                                                   | —                                                      | —                                                                   |
|                          | 26-22      | 46121 <sup>†</sup>                             | 59275 <sup>†</sup>                                                 | 314537-1                        | —                              | 69344                                               | 69877                                                  | 69877                                                               | 69877                                                  | 69877                                                               |
|                          | 22-16      | 47386 <sup>†</sup>                             | 59250 <sup>†</sup><br>59824-1 <sup>†</sup><br>58433-3 <sup>2</sup> | 314270-3                        | 679305-1                       | 47806-2                                             | 69872*<br>59826-1 <sup>†</sup>                         | 69872*<br>59826-1 <sup>†</sup>                                      | 69872*<br>59826-1 <sup>†</sup>                         | 69872*<br>59826-1 <sup>†</sup>                                      |
|                          | 16-14      | 68343-1<br>(.250 exp.)<br>47387                | 59250 <sup>†</sup><br>59824-1 <sup>†</sup><br>58433-3 <sup>2</sup> | 314269-1                        | 679305-1                       | 47807-1                                             | 69873*<br>59827-1 <sup>†</sup>                         | 69873*<br>59827-1 <sup>†</sup>                                      | 69873*<br>59827-1 <sup>†</sup>                         | 69873*<br>59827-1 <sup>†</sup>                                      |
|                          | 12-10      | 59239-4 <sup>†</sup><br>59287-2<br>(.300 exp.) | 59824-1 <sup>†</sup><br>58433-3 <sup>2</sup>                       | 679300-1                        | 679305-1                       | 47808-6 Std.<br>47808-5<br>(.300 exp.)              | 69874*<br>69897<br>(.300 exp.)<br>59828-1 <sup>†</sup> | 69874*<br>69897<br>(.300 exp.)<br>59828-1 <sup>†</sup>              | 69874*<br>69897<br>(.300 exp.)<br>59828-1 <sup>†</sup> | 69874*<br>69897<br>(.300 exp.)<br>59828-1 <sup>†</sup>              |
|                          | 16-14 HD   |                                                |                                                                    |                                 |                                |                                                     |                                                        |                                                                     |                                                        |                                                                     |

<sup>†</sup>Tooling with adjustable insulation crimp.

\*Same die set/configuration as in hand tools.

<sup>1</sup>TETRA-CRIMP die configuration.

<sup>2</sup>PRO-CRIMPER II commercial tool not approved for UL applications.

<sup>3</sup>69710-1 hand tool.

<sup>4</sup>626 Pneumatic Tool Adapter

## PIDG Terminal Style

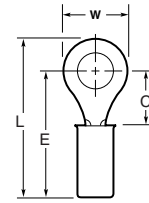
### Ring Tongue Terminals

#### Material and Finish

**Terminal Body** — Copper per QQ-C-576 with tin plating per MIL-T-10727 or gold plating per MIL-G-45204 over nickel per QQ-N-290

**Insulation Support Sleeve** — Copper per QQ-C-576 with tin plating per MIL-T-10727

**Insulation Sleeve** — PVF<sub>2</sub>, natural color



### Military Specifications M7928/4

| Wire Range<br>AWG | CMA         | Tongue Thickness<br>Max. | Wire Insulation Diameter<br>Max. | Stripe Color Code | Stud Size  | Dimensions    |               |               |                | Class      | M7928/4 Dash Numbers | Part Numbers    |              |
|-------------------|-------------|--------------------------|----------------------------------|-------------------|------------|---------------|---------------|---------------|----------------|------------|----------------------|-----------------|--------------|
|                   |             |                          |                                  |                   |            | C Min.        | W             | E Max.        | L Max.         |            |                      | Tin Plate Loose | Tape Mounted |
| 26-24             | 202-509     | .029<br>0.74             | .082<br>2.09                     | Yellow            | 2<br>M2    | .211<br>5.36  | .203<br>5.16  | .632<br>16.05 | .736<br>18.69  | 1 & 2      | 143                  | 53400-1         | —            |
|                   |             |                          |                                  |                   | 4          | .211<br>5.36  | .203<br>5.16  | .632<br>16.05 | .736<br>18.69  | 1 & 2      | 144                  | 53401-1         | —            |
|                   |             |                          |                                  |                   | 6<br>M3.5  | .243<br>6.17  | .250<br>6.35  | .664<br>16.87 | .792<br>20.12  | 1 & 2      | 145                  | 53402-1         | —            |
|                   |             |                          |                                  |                   | 8<br>M4    | .250<br>6.35  | .281<br>7.13  | .671<br>17.05 | .814<br>20.68  | 1 & 2      | 146                  | 53403-1         | —            |
|                   |             |                          |                                  |                   | 10         | .281<br>7.14  | .312<br>7.92  | .702<br>17.83 | .861<br>21.87  | 1 & 2      | 147                  | 53404-1         | —            |
| 24-20             | 320-1,290   | .025<br>0.64             | .100<br>2.54                     | White             | 6<br>M3.5  | .281<br>7.13  | .250<br>6.35  | .631<br>16.03 | .774<br>19.66  | 1 & 2      | —                    | 53809-2         | —            |
| 22-16             | 509-3,250   | .033<br>0.84             | .125<br>3.18                     | Red               | 4          | .156<br>3.96  | .218<br>5.54  | .560<br>14.23 | .672<br>17.07  | 1 & 2      | 148                  | 53405-1         | —            |
|                   |             |                          |                                  |                   | 6<br>M3.5  | .156<br>3.96  | .218<br>5.54  | .560<br>14.23 | .672<br>17.07  | 1 & 2      | 101                  | 53406-1         | —            |
|                   |             |                          |                                  |                   | 6<br>M3.5  | .250<br>6.35  | .250<br>6.35  | .654<br>16.62 | .782<br>19.87  | 1 & 2<br>2 | 102                  | 53407-1<br>—    | —<br>53407-2 |
|                   |             |                          |                                  |                   | 8<br>M4    | .281<br>7.13  | .312<br>7.91  | .685<br>17.4  | .844<br>21.44  | 1 & 2<br>2 | 149                  | 53408-1         | —            |
|                   |             |                          |                                  |                   | 10         | .281<br>7.13  | .312<br>7.92  | .685<br>17.4  | .844<br>21.44  | 1 & 2      | 103                  | 53409-1         | —            |
|                   |             |                          |                                  |                   | 1/4<br>M6  | .437<br>11.10 | .469<br>11.91 | .841<br>21.36 | 1.078<br>27.38 | 1 & 2<br>2 | 150                  | 53410-1<br>—    | —<br>53410-2 |
|                   |             |                          |                                  |                   | 5/16<br>M8 | .437<br>11.10 | .469<br>11.91 | .841<br>21.36 | 1.078<br>27.38 | 1 & 2      | 104                  | 53411-1         | —            |
|                   |             |                          |                                  |                   | 3/8        | .546<br>13.87 | .531<br>13.49 | .950<br>24.13 | 1.218<br>30.94 | 1 & 2      | 105                  | 53412-1         | —            |
|                   |             |                          |                                  |                   | 1/2<br>M12 | .530<br>13.46 | .713<br>18.11 | .934<br>23.72 | 1.293<br>32.84 | 1 & 2      | 151                  | 53413-1         | —            |
|                   |             |                          |                                  |                   | 4          | .171<br>4.34  | .250<br>6.35  | .575<br>14.61 | .703<br>17.86  | 1 & 2      | 152                  | 53414-1         | —            |
|                   |             |                          |                                  |                   | 6<br>M3.5  | .171<br>4.34  | .250<br>6.35  | .575<br>14.61 | .703<br>17.86  | 1 & 2      | 106                  | 53415-1         | —            |
| 16-14             | 2,050-5,180 | .033<br>0.84             | .150<br>3.81                     | Blue              | 6<br>M3.5  | .281<br>7.13  | .312<br>7.92  | .685<br>17.4  | .844<br>21.44  | 1 & 2<br>2 | 107                  | 53416-1<br>—    | —<br>53416-2 |
|                   |             |                          |                                  |                   | 8<br>M4    | .281<br>7.13  | .312<br>7.92  | .685<br>17.4  | .844<br>21.44  | 1 & 2      | 153                  | 53417-1         | —            |
|                   |             |                          |                                  |                   | 10         | .281<br>7.13  | .312<br>7.92  | .685<br>17.4  | .844<br>21.44  | 1 & 2<br>2 | 108                  | 53418-1<br>—    | —<br>53418-2 |
|                   |             |                          |                                  |                   | 1/4<br>M6  | .437<br>11.09 | .469<br>11.91 | .841<br>21.37 | 1.078<br>27.39 | 1 & 2      | 154                  | 53419-1         | —            |
|                   |             |                          |                                  |                   | 5/16<br>M8 | .437<br>11.09 | .469<br>11.91 | .841<br>21.37 | 1.078<br>27.39 | 1 & 2      | 109                  | 53420-1         | —            |
|                   |             |                          |                                  |                   | 3/8        | .546<br>13.87 | .531<br>13.49 | .950<br>24.13 | 1.218<br>30.94 | 1 & 2      | 110                  | 53421-1         | —            |
|                   |             |                          |                                  |                   | 1/2<br>M12 | .530<br>13.46 | .713<br>18.11 | .934<br>23.72 | 1.293<br>32.84 | 1 & 2      | 155                  | 53422-1         | —            |

### PIDG Terminal Style (Continued)

#### Military Specifications M7928/4

| Wire Range |              | Tongue Thickness Max. | Wire Insulation Diameter Max. | Stripe Color Code | Stud Size  | Dimensions    |               |                |                | Class      | M7928/4 Dash Numbers | Part Numbers    |              |
|------------|--------------|-----------------------|-------------------------------|-------------------|------------|---------------|---------------|----------------|----------------|------------|----------------------|-----------------|--------------|
| AWG        | CMA          |                       |                               |                   |            | C Min.        | W             | E Max.         | L Max.         |            |                      | Tin Plate Loose | Tape Mounted |
| 12-10      | 5,180-13,100 | .042<br>1.07          | .230<br>5.84                  | Yellow            | 6<br>M3.5  | .302<br>7.67  | .375<br>9.53  | .893<br>22.69  | 1.083<br>27.51 | 1 & 2      | 111                  | 53423-1*        | —            |
|            |              |                       |                               |                   | 8<br>M4    | .302<br>7.67  | .375<br>9.53  | .893<br>22.69  | 1.083<br>27.51 | 1 & 2<br>2 | 156                  | 53424-1*        | —            |
|            |              |                       |                               |                   | 10         | .302<br>7.67  | .375<br>9.53  | .893<br>22.69  | 1.083<br>27.51 | 1 & 2<br>2 | 112                  | 53425-1*        | —            |
|            |              |                       |                               |                   | 1/4<br>M6  | .468<br>11.88 | .531<br>13.48 | 1.054<br>26.78 | 1.322<br>33.58 | 1 & 2      | 157                  | 53426-1*        | —            |
|            |              |                       |                               |                   | 5/16<br>M8 | .468<br>11.88 | .531<br>13.48 | 1.054<br>26.78 | 1.322<br>33.58 | 1 & 2      | 113                  | 53427-1*        | —            |
|            |              |                       |                               |                   | 3/8        | .531<br>13.48 | .593<br>15.06 | 1.115<br>28.32 | 1.414<br>35.92 | 1 & 2      | 114                  | 53428-1         | —            |
|            |              |                       |                               |                   | 1/2<br>M12 | .474<br>12.04 | .715<br>18.16 | 1.054<br>26.78 | 1.414<br>35.92 | 2          | 158                  | 53429-1         | —            |

\* Brazed body

### Application Tooling



Long Handle Tool



T-HEAD Tool



Heavy Head Tool

| Wire Size Range |                     | Hand Tools                             |                         | Pneumatic Tools                 |                                |                                                     |
|-----------------|---------------------|----------------------------------------|-------------------------|---------------------------------|--------------------------------|-----------------------------------------------------|
| AWG             | mm <sup>2</sup>     | Style                                  | Part Number             | Heads for 626 Single Wire Range | Heads for 626 Multi-Wire Range | Dies for 69710-1 <sup>1</sup> 217200-1 <sup>2</sup> |
| 26-24 & 22-16   | 0.1-0.2 & 0.26-1.65 | Long Handle T-HEAD Tool<br>T-HEAD Tool | 47386<br>59250<br>59300 | 314270-3                        | 679305-1                       | 47806-2*                                            |
| 22-16           | 0.26-1.65           | Long Handle                            | 69151-1**               | —                               | —                              | —                                                   |
| 16-14           | 1.04-2.62           | Long Handle T-HEAD Tool                | 47387<br>59250          | 314269-1                        | 679305-1                       | 47807-1*                                            |
| 12-10           | 2.62-6.64           | Heavy Head                             | 59239-4                 | 679300-1                        | 679305-1                       | 47808-6*                                            |

\* Maximum tongue width of terminals for use with these dies is .469 [11.91] when used in adapter 217200-1. Flat tongues only.

\*\* For wires with thin wall insulation.

<sup>1</sup> 69710-1 hand tool

<sup>2</sup> 626 Pneumatic Tool Adapter

[www.tooling.tycoelectronics.com](http://www.tooling.tycoelectronics.com)

[www.tooling.tycoelectronics.com/europe](http://www.tooling.tycoelectronics.com/europe)



## Introduction

### Product Facts

- Designed to provide insulated terminals and splices for large wire sizes, many of which are used in airborne and ground support applications
- Tested under the procedures stipulated by MIL Spec. MIL-T-7928, they meet and exceed requirements
- Designed and engineered to successfully withstand many vibration, shock and structural stresses, elevated temperatures and other conditions which can adversely affect the circuit requirements in complex air and space flight equipment
- The use of matching AMP tooling for precision crimping which makes all terminations identical
- This uniformity promotes maximum reliability and, coupled with tool die marks on the barrel indicating the wire size and color coding of the insulation sleeve, also serves as a built-in quality control factor
- Pre-insulated with color coded nylon which also acts as insulation support
- Wire size range of terminals is 8 AWG through 4/0 AWG

**Funnel Entry.** Molded insulation for ease of wire insertion and snug fit over MIL-standard wire diameters.

**Basic Terminal Material.** The basic terminal is constructed of fine grade high conductivity copper per ASTM B-152 and tin-plated per ASTM B-545. AMP's special plating process creates durable corrosion resistance to salt spray and most chemical fumes.

**Dimples.** Dimples afford maximum contact of barrel and wire and maximum tensile strength.

**Insulation.** Nylon insulation for dielectric strength, color coded to wire size.

**Temperature Rating: 221°F [105°C] Max.**

### Insulated Terminals and Splices — 8 to 4/0 AWG Wire Range

| Description                    | Wire Size | Tools for Loose Piece Terminations |                                                                           |                                                                     |
|--------------------------------|-----------|------------------------------------|---------------------------------------------------------------------------|---------------------------------------------------------------------|
|                                |           | Hand Tools                         | Dies for Crimp Head 1490746-1 & 1976230-1 & Hydraulic Hand Tool 1490749-1 | Dies for Crimp Head 1752877-1 <sup>1</sup> & 1752787-1 <sup>2</sup> |
| TERMINYL Terminals and Splices | 8         | —                                  | 1490597-1                                                                 | —                                                                   |
|                                | 6         | —                                  | 1490598-1                                                                 | —                                                                   |
|                                | 4         | —                                  | 1490599-1                                                                 | —                                                                   |
|                                | 2         | —                                  | 1490406-1                                                                 | —                                                                   |
|                                | 1/0       | —                                  | —                                                                         | 47824                                                               |
|                                | 2/0       | —                                  | —                                                                         | 47825                                                               |
|                                | 3/0       | —                                  | —                                                                         | 47915                                                               |
|                                | 4/0       | —                                  | —                                                                         | 47918                                                               |
|                                | 4 HD      | —                                  | —                                                                         | 69463                                                               |

<sup>1</sup> Heads for Power Units 1804700-1, 1804700-2, 1583659-1 & 1583661-1.

<sup>2</sup> Large expansion dies.

## Ring Tongue Terminals

### Material and Finish

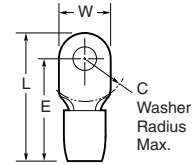
Insulation — Nylon

Terminal Body — Copper per  
ASTM B-152

Plating — Tin per ASTM B-545

### Related Product Data

Application Tooling — page 10-42



### Military Specifications MS25036

| Wire Size<br>Circular Mills<br>[mm <sup>2</sup> ] | Tongue<br>Material<br>Thickness<br>Max. | Stud<br>Size | Dimensions     |               |                |                | Terminal<br>Insulation<br>Color | Wire<br>Insulation<br>Diameter<br>Max. | Class | MS25036<br>Dash<br>Numbers | Part Number<br>Loose<br>Piece |
|---------------------------------------------------|-----------------------------------------|--------------|----------------|---------------|----------------|----------------|---------------------------------|----------------------------------------|-------|----------------------------|-------------------------------|
|                                                   |                                         |              | W              | C             | E<br>Max.      | L<br>Max.      |                                 |                                        |       |                            |                               |
| 8<br>13,100-20,800<br>[6.64-10.5]                 | .043<br>1.09                            | 10           | .431<br>10.95  | .437<br>11.10 | 1.183<br>30.05 | 1.402<br>35.61 | Red                             | .256<br>6.50                           | 2     | 115                        | 324043                        |
|                                                   |                                         | 1/4<br>M6    | .478<br>12.14  | .437<br>11.10 | 1.183<br>30.05 | 1.425<br>36.20 | Red                             | .256<br>6.50                           | 2     | 116                        | 324082                        |
|                                                   |                                         | 5/16<br>M8   | .587<br>14.91  | .500<br>12.70 | 1.246<br>31.65 | 1.542<br>39.17 | Red                             | .256<br>6.50                           | 2     | 117                        | 324044                        |
|                                                   |                                         | 3/8          | .587<br>14.91  | .500<br>12.70 | 1.246<br>31.65 | 1.542<br>39.17 | Red                             | .256<br>6.50                           | 2     | 118                        | 324045                        |
| 6<br>20,800-33,100<br>[10.5-16.8]                 | .048<br>1.22                            | 10           | .468<br>11.89  | .421<br>10.69 | 1.338<br>33.99 | 1.575<br>40.01 | Blue                            | .314<br>7.98                           | 2     | 119                        | 324046                        |
|                                                   |                                         | 1/4<br>M6    | .500<br>12.70  | .515<br>13.08 | 1.447<br>36.75 | 1.700<br>43.18 | Blue                            | .314<br>7.98                           | 2     | 120                        | 324047                        |
|                                                   |                                         | 5/16<br>M8   | .625<br>15.88  | .515<br>13.08 | 1.447<br>36.75 | 1.762<br>44.75 | Blue                            | .314<br>7.98                           | 2     | 121                        | 324048                        |
|                                                   |                                         | 3/8          | .625<br>15.88  | .515<br>13.08 | 1.447<br>36.75 | 1.762<br>44.75 | Blue                            | .314<br>7.98                           | 2     | 122                        | 324049                        |
| 4<br>33,100-52,600<br>[16.8-26.7]                 | .051<br>1.30                            | 1/4<br>M6    | .546<br>13.87  | .531<br>13.49 | 1.536<br>39.01 | 1.812<br>46.02 | Yellow                          | .382<br>9.70                           | 2     | 123                        | 324050                        |
|                                                   |                                         | 5/16<br>M8   | .679<br>17.25  | .531<br>13.49 | 1.536<br>39.01 | 1.878<br>47.70 | Yellow                          | .382<br>9.70                           | 2     | 124                        | 324051                        |
|                                                   |                                         | 3/8          | .679<br>17.25  | .531<br>13.49 | 1.536<br>39.01 | 1.878<br>47.70 | Yellow                          | .382<br>9.70                           | 2     | 125                        | 324052*                       |
| 2<br>52,600-83,700<br>[26.7-42.4]                 | .060<br>1.52                            | 1/4<br>M6    | .679<br>17.25  | .578<br>14.68 | 1.705<br>43.31 | 2.045<br>51.94 | Red                             | .468<br>11.89                          | 2     | 126                        | 324053                        |
|                                                   |                                         | 3/8          | .711<br>18.06  | .578<br>14.68 | 1.705<br>43.31 | 2.063<br>52.40 | Red                             | .468<br>11.89                          | 2     | 127                        | 324054                        |
|                                                   |                                         | 1/2<br>M12   | .855<br>21.72  | .578<br>14.68 | 1.705<br>43.31 | 2.135<br>54.23 | Red                             | .468<br>11.89                          | 2     | 128                        | 324055                        |
| 11<br>83,700-119,500<br>[42.4-60.6]               | .073<br>1.85                            | 1/4<br>M6    | .807<br>20.50  | .625<br>15.88 | 2.033<br>51.64 | 2.426<br>61.62 | Blue                            | .580<br>14.73                          | 2     | 129                        | 324056                        |
|                                                   |                                         | 3/8          | .807<br>20.50  | .625<br>15.88 | 2.033<br>51.64 | 2.426<br>61.62 | Blue                            | .580<br>14.73                          | 2     | 130                        | 324057                        |
|                                                   |                                         | 1/2<br>M12   | .875<br>22.23  | .625<br>15.88 | 2.017<br>51.23 | 2.454<br>62.33 | Blue                            | .580<br>14.73                          | 2     | 131                        | 324058                        |
| 1/0<br>83,700-119,500<br>[42.4-60.6]              | .073<br>1.85                            | 1/4<br>M6    | .807<br>20.50  | .625<br>15.88 | 2.033<br>51.64 | 2.426<br>61.62 | Blue                            | .580<br>14.73                          | 2     | 132                        | 324113                        |
|                                                   |                                         | 3/8          | .807<br>20.50  | .625<br>15.88 | 2.033<br>51.64 | 2.426<br>61.62 | Blue                            | .580<br>14.73                          | 2     | 133                        | 324057                        |
|                                                   |                                         | 1/2<br>M12   | .875<br>22.23  | .625<br>15.88 | 2.017<br>51.23 | 2.454<br>62.33 | Blue                            | .580<br>14.73                          | 2     | 134                        | 324058                        |
| 2/0<br>119,500-150,500<br>[60.6-76.3]             | .083<br>2.11                            | 5/16<br>M8   | .926<br>23.52  | .625<br>15.88 | 2.026<br>51.46 | 2.416<br>61.37 | Yellow                          | .610<br>15.49                          | 2     | 135                        | 324083                        |
|                                                   |                                         | 3/8          | .926<br>23.52  | .625<br>15.88 | 2.026<br>51.46 | 2.416<br>61.37 | Yellow                          | .610<br>15.49                          | 2     | 136                        | 324084                        |
|                                                   |                                         | 1/2<br>M12   | .926<br>23.52  | .625<br>15.88 | 2.026<br>51.46 | 2.416<br>61.37 | Yellow                          | .610<br>15.49                          | 2     | 137                        | 324085                        |
| 3/0<br>150,000-190,000<br>[76.3-96.3]             | .094<br>2.39                            | 3/8          | 1.082<br>27.48 | .625<br>15.88 | 2.294<br>58.27 | 2.794<br>70.97 | Red                             | .680<br>17.27                          | 2     | 138                        | 324185                        |
| 4/0<br>190,000-231,000<br>[96.3-117]              | .105<br>2.67                            | 3/8          | 1.150<br>29.21 | .625<br>15.88 | 2.295<br>58.29 | 2.858<br>75.59 | Blue                            | .765<br>19.43                          | 2     | 140                        | 324187                        |
|                                                   |                                         | 1/2<br>M12   | 1.150<br>29.21 | .625<br>15.88 | 2.295<br>58.29 | 2.858<br>75.59 | Blue                            | .765<br>19.43                          | 2     | 141                        | 324188                        |

\* Available in small packaging quantities.

<sup>1</sup> TE Connectivity recommends #1/0 AWG terminals for #1 AWG application.

## Table of Contents

### Discrete Connectors

|                                           |      |
|-------------------------------------------|------|
| Introduction .....                        | 11-2 |
| Connector Kit Part Numbering System ..... | 11-3 |

### Accessories

|                                                                                             |      |
|---------------------------------------------------------------------------------------------|------|
| Introduction .....                                                                          | 11-4 |
| Product Selection .....                                                                     | 11-5 |
| Terminator and Connector and Compatibility —<br>Bayonet and Threaded Connectors .....       | 11-6 |
| Triaxial Connectors and Terminator Compatibility —<br>Bayonet and Threaded Connectors ..... | 11-7 |
| Triaxial Connectors and Terminator Compatibility —<br>to European norme 3716 .....          | 11-8 |

### Triaxial Size 8 Contacts

|                    |      |
|--------------------|------|
| Introduction ..... | 11-9 |
|--------------------|------|

## Discrete Connectors

### Product Facts

- Compliance with MIL-STD-1553B hardware requirements
- Light weight
- Removable pin or socket contacts
- Termination with MIL-STD-1553B data bus cables, including EMP-hardened versions
- Continuous 360° shield coverage
- Rugged constructions
- Termination time of 1 to 2 minutes
- Inspectable solder terminations
- Low-skill assembly
- Reworkable and repairable terminations
- Strain relief built into the design
- Low-voltage drop and high reliability because of precisely controlled solder terminations
- Threaded and bayonet coupling styles
- Low total installed cost
- 1000-hour salt spray resistance
- Lower-cost connectors, for benchtop and mock-up



### Applications

Designed specifically for MIL-STD-1553B data bus applications, the D-621 connector is intended to be a perfect match for the TE Connectivity airworthy data bus cable. Together they provide durable, reliable, and reworkable interconnection hardware for the MIL-STD-1553B market.

### Specifications/Approvals

| Series | Military      | TE     |
|--------|---------------|--------|
| DK-621 | MIL-STD-1553B | D-6025 |

## Discrete Connectors (Continued)

### Connector Kit Part Numbering System

#### DK-621-04 XX-XX

**Contact (supplied in DK-621 kits only)**

P = Pin

S = Socket

**Polarization (bayonet styles only) (jack view)**

1 = A



2 = B



3 = C



4 = D



**Basic Connector Configurations**

*Threaded styles*

11 = Plug

12 = Jack

*Bayonet styles*

33 = Plug, A polarization

34 = Jack, A polarization

35 = Plug, B polarization

36 = Jack, B polarization

37 = Plug, C polarization

38 = Jack, C polarization

39 = Plug, D polarization

40 = Jack, D polarization

**D-621 connector, kitted with accessories**

#### Example:

DK-621-0434-1P = D-621 connector, kitted with accessories, jack bayonet style with A polarization and pin contact.

## Accessories

### Product Facts

- A single source for all harness components
- Products designed to work together



### Applications

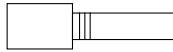
TE Connectivity manufactures all the products needed to build a MIL-STD-1553B data bus network. In addition to the main components (couplers, connectors, contacts, and cables), TE supplies the accessory components that may be necessary to complete a data bus system.

These include:

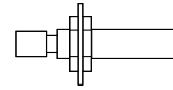
- Bus and stub terminators (spliced-in and connectorized D-621 series).
- Cable splice kits.
- EMI/environment-resistant connector caps.
- Braid terminators and strain relief tubing (for rework applications).
- Cable marking materials.

## Accessories (Continued)

### Product Selection



D-621 Plug



D-621 Jack



Splice-in

### Bus and Stub Terminators

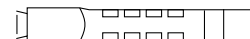
| Spliced-in              | 12-inch Cable  |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
|-------------------------|----------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| 77-ohm 10612 cable      | D-500-0463-612 |  |  |  |  |
| 77-ohm 10613 cable      | D-500-0463-613 |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
| 77-ohm 10614 cable      | D-500-0463-614 |                                                                                   |                                                                                   |                                                                                     |                                                                                     |
| D-621 Series—Plug       | Threaded       | Bayonet A                                                                         | Bayonet B                                                                         | Bayonet C                                                                           | Bayonet D                                                                           |
| 77-ohm pin contact      | D-621-0413     | D-621-0453                                                                        | D-621-0454                                                                        | D-621-0455                                                                          | D-621-0456                                                                          |
| 77-ohm socket contact   | D-621-0415     | D-621-0469                                                                        | D-621-0470                                                                        | D-621-0471                                                                          | D-621-0472                                                                          |
| 3000-ohm pin contact    | D-621-0417     | D-621-0457                                                                        | D-621-0458                                                                        | D-621-0459                                                                          | D-621-0476                                                                          |
| 3000-ohm socket contact | D-621-0407     | D-621-0473                                                                        | D-621-0474                                                                        | D-621-0475                                                                          | D-621-0460                                                                          |
| D-621 Series—Jack       | Threaded       | Bayonet A                                                                         | Bayonet B                                                                         | Bayonet C                                                                           | Bayonet D                                                                           |
| 77-ohm pin contact      | D-621-0418     | D-621-0477                                                                        | D-621-0478                                                                        | D-621-0479                                                                          | D-621-0480                                                                          |
| 77-ohm socket contact   | D-621-0406     | D-621-0461                                                                        | D-621-0462                                                                        | D-621-0463                                                                          | D-621-0464                                                                          |
| 3000-ohm pin contact    | D-621-0423     | D-621-0481                                                                        | D-621-0482                                                                        | D-621-0483                                                                          | D-621-0484                                                                          |
| 3000-ohm socket contact | D-621-0424     | D-621-0465                                                                        | D-621-0466                                                                        | D-621-0467                                                                          | D-621-0468                                                                          |
| D-621 Series—L          | Lanyard 7"     | —                                                                                 | —                                                                                 | —                                                                                   | —                                                                                   |

### Connector Caps



| D-621 Series                                            | Threaded   | Bayonet A  | Bayonet B  | Bayonet C  | Bayonet D  |
|---------------------------------------------------------|------------|------------|------------|------------|------------|
| Plug cap for jack connector<br>Supplied with 7" Lanyard | D-600-0083 | D-600-0068 | D-600-0068 | D-600-0068 | D-600-0065 |

### Cable Splice Kits



| Cables              | Flexible Crimp |
|---------------------|----------------|
| All data bus cables | D-150-0708-5   |



## Accessories (Continued)

### Terminator and Connector and Compatibility — Bayonet and Threaded Connectors

| Panel Thickness        | Connector | Contact | Terminator Reference | Mate with          |                      |
|------------------------|-----------|---------|----------------------|--------------------|----------------------|
|                        |           |         |                      | Standard Connector | Long Reach Connector |
| Bayonet Connectors     |           |         |                      |                    |                      |
| Polarity A             |           |         |                      |                    |                      |
| 77 Ohm bus terminator  | Plug      | Pin     | D-621-0453(-L)       | DK-621-0434-1S     | DK-621-0550-1S       |
|                        | Plug      | Socket  | D-621-0469(-L)       | DK-621-0434-1P     | DK-621-0550-1P       |
|                        | Jack      | Pin     | D-621-0477(-L)       | DK-621-0433-1S     | —                    |
|                        | Jack      | Socket  | D-621-0461(-L)       | DK-621-0433-1P     | —                    |
| 3K Ohm stub terminator | Plug      | Pin     | D-621-0457(-L)       | DK-621-0434-1S     | DK-621-0550-1S       |
|                        | Plug      | Socket  | D-621-0473(-L)       | DK-621-0434-1P     | DK-621-0550-1P       |
|                        | Jack      | Pin     | D-621-0481(-L)       | DK-621-0433-1S     | —                    |
|                        | Jack      | Socket  | D-621-0465(-L)       | DK-621-0433-1P     | —                    |
| Polarity B             |           |         |                      |                    |                      |
| 77 Ohm bus terminator  | Plug      | Pin     | D-621-0454(-L)       | DK-621-0436-2S     | DK-621-0548-2S       |
|                        | Plug      | Socket  | D-621-0470(-L)       | DK-621-0436-2P     | DK-621-0548-2P       |
|                        | Jack      | Pin     | D-621-0478(-L)       | DK-621-0435-2S     | —                    |
|                        | Jack      | Socket  | D-621-0462(-L)       | DK-621-0435-2P     | —                    |
| 3K Ohm stub terminator | Plug      | Pin     | D-621-0458(-L)       | DK-621-0436-2S     | DK-621-0548-2S       |
|                        | Plug      | Socket  | D-621-0474(-L)       | DK-621-0436-2P     | DK-621-0548-2P       |
|                        | Jack      | Pin     | D-621-0482(-L)       | DK-621-0435-2S     | —                    |
|                        | Jack      | Socket  | D-621-0466(-L)       | DK-621-0435-2P     | —                    |
| Polarity C             |           |         |                      |                    |                      |
| 77 Ohm bus terminator  | Plug      | Pin     | D-621-0455(-L)       | DK-621-0438-3S     | DK-621-0546-3S       |
|                        | Plug      | Socket  | D-621-0471(-L)       | DK-621-0438-3P     | DK-621-0546-3P       |
|                        | Jack      | Pin     | D-621-0479(-L)       | DK-621-0437-3S     | —                    |
|                        | Jack      | Socket  | D-621-0463(-L)       | DK-621-0437-3P     | —                    |
| 3K Ohm stub terminator | Plug      | Pin     | D-621-0459(-L)       | DK-621-0438-3S     | DK-621-0546-3S       |
|                        | Plug      | Socket  | D-621-0475(-L)       | DK-621-0438-3P     | DK-621-0546-3P       |
|                        | Jack      | Pin     | D-621-0483(-L)       | DK-621-0437-3S     | —                    |
|                        | Jack      | Socket  | D-621-0467(-L)       | DK-621-0437-3P     | —                    |
| Polarity D             |           |         |                      |                    |                      |
| 77 Ohm bus terminator  | Plug      | Pin     | D-621-0456(-L)       | DK-621-0440-4S     | DK-621-0551-4S       |
|                        | Plug      | Socket  | D-621-0472(-L)       | DK-621-0440-4P     | DK-621-0551-4P       |
|                        | Jack      | Pin     | D-621-0480(-L)       | DK-621-0439-4S     | —                    |
|                        | Jack      | Socket  | D-621-0464(-L)       | DK-621-0439-4P     | —                    |
| 3K Ohm stub terminator | Plug      | Pin     | D-621-0460(-L)       | DK-621-0440-4S     | DK-621-0551-4S       |
|                        | Plug      | Socket  | D-621-0476(-L)       | DK-621-0440-4P     | DK-621-0551-4P       |
|                        | Jack      | Pin     | D-621-0468(-L)       | DK-621-0439-4S     | —                    |
|                        | Jack      | Socket  | D-621-0484(-L)       | DK-621-0439-4P     | —                    |
| Threaded Connectors    |           |         |                      |                    |                      |
| 77 Ohm bus terminator  | Plug      | Pin     | D-621-0413(-L)       | DK-621-0412-S      | DK-621-0512-S        |
|                        | Plug      | Socket  | D-621-0415(-L)       | DK-621-0412-P      | DK-621-0512-P        |
|                        | Jack      | Pin     | D-621-0418(-L)       | DK-621-0411-S      | —                    |
|                        | Jack      | Socket  | D-621-0406(-L)       | DK-621-0411-P      | —                    |
| 3K Ohm stub terminator | Plug      | Pin     | D-621-0417(-L)       | DK-621-0412-S      | DK-621-0512-S        |
|                        | Plug      | Socket  | D-621-0407(-L)       | DK-621-0412-P      | DK-621-0512-P        |
|                        | Jack      | Pin     | D-621-0423(-L)       | DK-621-0411-S      | —                    |
|                        | Jack      | Socket  | D-621-0424(-L)       | DK-621-0411-P      | —                    |

## Accessories (Continued)

### Triaxial Connectors and Terminator Compatibility — Bayonet and Threaded Connectors

| Panel Thickness     | Connector | Contact | Connector Reference | Mate with      |                       |                        |
|---------------------|-----------|---------|---------------------|----------------|-----------------------|------------------------|
|                     |           |         |                     | Connector      | 77 Ohm Bus Terminator | 3K Ohm Stub Terminator |
| Bayonet Connectors  |           |         |                     |                |                       |                        |
| Polarity A          |           |         |                     |                |                       |                        |
|                     | Plug      | Pin     | DK-621-0433-1P      | DK-621-0434-1S | D-621-0461(-L)        | D-621-0465 (-L)        |
|                     | Plug      | Socket  | DK-621-0433-1S      | DK-621-0434-1P | D-621-0477(-L)        | D-621-0481(-L)         |
| Standard            | Jack      | Pin     | DK-621-0434-1P      | DK-621-0433-1S | D-621-0461(-L)        | D-621-0473(-L)         |
| 2.4mm max.          | Jack      | Socket  | DK-621-0434-1S      | DK-621-0433-1P | D-621-0453(-L)        | D-621-0457(-L)         |
| Long Reach          | Jack      | Pin     | DK-621-0550-1P      | DK-621-0433-1S | D-621-0469(-L)        | D-621-0473(-L)         |
| 12.5mm max.         | Jack      | Socket  | DK-621-0550-1S      | DK-621-0433-1P | D-621-0453(-L)        | D-621-0457(-L)         |
| Polarity B          |           |         |                     |                |                       |                        |
|                     | Plug      | Pin     | DK-621-0435-2P      | DK-621-0436-2S | D-621-0462(-L)        | D-621-0474 (-L)        |
|                     | Plug      | Socket  | DK-621-0435-2S      | DK-621-0436-2P | D-621-0478(-L)        | D-621-0458(-L)         |
| Standard            | Jack      | Pin     | DK-621-0436-2P      | DK-621-0435-2S | D-621-0470(-L)        | D-621-0474(-L)         |
| 2.4mm max.          | Jack      | Socket  | DK-621-0436-2S      | DK-621-0435-2P | D-621-0454(-L)        | D-621-0458(-L)         |
| Long Reach          | Jack      | Pin     | DK-621-0448-2P      | DK-621-0435-2S | D-621-0470(-L)        | D-621-0467(-L)         |
| 12.5mm max.         | Jack      | Socket  | DK-621-0448-2S      | DK-621-0435-2P | D-621-0454(-L)        | D-621-0483(-L)         |
| Polarity C          |           |         |                     |                |                       |                        |
|                     | Plug      | Pin     | DK-621-0437-3P      | DK-621-0438-3S | D-621-0463(-L)        | D-621-0467(-L)         |
|                     | Plug      | Socket  | DK-621-0437-3S      | DK-621-0438-3P | D-621-0479(-L)        | D-621-0483(-L)         |
| Standard            | Jack      | Pin     | DK-621-0438-3P      | DK-621-0437-3S | D-621-0471(-L)        | D-621-0475(-L)         |
| 2.4mm max.          | Jack      | Socket  | DK-621-0438-3S      | DK-621-0437-3P | D-621-0455(-L)        | D-621-0459(-L)         |
| Long Reach          | Jack      | Pin     | DK-621-0446-3P      | DK-621-0437-3S | D-621-0471(-L)        | D-621-0475(-L)         |
| 12.5mm max.         | Jack      | Socket  | DK-621-0446-3S      | DK-621-0437-3P | D-621-0455(-L)        | D-621-0459(-L)         |
| Polarity D          |           |         |                     |                |                       |                        |
|                     | Plug      | Pin     | DK-621-0439-4P      | DK-621-0440-4S | D-621-0464(-L)        | D-621-0468(-L)         |
|                     | Plug      | Socket  | DK-621-0439-4S      | DK-621-0440-4P | D-621-0480(-L)        | D-621-0484(-L)         |
| Standard            | Jack      | Pin     | DK-621-0440-4P      | DK-621-0439-4S | D-621-0472(-L)        | D-621-0476(-L)         |
| 2.4mm max.          | Jack      | Socket  | DK-621-0440-4S      | DK-621-0439-4P | D-621-0456(-L)        | D-621-0460(-L)         |
| Long Reach          | Jack      | Pin     | DK-621-0551-4P      | DK-621-0439-4S | D-621-0472(-L)        | D-621-0476(-L)         |
| 12.5mm max.         | Jack      | Socket  | DK-621-0551-4S      | DK-621-0439-4P | D-621-0456(-L)        | D-621-0460(-L)         |
| Threaded Connectors |           |         |                     |                |                       |                        |
|                     | Plug      | Pin     | DK-621-0411-P       | DK-621-0412-S  | D-621-0406(-L)        | D-621-0424(-L)         |
|                     | Plug      | Socket  | DK-621-0411-S       | DK-621-0412-P  | D-621-0418(-L)        | D-621-0423(-L)         |
| Standard            | Jack      | Pin     | DK-621-0412-P       | DK-621-0411-S  | D-621-0415(-L)        | D-621-0407(-L)         |
| 2.4mm max.          | Jack      | Socket  | DK-621-0412-S       | DK-621-0411-P  | D-621-0413(-L)        | D-621-0417(-L)         |
| Long Reach          | Jack      | Pin     | DK-621-0412-P       | DK-621-0411-S  | D-621-0415(-L)        | D-621-0407(-L)         |
| 12.5mm max.         | Jack      | Socket  | DK-621-0412-S       | DK-621-0411-P  | D-621-0413(-L)        | D-621-0417(-L)         |

## Accessories (Continued)

### Triaxial Connectors and Terminator Compatibility — to European norme 3716

| Panel Thickness           | Connector | Contact | Connector Reference | Mate with      |                       |                        |
|---------------------------|-----------|---------|---------------------|----------------|-----------------------|------------------------|
|                           |           |         |                     | Connector      | 77 Ohm Bus Terminator | 3K Ohm Stub Terminator |
| Triaxial Connectors       |           |         |                     |                |                       |                        |
| Standard<br>2.4mm max.    | Plug      | Pin     | DK-3716-F101-TP     | DK-621-E102-TS | D-621-E077-S          | D-621-E03K-S           |
|                           | Plug      | Socket  | DK-3716-F101-TS     | DK-621-E102-TP | D-621-E077-P          | D-621-E03K-P           |
|                           | Plug      | Pin     | DK-3716-F201-TP     | DK-621-E202-TS | D-621-E077-S          | D-621-E03K-S           |
|                           | Plug      | Socket  | DK-3716-F201-TS     | DK-621-E202-TP | D-621-E077-P          | D-621-E03K-P           |
|                           | Jack      | Pin     | DK-3716-E102-TP     | DK-621-F101-TS | D-621-F077-S          | D-621-F03K-S           |
|                           | Jack      | Socket  | DK-3716-E102-TS     | DK-621-F101-TP | D-621-F077-P          | D-621-F03K-P           |
|                           | Jack      | Pin     | DK-3716-E202-TP     | DK-621-F201-TS | D-621-F077-S          | D-621-F03K-S           |
|                           | Jack      | Socket  | DK-3716-E202-TS     | DK-621-F201-TP | D-621-F077-P          | D-621-F03K-P           |
| Long Reach<br>12.5mm max. | Jack      | Pin     | DK-3716-E112-TP     | DK-621-F101-TS | D-621-F077-S          | D-621-F03K-S           |
|                           | Jack      | Socket  | DK-3716-E112-TS     | DK-621-F101-TP | D-621-F077-P          | D-621-F03K-P           |
|                           | Jack      | Pin     | DK-3716-E212-TP     | DK-621-F201-TS | D-621-F077-S          | D-621-F03K-S           |
|                           | Jack      | Socket  | DK-3716-E212-TS     | DK-621-F201-TP | D-621-F077-P          | D-621-F03K-P           |

| Panel Thickness        | Connector | Contact | Terminator Reference | Mate with          |                      |
|------------------------|-----------|---------|----------------------|--------------------|----------------------|
|                        |           |         |                      | Standard Connector | Long Reach Connector |
| Terminators            |           |         |                      |                    |                      |
| 77 Ohm bus terminator  | Plug      | Pin     | DK-3716-F077-P       | DK-3716-E#02-TS    | DK-3716-E#12K-TS     |
|                        | Plug      | Socket  | DK-3716-F077-S       | DK-3716-E#02-TP    | DK-3716-E#12K-TP     |
|                        | Jack      | Pin     | DK-3716-F077-P       | DK-3716-E#01-TS    | —                    |
|                        | Jack      | Socket  | DK-3716-F077-S       | DK-3716-E#01-TP    | —                    |
| 3K Ohm stub terminator | Plug      | Pin     | DK-3716-E03K-P       | DK-3716-E#02-TS    | DK-3716-E#12K-TS     |
|                        | Plug      | Socket  | DK-3716-E03K-S       | DK-3716-E#02-TP    | DK-3716-E#12K-TP     |
|                        | Jack      | Pin     | DK-3716-E03K-P       | DK-3716-E#01-TS    | —                    |
|                        | Jack      | Socket  | DK-3716-E03K-S       | DK-3716-E#01-TP    | —                    |

## Triaxial Size 8 Contacts

### Product Facts

- One-step termination
- Termination time of 1 to 2 minutes
- No requirements for special termination tools
- No requirements for special skills
- Reworkable and repairable terminations
- Strain relief
- Continuous 360° shield coverage
- Triaxial mating face for least susceptibility to damage
- Rugged construction, because only two parts are being soldered together
- Inspectable solder terminations
- Low voltage drop and high reliability due to precisely controlled solder termination



### Applications

Contacts provide full shield coverage with a simple, quick, and reliable termination system. 24 AWG twisted-pair data bus cables are terminated with triaxial SolderTacts contacts, which fit size 8 cavities of MIL-C-38999, Series 1, 3, or 4 connectors.

brand size 8 triaxial data bus contacts for MIL-C-38999 connectors have interfaces that comply with MIL-C-39029/90 and /91 to provide ease of termination, and intermateability with more cumbersome crimp contacts.

These contacts provide a fast and convenient method of implementing MIL-STD-1553B connections in MIL-STD-1760 applications.

### Specifications/Approvals

| Series | TE     |
|--------|--------|
| Size 8 | D-6002 |

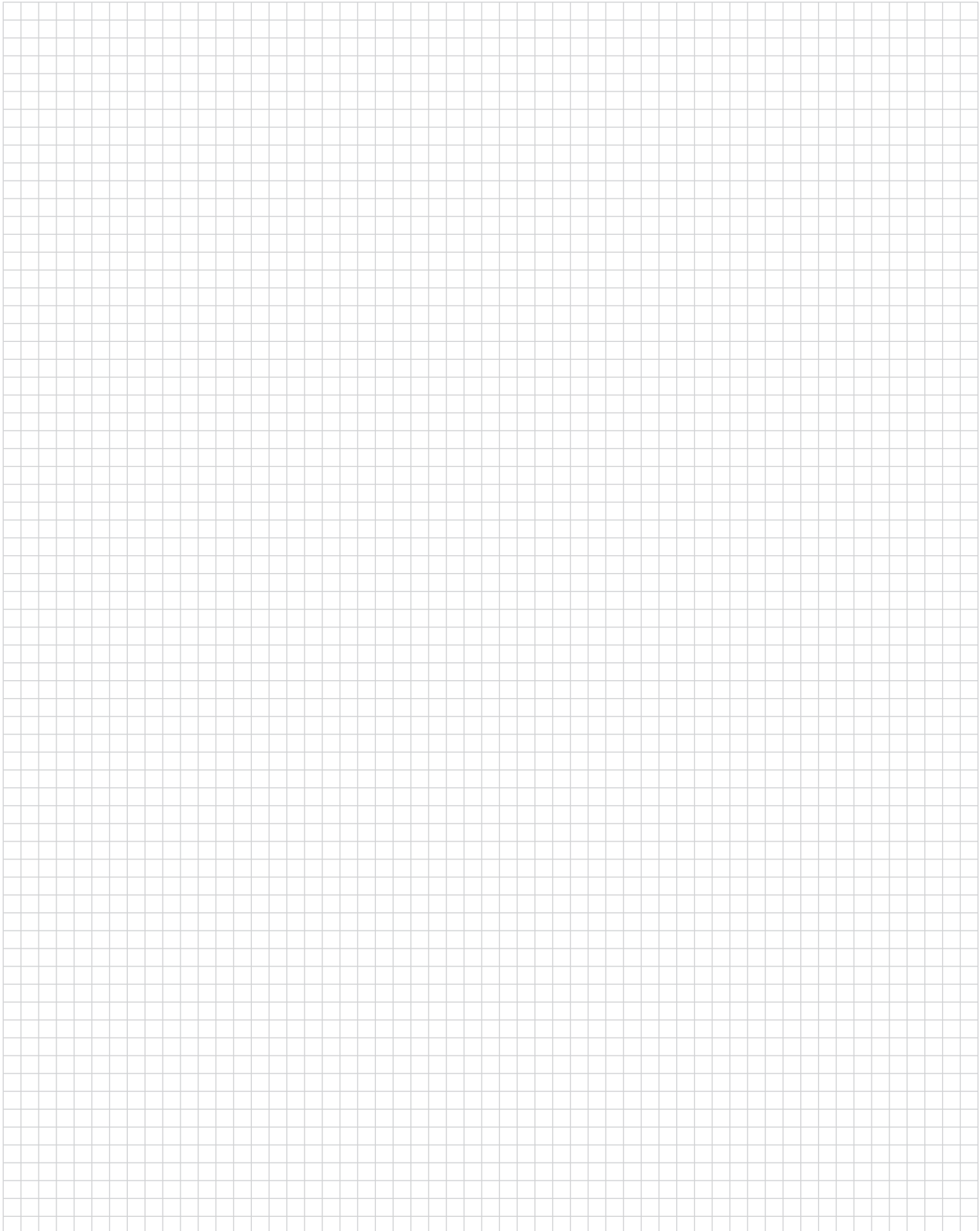
### Product Selection

| Cable Type | Pin             | Socket          |
|------------|-----------------|-----------------|
| 10612      | DK-602-0156-N-1 | DK-602-0157-N-1 |
| 10613      | DK-602-0156-N-2 | DK-602-0157-N-2 |
| 10614      | DK-602-0156-N-3 | DK-602-0157-N-3 |

---

**Engineering Notes**

---

A large rectangular area filled with a fine grid of small squares, intended for handwritten engineering notes or calculations.

---

**Table of Contents**

---

|                                             |                   |
|---------------------------------------------|-------------------|
| <b>Equivalents and Conversions .....</b>    | <b>12-2, 12-3</b> |
| <b>Temperature Conversion Formula .....</b> | <b>12-4, 12-5</b> |

## Equivalents and Conversions

### Decimal Equivalents

| Fraction of Inch | Decimal of Inch | Decimal Millimeters | Fraction of Inch | Decimal of Inch | Decimal Millimeters |
|------------------|-----------------|---------------------|------------------|-----------------|---------------------|
| 1/64             | .0156           | 0.3969              |                  | .5118           | 13.0000             |
| 1/32             | .0313           | 0.7938              | 33/64            | .5156           | 13.0969             |
|                  | .0394           | 1.0000              | 17/32            | .5313           | 13.4938             |
| 3/64             | .0469           | 1.1906              | 35/64            | .5469           | 13.8906             |
| 1/16             | .0625           | 1.5875              |                  | .5512           | 14.0000             |
| 5/64             | .0781           | 1.9844              | 9/16             | .5625           | 14.2875             |
|                  | .0787           | 2.0000              | 37/64            | .5781           | 14.6844             |
| 3/32             | .0938           | 2.3813              |                  | .5906           | 15.0000             |
| 7/64             | .1094           | 2.7781              | 19/32            | .5938           | 15.0813             |
|                  | .1181           | 3.0000              | 39/64            | .6094           | 15.4781             |
| 1/8              | .1250           | 3.1750              | 5/8              | .6250           | 15.8750             |
| 9/64             | .1406           | 3.5719              |                  | .6299           | 16.0000             |
| 5/32             | .1563           | 3.9688              | 41/64            | .6406           | 16.2719             |
|                  | .1575           | 4.0000              | 21/32            | .6563           | 16.6688             |
| 11/64            | .1719           | 4.3656              |                  | .6693           | 17.0000             |
| 3/16             | .1875           | 4.7625              | 43/64            | .6719           | 17.0656             |
|                  | .1969           | 5.0000              | 11/16            | .6875           | 17.4625             |
| 13/64            | .2031           | 5.1594              | 45/64            | .7031           | 17.8594             |
| 7/32             | .2188           | 5.5563              |                  | .7087           | 18.0000             |
| 15/64            | .2344           | 5.9531              | 23/32            | .7188           | 18.2563             |
|                  | .2362           | 6.0000              | 47/64            | .7344           | 18.6531             |
| 1/4              | .2500           | 6.3500              |                  | .7480           | 19.0000             |
| 17/64            | .2656           | 6.7469              | 3/4              | .7500           | 19.0500             |
|                  | .2756           | 7.0000              | 49/64            | .7656           | 19.4469             |
| 9/32             | .2813           | 7.1438              | 25/32            | .7813           | 19.8438             |
| 19/64            | .2969           | 7.5406              |                  | .7874           | 20.0000             |
| 5/16             | .3125           | 7.9375              | 51/64            | .7969           | 20.2406             |
|                  | .3150           | 8.0000              | 13/16            | .8125           | 20.6375             |
| 21/64            | .3281           | 8.3344              |                  | .8268           | 21.0000             |
| 11/32            | .3438           | 8.7313              | 53/64            | .8281           | 21.0344             |
|                  | .3543           | 9.0000              | 27/32            | .8438           | 21.4313             |
| 23/64            | .3594           | 9.1281              | 55/64            | .8594           | 21.8281             |
| 3/8              | .3750           | 9.5250              |                  | .8661           | 22.0000             |
| 25/64            | .3906           | 9.9219              | 7/8              | .8750           | 22.2250             |
|                  | .3937           | 10.0000             | 57/64            | .8906           | 22.6219             |
| 13/32            | .4063           | 10.3188             |                  | .9055           | 23.0000             |
| 27/64            | .4219           | 10.7156             | 29/32            | .9063           | 23.0188             |
|                  | .4331           | 11.0000             | 59/64            | .9219           | 23.4156             |
| 7/16             | .4375           | 11.1125             | 15/16            | .9375           | 23.8125             |
| 29/64            | .4531           | 11.5094             |                  | .9449           | 24.0000             |
| 15/32            | .4688           | 11.9063             | 61/64            | .9531           | 24.2094             |
|                  | .4724           | 12.0000             | 31/32            | .9688           | 24.6063             |
| 31/64            | .4844           | 12.3031             |                  | .9843           | 25.0000             |
| 1/2              | .5000           | 12.7000             | 63/64            | .9844           | 25.0031             |
|                  |                 | 1                   |                  | 1.0000          | 25.4000             |



## Conversion Factors

### Equivalents and Conversions (Continued)

| Length                         | Area                                  | Volume                                  | Mass                                  |
|--------------------------------|---------------------------------------|-----------------------------------------|---------------------------------------|
| Inches x 25.40 = Millimeters   | Sq. inches x 6.452 = Sq. centimeters  | Cu. inches x 16.39 =<br>Cu. centimeters | Ounces x 28.35 = Grams                |
| Millimeters x 0.03937 = Inches | Sq. centimeters x 0.1550 = Sq. inches | Cu. cm. x 0.06102 = Cu. inches          | Grams x 0.03527 = Ounces              |
| Feet x 0.3048 = Meters         | Sq. feet x 0.0929 = Sq. meters        | Cu. feet x 0.02832 = Cu. meters         | Pounds x 0.4536 = Kilograms           |
| Meters x 3.281 = Feet          | Sq. meters x 10.76 = Sq. feet         | Cu. meters x 35.31 = Cu. feet           | Kilograms x 2.205 = Pounds            |
| Miles x 1.609 = Kilometers     | Sq. miles x 2.59 = Sq. kilometers     |                                         | Kilograms/km x 0.6214 =<br>Pounds/kft |
| Kilometers x 0.6214 = Miles    | Sq. kilometers x 0.3861 = Sq. miles   |                                         | Pounds/kft x 1.4881 =<br>Kilograms/km |
| Ohms/km x 0.3048 = Ohms/kft    | Circular mils x 0.7854 = Sq. mil      |                                         |                                       |

## Prefixes (SI), Values, and Symbols

| Prefix | Value            | Symbol | Prefix | Value             | Symbol |
|--------|------------------|--------|--------|-------------------|--------|
| Tera   | 10 <sup>12</sup> | T      | Deci   | 10 <sup>-1</sup>  | d      |
| Giga   | 10 <sup>9</sup>  | G      | Centi  | 10 <sup>-2</sup>  | c      |
| Mega   | 10 <sup>6</sup>  | M      | Milli  | 10 <sup>-3</sup>  | m      |
| Kilo   | 10 <sup>3</sup>  | k      | Micro  | 10 <sup>-6</sup>  | μ      |
| Hecto  | 10 <sup>2</sup>  | h      | Nano   | 10 <sup>-9</sup>  | n      |
| Deca   | 10 <sup>1</sup>  | da     | Pico   | 10 <sup>-12</sup> | p      |

### Temperature Conversion Formula

$$^{\circ}\text{C} = (^{\circ}\text{F} - 32) \div 1.8$$

$$^{\circ}\text{F} = (^{\circ}\text{C} \times 1.8) + 32$$

| $^{\circ}\text{F}$ | $^{\circ}\text{C}$ | $^{\circ}\text{F}$ | $^{\circ}\text{C}$ | $^{\circ}\text{F}$ | $^{\circ}\text{C}$ | $^{\circ}\text{F}$ | $^{\circ}\text{C}$ |
|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| -103               | -75.00             | -30                | -34.44             | 25                 | -3.89              | 65                 | 18.33              |
| -101.2             | -74.00             | -28                | -33.33             | 26                 | -3.33              | 66                 | 18.89              |
| -99.4              | -73.00             | -26                | -32.22             | 27                 | -2.78              | 67                 | 19.44              |
| -97.6              | -72.00             | -24                | -31.11             | 28                 | -2.22              | 68                 | 20.00              |
| -95.8              | -71.00             | -22                | -30.00             | 29                 | -1.67              | 69                 | 20.56              |
| -94.0              | -70.00             | -20                | -28.89             | 30                 | -1.11              | 70                 | 21.11              |
| -92.2              | -69.00             | -18                | -27.78             | 31                 | -0.56              | 71                 | 21.67              |
| -90.4              | -68.00             | -16                | -26.67             | 32                 | 0.00               | 72                 | 22.22              |
| -88.6              | -67.00             | -14                | -25.56             | 33                 | 0.56               | 73                 | 22.78              |
| -86.8              | -66.00             | -12                | -24.44             | 34                 | 1.11               | 74                 | 23.33              |
| -85.0              | -65.00             | -10                | -23.33             | 35                 | 1.67               | 75                 | 23.89              |
| -83.2              | -64.00             | -8                 | -22.22             | 36                 | 2.22               | 77                 | 25.00              |
| -81.4              | -63.00             | -6                 | -21.11             | 37                 | 2.78               | 77                 | 25.00              |
| -79.6              | -62.00             | -4                 | -20.00             | 38                 | 3.33               | 78                 | 25.56              |
| -77.8              | -61.00             | -2                 | -18.89             | 39                 | 3.89               | 79                 | 26.11              |
| -76.0              | -60.00             | 0                  | -17.78             | 40                 | 4.44               | 80                 | 26.67              |
| -74.2              | -59.00             | 1                  | -17.22             | 41                 | 5.00               | 81                 | 27.22              |
| -72.4              | -58.00             | 2                  | -16.67             | 42                 | 5.56               | 82                 | 27.78              |
| -70.6              | -57.00             | 3                  | -16.11             | 43                 | 6.11               | 83                 | 28.33              |
| -68.8              | -56.00             | 4                  | -15.56             | 44                 | 6.67               | 84                 | 28.89              |
| -67.0              | -55.00             | 5                  | -15.00             | 45                 | 7.22               | 85                 | 29.44              |
| -65.2              | -54.00             | 6                  | -14.44             | 46                 | 7.78               | 86                 | 30.00              |
| -63.4              | -53.00             | 7                  | -13.89             | 47                 | 8.33               | 87                 | 30.56              |
| -61.6              | -52.00             | 8                  | -13.33             | 48                 | 8.89               | 88                 | 31.11              |
| -59.8              | -51.00             | 9                  | -12.78             | 49                 | 9.44               | 89                 | 31.67              |
| -58.0              | -50.00             | 10                 | -12.22             | 50                 | 10.00              | 90                 | 32.22              |
| -56.2              | -49.00             | 11                 | -11.67             | 51                 | 10.56              | 91                 | 32.78              |
| -54.4              | -48.00             | 12                 | -11.11             | 52                 | 11.11              | 92                 | 33.33              |
| -52.6              | -47.00             | 13                 | -10.56             | 53                 | 11.67              | 93                 | 33.89              |
| -50.8              | -46.00             | 14                 | -10.00             | 54                 | 12.22              | 94                 | 34.44              |
| -49.0              | -45.00             | 15                 | -0.44              | 55                 | 12.78              | 95                 | 35.00              |
| -47.2              | -44.00             | 16                 | -8.89              | 56                 | 13.33              | 96                 | 35.56              |
| -45.4              | -43.00             | 17                 | -8.33              | 57                 | 13.89              | 97                 | 36.11              |
| -43.6              | -42.00             | 18                 | -7.78              | 58                 | 14.44              | 98                 | 36.67              |
| -41.8              | -41.00             | 19                 | -7.22              | 59                 | 15.00              | 99                 | 37.22              |
| -40                | -40.00             | 22                 | -6.11              | 60                 | 15.56              | 100                | 37.78              |
| -38                | -38.89             | 21                 | -6.11              | 61                 | 16.11              | 101                | 38.33              |
| -36                | -37.78             | 22                 | -5.56              | 62                 | 16.67              | 102                | 38.88              |
| -34                | -36.67             | 23                 | -5.00              | 63                 | 17.22              | 103                | 39.44              |
| -32                | -35.56             | 24                 | -4.44              | 64                 | 17.78              | 104                | 40.00              |

$$^{\circ}\text{C} = (^{\circ}\text{F} - 32) \div 1.8$$

$$^{\circ}\text{F} = (^{\circ}\text{C} \times 1.8) + 32$$

(Continued)

### Temperature Conversion Formula (Continued)

| $^{\circ}\text{F}$ | $^{\circ}\text{C}$ | $^{\circ}\text{F}$ | $^{\circ}\text{C}$ | $^{\circ}\text{F}$ | $^{\circ}\text{C}$ | $^{\circ}\text{F}$ | $^{\circ}\text{C}$ |
|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|
| 105                | 40.55              | 145                | 62.78              | 185                | 85.00              | 325                | 162.78             |
| 106                | 41.11              | 146                | 63.33              | 186                | 85.55              | 330                | 165.56             |
| 107                | 41.66              | 147                | 63.88              | 187                | 86.11              | 335                | 168.33             |
| 108                | 42.22              | 148                | 64.44              | 189                | 87.22              | 340                | 171.11             |
| 109                | 42.77              | 149                | 65.00              | 189                | 87.22              | 345                | 173.89             |
| 110                | 43.33              | 150                | 65.56              | 190                | 87.78              | 350                | 176.67             |
| 111                | 43.88              | 151                | 66.11              | 191                | 88.33              | 355                | 179.44             |
| 112                | 44.44              | 152                | 66.66              | 192                | 88.88              | 360                | 182.22             |
| 113                | 45.00              | 153                | 67.22              | 193                | 89.44              | 365                | 185.00             |
| 114                | 45.55              | 154                | 67.77              | 194                | 90.00              | 370                | 187.78             |
| 115                | 46.11              | 155                | 68.33              | 195                | 90.55              | 375                | 190.55             |
| 116                | 46.66              | 156                | 68.88              | 196                | 91.11              | 380                | 193.33             |
| 117                | 47.22              | 157                | 69.44              | 197                | 91.66              | 385                | 196.11             |
| 118                | 47.77              | 158                | 70.00              | 198                | 92.22              | 390                | 198.89             |
| 119                | 48.33              | 159                | 70.55              | 199                | 92.77              | 395                | 201.67             |
| 120                | 48.89              | 160                | 71.11              | 200                | 93.33              | 400                | 204.44             |
| 121                | 49.44              | 161                | 71.66              | 205                | 96.11              | 405                | 207.22             |
| 122                | 50.00              | 162                | 72.22              | 210                | 98.89              | 410                | 210.00             |
| 123                | 50.55              | 163                | 72.77              | 215                | 101.67             | 415                | 212.78             |
| 124                | 51.11              | 164                | 73.33              | 220                | 104.44             | 425                | 215.56             |
| 125                | 51.67              | 165                | 73.89              | 225                | 107.22             | 425                | 218.33             |
| 126                | 52.22              | 166                | 74.44              | 230                | 110.00             | 430                | 221.11             |
| 127                | 52.77              | 167                | 75.00              | 235                | 112.78             | 435                | 223.89             |
| 128                | 53.33              | 168                | 75.55              | 240                | 115.56             | 440                | 226.67             |
| 129                | 53.88              | 169                | 76.11              | 245                | 118.33             | 445                | 229.44             |
| 130                | 54.44              | 170                | 76.67              | 250                | 121.11             | 450                | 232.22             |
| 131                | 55.00              | 171                | 77.22              | 255                | 123.89             | 455                | 235.00             |
| 133                | 56.11              | 172                | 77.77              | 260                | 126.67             | 460                | 237.78             |
| 133                | 56.11              | 173                | 78.33              | 265                | 129.44             | 465                | 240.55             |
| 134                | 56.66              | 174                | 78.88              | 270                | 132.22             | 470                | 243.33             |
| 135                | 57.22              | 175                | 79.44              | 275                | 135.00             | 475                | 246.11             |
| 136                | 57.77              | 176                | 80.00              | 280                | 137.78             | 480                | 248.89             |
| 137                | 58.33              | 177                | 80.55              | 285                | 140.55             | 485                | 251.67             |
| 138                | 58.88              | 178                | 81.11              | 290                | 143.33             | 490                | 254.44             |
| 139                | 59.44              | 179                | 88.66              | 295                | 146.11             | 495                | 257.22             |
| 140                | 60.00              | 180                | 82.22              | 300                | 148.89             |                    |                    |
| 141                | 60.55              | 181                | 82.77              | 305                | 151.67             |                    |                    |
| 142                | 61.11              | 182                | 83.33              | 310                | 154.44             |                    |                    |
| 143                | 61.66              | 183                | 83.88              | 315                | 157.22             |                    |                    |
| 144                | 62.22              | 184                | 84.44              | 320                | 160.00             |                    |                    |

---

**Engineering Notes**

---

A large rectangular area filled with a fine grid of small squares, intended for handwritten engineering notes or calculations.

## Glossary of Terms

### A

**abrasion-resistance** A measure of the ability of a wire or wire covering to resist damage by mechanical means.

**accelerated aging** A test in which voltage, temperature, or other test parameters are increased above normal operating values to obtain observable deterioration in a relatively short time. The plotted results give service life within the context of the test.

**adapter** A device usually attached to the rear of connectors that provides for the attachment of harnessing components, such as strain-relief clamps, heat-shrinkable boots, and braid.

**adhesive (hot melt)** Dual-wall tubing and precoated molded parts whose inner layer melts and flows when heated, fills voids in the areas being covered, and forms a mechanical bond to the substrate. Unlike an encapsulant, an adhesive forms a mechanical bond to the substrate.

**adhesive liner** Lining that melts and flows inside a sleeve or molded part, filling any voids in between the substrate and the sleeve or molded part. DuraSeal has an adhesive liner.

**aging** Change in the properties of a material over time and under specific conditions. Generally refers to environmental stimulus such as heat and light.

**altitude immersion seal** A seal able to withstand substantial pressure change (for example, from sea level to 75,000 feet).

**amnesia** The tendency over time for a heat-shrinkable elastomeric tubing or molded part to fail to recover completely to its specified recovered size. See shelf life.

**ampacity** See current-carrying capacity.

**amplitude** The magnitude of variation in a changing quantity from its zero value. The word requires modification — as with adjectives such as peak, maximum, rms, etc. — to designate the specific amplitude in question.

**arc voltage** voltage that continues to pass through a surge protector during activation of GDT (approx. 20 volts)

**ASTM (American Society for Testing and Materials)** A nonprofit industry-wide organization that formulates test methods and material specifications, and publishes standards, testing methods, recommended practices, definitions, and other materials.

**attenuation** A reduction in power. It occurs naturally during wave travel through lines, waveguides, space or a medium such as water. It may be produced intentionally by placing an attenuator in a circuit. The amount of attenuation is generally expressed in decibels per unit of length.

**AWG (American Wire Gauge)** The recognized method (in the United States) of specifying conductor size. The higher the gauge number, the smaller the conductor size.

### B

**back mounted** A connector attached to the inside of a panel or box with its mounting flanges inside the equipment.

**band marking** A continuous circumferential band applied to a wire at regular intervals for identification.

**bare conductor** A conductor not covered with insulating material.

**barrel** 1.) Connector barrel: The section of the terminal, splice, or contact that accommodates the stripped conductor. 2.) Insulation barrel: The section of the terminal, splice, or contact that accommodates the conductor insulation. 3.) Open barrel: The section of a cap that accommodates the conductor.

**batch number** See lot number.

**bayonet coupling** A quick-coupling device for plug and receptacle connectors. Mating is accomplished by rotation of the two parts under pressure.

**beaming** Crosslinking by means of high-energy electrons.

**bellmouth** Flared at the mouth. The rear of a properly crimped wire barrel will have a slight flare (bellmouth) to relieve the strain on the wire strands as they leave the area of high compression and take their natural "lay". A bellmouth condition may also be present in front of the wire barrel.

**binder** A spiral wrapping of a thread to hold together the members of a cable.

**blocking** The sticking together of insulated wires; usually caused by heat.

**BNC connector** A radio frequency connector covered by Military Specification. It has an impedance of 50 or 75 ohms, and is designed to operate in the 0 to 4 GHz frequency range. It features quick connect/disconnect by pin and cam bayonet coupling.

**body** Main or largest portion of a connector to which other portions are attached.

**bonding temperature** Temperature above which adhesive melts and flows sufficiently to form an adhesive bond between substrates.

**braid** A weave of metal fibers used as a shield covering for an insulated conductor or group of insulated conductors. When flattened it may be used as a grounding strap.

**braid angle** The angle between the braid strands and the axis of the cable.

**breakdown voltage** The voltage at which an insulator or dielectric fails to maintain the applied voltage.

**breakout** A region in a harness assembly where a wire or a group of wires is detached to form a separate, terminated branch. Also known as a transition.

**brittle temperature** The temperature below which a material becomes brittle, often measured by a cold impact test.

**broad-band E** Interference generated over a wide range of frequencies (e.g., automotive ignition noise).

**bulkhead** A term used to define a mounting style of connectors. Bulkhead connectors are designed to be inserted into a panel cutout from the rear (component side) of the panel.

**bunch stranding** A method of twisting individual strands to form a finished stranded conductor. Specifically, a number of strands twisted together in a common direction and with a uniform pitch (or twist) per inch.

**bus** A communal circuit over which data or power is transmitted.

### C

**cable** Two or more wires in a twisted or parallel configuration. Also, a shielded wire.

**cable clamp** A mechanical clamp attached to the cable side of a termination assembly to support the cable or wire bundle. It provides strain relief and absorbs vibration and shock that would otherwise be transmitted by the cable terminations.

**cable clamp adapter** A mechanical adapter that attaches to the rear of a termination assembly to allow the attachment of a cable clamp.

**cable sealing clamp** A device consisting of a gland nut designed to seal around the jacket of a cable.

**cabler** A machine that mechanically assembles a group of insulated wires.

**cabling** The act of twisting together two or more insulated components to form a cable.

**capacitance** The property of an electrical conductor (dielectric in a capacitor) that permits the storage of energy as a result of electrical displacement. The basic unit of capacitance is the farad, however, measurement is more commonly in microfarads or picofarads.

**carrier** A group of strands or ends used to form a finished braid.

**cavity** A metallic enclosure in some types of tubes and circuits within which resonant fields may be excited at the microwave frequency to which the cavity is tuned. Usually referred to as resonant cavity. See also: contact cavity.

---

**Glossary of Terms** (Continued)

---

**characteristic impedance** The ratio of voltage to current at any point along a transmission line on which there are no standing waves.

**chemical resistance** The ability of an insulation to withstand the presence of materials—such as acids, bases, water, salt water, and fuels—that can deteriorate the insulation, or that, if penetrable to the conductor, can cause dielectric loss of insulating qualities.

**Cheminax cables** Raychem's registered trade name for coaxial cables.

**circuit** The interconnection of a number of electrical elements or parts to accomplish a desired function.

**circular mil area (CMA)** A unit of area equal to the area of a circle whose diameter is 1 mil (0.001 inch). Used chiefly in specifying cross-sectional areas of conductors. (See AMP Brochure No. 4402-8, Computing Circular Mil Area for AMP Terminals and Splices).

**clocking** The arrangement of connector inserts, jackscrews, polarizing pins, sockets, keys/keyways, or housing configurations to prevent the mismatching or cross-mating of connectors. See also polarization.

**closed entry contact** A female contact designed to prevent the entry of a pin or probing device having a cross-sectional dimension (diameter) greater than the mating pin.

**coax** See coaxial cable.

**coaxial cable** A transmission line consisting of two conductors concentric with and insulated from each other. In its flexible form it consists of either a solid or stranded center conductor surrounded by a dielectric. A braid is then woven over the dielectric to form an outer conductor. A weatherproof plastic covering, usually vinyl, is placed on top of the braid.

**cold bend** A test conducted by wrapping tubing or cable around a mandrel or by bending it in an arc while at a low temperature.

**cold flow** Permanent deformation of polymeric materials (insulation) at ambient temperature due to mechanical force or pressure (not due to heat softening).

**cold impact** A test performed by subjecting a component to a specified impact during exposure to low temperature. It measures the brittleness of the material.

**cold joint** A soldered joint made with insufficient heat. (Solder hasn't completely flowed and wet the substrate.)

**color code** A means of identifying cable components using solid colors or stripes. Also, the scheme that assigns a number from 0 to 9 for each of 10 colors.

**color stability** The time and temperature ranges within which the color of a material will remain within the specified color limit.

**component** A wire or cable that is combined with other wires or cables to make a multicomponent cable.

**compound** An insulating or jacketing material made by formulating polymeric materials and additives.

**Compound Under Strands (CUS)** A problem that occurs when loose stranding, or overheating during extrusion, allows compounds to get under individual strands of conductor.

**concentric stranding** A method of stranding conductor. Specifically, the final conductor is built up in layers so that the inner diameter of a succeeding layer is always equal to the outer diameter of the underlying layer.

**concentricity** Ratio (expressed as a percentage) of the thinnest to the heaviest wall thickness. Measured on expanded or recovered tubing, or wire insulation, or jacketing.

**conductivity** The capability of a material to carry electrical current, usually expressed as a percentage of copper conductivity (copper being 100%). Specifically, the ratio of the current flow to the potential difference causing the flow. The reciprocal of resistance.

**conductor** The metallic strand or strands used to carry an electric current.

**conductor resistance** The resistance to flow of the electrical current along a conductor. Expressed in ohms/1000 feet. (Usually referenced to 20°C).

**conduit** A tubular raceway for holding wires or cables.

**configuration** Arrangement of contacts in a multiple-contact connector.

**connector** A device used to physically and electrically connect two or more conductors.

**connector classes** Categories based on shape, function, and smallest-size contact in a series.

**connector insert** In connectors with metal shells, the part that holds contacts in proper arrangement while electrically insulating them from each other and from the shell.

**contact** The element in a connector that makes the actual electrical connection. Also the parts of a connector that actually carry the electrical current, and are touched together or separated to control the flow.

**contact crimp** A contact whose rear portion is a hollow cylinder that accepts the conductor. A crimping tool is applied to swage or form the contact metal firmly against the conductor. Sometimes referred to as a solderless contact.

**contact durability** The number of insertion and withdrawal cycles that a connector must be capable of withstanding while remaining within the performance levels of the applicable specification.

**contact engaging and separating force** Force required to either engage or separate contacts. Values are generally established for maximum and minimum forces.

**contact inspection hole** A hole, perpendicular to the cylindrical rear portion of screw machined contacts, used to check the depth to which wire has been inserted into the barrel.

**contact resistance** Measurement of electrical resistance of mated contacts when assembled in a connector under typical service use. Electrical resistance is determined by measuring from the rear of the electrical area of one contact to the rear of the contact area of the mating contact (excluding both crimps) while carrying a specified test current.

**contact size** The diameter of the engagement end of a pin contact; also related to the current-carrying capacity of a contact.

**contact, two-piece** A contact made of two separate parts joined by swedging, brazing or other means of fastening to form a single contact. While this provides the mechanical advantages of two metals, it also has the inherent electrical disadvantage of difference in conductivity.

**continuity** A continuous path for the flow of current in an electrical circuit.

**continuous operating temperature** Maximum temperature at which a component will maintain an acceptable lifetime performance, based on accelerated aging prediction.

**continuous service** Conditions (time, temperature, environment) that describe the lifetime requirements of a component.

**core** 1.) In cables, a component or assembly of components over which additional components, such as a shield or a sheath, are applied.  
2.) Inner wall of dual-wall heat-shrinkable tubing.

**corona** A discharge of electricity appearing as a bluish-purple glow on the surface of, and adjacent to, a conductor when the voltage gradient exceeds a certain critical value. It is caused by the ionization of surrounding air by high voltage.

**coupling ring** The portion of a plug that aids in the mating and demating of a plug and receptacle and holds the plug to the receptacle.

**cover, electrical connector** An item specifically designed to cover the mating end of a connector for mechanical and/or environmental protection. Also known as a dust cover.

**coverage** A calculated percentage that defines the completeness with which a braid or shield covers the surface of the underlying insulated conductor or conductors.

## Glossary of Terms (Continued)

**crimp** The final configuration of a terminal barrel after the necessary compression forces have been applied to cause a functional union between the terminal barrel and the wire.

**crimp height** A top to bottom measurement of the crimped barrel, using a crimp height comparator in the prescribed manner. (Refer to AMP Instruction Sheet 7424).

**crimping dies** A term used to identify the shaping tools that, when moved toward each other, produce a certain desirable shape to the barrel of the terminal or contact that has been placed between them. Crimping dies are often referred to as die sets or as die inserts.

**crimping head** Tooling containing jaws and linkage for use in pneumatic or hydraulic powered units to crimp loose-piece contacts/terminals that may be too large for hand tool applications.

**crimping tool** A term commonly used to identify a hand held mechanical device that is used to crimp a contact, terminal or splice.

**crosslinking** The formation of bonds between molecular chains in a polymer by means of chemical catalyzation or electron bombardment. The properties of the resulting thermosetting material are usually improved.

**crosslinking by irradiation** A method of crosslinking polymers that makes a nonflowing material. This generally improves the properties of the polymer.

**crosstalk** A magnetic or electrostatic coupling which causes the unwanted transfer of energy from one circuit (disturbing circuit) to another circuit (disturbed circuit)

**crystallinity** The portion of polymer chains that are ordered in a regular (as opposed to amorphous) structure or a crystal lattice. Crystallinity tends to improve mechanical properties and fluid resistance. Crystalline or semi-crystalline materials have a well-defined melting point (shrink temperature) at which the structure becomes disordered and the polymer flows.

**CSA (Canadian Standards Association)** An agency that has developed standard specifications for products with particular emphasis on safety in the end use.

**curing** See thermoset.

**current** A movement or flow of electrons. Also, the measure of this flow, expressed in amperes.

**current-carrying capacity** The maximum current an insulated conductor is capable of carrying without exceeding its insulation- and /or jacket-temperature limitations under specified ambient conditions. Also known as ampacity.

**current rating** The maximum continuous electrical flow of current recommended for a given situation. It is expressed in amperes.

**cutout** The hole, usually round or rectangular, cut into a metal panel in order to mount a connector. The cutout may also include holes for mounting screws or bolts.

**cut-through resistance** Resistance of solid material to penetration by an object (typically a closely controlled knife edge) under conditions of pressure, temperature, and other elements.

**cycle** One complete sequence of values of an alternating quantity, including a rise to maximum in one direction and return to zero; a rise to maximum in the opposite direction and return to zero. The number of cycles occurring in one second is called the frequency.

## D

**dB** Abbreviation — see decibel.

**D.C. sparkover voltage** defined as the maximum voltage across a device before it discharges the energy to ground when subjected to a slowly rising voltage ramp. A rate of rise of 100V/s is usually chosen for testing purposes.

**decibel** A unit expressing the ratio of two voltages, currents or powers. It is equal to 20 times the common logarithm of the ratio of two voltages across or two currents through equal loads, or 10 times the common logarithm of the two powers. One decibel is approximately the smallest change in audible power that can be recognized by the human ear.

**die closure** Term used to designate a crimping area (crimping chamber) when the dies are fully closed or bottomed. Die closure is checked with go/no go plug gage to insure that the crimp produced by the tooling satisfies the crimp height specification.

**dielectric** A material that serves as an insulator. The amount of resistance to voltage in a given insulation.

**dielectric breakdown** The voltage required to cause an electrical failure or breakthrough of the insulation. Determined by a destructive test. See also breakdown voltage.

**dielectric constant (also K)** The ratio of the capacitance between two electrodes with a solid, liquid, or gaseous dielectric, to the capacitance with air between the electrodes. Also called permittivity and specific inductive capacity. Generally low values are desirable for insulation.

**dielectric strength** The maximum voltage a dielectric can withstand without rupture. Usually expressed as volts per mil.

**dielectric withstanding voltage** The maximum potential gradient that a dielectric material can withstand without failure.

**Direct Current Resistance (DCR)** The resistance offered by any circuit to the flow of direct current.

**direction of lay** The lateral direction in which the strands or elements of a cable run over the top of the cable as they recede from the observer. Expressed as right-hand or left-hand lay.

**discontinuity** Rated interconnection: a broken connection (open circuit) or the loss of a specified connection characteristic. Transient phenomena: Short term (temporary) interruption or unacceptable variation in current or voltage.

**dissipation** Unusable or lost energy, such as the production of unused heat in a circuit.

**dissipation factor** The ratio between the permittivity and the conductivity of a dielectric.

**distortion** An unwanted change or addition to a signal or waveform when it is amplified. This definition excludes noise which is an extraneous signal superimposed on the desired signal.

**drain wire** In a cable, an uninsulated conductor laid over the component, or components, in a foil-shield cable. Used as a ground connection.

**dummy load** A dissipative device used at the end of a transmission line or waveguide to convert transmitted energy into heat, so essentially no energy is radiated outward or reflected back to its source.

**dust cover** See cover, electrical connector.

## E

**EID** See Expanded ID.

**elastic memory** The ability of a crosslinked polymer to be deformed to some predetermined shape, hold that shape for a period, and then return to its original shape upon the application of heat.

**elastomer** A material that exhibits very low or zero crystallinity and a high degree of flexibility (rubber is a synonym).

**electromagnetic compatibility (EMC)** The ability of an electronic device to operate in its intended environment without its performance being affected by EMI and without generating EMI that will affect other equipment.

**electromagnetic interference (EMI)** Unwanted electrical or electromagnetic energy that causes undesirable responses, degrading performance or complete malfunctions in electronic equipment. See also: noise.



## Glossary of Terms (Continued)

**electromotive force (emf)** See voltage.

**elongation** The ultimate elongation, or elongation at rupture. Expressed as a percentage of original length.

**EMI** Abbreviation for electromagnetic interference.

**encapsulant** Description related to the way dual-wall tubing products and precoated molded parts melt and flow when heated, filling any void in the area being covered. Unlike an adhesive, an encapsulant does not form a mechanical bond to the substrate.

**encapsulation** Covering and sealing.

**end** The number of fibers or strands per carrier in braiding operations.

**environmentally sealed** A unit is provided with gaskets, seals, grommets, potting or other means to keep out moisture, dust, air or dirt which might reduce or impair its performance.

**epoxy** A family of thermosetting resins usually used as adhesives or encapsulants.

**ETFE (Ethylenetetrafluoroethylene)** A fluoropolymer used as base resin for SPEC 55 wire and HCTE.

**Expanded ID (EID)** The specified minimum (as supplied) internal diameter of tubing.

**expansion ratio** An expression of how much larger the inside diameter of a tubing is before shrinking. Specifically, the relationship of the minimum (expanded) inside diameter of tubing to the maximum (recovered) inside diameter, expressed as a ratio. See also shrink ratio.

**extraction tool** A tool used for removing contacts from a connector body.

**extrusion** A process that conveys plastic insulation material, generally via a screw, through forming dies and subsequently cools the insulation material to form a predetermined shape.

## F

**feedthrough** A connector or terminal block, usually having double-ended terminals, which permits distribution and bussing of electrical circuits. Also used to describe a bushing in a wall or bulkhead, separating compartments at different pressure levels, with terminations on both sides.

**ferrule** A short tube used to make solderless connections to shielded or coaxial cable. Also molded into the plastic inserts of multiple contact connectors to provide strong, wear-resistant shoulders on which contact retaining springs can bear.

**filler** A material used in a cable construction to fill large interstices, thus providing a round construction; can be shaped, round, or in mastic forms. A nonfunctional member used in a cable to provide a more circular cross section.

**flame-resistant** A descriptor applied to a material that is inherently resistant to burning.

**flame retardant** A descriptor applied to a material that has been made or treated so as to resist burning.

**flat braid** A braided shield composed of flat strands.

**flat cable** A cable with each component in a single, flat plane.

**flat conductor** A conductor having a rectangular cross section, as opposed to a round or square cross section.

**flex life** A measure of the susceptibility of a conductor or other device to failure due to fatigue from repeated bending.

**fluoropolymer** A polymer that contains atoms of fluorine.

**flux** A liquid or solid that, when heated, exercises a cleaning and protective action upon surfaces. Used to promote or facilitate fusion during soldering or welding.

**frequency modulation (fm)** A scheme for modulating a carrier frequency in which the amplitude remains constant but the carrier frequency is displaced in frequency proportionally to the amplitude of the modulating signal. An fm broadcast is practically immune to atmospheric and man-made interference.

**fretting corrosion** A form of accelerated oxidation that appears at the interface of contacting materials undergoing slight cyclic relative motion. All non-nobel metals (tin) are susceptible to some degree of fretting corrosion and will suffer contact resistance increases.

**front mounted** A connector is said to be front mounted when it is attached to the outside of the mating side of a panel. A front mounted connector can only be installed or removed from the outside of the equipment.

**front release contacts** Connector contacts that are released from the front side of the connector and then removed from the back, wire side of the connector.

**full recovery temperature, minimum** See recovery temperature.

## G

**gauge** A term used to denote the physical size of a wire. See also AWG.

**giga** A prefix meaning one billion ( $10^9$ ).

**gigahertz (GHz)** One billion cycles per second ( $10^9$  cps).

**ground** A connection, intentional or accidental, between an electrical circuit and the earth or some conducting body (e.g. chassis) serving in place of earth.

**grounding conductor** A conductor that provides a current return path from an electrical device to ground.

## H

**hardness** A general term that correlates with strength, rigidity, and resistance to abrasion or penetration. Measured on Shore or Rockwell scales. See also shore.

**harness** A system providing electrical connection between two or more points.

**heat aging** A test that subjects components or materials to temperatures above normal operating values to evaluate changes in performance in order to predict service life. See also accelerated aging.

**heat shock** A test to determine the stability of a material by continuously exposing it to an extremely high temperature for a short period of time. The test was developed both to demonstrate that the material is crosslinked and to observe any problems in dripping, cracking, or flowing.

**heat-shrinkable** A type of plastic material that has been cross-linked. A term describing tubes, sleeves, caps, boots, films or other forms of plastic which shrink to encapsulate, protect or insulate connections, splices, terminations and other configurations.

**hermetic** Airtight, impervious to external influence, as in a hermetic package. Often used to describe metal-to-metal solder or weld-sealed packages.

**hermetic seal** Hermetically sealed connectors are usually multiple contact connectors where the contacts are bonded to the connector by glass or other materials and permits maximum leakage rate of gas through the connector of 1.0 micron ft./hr. at one atmosphere pressure for special applications.

**hertz (Hz)** International standard term for cycles per second. Named after the German physicist Heinrich R. Hertz (e.g., 60 cycles per second is equal to 60 hertz or 60 Hz).

**hookup wire and cable** Wiring used to connect various points in electronic assemblies.

## Glossary of Terms (Continued)

**hot-melt adhesive** An adhesive that becomes activated by heating. When heated, it melts, flows over the substrate surface, and forms an adhesive bond. Reheating causes the adhesive to remelt.

### I

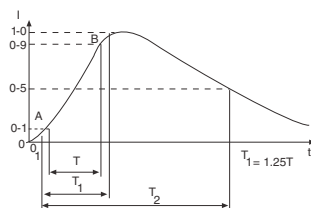
**ID (Internal Diameter)** The inside or internal diameter of a tubing.

**impedance (Z)** The total opposition offered by a component or circuit to the flow of alternating or varying current. Impedance is expressed in ohms and is similar to the actual resistance in a direct current circuit. In computations, impedance is handled as a complex ratio of voltage to current.

**impedance match** A condition in which the impedance of a component or circuit is equal to the internal impedance of the source, or the surge impedance of a transmission line. This gives maximum transfer of energy from the source to the load, as well as minimum reflection and distortion.

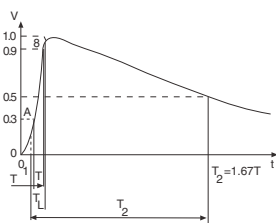
#### impulse discharge current

is defined as the peak current of an impulse which the device can withstand ten times (5 of each polarity at fixed time intervals) without substantially affecting device performance. The test normally used to determine this capacity uses the 8/20ms waveform as depicted at right where  $T_1=8\text{ms}$  and  $T_2=20\text{ms}$ .



#### impulse sparkover voltage

defined as the maximum level of voltage across a device before it discharges the energy to ground when subjected to a voltage impulse. The three common waveform profiles used to determine this capacity are:



**impulse test** A high-voltage test designed to locate pinholes in the insulation of a wire or cable by applying a voltage while the wire or cable is being drawn through an electrode.

**inductance** One cause of reactance. An electromagnetic phenomenon in which the expanding and collapsing of a magnetic field surrounding a conductor or device tends to impede changes in current. The effects of inductance become greater as frequencies increase. The basic unit for inductance is the henry.

**input impedance** The impedance that exists between the input terminals of an amplifier or transmission line when the source is disconnected. The circuit, signal level and frequency must be specified.

**insert** Melttable thermoplastic ring placed within a SolderSleeve device. Aids in encapsulation and sealing.

**insert (connector)** Part that holds the contacts in their proper arrangement and electrically insulates them from each other and from the shell.

**insert arrangement (connector)** The number, spacing, and arrangement of contacts in a termination assembly.

**insert cavity (connector)** A defined hole in the connector insert into which the contacts are inserted.

**insertion loss** The loss in load power due to the insertion of a component, connector or device at some point in a transmission system. Generally expressed in decibels as the ratio of the power received at the load before insertion of the apparatus, to the power received at the load after insertion.

**insertion tool (connector)** A tool used to insert removable contacts into a connector.

**inspection hole** A hole placed at one end of a contact barrel to permit visual inspection, to ensure that the conductor has been inserted to the proper depth in the barrel prior to crimping or soldering.

**insulated terminal** A solderless terminal with an insulated sleeve over the barrel to prevent a short circuit in certain installations.

**insulation crimp** The area of a terminal splice or contact that has been formed around the insulation of a wire.

**insulation, electrical** A nonconductive material usually surrounding or separating two conductive materials. Often called the dielectric in cables designed for high-frequency use.

**insulation grip** The ability of certain crimped terminals to hold firmly in place both the conductor and a small portion of insulation. This prevents the conductor from being exposed due to insulation receding away from the terminal.

**insulation resistance** The electrical resistance between two conductors separated by an insulating material.

**insulation, thermal** A nonconductive material that prevents the passage of heat.

**interconnection** The joining of one individual device with another.

**interface** The two surfaces of a multiple-contact connector that face each other when the connector is assembled.

**interference** An electrical or electromagnetic disturbance that causes undesirable response in electronic equipment.

**interstice** In a cable construction, the space or void left between or around the cabled components.

**irradiation** In insulations, the exposure of the material to high-energy emissions for the purpose of favorably altering the molecular structure via crosslinking.

### J

**jack** A connecting device into which a plug can be inserted to make circuit connections. The jack may also have contacts which open or close to perform switching functions when the plug is inserted or removed. See also: receptacle.

**jacket** 1.) A material covering over a wire or cable assembly. 2.) Outer covering of a dual-wall heat-shrinkable tubing.

**jackscrew** A screw attached to one half of a two-piece, multiple-contact connector and used to draw both halves together and to separate them.

### K

**Kapton** DuPont's trade name for polyimide film.

**key (connector)** A short pin or other projection that slides into a mating slot or groove to guide two parts being assembled.

**keying (connector)** Mechanical arrangement of guide pins and sockets, keying plugs, contacts, bosses, slots, keyways, inserts, or grooves in a connector housing, shell or insert that allows connectors of the same size and type to be lined up; used in situations where there is danger of making a wrong connection.

**keyway** The slot or groove in which a key slides.

**kV (kilovolt)** A unit equal to 1000 volts.

**Kynar** Trade name (of Elf Atochem North America) for polyvinylidene fluoride and its copolymers.

---

**Glossary of Terms (Continued)**

---

**L**

**lacing cord or twine** Used for lacing and tying cable forms, hookup wires, cable ends, cable bundles, and wire harness assemblies. Available in various materials and impregnants.

**lanyard** A device, attached to certain quick-disconnect connectors, that permits uncoupling and separation of connector halves by a pull on a wire or cable.

**lay** Refers to direction or sometimes the ratio of lay length to core diameter.

**lay length** A term used in cable manufacturing to denote the distance of advance of one member, or a group of spirally twisted members in one turn, measured axially. The lay of any helical element of a cable or conductor is the axial length of a turn of the helix of that element.

**life cycle** A test to determine the length of time before failure in a controlled, usually accelerated environment.

**line impedance** Impedance as measured across the terminals of a transmission line; frequently the characteristic impedance of the line.

**liner** See core.

**longitudinal change (shrink tubing)** The change in length of tubing when recovered. Expressed in the percent of change from the original length.

**loss** Electrical energy that is dissipated as heat.

**loss factor** The product of the power factor and dielectric constant of an insulating material.

**lot number** The number that identifies one production run of material. Also known as a batch number.

**low-loss dielectric** An insulating material that has a relatively low dielectric loss, such as polyethylene or PTFE.

**lug** A termination, usually crimped or soldered to a conductor, that allows connection to be made with a retaining screw.

**M**

**marking** A printed identification number or symbol applied to the surface of a wire or cable.

**matched impedance** The coupling of two circuits in such a way that the impedance of one circuit equals the impedance of the other.

**mate** To join two connectors in a normal engaging mode.

**maximum discharge current** defined as the peak current of an impulse which the device can withstand once without substantially affecting device performance.

**mega (M)** A prefix meaning one million ( $10^6$ ).

**megarad** A unit for measuring radiation dosage.

**melt/flow index** Measurement of the flow of thermoplastic material under given conditions of temperature and pressure. Expressed as grams per unit of time.

**melting point** The temperature at which crystallinity disappears when crystalline material is heated.

**MIL** A unit equal to one one-thousandth of an inch (.001"); used in measuring the diameter of a conductor or thickness of insulation over a conductor.

**Military Specification** Military requirements. The demand imposed upon a system to meet a military operational need.

**MIL-SPEC** Abbreviation for Military Specification, which is a document the U.S. Government issues to define a product that will be used in military end-use applications.

**milking off** Action that occurs when the inner layer (the encapsulant or adhesive) of the tubing or molded part acts as a lubricant, allowing the tubing to slip off the substrate (because the tubing wants to recover to a smaller diameter).

**minimum full recovery temperature** See recovery temperature.

**mismatch** The condition in which the impedance of a source does not match or equal the impedance of the connected load. This reduces power transfer by causing reflection.

**MO (Manufacturing Order)** A series of operation-work-order cards identifying materials to be used and the type and quantity of products to be manufactured. An MO is controlled and issued by Production Control to the manufacturing operation.

**MOD Code (Material Modification Code)** A code designating a particular stage in the production process. Most MOD codes describe the way the product is packaged.

**MS (Manufacturing Specification)** A set of process instructions used in the manufacturing of tubing products. Customer Logistics, Product Management, or Manufacturing Engineering initiate the MS; Manufacturing Engineering controls it. The product design and quality parameters are provided to Manufacturing Engineering by Product Development and Quality Assurance. Successful trial runs of a new product or design usually precede the initiation of an MS (see SMO). A proprietary Raychem document, an MS is not available to customers.

**multiconductor** More than one component within a single-cable complex.

**multiple-conductor cable** A combination of two or more components cabled together.

**N**

**narrow-band** EMI generated from a device operating at a specific and limited range of frequencies. See also: electromagnetic interference (EMI).

**N Connector** A large radio frequency connector covered by Military Specification. It has an impedance of 50 ohms and is designed to operate in the 0 to 11 GHz frequency range. It has a threaded coupling and is physically larger than a TNC connector.

**nick** A small cut or notch in conductor strands or insulation.

**noise** An extraneous signal in an electrical circuit, capable of interfering with the desired signal. Classes of noise include burst of popcorn noise, intermediate frequency noise at low audio frequencies, white (thermal) noise, etc. Signals from power supply or ground line coupled into an amplifier output may be considered noise.

**nominal** A descriptor applied to a dimension representing the center of the range of tolerance or a value if no tolerance is applied.

**O**

**"O" crimp** An insulation support crimp for open barrel terminals and contacts. In its crimped form it resembles an "O" and conforms to the shape of the round wire insulation. "O" crimp is also used to describe the circumferential crimps used on COAXICON ferrules.

**OFT (Optional Flame Test)** Canadian Standards Association's test for flame-retardance. Tubing with an OFT rating is highly flame-retardant.

**ohm** The unit of measurement for electrical resistance. A circuit is said to have a resistance of one ohm when an applied emf of one volt causes a current of one ampere to flow.

**operating temperature** The maximum internal temperature at which a system, harness, or connector may operate in continuous service; generally expressed as a time and temperature.

**operating temperature range** The range between the maximum and the minimum internal temperature of insulation in a system, harness, or connector in continuous service. The lower limit is determined by low-temperature flex test.

**Optional Flame Test** See OFT.

## Glossary of Terms (Continued)

## P

**packaging** The process of physically locating, connecting, and protecting devices or components.

**panel** The side or front (usually metal) of a piece of equipment on which connectors are mounted.

**panel mount** A method of fixing a connector to a board, panel or frame. The mounted connector is usually the receptacle or female connector. The plug or male connector is usually the removable portion.

**PC (Production Control)** Group responsible for directing and regulating the movement of goods through the entire manufacturing cycle, from the requisitioning of raw materials to the delivery of the finished products.

**PCN** See RPN.

**peripheral seal** A seal provided around the periphery of connector inserts to prevent the ingress of fluids or contaminants at the perimeter of mated connectors.

**permeability (chemical)** The passage or diffusion (or rate of passage) of a gas, vapor, liquid or solid through a barrier without physically or chemically affecting it.

**permeability (magnetic)** The measure of how much better a material is than air as a path for magnetic lines of force. Air is assumed to have a permeability of 1.

**permittivity** See dielectric constant.

**pick** The number of crossovers of braiding units per inch of cable.

**pigtail** A short conductor or wire extending from an electrical or electronic device to serve as a jumper or ground connection.

**pin contact** An electrical terminal, usually in a connector. Normally a smaller termination than a lug.

**plastic deformation** Change in dimensions under a load that does not recover when the load is removed.

**plasticizer** A softener or lubricant added to a compound to make it easier to process or more flexible in use.

**plating** The overlaying of a thin coating of metal on metallic components to improve conductivity, facilitate soldering, or prevent corrosion.

**plug** The part of a connector that is normally "removable" from the other, permanently mounted part; usually that half of a two-piece connector that contains the pin contacts.

**plug connector** An electrical connector that is intended to be attached to the free end of a conductor, wire, cable, or bundle, and that couples or mates to a receptacle connector.

**poke through** A term describing stray wires in a solder joint that poke through the insulation.

**polarization (connectors)** A mechanical arrangement of inserts or the shell configuration (referred to as clocking in some instances) that prohibits the mating of mismatched plugs and receptacles. See also clocking.

**polyamide** A polymer formed by the reaction of a diamine and a diacid. Nylons are commercial polyamides characterized by toughness, solvent resistance, and sharp melting point.

**polymer** A material of high molecular weight formed by the chemical union of monomers.

**polyolefin** A family of polymers (such as polyethylene and polypropylene) made from olefin monomers.

**potting** The permanent sealing of the cable end of a connector with a compound or material that thermosets into an elastomer, to exclude moisture and/or to provide strain relief.

**pre-etching** The act of surface preparation before encapsulating.

**pretinned** Description of an electrical component to which solder has been applied prior to soldering.

**pretinned solder cup** Solder cup whose inner surfaces have been precoated with a small amount of solder.

**preform** Usually, the solder ring in a SolderSleeve device.

**primary insulation** The inner member of a dual-wall wire insulation. The insulation applied directly on the conductor. Also referred to as the core. See also core.

**printed circuit board (pcb)** An insulating board serving as a base for a printed circuit. When the printing process is completed, the board may include printed components, as well as printed wiring.

**propagation delay** Time required for an electronic digital device, or transmission network to transfer information from its input to its output.

**propagation delay time** The time between the application of a digital input waveform and the corresponding change in input waveform. It is measured between reference points on the waveforms. The time is generally different for positive-going and negative-going waveforms.

**pulse** A change in the level, over a relatively short period of time, of a signal whose value is normally constant.

**pulse width** The length of time that the pulse voltage is at the transient level. Electronic pulse widths are usually in the millisecond ( $10^{-3}$ ), microsecond ( $10^{-6}$ ) or nanosecond ( $10^{-9}$ ) range.

**push-back** That property of a braid or shield that allows the braid or shield to be pushed back easily along the cable core.

**PVC (Polyvinyl chloride)** A polymer compound used as wire insulation.

**PVDF** Polyvinylidene fluoride.

## Q

**quality assurance** Systematic, planned, and documented activities designed to provide confidence that a product will meet specifications.

**quality control** Activities that monitor, measure, and control the characteristics of a material, component, or product to documented specifications.

**quick disconnect** A type of connector shell that permits rapid locking and unlocking of two connector halves.

## R

**RA flux** Rosin-activated flux.

**radiation crosslinking** The act of crosslinking a material with ionizing radiation. (Most Raychem products are radiation crosslinked, with an electron beam as the form of ionizing radiation.) See also crosslinking by irradiation.

**rated temperature** The maximum temperature at which a component can operate for extended periods with acceptable changes in its basic properties.

**rated voltage** The maximum voltage at which an electric component can operate for extended periods without undue degradation.

**rear release contacts** Connector contacts designed to be released and removed from the rear (wire side) of the connector. The removal tool engages the contact from the rear and pulls the contact out of the connector contact retainer.

**receptacle** Usually the fixed or stationary half of a two-piece multiple contact connector. Also the connector half usually mounted on a panel and containing socket contacts.

**recover (heat-shrinkable components)** Activation of the elastic memory principle (usually with heat) to cause a tubing or molded part to return to its original size.

**Recovered ID (RID)** In heat-shrink tubing, the guaranteed maximum internal diameter of tubing after being freely recovered.



## Glossary of Terms (Continued)

**recovery temperature** The minimum temperature required to fully shrink a product, that is, for the product to recover completely.

**removable contact** A contact that can be mechanically joined to or removed from an insert. Usually special tools are required to lock the contact in place or remove it for repair or replacement.

**residual impulse** defined as the voltage that will pass through the device prior to activation of the GDT.

**residual voltage** defined as the small amount of voltage left on the line after an impulse passes.

**resistance** A measure of the difficulty in moving electrical current through a conductor or insulation when a voltage is applied. It is measured in ohms.

**resonance** A frequency at which capacitive reactance and inductive reactance are equal and therefore cancel one another's effects.

**RF** Abbreviation for radio frequency.

**RG/U** Symbol used to designate coaxial cables that are made to Government Specification (e.g., RG-58U; in this designation the "R" means radio frequency, the "G" means Government, the "58" is the number assigned to the government approval, and the "U" means it is a universal specification).

**ribbon cable** Flat cable with conductors that have been individually insulated together. Its structure is usually characterized by individual colors of insulation for each conductor, although a single color may be used for all conductors.

**RID** See Recovered ID.

**rise time** The time required for a component or logic circuit to change from the quiescent to the transient state when an input is applied. (i.e. elapsed time between application of input and attainment of full output level).

**RMA flux** Rosin-mildly-activated flux.

**root mean square (rms)** The effective value of an alternating current, corresponding to the direct current value that will produce the same heating effect.

**rope lay** A type of conductor lay that uses stranded conductors as components to build a larger conductor.

**RPN (Raychem Product Number)** A 10-digit number (such as 123456-4-001) assigned to every standard product and every product manufactured on a special manufacturing order (SMO). The first 6 digits represent the PCN (Product Control Number), followed by a 1-digit MOD Code, and finally a 3-digit suffix. See also MOD Code and SMO.

**RT and RW specifications** Specification that describes standard product properties. Qualification and acceptance inspection criteria are incorporated into RT and RW specifications. RT and RW specifications are issued and controlled by the Specifications Group.

## S

**SCD (Specification Control Drawing)** Drawing that defines configuration and material parameters. Issued and controlled by the specifications group, SCDs are frequently used in conjunction with RT Specifications for Thermofit products.

**scoop-proof** A feature that prevents the damage of contacts during misaligned mating.

**sealant** Soft, tacky, pliable material that seals where mechanical strength is not required.

**sealed** Environmentally protected by the thermoplastic inserts or core of encapsulant/ adhesive that has melted down around the substrate.

**sealing plug** A plug that is inserted to fill an unoccupied contact aperture in a termination assembly.

**secant modulus** A measure of material stiffness; stiffer material has a higher secant modulus. More specifically, the secant modulus is the ratio of stress (nominal) to corresponding strain at any specified point on the stress-strain curve. It is expressed in force per unit area (usually kilograms per square centimeters or pounds per square inch), and reported together with the specified stress or strain.

**semi-rigid** A cable containing a flexible inner core and a relatively inflexible sheathing.

**service life** Period of time during which the product is expected to perform satisfactorily.

**service loop** The extra cable required at a breakout to facilitate maintenance and servicing.

**service rating** The maximum voltage or current that a termination is designed to carry continuously.

**sheath** The outer covering of a jacket over the insulated conductors to provide mechanical protection for the conductors. Also known as the external conduction surface of a shielded transmission line.

**shelf life** Generally, the length of time a product or material may be stored without deterioration. Specifically, the length of time during which shrink tubing will retain its expanded ID and return to its recovered ID. Usually not a concern—except for some "amnesic" materials. See amnesia.

**shell (connector)** The outside case, usually metallic, into which the insert (body) and contacts are assembled. Shells of mating connector halves usually provide for proper alignment and polarization as well as for protection of projecting contacts.

**shield/shielding (cable)** A conducting envelope, composed of metal strands, which enclose a wire, group of wires or cable so constructed that substantially every point on the surface of the underlying insulation is at ground potential or at some predetermined potential with respect to ground.

**shield/shielding (circuit)** The metal sleeving surrounding one or more of the conductors in a wire circuit to prevent interference, interaction or current leakage. Shielding protects a circuit against crosstalk.

**Shielding Effectiveness (SE)** The reduction in field strength resulting from interposing a metallic barrier between a source and receptor of electromagnetic energy.

**shock (mechanical)** (1) An abrupt impact applied to a stationary object. (2) An abrupt or nonperiodic change in position, characterized by suddenness, and by the development of substantial internal forces.

**shore** A scale for comparing hardness. Higher Shore values represent harder materials. The hardness of a polymer, for example, is usually represented as Shore A or Shore D, with D being harder.

**shrink ratio** An expression of how much the inside diameter of shrink tubing will reduce in size when recovered. The inverse of the expansion ratio. See also expansion ratio.

**shrink temperature, minimum** The minimum temperature at which a product begins to recover.

**SHV** Abbreviation for standard high voltage.

**signal cable** A cable designed to carry current of less than 12 amperes per conductor.

**sine wave** A wave which can be expressed as the sine of a linear function of time, space or both. A waveform, often viewed on an oscilloscope, of a pure alternating current or voltage.

**skew** Any out-of-squareness of the cut end of a piece of tubing after shrinking.

**skin effect** The tendency of alternating currents to flow near the surface of the conductor, thus being restricted to a small part of the total cross-sectional area. This effect increases the resistance and becomes more marked as the frequency rises.

## Glossary of Terms (Continued)

**sleeve** The insulated or metallic covering over the barrel of a terminal.

**SMO (Special Manufacturing Order)** An order to evaluate manufacturing and production capability for a new or changed design for a customer and to provide development samples of potential products for customers. SMO products are separate and distinct from standard products. New, potential products are usually run as SMO products for a minimum of three times before being considered for manufacture as a standard product.

**solder** An alloy that melts at relatively low temperatures and is used to join metals with higher melt points.

**solder contact** A contact or terminal having a cup, hollow cylinder, eyelet or hook to accept a wire for a conventional soldered termination.

**solder cup** A tubular end of a terminal into which a wire conductor is inserted prior to being soldered.

**solderability** The property of a metal surface that allows it to be readily wetted by molten solder. See also wetting.

**soldering** A process of joining metallic surfaces with solder without melting the base metal.

**SolderSleeve device** A device of flux-coated solder preform encapsulated in a heat-recoverable plastic sleeve. Upon the application of heat, the flux and solder will melt and flow as the sleeve recovers, forcing the solder around and onto the metallic parts being joined, thus forming an electrically insulated and strain-relieved joint.

**solid conductor** A conductor composed of one single strand.

**solvent resistance** The ability of a material to retain physical and electrical properties after being immersed in specific solvents.

**SPC** Silver-plated copper.

**SPC (Statistical Process Control)** The use of statistical techniques such as control charts to analyze a process or its output so as to take appropriate actions to achieve and maintain a state of control and to improve the capability of the process.

**specific gravity** The ratio of the density (mass per unit volume) of a material to that of water.

**specific inductive capacity** See dielectric constant.

**splice** A joint connecting conductors with good mechanical strength and conductivity; a terminal that permanently joins two or more wires.

**standard high voltage (SHV)** A quick connect/disconnect connector series employing a bayonet lock coupling and designated to operate safely up to 5000 volts AC. It is the industry standard connector specified by the National Bureau of Standards (NBS) for high voltage use by the Atomic Energy Commission (AEC).

**standing-wave** Distribution of current and voltage on a transmission line, resulting from two sets of waves traveling in opposite directions.

**standing wave ratio** The ratio between maximum and minimum current or voltage along a line. It is a measure of the mismatch between the load and the line. It is equal to 1 when the line impedance is perfectly matched to the load. (In which case the maximum and minimum are the same, as current and voltage do not vary along the line). The perfect match would be a 1 to 1 ratio.

**strain relief** The technique for or act of removing or lessening the strain or stress on a joint, splice, or termination. SolderSleeve devices provide strain relief.

**strain relief clamp** See cable clamp.

**strand** A single unit of a conductor.

**stranded conductor** A conductor composed of more than one single strand. The strands in stranded conductors are usually twisted or braided together.

**strip** To remove insulation from a wire or cable.

**stripe** A continuous longitudinal or spiral color strip applied on the surface of a wire, cable, or tubing for identification.

**substrate** The material—such as a wire, post, or tab—over which an interconnection device is used.

**super high frequency (shf)** The Federal Communications Commission designation for the band from 3,000 to 30,000 MHz in the radio spectrum.

**surface resistance** The ratio of the direct current applied to an insulation system to the current that passes across the surface of the system.

## T

**tape wrap** A term denoting a spirally or longitudinally applied tape material wrapped around insulated or uninsulated wire and used as a mechanical barrier.

**TC** Tinned copper.

**tear test** A test to determine the tear strength of an insulating material. Usually includes exposure to given thermal conditions or a programmed series of conditions for prescribed periods of time.

**temperature rating** The maximum temperature at which the insulating material may be used in continuous operation without loss of its basic properties. Usually time dependent.

**tensile** The amount of axial load (longitudinal stress) required to break or pull the wire from the crimped barrel of the terminal, splice or contact.

**tensile strength** The greatest longitudinal stress that a substance or union can bear without tearing or pulling apart. In crimped terminations, it is the greatest longitudinal stress that a terminal can bear without the wire separating from the terminal.

**thermal rating** The effect of heat or cold applied at such a rate that nonuniform thermal expansion or contraction occurs within a given material or combination of materials. In electrical terminations, the effect can cause inserts and other insulation material to pull away from the metal parts.

**thermal shock** The effect of heat or cold applied at such a rate that nonuniform thermal expansion or contraction occurs within a given material or combination materials. The effect can cause inserts and other insulation materials to pull away from metal parts.

**thermochromic indicator** Special compound that changes color when the proper wetting temperature has been reached in the solder joint.

**thermoplastic** A material that softens (melts and flows) when heated and becomes firm when cooled. A type of plastic that can be remelted a number of times without any important change in properties. Nylon, GE's Lexan, and PVC—examples of this type of plastic—are resilient after molding.

**thermoset** A material that hardens or sets when heated and, once set, cannot be resoftened by heating. This application of heat is called "curing."

**thermosetting plastic** A type of plastic in which an irreversible chemical reaction takes place while the plastic is being molded under heat and pressure.

**thermosetting adhesive** A curing adhesive that requires heat to promote curing. This type of plastic will not soften when reheated. See epoxy.

**time-delay** A circuit that delays the transmission of an impulse for a definite and desired period of time.

**TNC Connector** A radio frequency connector covered by Military Specification. It has an impedance of 50 ohms and is designed to operate in a 0 to 11 GHz frequency range. Reliability is assured by a threaded coupling that can be safely wired to prevent accidental disconnect.

**tolerance** The total amount by which a quantity is allowed to vary from nominal; thus, the tolerance is half the algebraic difference between the maximum and minimum limits.

---

**Glossary of Terms** (Continued)

---

**traceability** The ability to trace the history, application, or location of an item and like items or activities by means of recorded identification. The lot number/manufacturing order (MO) number, or SMO number used to identify items or groups of items is traceable back to inspection and procurement records.

**transmission cable** Two or more transmission lines. If the structure is flat, it is sometimes called flat transmission cable to differentiate it from a round structure such as a jacketed group of coaxial cables. See also transmission line.

**transmission line** A signal-carrying circuit with controlled electrical characteristics; used to transmit high-frequency or narrow-pulse signals.

**triaxial cable** A concentrically constructed cable, with a common axis, composed of a center connector, first shield, and second shield, all insulated from each other.

**U**

**UG** Symbol used to describe coaxial connectors that were made to a Government specification. This specification is now obsolete.

**UL (Underwriters' Laboratories)** A nonprofit independent testing organization that operates a listing service for electrical and electronic materials and equipment.

**ultra-high frequency (uhf)** A Federal Communications Commission designation for the band from 300 to 3000 MHz on the radio spectrum. In television — channels 14 to 83 or 470 to 890 MHz.

**ultraviolet degradation** The degradation caused by long-time exposure of a material to sunlight or other ultraviolet rays.

**V**

**velocity of propagation** The ratio of the speed of a radio frequency wave within a cable or dielectric as compared with the same wave in free space.

**very high frequency (vhf)** A Federal Communications Commission designation for the band from 30 to 300 MHz on the radio spectrum.

**voice-frequency (vf)** Any frequency within that part of the radio frequency range essential to speech transmission of a commercial quality (i.e., 300 to 3400 Hz). Also referred to as telephone frequency.

**volt (V)** The unit of measurement for electromotive force (emf). It is equivalent to the force required to produce 1 ampere through a resistance of 1 ohm.

**voltage (E)** The term most often used to designate electrical pressure that exists between two points and is capable of producing a flow of current when a closed circuit is connected between the two points. Voltage is measured in volts, millivolts, microvolts and kilovolts. The terms electromotive force (emf), potential, potential difference and voltage drop are often referred to as voltage.

**voltage breakdown** The voltage necessary to cause insulation failure.

**voltage drop** The voltage developed across a component or conductor by the flow of current through the resistance or impedance of that component or conductor.

**voltage hold over** refers to the maximum line voltage at which recovery of the GDT to its inactive state will take place within a specified period of time (normally 150ms) after an induced lightning pulse (normally 10/1000ms) has been applied.

**voltage rating** The voltage that may be continuously applied to wire.

**volume resistivity** Reciprocal of conductivity; the resistance of a material to the flow of electrical current, usually expressed in ohm-cm.

**VSWR (Voltage Standing Wave Ratio)** A measure of the uniformity of impedance along a transmission line, or the quality of the impedance match between a line and the source or load.

**VW-1** A rating determined by the Underwriters' Laboratories' (UL) optional Vertical Wire Flame Test—the most difficult flame test for tubing. Tubings with a VW-1 rating are highly flame-retardant.

**W**

**wall thickness** The thickness of the applied insulation or jacket.

**water absorption test** A method to determine the water uptake of a material. It is time and temperature dependent.

**water blocking** The sticking together of insulated wires; usually caused by heat.

**wavelength** The distance between two points which are in phase on adjacent waves. It is the distance traveled by the wave in the same span of one cycle. Electromagnetic waves (both light and radio) have a speed in space of about 300,000,000 meters (186,000 miles) per second. Thus wavelength in meters is equal to 300,000,000 divided by frequency.

**wetting (solder)** The formation of a relatively uniform, smooth, unbroken, and adherent film of solder to a base metal. Also, the free flow of solder alloy, with proper application of heat and flux, on a metallic surface to produce an adherent bond.

**wicking** The longitudinal flow of a liquid in a wire or cable construction due to capillary action. (This may also apply to solder.)

**wire** A single conductor covered with insulation.

**wire dress** The orderly arrangement of wires and laced harnesses.

**withstanding voltage** The test voltage an electrical connector can withstand for one minute without showing evidence of electrical breakdown when the voltage is applied between conductors and grounding devices of the connectors in various combinations.

**Z**

**Z** Letter symbol used to represent impedance in ohms.



## Part Number Index

**Note:** This index lists all cataloged parts by base no. only. Complete part nos. (with prefixes and/or suffixes) are shown on the page(s) indicated.

| Part No. | Page                                                                          |
|----------|-------------------------------------------------------------------------------|
| 010*     | 2-105 to 2-107, 2-111, 2-112, 2-115 to 2-117, 2-127, 2-134, 2-137             |
| 031*     | 2-104, 2-107 to 2-110, 2-112 to 2-117, 2-141, 2-142                           |
| 032*     | 2-104 to 2-106, 2-110, 2-111, 2-114, 2-115, 2-117, 2-140 to 2-143             |
| 033*     | 2-118, 2-120 to 2-122                                                         |
| 051*     | 2-104, 2-107, 2-108, 2-110, 2-113, 2-114, 2-116, 2-117, 2-143, 2-146, 2-147   |
| 052*     | 2-104 to 2-106, 2-110, 2-111, 2-115, 2-117, 2-118, 2-140, 2-141, 2-143, 2-144 |
| 053*     | 2-118, 2-120, 2-121, 2-122, 2-146, 2-147                                      |
| 131*     | 2-126, 2-127, 2-145                                                           |
| 132*     | 2-124, 2-125, 2-144                                                           |
| 141*     | 2-129, 2-130, 2-132 to 2-134                                                  |
| 142*     | 2-129, 2-131, 2-133                                                           |
| 143*     | 2-130, 2-135, 2-136                                                           |
| 144*     | 2-137                                                                         |
| 145*     | 2-137                                                                         |
| 19840    | 3-33                                                                          |
| 23174    | 1-77                                                                          |
| 31807    | 10-5                                                                          |
| 31808    | 10-5                                                                          |
| 31811    | 10-6                                                                          |
| 31812    | 10-6                                                                          |
| 31880    | 10-30                                                                         |
| 31890    | 10-30                                                                         |
| 31894    | 10-30                                                                         |
| 31895    | 10-30                                                                         |
| 31897    | 10-30                                                                         |
| 33114    | 10-6                                                                          |
| 33115    | 10-6                                                                          |
| 33220    | 10-5                                                                          |
| 33457    | 10-5                                                                          |
| 33459    | 10-5                                                                          |
| 33461    | 10-5                                                                          |
| 33463    | 10-5                                                                          |
| 33466    | 10-5                                                                          |
| 33467    | 10-5                                                                          |
| 34103    | 10-5                                                                          |
| 34104    | 10-5                                                                          |
| 34110    | 10-5                                                                          |
| 34112    | 10-5                                                                          |
| 34114    | 10-5                                                                          |
| 34115    | 10-5                                                                          |
| 34119    | 10-5                                                                          |
| 34125    | 10-5                                                                          |
| 34126    | 10-5                                                                          |
| 34318    | 10-13                                                                         |
| 35107    | 10-31                                                                         |
| 35108    | 10-31                                                                         |
| 35109    | 10-31                                                                         |
| 35110    | 10-31                                                                         |
| 35111    | 10-31                                                                         |

| Part No. | Page                |
|----------|---------------------|
| 35112    | 10-31               |
| 35135    | 10-5                |
| 35476    | 10-5                |
| 36149    | 10-30, 10-32, 10-33 |
| 36150    | 10-30               |
| 36153    | 10-30, 10-32, 10-33 |
| 36154    | 10-30               |
| 36161    | 10-31, 10-34        |
| 36918    | 10-6                |
| 36919    | 10-6                |
| 36935    | 10-6                |
| 50079    | 8-149               |
| 50080    | 8-149               |
| 50834    | 10-11               |
| 50836    | 10-11               |
| 50844    | 10-20               |
| 50845    | 10-11, 10-20        |
| 50846    | 10-11, 10-20        |
| 50847    | 10-20               |
| 50848    | 10-20               |
| 51565    | 8-150, 8-151        |
| 51692    | 2-6, 2-88           |
| 51863    | 10-30, 10-32, 10-33 |
| 51864    | 10-31, 10-33        |
| 52077    | 10-31, 10-34        |
| 52189    | 10-30               |
| 52273    | 10-32               |
| 52274    | 10-33               |
| 53049    | 10-32               |
| 53050    | 10-32               |
| 53051    | 10-32               |
| 53053    | 10-32               |
| 53054    | 10-32               |
| 53055    | 10-32               |
| 53056    | 10-32               |
| 53057    | 10-32               |
| 53073    | 10-30               |
| 53078    | 10-32               |
| 53400    | 10-39               |
| 53401    | 10-39               |
| 53402    | 10-39               |
| 53403    | 10-39               |
| 53404    | 10-39               |
| 53405    | 10-39               |
| 53406    | 10-39               |
| 53407    | 10-39               |
| 53408    | 10-39               |
| 53409    | 10-39               |
| 53410    | 10-39               |
| 53411    | 10-39               |
| 53412    | 10-39               |
| 53413    | 10-39               |
| 53414    | 10-39               |
| 53415    | 10-39               |
| 53416    | 10-39               |
| 53417    | 10-39               |
| 53418    | 10-39               |
| 53419    | 10-39               |
| 53420    | 10-39               |
| 53421    | 10-39               |
| 53422    | 10-39               |
| 53423    | 10-40               |

| Part No. | Page              |
|----------|-------------------|
| 53424    | 10-40             |
| 53425    | 10-40             |
| 53426    | 10-40             |
| 53427    | 10-40             |
| 53428    | 10-40             |
| 53429    | 10-40             |
| 53546    | 10-36             |
| 53547    | 10-36             |
| 53548    | 10-36             |
| 53549    | 10-36             |
| 53809    | 10-39             |
| 54310    | 10-30             |
| 54311    | 10-30             |
| 54312    | 10-30             |
| 55832    | 10-26             |
| 55833    | 10-26             |
| 55834    | 10-26             |
| 55835    | 10-26             |
| 55836    | 10-26             |
| 55837    | 10-26             |
| 55838    | 10-26             |
| 55839    | 10-26             |
| 55840    | 10-26             |
| 55841    | 10-26             |
| 55844    | 10-26             |
| 55944    | 10-25             |
| 55982    | 10-26             |
| 55984    | 10-27             |
| 58107    | 1-13              |
| 58212    | 8-64              |
| 58284    | 8-28              |
| 58532    | 3-33              |
| 59524    | 1-106             |
| 59993    | 8-64              |
| 60789    | 9-29              |
| 61276    | 9-29              |
| 66005    | 1-100             |
| 66009    | 1-100             |
| 66010    | 1-100, 1-106      |
| 66011    | 1-100, 1-106      |
| 66021    | 1-100             |
| 66026    | 1-100, 1-106      |
| 66027    | 1-100             |
| 66086    | 1-100             |
| 66098    | 8-145             |
| 66099    | 8-145, 9-29, 9-33 |
| 66100    | 8-145             |
| 66101    | 8-145, 9-29, 9-33 |
| 66102    | 8-145             |
| 66103    | 8-145             |
| 66104    | 8-145             |
| 66105    | 8-145             |
| 66106    | 8-145             |
| 66107    | 8-145             |
| 66108    | 8-145             |
| 66109    | 8-145             |
| 66253    | 8-147             |
| 66254    | 8-147             |
| 66255    | 8-147             |
| 66256    | 8-147             |
| 66259    | 8-147, 9-30       |
| 66260    | 8-147             |

| Part No. | Page                               |
|----------|------------------------------------|
| 66261    | 8-147, 9-30                        |
| 66262    | 8-147                              |
| 66331    | 8-145                              |
| 66332    | 8-145                              |
| 66358    | 8-145                              |
| 66359    | 8-145                              |
| 66360    | 8-145                              |
| 66361    | 8-145                              |
| 66393    | 8-145                              |
| 66394    | 8-145                              |
| 66399    | 8-145, 9-29, 9-33                  |
| 66400    | 8-145, 9-29, 9-33                  |
| 66405    | 8-145                              |
| 66406    | 8-145                              |
| 66424    | 8-145                              |
| 66425    | 8-145                              |
| 66428    | 8-145                              |
| 66429    | 8-145                              |
| 66563    | 8-145                              |
| 66564    | 8-145                              |
| 66565    | 8-145                              |
| 66566    | 8-145                              |
| 66577    | 8-146                              |
| 66578    | 8-146                              |
| 66579    | 8-146                              |
| 66580    | 8-146                              |
| 66581    | 8-146                              |
| 66582    | 8-146                              |
| 66583    | 8-146                              |
| 66584    | 8-146                              |
| 66585    | 8-146                              |
| 66586    | 8-146                              |
| 66587    | 8-146                              |
| 66588    | 8-146                              |
| 66589    | 8-146                              |
| 66590    | 8-146                              |
| 66591    | 8-146                              |
| 66592    | 8-146                              |
| 66593    | 8-146                              |
| 66594    | 8-146                              |
| 66595    | 8-146                              |
| 66596    | 8-146                              |
| 66597    | 8-145                              |
| 66598    | 8-145                              |
| 66601    | 8-145                              |
| 66602    | 8-145                              |
| 66740    | 8-147, 9-30                        |
| 66741    | 8-147, 9-30                        |
| 87961    | 1-95, 1-96, 1-97                   |
| 87962    | 1-95, 1-96, 1-97                   |
| 87964    | 1-95, 1-96, 1-97                   |
| 87965    | 1-96, 1-97                         |
| 87971    | 1-93, 1-94                         |
| 90005    | 1-106                              |
| 91066    | 3-30, 3-33, 8-28                   |
| 91067    | 8-28, 8-39, 8-40, 8-44, 8-45, 8-69 |
| 91074    | 8-28                               |
| 91555    | 1-106                              |
| 102188   | 1-93, 1-94, 1-95, 1-96, 1-97, 1-98 |
| 102192   | 1-98                               |
| 102193   | 1-98                               |

## Part Number Index (Continued)

| Part No. | Page             | Part No. | Page         | Part No. | Page              | Part No. | Page             |
|----------|------------------|----------|--------------|----------|-------------------|----------|------------------|
| 102196   | 1-98             | 152899   | 10-17        | 202507   | 8-144             | 204518   | 8-72, 8-97       |
| 102275   | 1-92, 1-93, 1-94 | 153103   | 10-19, 10-20 | 202508   | 8-144             | 204519   | 8-70, 8-98, 8-99 |
| 102277   | 1-95, 1-96, 1-97 | 153104   | 10-19, 10-20 | 202567   | 8-155             | 204520   | 8-72, 8-97       |
| 102278   | 1-96, 1-97       | 153105   | 10-19, 10-20 | 202617   | 8-155             | 204521   | 8-70, 8-98, 8-99 |
| 102281   | 1-98             | 153106   | 10-19, 10-20 | 202624   | 8-143             | 204522   | 8-72, 8-97       |
| 125905   | 4-53, 8-87       | 153107   | 10-19, 10-20 | 202625   | 8-143             | 204523   | 8-70, 8-98, 8-99 |
| 131250   | 6-8              | 153108   | 10-19, 10-20 | 202648   | 8-143, 8-243      | 204524   | 8-72, 8-98       |
| 134265   | 10-20            | 153109   | 10-19, 10-20 | 202649   | 8-143             | 204525   | 8-70, 8-99       |
| 151437   | 10-17            | 153110   | 10-20        | 202650   | 8-143             | 204526   | 8-72, 8-98       |
| 151438   | 10-17            | 153111   | 10-20        | 202651   | 8-143             | 204527   | 8-70, 8-99       |
| 151439   | 10-17            | 153112   | 10-20        | 202680   | 8-153             | 204528   | 8-72, 8-98       |
| 151440   | 10-17            | 153113   | 10-20        | 202681   | 8-153             | 204529   | 8-70, 8-99       |
| 151441   | 10-17            | 153114   | 10-20        | 202725   | 8-144             | 204530   | 8-72, 8-98       |
| 151458   | 10-17            | 153115   | 10-20        | 202726   | 8-144             | 204531   | 8-70, 8-99       |
| 151626   | 3-21             | 153116   | 10-20        | 202759   | 8-143             | 204532   | 8-72, 8-98       |
| 152642   | 10-19, 10-20     | 153400   | 10-18        | 202760   | 8-143, 8-243      | 204533   | 8-70, 8-99       |
| 152643   | 10-19, 10-20     | 153401   | 10-18        | 202764   | 8-155             | 204534   | 8-72, 8-98       |
| 152644   | 10-19, 10-20     | 153402   | 10-18        | 202786   | 8-152             | 204535   | 8-70, 8-99       |
| 152645   | 10-19, 10-20     | 153403   | 10-18        | 202789   | 8-153             | 204536   | 8-72, 8-97, 8-98 |
| 152646   | 10-19, 10-20     | 153475   | 10-19        | 202795   | 8-154             | 204537   | 8-70, 8-99       |
| 152647   | 10-19, 10-20     | 153476   | 10-20        | 202832   | 8-155             | 204538   | 8-72, 8-97, 8-98 |
| 152648   | 10-19            | 153493   | 10-19        | 202946   | 1-78              | 204539   | 8-70, 8-99       |
| 152654   | 10-19, 10-20     | 154924   | 10-17        | 202947   | 1-78              | 204540   | 8-72, 8-97, 8-98 |
| 152655   | 10-19            | 154927   | 10-18        | 203802   | 8-105, 9-28, 9-36 | 204541   | 8-70, 8-99       |
| 152656   | 10-19, 10-20     | 154930   | 10-18        | 203803   | 8-107             | 204542   | 8-72, 8-97, 8-98 |
| 152657   | 10-19, 10-20     | 184113   | 10-25        | 203804   | 8-107             | 204543   | 8-70, 8-99       |
| 152658   | 10-19, 10-20     | 194081   | 8-40         | 203814   | 8-114             | 204544   | 8-72, 8-97, 8-98 |
| 152659   | 10-19, 10-20     | 194083   | 8-40         | 203816   | 8-105, 9-28, 9-36 | 204545   | 8-70, 8-99       |
| 152660   | 10-19            | 200333   | 8-144, 9-35  | 203839   | 4-33, 4-59        | 204546   | 8-72, 8-97, 8-98 |
| 152661   | 10-19, 10-20     | 200336   | 8-144        | 203874   | 8-105             | 204547   | 8-70, 8-99       |
| 152662   | 10-19, 10-20     | 200679   | 9-35         | 203875   | 8-105             | 204682   | 8-110            |
| 152663   | 10-19, 10-20     | 200681   | 9-35         | 203881   | 8-113             | 204683   | 8-110            |
| 152869   | 10-18            | 201097   | 8-148        | 203882   | 8-113             | 204684   | 8-110            |
| 152870   | 10-18            | 201098   | 8-148        | 204027   | 8-108             | 204685   | 8-110            |
| 152871   | 10-18            | 201143   | 8-148, 8-149 | 204030   | 8-108             | 204686   | 8-110            |
| 152872   | 10-18            | 201144   | 8-148, 8-149 | 204219   | 8-144             | 204687   | 8-110            |
| 152873   | 10-18            | 201145   | 8-148, 8-149 | 204259   | 8-107             | 204688   | 8-110            |
| 152874   | 10-18            | 201146   | 8-148, 8-149 | 204260   | 8-107             | 204689   | 8-111            |
| 152875   | 10-18            | 201328   | 8-144, 9-35  | 204281   | 8-107             | 204690   | 8-111            |
| 152876   | 10-18            | 201330   | 8-144        | 204282   | 8-107             | 204691   | 8-112            |
| 152877   | 10-18            | 201332   | 8-144        | 204337   | 8-114             | 204692   | 8-112            |
| 152878   | 10-18            | 201334   | 8-144        | 204351   | 8-68              | 204693   | 8-108            |
| 152879   | 10-18            | 201511   | 8-148, 8-149 | 204370   | 8-68, 8-74, 8-103 | 204694   | 8-108            |
| 152880   | 10-18            | 201568   | 8-144, 9-35  | 204500   | 8-72, 8-80, 8-97  | 204727   | 8-107            |
| 152881   | 10-18            | 201570   | 8-144        | 204501   | 8-70              | 204728   | 8-107            |
| 152882   | 10-18            | 201578   | 8-144        | 204501   | 8-80, 8-99        | 204729   | 8-107            |
| 152883   | 10-18            | 201580   | 8-144        | 204502   | 8-72, 8-80, 8-97  | 204731   | 8-107            |
| 152884   | 10-18            | 201611   | 8-144        | 204503   | 8-70, 8-80, 8-99  | 204732   | 8-107            |
| 152885   | 10-18            | 201613   | 8-144        | 204504   | 8-72, 8-80, 8-97  | 204733   | 8-107            |
| 152886   | 10-18            | 201645   | 9-35         | 204505   | 8-70, 8-80, 8-99  | 204734   | 8-107            |
| 152887   | 10-18            | 202275   | 8-152        | 204506   | 8-72, 8-80, 8-97  | 204735   | 8-107            |
| 152888   | 10-17            | 202279   | 8-152        | 204507   | 8-70, 8-80, 8-99  | 204736   | 8-107            |
| 152889   | 10-17            | 202283   | 8-154        | 204508   | 8-72, 8-80, 8-97  | 204737   | 8-107            |
| 152890   | 10-17            | 202287   | 8-154        | 204509   | 8-70, 8-80, 8-99  | 204738   | 8-107            |
| 152891   | 10-17            | 202301   | 8-155        | 204510   | 8-72, 8-97        | 204740   | 8-107            |
| 152892   | 10-17            | 202305   | 8-155        | 204511   | 8-70, 8-99        | 204741   | 8-107            |
| 152893   | 10-17            | 202410   | 8-144        | 204512   | 8-72, 8-97        | 204742   | 8-107            |
| 152894   | 10-17            | 202411   | 8-144        | 204513   | 8-70, 8-98, 8-99  | 204743   | 8-107            |
| 152895   | 10-17            | 202417   | 8-143        | 204514   | 8-72, 8-97        | 204744   | 8-107            |
| 152896   | 10-17            | 202418   | 8-143        | 204515   | 8-70, 8-98, 8-99  | 204745   | 8-107            |
| 152897   | 10-17            | 202421   | 8-143        | 204516   | 8-72, 8-97        | 204746   | 8-107            |
| 152898   | 10-17            | 202422   | 8-143        | 204517   | 8-70, 8-98, 8-99  | 204747   | 8-107            |

## Part Number Index (Continued)

| Part No. | Page              |
|----------|-------------------|
| 204748   | 8-107             |
| 204749   | 8-107             |
| 204750   | 8-107             |
| 204760   | 4-33, 4-59        |
| 204818   | 8-109             |
| 204819   | 8-109             |
| 204873   | 4-53              |
| 204938   | 4-53              |
| 205083   | 8-114             |
| 205089   | 8-38, 8-44, 8-103 |
| 205090   | 8-38              |
| 205103   | 4-53              |
| 205116   | 4-53              |
| 205117   | 4-54              |
| 205120   | 8-113             |
| 205161   | 8-41, 8-59, 8-97  |
| 205162   | 8-41, 8-59, 8-99  |
| 205163   | 8-41, 8-59, 8-97  |
| 205164   | 8-41, 8-59, 8-99  |
| 205165   | 8-41, 8-59, 8-97  |
| 205166   | 8-41, 8-59, 8-99  |
| 205167   | 8-41, 8-59, 8-97  |
| 205168   | 8-41, 8-59, 8-99  |
| 205169   | 8-41, 8-59, 8-97  |
| 205170   | 8-41, 8-59, 8-99  |
| 205171   | 8-105             |
| 205172   | 8-105             |
| 205282   | 4-59              |
| 205283   | 4-59              |
| 205402   | 4-33, 4-59        |
| 205408   | 8-41, 8-99        |
| 205409   | 8-41, 8-99        |
| 205412   | 8-41, 8-99        |
| 205413   | 8-41, 8-99        |
| 205414   | 8-41, 8-99        |
| 205415   | 8-41, 8-99        |
| 205416   | 8-41, 8-98        |
| 205417   | 8-41, 8-98        |
| 205418   | 8-41, 8-98        |
| 205419   | 8-41, 8-98        |
| 205420   | 8-41, 8-98        |
| 205431   | 8-41, 8-99        |
| 205432   | 8-41, 8-97, 8-98  |
| 205433   | 8-41, 8-97, 8-98  |
| 205483   | 8-41, 8-97, 8-98  |
| 205484   | 8-41, 8-97, 8-98  |
| 205485   | 8-41, 8-97, 8-98  |
| 205486   | 8-41, 8-99        |
| 205487   | 8-41, 8-99        |
| 205488   | 8-41, 8-99        |
| 205544   | 4-53              |
| 205547   | 4-53              |
| 205548   | 4-54              |
| 205555   | 8-41, 8-97        |
| 205556   | 8-41, 8-98, 8-99  |
| 205557   | 8-41, 8-97        |
| 205558   | 8-41, 8-98, 8-99  |
| 205559   | 8-41, 8-97        |
| 205560   | 8-41, 8-98, 8-99  |
| 205561   | 8-41, 8-97        |
| 205562   | 8-41, 8-98, 8-99  |
| 205563   | 8-41, 8-97        |

| Part No. | Page                   |
|----------|------------------------|
| 205564   | 8-41, 8-98, 8-99       |
| 205574   | 4-33, 4-59             |
| 205694   | 8-113                  |
| 205753   | 4-53                   |
| 205763   | 4-54                   |
| 205791   | 4-53                   |
| 205817   | 8-37, 8-67, 8-101      |
| 205851   | 4-54                   |
| 205975   | 4-33, 4-59             |
| 206063   | 8-74, 8-103            |
| 206064   | 8-75, 8-103            |
| 206065   | 8-75, 8-103            |
| 206066   | 8-74, 8-103            |
| 206071   | 8-75, 8-103            |
| 206210   | 4-53                   |
| 206211   | 4-54                   |
| 206495   | 8-74                   |
| 206496   | 8-75                   |
| 206498   | 8-74, 8-103            |
| 206499   | 8-75, 8-103            |
| 206500   | 8-74, 8-103            |
| 206501   | 8-75, 8-103            |
| 206502   | 8-74, 8-103            |
| 206503   | 8-75, 8-103            |
| 206504   | 8-74, 8-103            |
| 206505   | 8-75, 8-103            |
| 206793   | 8-45, 8-103            |
| 206794   | 8-44                   |
| 206795   | 8-45                   |
| 206798   | 8-44, 8-103            |
| 206799   | 8-45, 8-103            |
| 206800   | 8-44, 8-103            |
| 206801   | 8-45, 8-103            |
| 206802   | 8-44, 8-103            |
| 206803   | 8-45, 8-103            |
| 206804   | 8-44, 8-103            |
| 206805   | 8-45, 8-103            |
| 207252   | 8-44, 8-103            |
| 207253   | 8-45, 8-103            |
| 207683   | 8-69, 8-77             |
| 207684   | 8-69, 8-77             |
| 208019   | 4-15                   |
| 208021   | 4-15                   |
| 208215   | 4-20                   |
| 208262   | 4-19, 4-27, 4-53       |
| 208264   | 4-19, 4-40, 4-53       |
| 208265   | 4-19, 4-27, 4-40, 4-53 |
| 208267   | 4-19, 4-27, 4-40, 4-53 |
| 208268   | 4-19, 4-27, 4-54       |
| 208270   | 4-19, 4-27, 4-40, 4-54 |
| 208271   | 4-19, 4-27, 4-54       |
| 208273   | 4-19, 4-27, 4-40, 4-54 |
| 208550   | 8-60, 8-102            |
| 208551   | 8-60, 8-102            |
| 208552   | 8-60, 8-66, 8-102      |
| 208597   | 4-35                   |
| 208598   | 4-35                   |
| 208599   | 4-35                   |
| 208600   | 4-35                   |
| 208742   | 8-60, 8-102            |
| 208743   | 8-60, 8-66, 8-102      |
| 208744   | 8-60, 8-102            |

| Part No. | Page              |
|----------|-------------------|
| 208778   | 8-39              |
| 208810   | 8-60, 8-102       |
| 208811   | 8-60, 8-102       |
| 208866   | 8-77              |
| 208867   | 8-77              |
| 208868   | 8-77              |
| 208869   | 8-77              |
| 208870   | 8-77              |
| 208871   | 8-77              |
| 208872   | 8-77              |
| 208873   | 8-77              |
| 208874   | 8-77              |
| 208875   | 8-77              |
| 208876   | 8-77              |
| 208877   | 8-77              |
| 208970   | 4-35              |
| 208971   | 4-35              |
| 208972   | 4-26, 4-36        |
| 208973   | 4-26, 4-37        |
| 208974   | 4-37              |
| 208975   | 4-37              |
| 208976   | 4-37              |
| 208977   | 4-37              |
| 211010   | 8-79              |
| 211011   | 8-79              |
| 211012   | 8-79              |
| 211013   | 8-79              |
| 211014   | 8-79              |
| 211015   | 8-79              |
| 211111   | 8-60, 8-66, 8-102 |
| 211112   | 8-60, 8-66, 8-102 |
| 211159   | 8-63              |
| 211161   | 8-63              |
| 211216   | 4-23              |
| 211229   | 4-23              |
| 211245   | 4-20              |
| 211431   | 4-20              |
| 211525   | 8-98              |
| 211526   | 8-98              |
| 211527   | 8-98              |
| 211528   | 8-98              |
| 211529   | 8-98              |
| 211536   | 8-98              |
| 211537   | 8-98              |
| 211538   | 8-98              |
| 211539   | 8-98              |
| 211540   | 8-98              |
| 211541   | 8-98              |
| 211558   | 4-23              |
| 211600   | 4-33              |
| 211633   | 8-45              |
| 211634   | 8-45              |
| 211635   | 8-45              |
| 211636   | 8-45              |
| 211637   | 8-45              |
| 211638   | 8-44              |
| 211639   | 8-44              |
| 211640   | 8-44              |
| 211641   | 8-44              |
| 211642   | 8-44              |
| 211667   | 8-75              |
| 211668   | 8-75              |

| Part No. | Page                    |
|----------|-------------------------|
| 211669   | 8-75                    |
| 211670   | 8-75                    |
| 211671   | 8-75                    |
| 211672   | 8-75                    |
| 211673   | 8-74                    |
| 211674   | 8-74                    |
| 211675   | 8-74                    |
| 211676   | 8-74                    |
| 211677   | 8-74                    |
| 211678   | 8-74                    |
| 211883   | 8-37, 8-67, 8-94, 8-101 |
| 211901   | 4-40, 4-26, 4-36        |
| 211992   | 4-37                    |
| 212007   | 8-63                    |
| 212008   | 8-63                    |
| 212013   | 8-63                    |
| 212014   | 8-63                    |
| 212049   | 8-61                    |
| 212051   | 8-61                    |
| 212053   | 8-61                    |
| 212055   | 8-61                    |
| 212057   | 8-61                    |
| 212059   | 8-60, 8-66, 8-102       |
| 212447   | 6-25, 8-93, 8-101       |
| 212452   | 8-93                    |
| 212491   | 8-60, 8-66, 8-102       |
| 212498   | 8-60, 8-102             |
| 212502   | 8-60, 8-102             |
| 212506   | 8-60, 8-102             |
| 212510   | 8-60, 8-102             |
| 212514   | 8-60, 8-102             |
| 212518   | 8-60, 8-102             |
| 212522   | 8-60, 8-66, 8-102       |
| 212526   | 8-60, 8-66, 8-102       |
| 212530   | 8-60, 8-66, 8-102       |
| 212534   | 8-60, 8-66, 8-102       |
| 212538   | 8-60, 8-102             |
| 212542   | 8-60, 8-102             |
| 212565   | 8-39                    |
| 212618   | 8-144                   |
| 212933   | 8-76                    |
| 213090   | 8-143                   |
| 213091   | 8-143                   |
| 213092   | 8-143                   |
| 213093   | 8-143                   |
| 213118   | 8-76                    |
| 213122   | 4-40                    |
| 213123   | 4-40                    |
| 213153   | 8-76                    |
| 213156   | 4-40                    |
| 213157   | 4-40                    |
| 220015   | 2-5                     |
| 220215   | 1-24                    |
| 220216   | 1-24                    |
| 221117   | 2-14, 2-88              |
| 221265   | 2-8                     |
| 221313   | 2-88                    |
| 221447   | 2-22, 2-90              |
| 221597   | 4-22                    |
| 221980   | 8-64                    |
| 222018   | 4-23, 4-56              |

## Part Number Index (Continued)

| Part No. | Page                         | Part No. | Page                | Part No. | Page  | Part No. | Page                |
|----------|------------------------------|----------|---------------------|----------|-------|----------|---------------------|
| 222190   | 4-25, 4-40                   | 277159   | 10-27               | 322324   | 10-14 | 324045   | 10-42               |
| 222191   | 4-25, 4-40                   | 277160   | 10-27               | 322326   | 10-14 | 324046   | 10-42               |
| 225014   | 2-6, 2-88                    | 277161   | 10-27               | 322329   | 10-13 | 324047   | 10-42               |
| 225088   | 8-150                        | 277162   | 10-27               | 322334   | 10-13 | 324048   | 10-42               |
| 225092   | 2-6, 2-88                    | 277163   | 10-27               | 322335   | 10-13 | 324049   | 10-42               |
| 225093   | 2-6, 2-88                    | 277164   | 10-27               | 322337   | 10-16 | 324050   | 10-42               |
| 225094   | 2-6, 2-88                    | 277165   | 10-27               | 322338   | 10-16 | 324051   | 10-42               |
| 225345   | 2-10                         | 277168   | 10-27               | 322339   | 10-13 | 324052   | 10-42               |
| 225348   | 2-10, 2-88                   | 320093   | 10-5                | 322345   | 10-14 | 324053   | 10-42               |
| 225361   | 2-6                          | 320344   | 10-5                | 322347   | 10-14 | 324054   | 10-42               |
| 225389   | 2-6                          | 320383   | 10-6                | 322363   | 10-15 | 324055   | 10-42               |
| 225392   | 2-6                          | 320551   | 10-30, 10-32, 10-33 | 322365   | 10-15 | 324056   | 10-42               |
| 225532   | 2-14, 2-88                   | 320553   | 10-30               | 322366   | 10-15 | 324057   | 10-42               |
| 225550   | 2-10, 2-88                   | 320559   | 10-36               | 322375   | 10-15 | 324058   | 10-42               |
| 225551   | 2-10, 2-88                   | 320561   | 10-31, 10-33        | 322695   | 10-12 | 324061   | 10-5                |
| 225609   | 2-89                         | 320562   | 10-36               | 322733   | 10-12 | 324075   | 10-30               |
| 225661   | 2-6                          | 320563   | 10-31, 10-33        | 322797   | 10-12 | 324082   | 10-42               |
| 225664   | 2-6                          | 320564   | 10-31, 10-33        | 322798   | 10-12 | 324083   | 10-42               |
| 225668   | 2-6                          | 320567   | 10-31               | 322799   | 10-12 | 324084   | 10-42               |
| 225669   | 2-6                          | 320568   | 10-31, 10-34        | 322822   | 10-13 | 324085   | 10-42               |
| 225790   | 4-24, 4-58                   | 320569   | 10-31, 10-34        | 322870   | 10-6  | 324113   | 10-42               |
| 225791   | 4-24, 4-58                   | 320570   | 10-36               | 323030   | 10-13 | 324159   | 10-31               |
| 225792   | 4-57                         | 320571   | 10-30, 10-32, 10-33 | 323062   | 10-12 | 324185   | 10-42               |
| 225831   | 4-23, 4-56                   | 320572   | 10-30, 10-32, 10-33 | 323064   | 10-12 | 324187   | 10-42               |
| 225837   | 4-23, 4-56                   | 320573   | 10-30, 10-32, 10-33 | 323066   | 10-15 | 324188   | 10-42               |
| 225935   | 4-58                         | 320575   | 10-31, 10-33        | 323068   | 10-15 | 327175   | 10-6                |
| 225936   | 4-58                         | 320576   | 10-31, 10-34        | 323069   | 10-15 | 327932   | 10-35               |
| 226053   | 4-57                         | 320577   | 10-31, 10-34        | 323151   | 10-15 | 327934   | 10-35               |
| 226537   | 8-150, 8-151                 | 320741   | 10-6                | 323152   | 10-15 | 327936   | 10-35               |
| 226781   | 4-58                         | 321271   | 10-6                | 323153   | 10-15 | 327938   | 10-35               |
| 226782   | 4-58                         | 321298   | 10-5                | 323161   | 10-15 | 327940   | 10-35               |
| 227531   | 2-25, 2-91                   | 321598   | 10-5                | 323165   | 10-12 | 327942   | 10-35               |
| 227602   | 1-23, 1-24, 1-68, 1-69, 1-70 | 321600   | 10-6                | 323166   | 10-12 | 327944   | 10-35               |
| 227603   | 1-22, 1-24, 1-66, 1-70       | 321625   | 10-6                | 323167   | 10-12 | 327946   | 10-35               |
| 227604   | 1-23, 1-24, 1-69, 1-70       | 321684   | 10-5                | 323169   | 10-12 | 327948   | 10-35               |
| 227605   | 1-24, 1-66, 1-70             | 321866   | 10-6                | 323172   | 10-12 | 327950   | 10-35               |
| 227606   | 1-24, 1-66, 1-70             | 321867   | 10-6                | 323173   | 10-12 | 327952   | 10-35               |
| 227743   | 2-22, 2-90                   | 321868   | 10-6                | 323177   | 10-12 | 327954   | 10-35               |
| 227868   | 2-22, 2-90                   | 321869   | 10-6                | 323199   | 10-15 | 327956   | 10-35               |
| 228011   | 4-57                         | 321870   | 10-6                | 323219   | 10-12 | 327958   | 10-35               |
| 228433   | 3-33                         | 321871   | 10-6                | 323672   | 10-14 | 327960   | 10-35               |
| 228583   | 2-23, 2-90                   | 321872   | 10-6                | 323680   | 10-14 | 327962   | 10-35               |
| 228596   | 8-64                         | 321873   | 10-6                | 323683   | 10-14 | 327964   | 10-35               |
| 228618   | 8-64                         | 321874   | 10-6                | 323696   | 10-14 | 327966   | 10-35               |
| 228626   | 2-23, 2-90                   | 321875   | 10-6                | 323698   | 10-14 | 327968   | 10-35               |
| 228634   | 2-22, 2-90                   | 321876   | 10-6                | 323745   | 10-14 | 327970   | 10-35               |
| 228635   | 2-25, 2-91                   | 321877   | 10-6                | 323749   | 10-16 | 327972   | 10-35               |
| 228639   | 2-22, 2-90                   | 321878   | 10-6                | 323750   | 10-16 | 328663   | 8-149               |
| 273122   | 6-8                          | 321879   | 10-6                | 323751   | 10-16 | 328664   | 8-148, 8-149        |
| 277147   | 10-25                        | 321880   | 10-6                | 323754   | 10-13 | 328666   | 8-148, 8-149        |
| 277148   | 10-25                        | 321884   | 10-13               | 323755   | 10-13 | 328667   | 8-148, 8-149        |
| 277149   | 10-25                        | 321885   | 10-13               | 323794   | 10-13 | 328822   | 10-14               |
| 277150   | 10-25                        | 321889   | 10-13               | 323795   | 10-13 | 328859   | 10-11               |
| 277151   | 10-25                        | 321890   | 10-13               | 323796   | 10-13 | 328975   | 10-30, 10-32, 10-33 |
| 277152   | 10-25                        | 321891   | 10-13               | 323878   | 10-14 | 328976   | 10-31, 10-33        |
| 277153   | 10-25                        | 321892   | 10-15               | 323913   | 10-30 | 329006   | 8-148               |
| 277154   | 10-25                        | 321893   | 10-15               | 323914   | 10-30 | 329029   | 8-149               |
| 277155   | 10-25                        | 321894   | 10-15               | 323916   | 10-30 | 330301   | 10-6                |
| 277156   | 10-27                        | 321897   | 10-15               | 323975   | 10-36 | 330478   | 8-148               |
| 277157   | 10-27                        | 321898   | 10-15               | 323994   | 10-36 | 330587   | 8-149               |
| 277158   | 10-27                        | 322228   | 10-6                | 324043   | 10-42 | 331350   | 2-8, 2-88           |
|          |                              | 322320   | 10-15               | 324044   | 10-42 | 331351   | 2-8, 2-88           |

## Part Number Index (Continued)

| Part No. | Page         | Part No. | Page        | Part No. | Page       | Part No. | Page         |
|----------|--------------|----------|-------------|----------|------------|----------|--------------|
| 331693   | 2-8, 2-88    | 446853   | 1-61        | 448540   | 4-25       | 530777   | 1-49         |
| 332056   | 8-150        | 446900   | 9-53        | 448541   | 4-25       | 530778   | 1-49         |
| 332057   | 8-150, 8-151 | 446947   | 9-52        | 448542   | 4-25       | 530779   | 1-50         |
| 413242   | 8-65         | 447006   | 1-37        | 448543   | 4-25       | 530780   | 1-50         |
| 413249   | 8-65         | 447007   | 1-37        | 449379   | 8-63       | 530781   | 1-50         |
| 443102   | 4-38         | 447087   | 4-23        | 449578   | 9-6        | 530782   | 1-47         |
| 443118   | 9-58         | 447095   | 4-23        | 449599   | 1-14       | 530785   | 1-41         |
| 443279   | 8-95         | 447118   | 4-23        | 449601   | 1-29       | 530884   | 1-57         |
| 443631   | 8-50         | 447141   | 4-38        | 449619   | 1-29       | 530885   | 1-57         |
| 443637   | 8-50         | 447142   | 4-38        | 449650   | 1-28       | 530886   | 1-57         |
| 443638   | 8-50         | 447143   | 4-38        | 449652   | 9-50       | 530942   | 1-54         |
| 443646   | 8-50         | 447144   | 4-38        | 449690   | 9-14       | 531122   | 1-17         |
| 443815   | 9-53         | 447162   | 4-59        | 449810   | 9-44       | 531124   | 1-42         |
| 443832   | 9-45         | 447192   | 1-61        | 449836   | 4-36       | 531127   | 1-42         |
| 443903   | 9-32         | 447193   | 1-61        | 449837   | 4-36       | 531129   | 1-40         |
| 443904   | 9-32         | 447255   | 1-62        | 449908   | 4-22       | 531133   | 1-63         |
| 443915   | 9-53         | 447280   | 4-38        | 449925   | 9-18       | 531134   | 1-61         |
| 443916   | 9-53         | 447346   | 4-22        | 453800   | 3-52       | 531137   | 1-63         |
| 443965   | 4-38         | 447373   | 1-63        | 454103   | 3-52       | 531138   | 1-61         |
| 443975   | 8-47, 8-99   | 447380   | 1-63        | 455335   | 3-44       | 531139   | 1-61         |
| 443976   | 8-47, 8-100  | 447441   | 1-16        | 455360   | 3-44       | 531140   | 1-61         |
| 443977   | 8-47, 8-100  | 447444   | 1-35, 1-37  | 455494   | 3-38       | 531141   | 1-56         |
| 443978   | 8-47, 8-100  | 447445   | 1-37        | 455500   | 3-38       | 531142   | 1-40         |
| 445000   | 8-61         | 447446   | 1-37        | 455616   | 3-38       | 531143   | 1-40         |
| 445005   | 8-46         | 447447   | 1-34, 1-36  | 455617   | 3-38       | 531144   | 1-40         |
| 445006   | 8-46         | 447448   | 1-36        | 455737   | 3-38       | 531145   | 1-40         |
| 445007   | 8-46         | 447717   | 8-61        | 455738   | 3-38       | 531146   | 1-40         |
| 445008   | 8-46         | 447718   | 8-61        | 456099   | 3-52       | 531147   | 1-40         |
| 445009   | 8-46         | 447719   | 8-61        | 457440   | 3-44       | 531148   | 1-40         |
| 445010   | 8-76         | 447720   | 8-61        | 465199   | 1-106      | 531216   | 1-59         |
| 445011   | 8-76         | 447721   | 8-61        | 466819   | 1-59       | 531586   | 1-100, 1-106 |
| 445012   | 8-76         | 447722   | 8-61        | 466904   | 8-105      | 531587   | 1-100, 1-106 |
| 445159   | 9-4          | 447723   | 8-61        | 466943   | 1-59       | 531589   | 1-100, 1-106 |
| 445162   | 9-4          | 447724   | 8-61        | 481350   | 6-8        | 531590   | 1-104        |
| 445181   | 9-44         | 447725   | 8-61        | 501197   | 3-33       | 531713   | 1-77         |
| 445185   | 1-15         | 447726   | 8-61        | 501523   | 3-33       | 531714   | 1-77         |
| 445217   | 9-24         | 447727   | 8-61        | 501857   | 3-33       | 531715   | 1-77         |
| 445269   | 1-33, 1-37   | 447728   | 8-61        | 502130   | 3-33       | 531719   | 1-42         |
| 445270   | 1-31, 1-36   | 447730   | 8-61        | 503887   | 3-33       | 531720   | 1-42         |
| 445701   | 8-61         | 447731   | 8-61        | 504035   | 3-33       | 531721   | 1-28, 1-54   |
| 445705   | 8-60, 8-102  | 447732   | 8-61        | 504064   | 3-33       | 531722   | 1-54         |
| 445717   | 4-26, 4-37   | 447733   | 8-61        | 530328   | 1-77       | 531802   | 1-59         |
| 445718   | 4-26         | 447850   | 4-24, 4-58  | 530340   | 1-47       | 531803   | 1-17         |
| 445726   | 8-61         | 447851   | 4-24        | 530341   | 1-77, 1-89 | 531810   | 1-40         |
| 445730   | 8-60, 8-102  | 447913   | 9-50        | 530345   | 1-77       | 531811   | 1-40         |
| 445814   | 4-20         | 447914   | 9-50        | 530346   | 1-77       | 531812   | 1-40         |
| 445918   | 4-59         | 448012   | 4-15        | 530347   | 1-77       | 531813   | 1-40         |
| 446080   | 1-65         | 448013   | 4-15        | 530719   | 1-17       | 531814   | 1-40         |
| 446081   | 1-64         | 448138   | 4-21        | 530720   | 1-13       | 531815   | 1-40         |
| 446405   | 8-60, 8-102  | 448139   | 4-21        | 530721   | 1-27       | 531816   | 1-40         |
| 446549   | 4-23         | 448140   | 4-21        | 530733   | 1-17       | 531817   | 1-40         |
| 446629   | 1-78         | 448153   | 8-60, 8-102 | 530743   | 1-17       | 531819   | 1-23         |
| 446630   | 8-61         | 448154   | 8-102       | 530744   | 1-17       | 531820   | 1-22         |
| 446631   | 8-61         | 448312   | 4-25        | 530750   | 1-56       | 531832   | 1-47         |
| 446709   | 4-23         | 448313   | 4-25        | 530752   | 1-57       | 531833   | 1-47         |
| 446710   | 8-61         | 448445   | 1-28        | 530753   | 1-57       | 531834   | 1-47         |
| 446711   | 8-61         | 448446   | 1-29        | 530754   | 1-56, 1-58 | 531835   | 1-47         |
| 446743   | 4-33         | 448462   | 9-8         | 530755   | 1-57       | 531836   | 1-49         |
| 446744   | 4-33         | 448463   | 9-14        | 530758   | 1-47       | 531837   | 1-49         |
| 446748   | 4-23         | 448464   | 9-11        | 530761   | 1-53       | 531838   | 1-49         |
| 446775   | 9-52         | 448479   | 9-42        | 530763   | 1-49       | 531840   | 1-59         |
| 446852   | 1-63         | 448482   | 4-35        | 530776   | 1-47       | 531841   | 1-59         |

## Part Number Index (Continued)

| Part No. | Page         | Part No. | Page         | Part No. | Page                   | Part No. | Page       |
|----------|--------------|----------|--------------|----------|------------------------|----------|------------|
| 531984   | 1-60         | 591613   | 8-164, 8-177 | 592623   | 8-174                  | 837975   | 9-21       |
| 531985   | 1-58, 1-60   | 591621   | 8-164, 8-177 | 592624   | 8-161, 8-175           | 839564   | 9-19       |
| 531993   | 1-58         | 591637   | 8-164        | 592625   | 8-173                  | 839565   | 9-19       |
| 532021   | 1-60         | 591638   | 8-164        | 592626   | 8-175                  | 840467   | 9-26       |
| 532469   | 1-51         | 591829   | 8-172        | 592627   | 8-174                  | 840468   | 9-26       |
| 532483   | 1-58         | 591841   | 8-172        | 592629   | 8-161, 8-175           | 846290   | 9-24       |
| 532484   | 1-58         | 591842   | 8-172        | 592630   | 8-173                  | 846291   | 9-24       |
| 532488   | 1-55         | 591846   | 8-172        | 592631   | 8-173, 8-174           | 846556   | 9-56       |
| 532775   | 1-63         | 591847   | 8-172        | 592632   | 8-174                  | 846793   | 9-15       |
| 532796   | 1-23         | 591854   | 8-172        | 592633   | 8-161, 8-175           | 846814   | 9-18       |
| 532797   | 1-22         | 591855   | 8-172        | 592634   | 8-173                  | 846938   | 9-16, 9-17 |
| 532804   | 1-90         | 591857   | 8-172        | 592635   | 8-174                  | 846950   | 9-25       |
| 532805   | 1-90         | 591863   | 8-172        | 592636   | 8-173                  | 846977   | 9-55       |
| 533170   | 1-67         | 591864   | 8-172        | 592820   | 8-166                  | 846985   | 9-6        |
| 533171   | 1-69         | 591865   | 8-172        | 592830   | 8-166                  | 848075   | 9-19       |
| 533181   | 1-67         | 591866   | 8-172        | 592836   | 8-166                  | 848076   | 9-22       |
| 533182   | 1-69         | 591871   | 8-172        | 592840   | 8-166                  | 848077   | 9-22       |
| 533189   | 1-67         | 591872   | 8-172        | 592887   | 8-172                  | 848078   | 9-24       |
| 533194   | 1-57         | 591873   | 8-172        | 593002   | 8-98                   | 848588   | 9-55       |
| 533285   | 1-81         | 591875   | 8-172        | 593004   | 8-98                   | 848816   | 9-55       |
| 533287   | 1-83         | 591876   | 8-172        | 593007   | 8-97                   | 849055   | 9-63       |
| 533289   | 1-84         | 591889   | 8-172        | 593008   | 8-97                   | 849099   | 9-12, 9-13 |
| 533423   | 1-90         | 591890   | 8-172        | 593009   | 8-97                   | 849103   | 9-13       |
| 533424   | 1-90         | 591892   | 8-172        | 593036   | 8-99                   | 849104   | 9-12, 9-13 |
| 533427   | 1-81         | 591893   | 8-172        | 593037   | 8-99                   | 849252   | 9-63       |
| 533472   | 1-82         | 591894   | 8-172        | 593038   | 8-99                   | 849253   | 9-63       |
| 533484   | 1-82         | 591895   | 8-172        | 593326   | 8-78                   | 849254   | 9-63       |
| 533492   | 1-81         | 591896   | 8-172        | 593327   | 8-78                   | 849267   | 9-63       |
| 533495   | 1-83         | 591898   | 8-172        | 599406   | 4-55, 8-38, 8-68, 8-87 | 849275   | 9-63       |
| 533499   | 1-81         | 591899   | 8-172        | 601966   | 8-28, 8-44, 8-45, 8-87 | 849371   | 9-19       |
| 533606   | 1-66         | 591911   | 8-172        | 601967   | 8-28                   | 849418   | 9-8        |
| 533607   | 1-68         | 591917   | 8-172        | 608650   | 8-28                   | 849424   | 9-56       |
| 533637   | 1-69         | 591992   | 8-172        | 650844   | 1-81                   | 849587   | 9-23       |
| 533639   | 1-67         | 592104   | 8-32, 8-160  | 745776   | 8-95                   | 849588   | 9-20, 9-23 |
| 533650   | 1-84         | 592105   | 8-28         | 745777   | 8-95                   | 849610   | 9-14       |
| 533656   | 1-81         | 592404   | 8-160        | 747024   | 8-95                   | 849616   | 9-16, 9-17 |
| 533657   | 1-83         | 592413   | 8-160        | 747025   | 8-95                   | 849662   | 9-15       |
| 533693   | 1-84         | 592575   | 8-176        | 748558   | 8-93                   | 849671   | 9-15       |
| 533694   | 1-81         | 592583   | 8-167, 8-176 | 811262   | 6-25                   | 849693   | 9-15       |
| 534164   | 1-27         | 592588   | 8-167        | 822542   | 6-8                    | 849768   | 9-63       |
| 534175   | 1-13         | 592589   | 8-167        | 822548   | 6-8                    | 849775   | 9-63       |
| 534179   | 1-19         | 592600   | 8-161        | 830126   | 9-12, 9-13             | 849853   | 9-26       |
| 534180   | 1-20         | 592601   | 8-178        | 830149   | 9-15                   | 850306   | 9-14       |
| 534195   | 1-52         | 592602   | 8-179        | 830174   | 9-8                    | 850512   | 9-63       |
| 534650   | 1-52         | 592603   | 8-178        | 830177   | 9-8                    | 850513   | 9-63       |
| 534688   | 1-21         | 592604   | 8-161        | 830178   | 9-8                    | 850514   | 9-63       |
| 582151   | 1-103        | 592605   | 8-178        | 830200   | 9-8                    | 850515   | 9-63       |
| 582156   | 1-105        | 592606   | 8-179        | 830395   | 9-8                    | 850554   | 9-26       |
| 582307   | 1-103        | 592607   | 8-178        | 830611   | 9-5                    | 850555   | 9-20       |
| 582364   | 1-100        | 592608   | 8-161        | 830612   | 9-5                    | 850735   | 9-20       |
| 582819   | 1-103        | 592609   | 8-177        | 830613   | 9-9                    | 850736   | 9-11       |
| 582828   | 1-103        | 592610   | 8-179        | 830614   | 9-9                    | 850908   | 9-23       |
| 582830   | 1-103        | 592611   | 8-178        | 830632   | 9-54                   | 850909   | 9-23       |
| 582831   | 1-103        | 592614   | 8-179        | 830637   | 9-16, 9-17             | 850910   | 9-20       |
| 582832   | 1-103        | 592615   | 8-178        | 830638   | 9-16, 9-17             | 850911   | 9-23       |
| 582843   | 1-101, 1-102 | 592616   | 8-161, 8-176 | 830649   | 9-21                   | 850912   | 9-26       |
| 583218   | 1-78         | 592617   | 8-173        | 830699   | 9-18                   | 858030   | 9-18       |
| 583254   | 1-77         | 592618   | 8-175        | 830903   | 6-8                    | 858082   | 9-11       |
| 583452   | 1-78         | 592619   | 8-174        | 834333   | 9-14                   | 858827   | 9-14       |
| 583812   | 1-78         | 592620   | 8-161, 8-176 | 836567   | 9-26                   | 858855   | 9-11       |
| 591601   | 8-165        | 592621   | 8-173        | 836674   | 9-15                   | 858856   | 9-11       |
| 591603   | 8-165        | 592622   | 8-175        | 837655   | 9-12, 9-13             | 858857   | 9-11       |



## Part Number Index (Continued)

| Part No. | Page             | Part No. | Page       | Part No. | Page | Part No. | Page             |
|----------|------------------|----------|------------|----------|------|----------|------------------|
| 858868   | 9-18             | 862434   | 9-33       | 865594   | 9-40 | 0443098  | 4-62             |
| 858873   | 9-18             | 862435   | 9-33       | 865656   | 9-40 | 1045351  | 2-68             |
| 858885   | 9-6              | 862443   | 9-61       | 866196   | 9-48 | 1045358  | 2-68, 2-92       |
| 858886   | 9-10             | 862444   | 9-61       | 866559   | 9-48 | 1045369  | 2-75             |
| 858945   | 9-10             | 862481   | 9-58       | 866803   | 9-54 | 1045370  | 2-68             |
| 859058   | 9-18             | 862485   | 9-61       | 866804   | 9-54 | 1045381  | 2-68             |
| 859111   | 9-60             | 862498   | 9-33       | 866805   | 9-54 | 1045398  | 2-68             |
| 859113   | 9-60             | 862514   | 9-62       | 866806   | 9-54 | 1045401  | 2-68             |
| 859526   | 9-35             | 862515   | 9-62       | 867121   | 9-58 | 1045410  | 2-68             |
| 859527   | 9-35             | 862518   | 9-62       | 867156   | 9-28 | 1045418  | 2-68, 2-92       |
| 859528   | 9-35             | 862528   | 9-33       | 867157   | 9-28 | 1045423  | 2-68             |
| 859529   | 9-35             | 862536   | 9-60       | 867447   | 9-19 | 1045477  | 2-69             |
| 860261   | 9-35             | 862544   | 9-35, 9-40 | 867448   | 9-20 | 1045482  | 2-69             |
| 860263   | 9-35             | 862545   | 9-5        | 867462   | 9-42 | 1045486  | 2-69, 2-92       |
| 860265   | 9-35             | 862546   | 9-5        | 867463   | 9-42 | 1045489  | 2-69             |
| 860267   | 9-35             | 862547   | 9-9        | 867465   | 9-42 | 1045496  | 2-69             |
| 860529   | 9-6              | 862548   | 9-9        | 867468   | 9-43 | 1045497  | 2-69             |
| 860708   | 9-23             | 862549   | 9-12, 9-13 | 867469   | 9-43 | 1045503  | 2-69             |
| 861076   | 9-62             | 862550   | 9-12, 9-13 | 867470   | 9-45 | 1045506  | 2-69             |
| 861214   | 9-41, 9-44       | 862551   | 9-16, 9-17 | 867471   | 9-45 | 1045507  | 2-69             |
| 861215   | 9-41, 9-44       | 862552   | 9-16, 9-17 | 867472   | 9-43 | 1045508  | 2-69             |
| 861252   | 9-8              | 862672   | 9-60       | 867473   | 9-43 | 1045511  | 2-69             |
| 861253   | 9-11             | 862695   | 9-35       | 867477   | 9-43 | 1045517  | 2-69, 2-92       |
| 861254   | 9-12, 9-13, 9-14 | 862794   | 9-40       | 867478   | 9-45 | 1045520  | 2-69             |
| 861255   | 9-17, 9-18       | 862798   | 9-35       | 867479   | 9-45 | 1045568  | 2-70             |
| 861256   | 9-19, 9-20       | 862908   | 9-60       | 867482   | 9-42 | 1045573  | 2-71             |
| 861257   | 9-23             | 862909   | 9-60       | 867534   | 9-36 | 1045576  | 2-71             |
| 861258   | 9-25, 9-26       | 863015   | 9-35       | 867535   | 9-36 | 1045578  | 2-71             |
| 861610   | 9-29             | 863016   | 9-35       | 867606   | 9-54 | 1045582  | 2-70             |
| 861611   | 9-29             | 863017   | 9-35       | 867615   | 9-55 | 1045586  | 2-71             |
| 861647   | 9-35             | 863018   | 9-35       | 867622   | 9-42 | 1045593  | 2-73             |
| 861648   | 9-35             | 863019   | 9-35       | 867823   | 9-48 | 1045598  | 2-72             |
| 861657   | 9-54             | 863103   | 9-30       | 867824   | 9-48 | 1045607  | 2-71             |
| 861658   | 9-54             | 863103   | 9-30       | 867862   | 9-39 | 1045621  | 2-70             |
| 861660   | 9-54             | 863104   | 9-30       | 868021   | 9-44 | 1045630  | 2-70             |
| 861662   | 9-54             | 863124   | 9-61       | 868313   | 9-5  | 1045632  | 2-70             |
| 861753   | 9-29             | 863125   | 9-61       | 868354   | 9-21 | 1045633  | 2-73             |
| 861807   | 9-7              | 863253   | 9-61       | 868373   | 9-56 | 1045637  | 2-70             |
| 861808   | 9-7              | 863254   | 9-61       | 869084   | 9-21 | 1045642  | 2-73             |
| 861809   | 9-10             | 863330   | 9-7        | 878182   | 6-8  | 1045643  | 2-72             |
| 861810   | 9-10             | 863350   | 9-30       | 878183   | 6-8  | 1045646  | 2-72             |
| 861811   | 9-12, 9-13       | 863701   | 9-12, 9-13 | 878495   | 6-8  | 1045647  | 2-72             |
| 861812   | 9-12, 9-13       | 863702   | 9-12, 9-13 | 878512   | 6-8  | 1045651  | 2-72             |
| 861813   | 9-16, 9-17       | 863703   | 9-12, 9-13 | 879222   | 6-8  | 1045672  | 2-71             |
| 861814   | 9-16, 9-17       | 863705   | 9-17       | 879268   | 6-8  | 1045677  | 2-71             |
| 861999   | 9-40             | 863706   | 9-17       | 879514   | 6-8  | 1045701  | 2-74             |
| 862004   | 9-40             | 863707   | 9-17       | 879515   | 6-8  | 1045704  | 2-74             |
| 862005   | 9-40             | 863743   | 9-47       | 0206442  | 4-62 | 1045708  | 2-74             |
| 862123   | 9-60             | 863752   | 9-37       | 0213431  | 4-62 | 1045723  | 2-74             |
| 862124   | 9-60             | 863753   | 9-37       | 0213432  | 4-62 | 1045725  | 2-73             |
| 862128   | 9-62             | 863754   | 9-37       | 0213433  | 4-62 | 1045747  | 2-74             |
| 862197   | 9-29             | 863755   | 9-37       | 0213434  | 4-62 | 1046477  | 2-75             |
| 862256   | 9-40             | 863995   | 9-35       | 0213434  | 4-62 | 1046479  | 2-75             |
| 862294   | 9-61             | 864019   | 9-38       | 0213435  | 4-62 | 1049678  | 2-57             |
| 862295   | 9-61             | 864062   | 9-37       | 0213436  | 4-62 | 1050524  | 2-22, 2-90, 2-92 |
| 862345   | 9-56             | 864063   | 9-37       | 0213437  | 4-62 | 1050525  | 2-22, 2-90, 2-92 |
| 862362   | 9-61             | 864064   | 9-37       | 0213438  | 4-62 | 1050547  | 2-22, 2-90       |
| 862363   | 9-61             | 864065   | 9-37       | 0213439  | 4-63 | 1050548  | 2-22, 2-90       |
| 862382   | 9-33             | 864639   | 9-37       | 0213440  | 4-63 | 1050598  | 2-22, 2-90       |
| 862383   | 9-33             | 864900   | 9-50       | 0213441  | 4-63 | 1050605  | 2-22, 2-92       |
| 862424   | 9-47             | 865089   | 9-25       | 0213442  | 4-63 | 1050609  | 2-22, 2-92       |
| 862425   | 9-47             | 865090   | 9-25       | 0443089  | 4-63 | 1050629  | 2-22, 2-92       |



## Part Number Index (Continued)

| Part No. | Page             | Part No. | Page             | Part No. | Page                   | Part No. | Page       |
|----------|------------------|----------|------------------|----------|------------------------|----------|------------|
| 1050631  | 2-22, 2-92       | 1051097  | 2-24, 2-90       | 1051905  | 2-18, 2-89             | 1052155  | 2-16, 2-88 |
| 1050744  | 2-22, 2-90       | 1051098  | 2-24, 2-90       | 1051906  | 2-18, 2-89             | 1052156  | 2-16, 2-89 |
| 1050769  | 2-22, 2-92       | 1051109  | 2-23, 2-90, 2-92 | 1051907  | 2-18, 2-89             | 1052157  | 2-16, 2-89 |
| 1050770  | 2-22, 2-92       | 1051110  | 2-23, 2-90, 2-92 | 1051908  | 2-18, 2-89             | 1052158  | 2-16, 2-89 |
| 1050774  | 2-22, 2-90       | 1051113  | 2-23, 2-90, 2-92 | 1051909  | 2-18, 2-89             | 1052159  | 2-16, 2-89 |
| 1050776  | 2-22, 2-90       | 1051114  | 2-23, 2-90, 2-92 | 1051910  | 2-18, 2-89             | 1052160  | 2-16, 2-89 |
| 1050777  | 2-22, 2-90       | 1051119  | 2-23, 2-92       | 1051911  | 2-18, 2-89             | 1052161  | 2-16, 2-89 |
| 1050779  | 2-22, 2-90       | 1051120  | 2-23, 2-92       | 1051912  | 2-18, 2-89             | 1052162  | 2-16, 2-89 |
| 1050781  | 2-22, 2-90       | 1051163  | 2-23, 2-90       | 1051913  | 2-18, 2-89             | 1052163  | 2-16, 2-89 |
| 1050783  | 2-22, 2-90       | 1051164  | 2-23, 2-90       | 1051914  | 2-18, 2-89             | 1052165  | 2-16, 2-89 |
| 1050785  | 2-22, 2-90       | 1051165  | 2-23, 2-90       | 1051915  | 2-18, 2-89             | 1052166  | 2-16, 2-89 |
| 1050786  | 2-22, 2-90       | 1051166  | 2-23, 2-90       | 1051916  | 2-18, 2-89             | 1052167  | 2-16, 2-89 |
| 1050787  | 2-22, 2-90       | 1051168  | 2-23, 2-90       | 1051917  | 2-18, 2-89             | 1052168  | 2-16, 2-89 |
| 1050788  | 2-22, 2-90       | 1051170  | 2-23, 2-90       | 1051918  | 2-18, 2-89             | 1052169  | 2-16, 2-89 |
| 1050789  | 2-22, 2-90       | 1051173  | 2-23, 2-90       | 1051919  | 2-18, 2-89             | 1052170  | 2-16, 2-89 |
| 1050790  | 2-22, 2-90       | 1051174  | 2-23, 2-90       | 1051920  | 2-18, 2-89             | 1052171  | 2-16, 2-88 |
| 1050791  | 2-91             | 1051175  | 2-23, 2-90       | 1051921  | 2-18, 2-89             | 1052173  | 2-16, 2-88 |
| 1050792  | 2-22, 2-90       | 1051176  | 2-23, 2-90       | 1051922  | 2-18, 2-89             | 1052174  | 2-16, 2-88 |
| 1050796  | 2-91             | 1051177  | 2-23, 2-90       | 1051923  | 2-18, 2-89             | 1052176  | 2-16, 2-88 |
| 1050797  | 2-22, 2-90       | 1051178  | 2-23, 2-90       | 1051933  | 2-90                   | 1052177  | 2-17, 2-88 |
| 1050799  | 2-22, 2-90       | 1051650  | 2-14, 2-15, 2-88 | 1051950  | 2-90                   | 1052178  | 2-17, 2-89 |
| 1050805  | 2-91             | 1051651  | 2-14, 2-15, 2-88 | 1051951  | 2-90                   | 1052179  | 2-17, 2-88 |
| 1050807  | 2-91             | 1051660  | 2-14, 2-15, 2-88 | 1051986  | 2-20, 2-90             | 1052181  | 2-17, 2-88 |
| 1050808  | 2-91             | 1051661  | 2-14, 2-15, 2-88 | 1051987  | 2-20, 2-90             | 1052182  | 2-17, 2-88 |
| 1050809  | 2-91             | 1051664  | 2-14, 2-15, 2-88 | 1051988  | 2-20, 2-90             | 1052184  | 2-17, 2-88 |
| 1050810  | 2-91             | 1051665  | 2-14, 2-15, 2-88 | 1051989  | 2-20, 2-90             | 1052185  | 2-17, 2-88 |
| 1050812  | 2-22, 2-90       | 1051678  | 2-14, 2-15, 2-88 | 1051990  | 2-20, 2-90             | 1052186  | 2-17, 2-89 |
| 1050813  | 2-22, 2-90       | 1051686  | 2-14, 2-15, 2-88 | 1051991  | 2-20, 2-90             | 1052187  | 2-17, 2-89 |
| 1050854  | 2-24, 2-90       | 1051687  | 2-14, 2-15, 2-88 | 1051992  | 2-20, 2-90             | 1052188  | 2-17, 2-89 |
| 1050859  | 2-24, 2-90       | 1051757  | 2-14, 2-88       | 1051994  | 2-20, 2-90             | 1052189  | 2-17, 2-89 |
| 1050923  | 2-24, 2-90       | 1051759  | 2-14, 2-88       | 1051995  | 2-20, 2-90             | 1052190  | 2-17, 2-89 |
| 1050924  | 2-24, 2-90       | 1051762  | 2-14, 2-88       | 1051996  | 2-20, 2-90             | 1052191  | 2-17, 2-89 |
| 1050926  | 2-24, 2-90       | 1051764  | 2-14, 2-88       | 1051997  | 2-20, 2-90             | 1052192  | 2-17, 2-89 |
| 1050928  | 2-24, 2-90       | 1051766  | 2-14, 2-88       | 1051998  | 2-20                   | 1052193  | 2-17, 2-89 |
| 1050929  | 2-24, 2-90       | 1051768  | 2-14, 2-88       | 1051999  | 2-90                   | 1052194  | 2-17, 2-89 |
| 1050931  | 2-24, 2-90       | 1051769  | 2-14, 2-88       | 1052024  | 2-19, 2-89             | 1052195  | 2-17, 2-89 |
| 1050934  | 2-24, 2-90       | 1051770  | 2-14, 2-88       | 1052030  | 2-19, 2-89             | 1052196  | 2-17, 2-89 |
| 1050935  | 2-24, 2-90       | 1051780  | 2-14, 2-88       | 1052042  | 2-19, 2-89             | 1052197  | 2-17, 2-89 |
| 1051005  | 2-25, 2-91       | 1051782  | 2-14, 2-88       | 1052043  | 2-19, 2-89             | 1052198  | 2-17, 2-89 |
| 1051013  | 2-25, 2-91       | 1051785  | 2-15, 2-88       | 1052044  | 2-19, 2-89             | 1052199  | 2-17, 2-89 |
| 1051018  | 2-25, 2-91       | 1051787  | 2-15, 2-88       | 1052045  | 2-19, 2-90             | 1052201  | 2-17, 2-88 |
| 1051022  | 2-25, 2-91       | 1051788  | 2-15, 2-88       | 1052046  | 2-19, 2-89             | 1052203  | 2-17, 2-88 |
| 1051023  | 2-25, 2-91       | 1051789  | 2-15, 2-88       | 1052047  | 2-19, 2-89             | 1052204  | 2-17, 2-88 |
| 1051026  | 2-25, 2-91       | 1051791  | 2-15, 2-88       | 1052048  | 2-19, 2-89             | 1052206  | 2-17, 2-89 |
| 1051027  | 2-25, 2-91       | 1051794  | 2-15, 2-88       | 1052049  | 2-19, 2-89             | 1052207  | 2-17, 2-89 |
| 1051028  | 2-25, 2-91       | 1051797  | 2-15, 2-88       | 1052050  | 2-19, 2-89             | 1052408  | 2-27, 2-91 |
| 1051029  | 2-25, 2-91       | 1051798  | 2-15, 2-88       | 1052051  | 2-19, 2-89             | 1052409  | 2-27, 2-91 |
| 1051032  | 2-25, 2-91       | 1051799  | 2-15, 2-88       | 1052062  | 2-16, 2-17, 2-88       | 1052410  | 2-27, 2-91 |
| 1051033  | 2-25, 2-91       | 1051800  | 2-15, 2-88       | 1052063  | 2-16, 2-17, 2-88       | 1052411  | 2-27, 2-91 |
| 1051046  | 2-24, 2-92       | 1051801  | 2-15, 2-88       | 1052066  | 2-16, 2-17, 2-88       | 1052412  | 2-27, 2-91 |
| 1051049  | 2-24, 2-90, 2-91 | 1051804  | 2-15, 2-88       | 1052067  | 2-16, 2-17, 2-88       | 1052413  | 2-27, 2-91 |
| 1051052  | 2-24, 2-92       | 1051810  | 2-15, 2-88       | 1052071  | 2-16, 2-17, 2-88, 2-89 | 1052414  | 2-27, 2-91 |
| 1051062  | 2-24             | 1051812  | 2-15, 2-88       | 1052072  | 2-16, 2-17, 2-88, 2-89 | 1052415  | 2-27, 2-91 |
| 1051063  | 2-24, 2-92       | 1051815  | 2-15, 2-88       | 1052075  | 2-16, 2-17, 2-88, 2-89 | 1052416  | 2-29, 2-91 |
| 1051067  | 2-24, 2-92       | 1051816  | 2-15, 2-88       | 1052076  | 2-16, 2-17, 2-88, 2-89 | 1052417  | 2-29, 2-91 |
| 1051081  | 2-24, 2-90, 2-91 | 1051817  | 2-15, 2-88       | 1052092  | 2-16, 2-17, 2-88, 2-89 | 1052421  | 2-21, 2-90 |
| 1051087  | 2-24, 2-91       | 1051855  | 2-18, 2-89       | 1052097  | 2-16, 2-17, 2-88, 2-89 | 1052422  | 2-21, 2-90 |
| 1051088  | 2-24, 2-91       | 1051861  | 2-18, 2-89       | 1052098  | 2-16, 2-17, 2-88, 2-89 | 1052522  | 2-29, 2-91 |
| 1051091  | 2-24, 2-90       | 1051866  | 2-18, 2-89       | 1052149  | 2-16, 2-88             | 1052523  | 2-29, 2-91 |
| 1051092  | 2-24, 2-90       | 1051868  | 2-18, 2-89       | 1052151  | 2-16, 2-88             | 1052527  | 2-29, 2-91 |
| 1051093  | 2-24, 2-90       | 1051869  | 2-18, 2-89       | 1052152  | 2-16, 2-88             | 1052528  | 2-29, 2-91 |
| 1051094  | 2-24, 2-90       | 1051904  | 2-18, 2-89       | 1052154  | 2-16, 2-88             | 1052533  | 2-21, 2-90 |

## Part Number Index (Continued)

| Part No. | Page       | Part No. | Page       | Part No. | Page       | Part No. | Page             |
|----------|------------|----------|------------|----------|------------|----------|------------------|
| 1052534  | 2-21, 2-90 | 1053424  | 2-30, 2-91 | 1057094  | 2-6        | 1059657  | 2-58             |
| 1052563  | 2-28, 2-91 | 1053425  | 2-30, 2-91 | 1057116  | 2-6        | 1059665  | 2-60             |
| 1052565  | 2-27, 2-91 | 1053428  | 2-30, 2-91 | 1057138  | 2-6        | 1059681  | 2-59             |
| 1052566  | 2-27, 2-91 | 1053429  | 2-30, 2-91 | 1057140  | 2-6        | 1059684  | 2-59             |
| 1052577  | 2-27, 2-91 | 1053430  | 2-30, 2-91 | 1057159  | 2-6        | 1059691  | 2-59             |
| 1052643  | 2-32, 2-92 | 1053431  | 2-30, 2-91 | 1057165  | 2-6        | 1059868  | 2-46             |
| 1052646  | 2-32, 2-92 | 1053438  | 2-30, 2-91 | 1057176  | 2-6        | 1059874  | 2-46             |
| 1052897  | 2-27, 2-91 | 1053450  | 2-30, 2-91 | 1057178  | 2-6        | 1059886  | 2-47             |
| 1052898  | 2-27, 2-91 | 1053451  | 2-30, 2-91 | 1057275  | 2-6        | 1059887  | 2-47             |
| 1052901  | 2-29, 2-91 | 1053452  | 2-30, 2-92 | 1057279  | 2-6        | 1059888  | 2-47             |
| 1052902  | 2-29, 2-91 | 1053453  | 2-30, 2-91 | 1057284  | 2-6        | 1059889  | 2-48             |
| 1052924  | 2-21, 2-90 | 1053465  | 2-31, 2-92 | 1057290  | 2-6        | 1059901  | 2-48             |
| 1052926  | 2-21, 2-90 | 1053467  | 2-31, 2-92 | 1057293  | 2-6        | 1059902  | 2-49             |
| 1052927  | 2-27, 2-91 | 1053475  | 2-31, 2-92 | 1057354  | 2-34, 2-92 | 1059903  | 2-48             |
| 1052928  | 2-27, 2-91 | 1053476  | 2-31, 2-92 | 1057357  | 2-34, 2-92 | 1059905  | 2-49             |
| 1052929  | 2-27, 2-91 | 1053477  | 2-31, 2-92 | 1057359  | 2-34, 2-92 | 1059919  | 2-48             |
| 1052930  | 2-27, 2-91 | 1053478  | 2-31, 2-92 | 1057371  | 2-33, 2-92 | 1080294  | 2-33, 2-92       |
| 1052931  | 2-27, 2-91 | 1053479  | 2-31, 2-92 | 1057402  | 2-34, 2-92 | 1083993  | 2-20, 2-90       |
| 1052932  | 2-27, 2-91 | 1053480  | 2-31, 2-92 | 1057403  | 2-92       | 1086451  | 2-75             |
| 1052933  | 2-27, 2-91 | 1053481  | 2-31, 2-92 | 1057465  | 2-34, 2-92 | 1086723  | 2-17, 2-89       |
| 1052934  | 2-27, 2-91 | 1053482  | 2-31, 2-92 | 1057631  | 2-10       | 1087842  | 2-20, 2-90       |
| 1052935  | 2-28, 2-91 | 1053488  | 2-26, 2-91 | 1057635  | 2-10       | 1087843  | 2-19, 2-89, 2-90 |
| 1052936  | 2-28, 2-91 | 1053489  | 2-26, 2-91 | 1057679  | 2-10       | 1087866  | 2-34, 2-92       |
| 1052937  | 2-28, 2-91 | 1053633  | 2-26, 2-91 | 1057697  | 2-10       | 1089686  | 2-22, 2-90       |
| 1052938  | 2-28, 2-91 | 1053634  | 2-26, 2-91 | 1057699  | 2-10       | 1218039  | 4-62             |
| 1052939  | 2-28, 2-91 | 1053635  | 2-26, 2-91 | 1057775  | 2-10       | 1218040  | 4-62             |
| 1052940  | 2-28, 2-91 | 1053765  | 2-91       | 1057780  | 2-10       | 1218041  | 4-62             |
| 1052941  | 2-28, 2-91 | 1053767  | 2-26, 2-91 | 1057848  | 2-33, 2-92 | 1218042  | 4-62             |
| 1052942  | 2-28, 2-91 | 1054874  | 2-26, 2-91 | 1058572  | 2-56       | 1218044  | 4-38             |
| 1052943  | 2-28, 2-91 | 1054875  | 2-26, 2-91 | 1058590  | 2-90       | 1218045  | 4-62             |
| 1052944  | 2-28, 2-91 | 1054986  | 2-26, 2-91 | 1058628  | 2-6        | 1218046  | 4-62             |
| 1052945  | 2-28, 2-91 | 1054988  | 2-26, 2-91 | 1058955  | 2-64       | 1218080  | 4-62             |
| 1052946  | 2-28, 2-91 | 1055064  | 2-26, 2-91 | 1058990  | 2-64       | 1218081  | 9-50             |
| 1052947  | 2-28, 2-91 | 1055065  | 2-26, 2-91 | 1058993  | 2-64       | 1218101  | 4-62             |
| 1052948  | 2-28, 2-91 | 1055091  | 2-26, 2-91 | 1059057  | 2-64       | 1218124  | 8-47, 8-100      |
| 1052949  | 2-29, 2-91 | 1055236  | 2-4        | 1059060  | 2-64       | 1218125  | 8-47, 8-100      |
| 1052950  | 2-29, 2-91 | 1055420  | 2-4        | 1059081  | 2-64       | 1218126  | 8-47, 8-100      |
| 1052951  | 2-29, 2-91 | 1055835  | 2-4        | 1059399  | 2-55       | 1218127  | 8-47, 8-101      |
| 1052952  | 2-29, 2-91 | 1056413  | 2-14, 2-88 | 1059402  | 2-51, 2-53 | 1218128  | 8-62             |
| 1052953  | 2-29, 2-91 | 1056521  | 2-41, 2-92 | 1059404  | 2-51, 2-53 | 1218129  | 8-62             |
| 1052954  | 2-29, 2-91 | 1056522  | 2-41, 2-92 | 1059408  | 2-55       | 1218133  | 4-62             |
| 1052955  | 2-29, 2-91 | 1056550  | 2-41, 2-92 | 1059410  | 2-51, 2-53 | 1218145  | 4-62             |
| 1052956  | 2-29, 2-91 | 1056551  | 2-41, 2-92 | 1059412  | 2-51, 2-53 | 1218146  | 4-62             |
| 1052957  | 2-29, 2-91 | 1056702  | 2-43       | 1059451  | 2-55       | 1218147  | 9-47             |
| 1052958  | 2-29, 2-91 | 1056703  | 2-41, 2-92 | 1059452  | 2-55       | 1218148  | 9-47             |
| 1052959  | 2-32, 2-92 | 1056706  | 2-43       | 1059453  | 2-53       | 1218155  | 4-62             |
| 1052961  | 2-32, 2-92 | 1056707  | 2-43       | 1059456  | 2-53       | 1218159  | 4-63             |
| 1052962  | 2-32, 2-92 | 1056708  | 2-43       | 1059465  | 2-54       | 1218176  | 4-62             |
| 1052963  | 2-32, 2-92 | 1056726  | 2-42       | 1059467  | 2-54       | 1218182  | 4-62             |
| 1053118  | 2-21, 2-90 | 1056728  | 2-43       | 1059505  | 2-54       | 1218201  | 4-63             |
| 1053133  | 2-21, 2-90 | 1056734  | 2-42       | 1059506  | 2-54       | 1218202  | 4-63             |
| 1053354  | 2-26, 2-91 | 1056736  | 2-42       | 1059523  | 2-56       | 1218203  | 4-63             |
| 1053372  | 2-26, 2-91 | 1056740  | 2-41       | 1059540  | 2-56       | 1218205  | 4-62             |
| 1053374  | 2-26, 2-91 | 1056741  | 2-41       | 1059541  | 2-56       | 1218206  | 4-63             |
| 1053376  | 2-26, 2-91 | 1056742  | 2-41       | 1059551  | 2-56       | 1218207  | 4-63             |
| 1053378  | 2-26, 2-91 | 1056743  | 2-41       | 1059572  | 2-61       | 1218214  | 4-63             |
| 1053396  | 2-26, 2-91 | 1056744  | 2-41       | 1059596  | 2-57       | 1218224  | 4-63             |
| 1053398  | 2-26, 2-91 | 1056745  | 2-41       | 1059617  | 2-58       | 1218225  | 4-63             |
| 1053400  | 2-26, 2-91 | 1056750  | 2-42       | 1059632  | 2-60       | 1218226  | 4-62             |
| 1053415  | 2-30, 2-91 | 1056751  | 2-42       | 1059637  | 2-60       | 1218227  | 4-63             |
| 1053422  | 2-30, 2-91 | 1056752  | 2-42       | 1059651  | 2-58       | 1218228  | 4-62             |
| 1053423  | 2-30, 2-91 | 1057088  | 2-6        | 1059654  | 2-58       | 1218229  | 4-62             |

## Part Number Index (Continued)

| Part No. | Page        | Part No. | Page       | Part No. | Page                  | Part No. | Page       |
|----------|-------------|----------|------------|----------|-----------------------|----------|------------|
| 1218230  | 4-62        | 1218606  | 8-56       | 1218859  | 8-55                  | 1484500  | 2-19, 2-89 |
| 1218232  | 8-83, 8-86  | 1218607  | 8-57       | 1218867  | 4-36                  | 1484501  | 2-19, 2-89 |
| 1218233  | 8-83, 8-86  | 1218611  | 8-62       | 1218876  | 4-62                  | 1484502  | 2-19, 2-89 |
| 1218234  | 8-82, 8-86  | 1218619  | 4-62       | 1218887  | 8-62                  | 1484503  | 2-19, 2-89 |
| 1218235  | 8-82, 8-86  | 1218637  | 4-62       | 1218894  | 4-63                  | 1484504  | 2-19, 2-89 |
| 1218236  | 4-62        | 1218638  | 4-62       | 1218895  | 4-63                  | 1484505  | 2-19, 2-89 |
| 1218237  | 4-62        | 1218639  | 4-62       | 1218896  | 8-62                  | 1484506  | 2-19, 2-90 |
| 1218239  | 4-62        | 1218654  | 8-60, 8-61 | 1218919  | 4-62                  | 1484507  | 2-19, 2-90 |
| 1218266  | 8-38        | 1218655  | 8-60, 8-61 | 1218934  | 4-62                  | 1484516  | 2-21, 2-90 |
| 1218267  | 8-38        | 1218656  | 4-62       | 1218939  | 8-62                  | 1484517  | 2-91       |
| 1218289  | 8-49        | 1218665  | 8-57       | 1218957  | 4-63                  | 1484518  | 2-32, 2-92 |
| 1218290  | 8-49        | 1218687  | 4-25       | 1218958  | 4-63                  | 1484519  | 2-32, 2-92 |
| 1218291  | 8-49        | 1218689  | 4-25       | 1218959  | 4-63                  | 1484520  | 2-32, 2-92 |
| 1218292  | 8-49        | 1218692  | 4-15       | 1218960  | 4-63                  | 1484521  | 2-32, 2-92 |
| 1218293  | 8-49        | 1218693  | 4-15       | 1221162  | 2-24, 2-92            | 1484522  | 2-32, 2-92 |
| 1218294  | 8-49        | 1218699  | 8-68       | 1221165  | 2-20, 2-90            | 1484523  | 2-32, 2-92 |
| 1218297  | 4-63        | 1218706  | 4-62       | 1251095  | 2-28, 2-91            | 1484524  | 2-32, 2-92 |
| 1218299  | 4-62        | 1218713  | 4-23       | 1252992  | 2-34, 2-92            | 1484525  | 2-32, 2-92 |
| 1218300  | 4-63        | 1218720  | 4-62       | 1253627  | 2-20, 2-90            | 1484542  | 2-20, 2-90 |
| 1218342  | 4-62, 4-63  | 1218723  | 4-63       | 1254028  | 2-19, 2-89            | 1484543  | 2-20, 2-90 |
| 1218343  | 4-63        | 1218724  | 4-62       | 1255511  | 2-46                  | 1484546  | 2-48       |
| 1218348  | 4-63        | 1218735  | 4-62       | 1278531  | 3-33                  | 1484620  | 6-20       |
| 1218349  | 4-63        | 1218745  | 4-62       | 1278540  | 3-33                  | 1484621  | 6-20       |
| 1218350  | 4-62        | 1218746  | 8-70       | 1278637  | 3-33                  | 1495164  | 5-62       |
| 1218352  | 4-63        | 1218747  | 8-72       | 1329846  | 2-57                  | 1515734  | 3-13       |
| 1218353  | 4-63        | 1218748  | 8-43       | 1331293  | 2-20, 2-90            | 1515735  | 3-13       |
| 1218354  | 4-63        | 1218749  | 8-43       | 1362216  | 2-20, 2-90            | 1515739  | 3-10       |
| 1218356  | 4-63        | 1218756  | 4-62       | 1374484  | 3-33                  | 1515740  | 3-10       |
| 1218358  | 4-63        | 1218807  | 8-62       | 1374759  | 3-5, 3-16, 3-26, 3-28 | 1515743  | 3-10       |
| 1218361  | 4-62        | 1218814  | 4-62       | 1410140  | 1-4, 1-5              | 1515747  | 3-10       |
| 1218363  | 4-62        | 1218816  | 8-62       | 1410142  | 1-4, 1-5              | 1515787  | 3-11       |
| 1218368  | 4-62        | 1218820  | 4-25       | 1410186  | 1-4, 1-5              | 1515867  | 3-11       |
| 1218374  | 8-49        | 1218821  | 4-25       | 1410187  | 1-4                   | 1515868  | 3-11       |
| 1218375  | 8-49        | 1218826  | 8-49       | 1410189  | 1-4                   | 1515940  | 3-13       |
| 1218377  | 8-49        | 1218827  | 8-49       | 1410190  | 1-4, 1-5              | 1515941  | 3-13       |
| 1218378  | 8-49        | 1218829  | 8-49       | 1410956  | 1-5                   | 1516040  | 3-10       |
| 1218379  | 8-49        | 1218830  | 8-53       | 1410964  | 1-5                   | 1516041  | 3-10       |
| 1218380  | 8-49        | 1218831  | 8-53       | 1410965  | 1-5                   | 1516228  | 3-5, 3-16  |
| 1218381  | 8-49        | 1218832  | 8-53       | 1410966  | 1-5                   | 1516229  | 3-13       |
| 1218385  | 8-63        | 1218833  | 8-53       | 1410968  | 1-5                   | 1516256  | 3-13, 3-16 |
| 1218401  | 4-62        | 1218834  | 8-53       | 1410970  | 1-5                   | 1516338  | 3-16       |
| 1218402  | 4-63        | 1218835  | 8-53       | 1410971  | 1-5                   | 1516340  | 3-16       |
| 1218404  | 4-62        | 1218837  | 8-53       | 1410972  | 1-5                   | 1516342  | 3-16       |
| 1218408  | 8-52, 8-100 | 1218838  | 8-53       | 1410975  | 1-5                   | 1516343  | 3-16       |
| 1218434  | 8-52, 8-100 | 1218839  | 8-53       | 1445162  | 3-27, 8-21, 8-26      | 1516344  | 3-16       |
| 1218435  | 8-52, 8-100 | 1218840  | 8-53       | 1445163  | 3-27, 8-21, 8-26      | 1516506  | 3-10       |
| 1218436  | 8-52, 8-100 | 1218841  | 8-53       | 1445626  | 6-16, 6-17            | 1516516  | 3-21       |
| 1218437  | 8-52, 8-100 | 1218842  | 8-55       | 1445692  | 6-16, 6-17, 8-29      | 1516546  | 3-4        |
| 1218438  | 8-52, 8-100 | 1218843  | 8-55       | 1445693  | 6-16, 6-17, 8-29      | 1516547  | 3-4        |
| 1218440  | 8-51, 8-101 | 1218844  | 8-55       | 1466018  | 5-62                  | 1516548  | 3-4        |
| 1218441  | 8-51, 8-101 | 1218845  | 8-55       | 1469491  | 1-4, 1-8              | 1516702  | 3-4        |
| 1218442  | 8-51, 8-101 | 1218846  | 8-55       | 1469492  | 1-4, 1-5, 1-8         | 1516703  | 3-4        |
| 1218443  | 8-101       | 1218847  | 8-55       | 1484014  | 4-63                  | 1516704  | 3-4        |
| 1218444  | 8-51, 8-101 | 1218848  | 8-55       | 1484033  | 4-62                  | 1532137  | 5-62, 5-61 |
| 1218445  | 8-51, 8-101 | 1218849  | 8-55       | 1484148  | 4-62                  | 1534805  | 8-96       |
| 1218473  | 4-62        | 1218850  | 8-55       | 1484157  | 4-62                  | 1534806  | 8-96       |
| 1218476  | 4-62        | 1218852  | 8-55       | 1484158  | 4-62                  | 1534807  | 8-96       |
| 1218479  | 4-62        | 1218854  | 8-55       | 1484240  | 4-63                  | 1534808  | 8-96       |
| 1218483  | 8-63        | 1218855  | 8-55       | 1484241  | 4-63                  | 1534809  | 8-96       |
| 1218490  | 4-62        | 1218856  | 8-55       | 1484406  | 6-20                  | 1534810  | 8-96       |
| 1218528  | 4-62        | 1218857  | 8-55       | 1484407  | 6-20                  | 1534811  | 8-96       |
| 1218538  | 8-56        | 1218858  | 8-55       | 1484499  | 2-19, 2-89            | 1534812  | 8-96       |

## Part Number Index (Continued)

| Part No. | Page       | Part No. | Page              | Part No. | Page                   | Part No. | Page       |
|----------|------------|----------|-------------------|----------|------------------------|----------|------------|
| 1577616  | 10-20      | 1589069  | 2-101             | 1589729  | 5-39                   | 1738058  | 8-17       |
| 1577617  | 10-20      | 1589070  | 2-101             | 1589735  | 5-10, 5-39             | 1738059  | 8-17       |
| 1577618  | 10-20      | 1589071  | 2-101             | 1589736  | 5-10, 5-39             | 1738060  | 8-17       |
| 1577619  | 10-20      | 1589072  | 2-101             | 1589737  | 5-12, 5-39, 5-40       | 1738061  | 8-17       |
| 1577620  | 10-20      | 1589448  | 5-45, 5-50        | 1589738  | 5-12, 5-39, 5-40       | 1738062  | 8-17       |
| 1577621  | 10-20      | 1589449  | 5-45, 5-50        | 1589775  | 5-50                   | 1738063  | 8-17       |
| 1577622  | 10-20      | 1589450  | 5-50              | 1589777  | 5-36, 5-37, 5-38, 5-39 | 1738064  | 8-17       |
| 1577623  | 10-20      | 1589451  | 5-47, 5-50        | 1589788  | 5-36, 5-37, 5-38, 5-39 | 1738065  | 8-17       |
| 1577624  | 10-20      | 1589452  | 5-47, 5-50        | 1589797  | 5-39                   | 1738066  | 8-17       |
| 1577625  | 10-20      | 1589453  | 5-48, 5-50        | 1589798  | 5-40                   | 1738067  | 8-17       |
| 1577626  | 10-20      | 1589454  | 5-48, 5-50        | 1589799  | 5-39                   | 1738068  | 8-17       |
| 1577627  | 10-20      | 1589455  | 5-7, 5-35         | 1589803  | 5-11, 5-39             | 1738069  | 8-17       |
| 1577628  | 10-20      | 1589456  | 5-35, 5-36        | 1589804  | 5-13, 5-40             | 1738070  | 8-17       |
| 1577629  | 10-20      | 1589457  | 5-7, 5-35, 5-36   | 1589813  | 5-41, 5-42             | 1738071  | 8-17       |
| 1577630  | 10-20      | 1589460  | 5-15, 5-40, 5-41  | 1589814  | 5-41                   | 1738072  | 8-17       |
| 1577631  | 10-20      | 1589461  | 5-24, 5-42        | 1589817  | 5-41                   | 1738073  | 8-17       |
| 1577632  | 10-20      | 1589462  | 5-40, 5-41        | 1589819  | 5-40                   | 1738074  | 8-17       |
| 1577633  | 10-20      | 1589463  | 5-17, 5-40, 5-41  | 1589827  | 5-35, 5-36             | 1738075  | 8-17       |
| 1577634  | 10-20      | 1589464  | 5-17, 5-40, 5-41  | 1589851  | 5-32, 5-43             | 1738076  | 8-17       |
| 1577635  | 10-20      | 1589465  | 5-17, 5-41        | 1589901  | 5-35, 5-36             | 1738077  | 8-17       |
| 1577636  | 10-20      | 1589466  | 5-18, 5-40, 5-41  | 1589902  | 5-41                   | 1738078  | 8-17       |
| 1577637  | 10-20      | 1589467  | 5-19, 5-40, 5-41  | 1589953  | 7-44                   | 1738079  | 8-17       |
| 1577638  | 10-20      | 1589468  | 5-40, 5-41        | 1589954  | 7-44                   | 1738080  | 8-17       |
| 1577639  | 10-20      | 1589469  | 5-22, 5-42        | 1589955  | 7-44                   | 1738081  | 8-17       |
| 1577640  | 10-20      | 1589470  | 5-24, 5-42        | 1604798  | 6-22, 6-23             | 1738082  | 8-17       |
| 1577641  | 10-20      | 1589471  | 5-22, 5-42        | 1604799  | 6-22, 6-23             | 1738083  | 8-17       |
| 1577642  | 10-20      | 1589472  | 5-8, 5-36, 5-37   | 1604800  | 6-22, 6-23             | 1738084  | 8-17       |
| 1577643  | 10-20      | 1589473  | 5-37, 5-38        | 1604874  | 6-22                   | 1738085  | 8-18       |
| 1577644  | 10-20      | 1589474  | 5-38, 5-39        | 1604896  | 6-22                   | 1738086  | 8-18       |
| 1577645  | 10-20      | 1589475  | 5-36 to 5-39      | 1604897  | 6-22                   | 1738087  | 8-18       |
| 1577646  | 10-20      | 1589476  | 5-8, 5-36 to 5-38 | 1604898  | 6-22                   | 1738088  | 8-18       |
| 1577647  | 10-20      | 1589477  | 5-36, 5-38, 5-39  | 1604905  | 6-22                   | 1738089  | 8-18       |
| 1577648  | 10-20      | 1589480  | 5-41, 5-42        | 1604940  | 6-17                   | 1738090  | 8-18       |
| 1577649  | 10-20      | 1589481  | 5-23, 5-42, 5-43  | 1604972  | 6-24                   | 1738091  | 8-18       |
| 1577650  | 10-20      | 1589482  | 5-25, 5-42, 5-43  | 1663018  | 6-20                   | 1738092  | 8-18       |
| 1588128  | 3-5, 3-16  | 1589483  | 5-16, 5-41, 5-42  | 1663019  | 6-20                   | 1738093  | 8-18       |
| 1588129  | 3-5        | 1589484  | 5-20, 5-41, 5-42  | 1663032  | 6-20                   | 1738094  | 8-18       |
| 1588129  | 3-16       | 1589485  | 5-20, 5-41, 5-42  | 1663433  | 2-36                   | 1738095  | 8-18       |
| 1588700  | 3-10, 3-11 | 1589486  | 5-21, 5-41, 5-42  | 1663434  | 2-36                   | 1738096  | 8-18       |
| 1588801  | 3-13       | 1589487  | 5-23, 5-42, 5-43  | 1663572  | 2-59                   | 1738099  | 8-18       |
| 1588839  | 3-26, 3-28 | 1589488  | 5-25, 5-42, 5-43  | 1663670  | 2-43                   | 1738101  | 8-18, 8-32 |
| 1588908  | 3-10, 3-11 | 1589489  | 5-42, 5-43        | 1663678  | 2-42                   | 1738104  | 8-18, 8-32 |
| 1588957  | 3-20       | 1589490  | 5-16, 5-41, 5-42  | 1663679  | 2-42                   | 1738106  | 8-18       |
| 1589050  | 5-33, 5-43 | 1589671  | 5-39              | 1663900  | 6-20                   | 1738107  | 8-18       |
| 1589051  | 5-29, 5-43 | 1589672  | 5-39              | 1693001  | 3-13                   | 1738108  | 8-18       |
| 1589052  | 5-29, 5-43 | 1589673  | 5-39, 5-40        | 1693741  | 3-10                   | 1738109  | 8-18       |
| 1589053  | 5-30, 5-43 | 1589674  | 5-40              | 1693797  | 3-11                   | 1738110  | 8-18       |
| 1589054  | 5-30, 5-43 | 1589675  | 5-40              | 1693800  | 3-11                   | 1738111  | 8-18       |
| 1589055  | 7-26       | 1589676  | 5-40              | 1693808  | 3-20                   | 1738112  | 8-18       |
| 1589056  | 7-32       | 1589683  | 5-50              | 1738007  | 8-32                   | 1738113  | 8-18       |
| 1589057  | 7-26       | 1589685  | 7-42              | 1738008  | 8-32                   | 1738114  | 8-18       |
| 1589058  | 7-32       | 1589686  | 7-36              | 1738017  | 8-32                   | 1738115  | 8-18       |
| 1589059  | 7-27       | 1589687  | 7-42              | 1738018  | 8-32                   | 1738116  | 8-19       |
| 1589060  | 7-40       | 1589688  | 7-36              | 1738049  | 8-17                   | 1738117  | 8-19       |
| 1589061  | 7-40       | 1589690  | 7-33              | 1738050  | 8-17                   | 1738118  | 8-19       |
| 1589062  | 7-41       | 1589691  | 7-28              | 1738051  | 8-17                   | 1738119  | 8-19       |
| 1589063  | 7-34       | 1589692  | 7-28              | 1738052  | 8-17                   | 1738120  | 8-19       |
| 1589064  | 7-34       | 1589693  | 7-29              | 1738053  | 8-17                   | 1738121  | 8-19       |
| 1589065  | 7-35       | 1589694  | 7-37              | 1738054  | 8-17                   | 1738122  | 8-19       |
| 1589066  | 5-27, 5-43 | 1589695  | 7-43              | 1738055  | 8-17                   | 1738123  | 8-19       |
| 1589067  | 5-28, 5-43 | 1589699  | 5-39, 5-40        | 1738056  | 8-17                   | 1738124  | 8-19       |
| 1589068  | 2-101      | 1589700  | 5-40, 5-41        | 1738057  | 8-17                   | 1738125  | 8-19       |

## Part Number Index (Continued)

| Part No. | Page | Part No. | Page       | Part No. | Page       | Part No. | Page                  |
|----------|------|----------|------------|----------|------------|----------|-----------------------|
| 1738126  | 8-19 | 1738204  | 8-30       | 1738279  | 8-12       | 1754122  | 3-11                  |
| 1738127  | 8-19 | 1738205  | 8-30       | 1738280  | 8-12       | 1754371  | 3-56                  |
| 1738128  | 8-19 | 1738206  | 8-30       | 1738281  | 8-12       | 1754439  | 3-10                  |
| 1738129  | 8-19 | 1738207  | 8-30       | 1738282  | 8-12       | 1754445  | 3-10                  |
| 1738130  | 8-19 | 1738208  | 8-30       | 1738283  | 8-12       | 1754447  | 3-10                  |
| 1738131  | 8-19 | 1738209  | 8-30       | 1738284  | 8-12       | 1754515  | 3-18                  |
| 1738132  | 8-19 | 1738210  | 8-30       | 1738285  | 8-12       | 1754516  | 3-19                  |
| 1738133  | 8-19 | 1738211  | 8-30, 8-32 | 1738286  | 8-12       | 1754517  | 3-19                  |
| 1738134  | 8-19 | 1738212  | 8-30, 8-32 | 1738287  | 8-12       | 1754622  | 3-26, 3-28            |
| 1738135  | 8-19 | 1738213  | 8-30       | 1738288  | 8-12       | 1754699  | 3-5, 3-16, 3-26, 3-28 |
| 1738136  | 8-19 | 1738214  | 8-30       | 1738289  | 8-12       | 1754700  | 3-5, 3-16, 3-26, 3-28 |
| 1738137  | 8-19 | 1738228  | 8-7        | 1738290  | 8-12       | 1754708  | 3-33                  |
| 1738138  | 8-19 | 1738229  | 8-7        | 1738291  | 8-12       | 1754765  | 3-33                  |
| 1738139  | 8-19 | 1738230  | 8-7        | 1738292  | 8-12       | 1754767  | 3-33                  |
| 1738140  | 8-19 | 1738231  | 8-7        | 1738293  | 8-12       | 1754842  | 3-13                  |
| 1738141  | 8-19 | 1738232  | 8-7        | 1738294  | 8-12       | 1754843  | 3-13                  |
| 1738142  | 8-19 | 1738233  | 8-7        | 1738295  | 8-12       | 1754844  | 3-13                  |
| 1738143  | 8-19 | 1738234  | 8-7        | 1738296  | 8-12       | 1757023  | 2-41, 2-92            |
| 1738144  | 8-19 | 1738235  | 8-7        | 1738297  | 8-12       | 1757024  | 2-41                  |
| 1738145  | 8-19 | 1738236  | 8-9        | 1738298  | 8-12       | 1757025  | 2-41                  |
| 1738146  | 8-19 | 1738237  | 8-9        | 1738299  | 8-13       | 1757026  | 2-41                  |
| 1738149  | 8-19 | 1738238  | 8-9        | 1738300  | 8-13       | 1757027  | 2-41                  |
| 1738151  | 8-19 | 1738239  | 8-9        | 1738301  | 8-13       | 1757028  | 2-41                  |
| 1738154  | 8-19 | 1738240  | 8-9        | 1738302  | 8-13       | 1757029  | 2-41                  |
| 1738156  | 8-20 | 1738241  | 8-9        | 1738303  | 8-13       | 1757030  | 2-41                  |
| 1738157  | 8-20 | 1738242  | 8-9        | 1738304  | 8-13       | 1757180  | 4-23                  |
| 1738158  | 8-20 | 1738243  | 8-9        | 1738305  | 8-13       | 1757203  | 4-23                  |
| 1738159  | 8-20 | 1738244  | 8-12       | 1738306  | 8-13       | 1757207  | 8-76                  |
| 1738160  | 8-20 | 1738245  | 8-12       | 1738307  | 8-13       | 1757253  | 2-36                  |
| 1738161  | 8-20 | 1738246  | 8-12       | 1738308  | 8-13       | 1757256  | 2-36                  |
| 1738162  | 8-20 | 1738247  | 8-12       | 1738310  | 8-31       | 1757257  | 2-36                  |
| 1738163  | 8-20 | 1738248  | 8-12       | 1738311  | 8-31       | 1757492  | 4-23                  |
| 1738164  | 8-20 | 1738249  | 8-12       | 1738312  | 8-31       | 1757624  | 4-25                  |
| 1738165  | 8-20 | 1738250  | 8-12       | 1738313  | 8-31, 8-32 | 1757638  | 2-36                  |
| 1738166  | 8-20 | 1738251  | 8-12       | 1738314  | 8-31       | 1757639  | 2-36                  |
| 1738167  | 8-20 | 1738252  | 8-12       | 1738315  | 8-31       | 1757640  | 2-36                  |
| 1738168  | 8-20 | 1738253  | 8-12       | 1738316  | 8-31       | 1757642  | 2-36                  |
| 1738169  | 8-20 | 1738254  | 8-12       | 1738317  | 8-31       | 1757643  | 2-36                  |
| 1738170  | 8-20 | 1738255  | 8-12       | 1738318  | 8-31       | 1757644  | 2-36                  |
| 1738171  | 8-20 | 1738256  | 8-12       | 1738319  | 8-31       | 1757669  | 4-23                  |
| 1738172  | 8-20 | 1738257  | 8-12       | 1738327  | 8-28       | 1757710  | 3-30, 4-14, 8-24      |
| 1738173  | 8-20 | 1738258  | 8-12       | 1738331  | 8-28       | 1757711  | 3-30, 4-14, 8-24      |
| 1738174  | 8-20 | 1738259  | 8-12       | 1738332  | 8-28       | 1757727  | 3-30, 4-14, 8-24      |
| 1738175  | 8-20 | 1738260  | 8-12       | 1738333  | 8-28       | 1757819  | 8-42                  |
| 1738176  | 8-20 | 1738261  | 8-12       | 1738338  | 8-28       | 1757820  | 8-42                  |
| 1738177  | 8-20 | 1738262  | 8-12       | 1738400  | 8-30       | 1757821  | 8-42                  |
| 1738178  | 8-20 | 1738263  | 8-12       | 1738428  | 8-30       | 1757822  | 8-42                  |
| 1738179  | 8-20 | 1738264  | 8-12       | 1738429  | 8-30       | 1757823  | 8-71                  |
| 1738180  | 8-20 | 1738265  | 8-12       | 1738440  | 8-30       | 1757824  | 8-73                  |
| 1738181  | 8-20 | 1738266  | 8-12       | 1738805  | 8-21, 8-24 | 1757825  | 8-71                  |
| 1738182  | 8-20 | 1738267  | 8-12       | 1738806  | 8-21, 8-24 | 1757826  | 8-73                  |
| 1738183  | 8-20 | 1738268  | 8-12       | 1738807  | 8-21, 8-24 | 1757827  | 8-47                  |
| 1738184  | 8-20 | 1738269  | 8-12       | 1738808  | 8-21, 8-24 | 1757828  | 8-47                  |
| 1738185  | 8-20 | 1738270  | 8-12       | 1738916  | 6-26       | 1757829  | 8-47                  |
| 1738186  | 8-20 | 1738271  | 8-12       | 1738949  | 6-22, 6-23 | 1757830  | 8-47                  |
| 1738189  | 8-20 | 1738272  | 8-12       | 1738950  | 6-22, 6-23 | 1757831  | 8-47                  |
| 1738191  | 8-20 | 1738273  | 8-12       | 1738951  | 6-22, 6-23 | 1757832  | 8-47                  |
| 1738194  | 8-20 | 1738274  | 8-12       | 1738955  | 6-22       | 1757833  | 8-47                  |
| 1738199  | 8-30 | 1738275  | 8-12       | 1738960  | 8-27       | 1757834  | 8-47                  |
| 1738200  | 8-30 | 1738276  | 8-12       | 1738969  | 8-27       | 1757835  | 8-51                  |
| 1738201  | 8-30 | 1738277  | 8-12       | 1738974  | 6-26, 6-28 | 1757836  | 8-52                  |
| 1738203  | 8-30 | 1738278  | 8-12       | 1754074  | 3-33       | 1757837  | 8-51                  |

## Part Number Index (Continued)

| Part No. | Page                         | Part No. | Page                         | Part No. | Page                         | Part No. | Page             |
|----------|------------------------------|----------|------------------------------|----------|------------------------------|----------|------------------|
| 1757838  | 8-52                         | 1877039  | 6-16, 8-29                   | 1918615  | 3-30, 3-31, 4-14, 8-24, 8-29 | 1954334  | 8-18             |
| 1757839  | 8-51                         | 1877040  | 6-16, 8-29                   | 1918616  | 3-30, 3-31, 4-14, 8-24, 8-29 | 1954335  | 8-18             |
| 1757840  | 8-52                         | 1877070  | 8-32                         | 1918617  | 3-30, 3-31, 4-14, 8-24, 8-29 | 1954336  | 8-18             |
| 1757841  | 8-51                         | 1877328  | 8-30                         | 1918808  | 3-33                         | 1954337  | 8-18             |
| 1757842  | 8-52                         | 1877329  | 8-30                         | 1918810  | 3-33                         | 1954338  | 8-18             |
| 1757843  | 8-51                         | 1877384  | 6-26                         | 1918834  | 3-33                         | 1954339  | 8-18             |
| 1757844  | 8-52                         | 1877519  | 8-27                         | 1918881  | 3-33                         | 1954340  | 8-18             |
| 1757845  | 8-51                         | 1877567  | 8-21                         | 1918884  | 3-16                         | 1954341  | 8-19             |
| 1757846  | 8-52                         | 1877568  | 8-21                         | 1918885  | 3-16                         | 1954342  | 8-19             |
| 1757859  | 4-23                         | 1877626  | 8-29                         | 1918887  | 3-33                         | 1954344  | 8-19             |
| 1757891  | 4-25                         | 1877646  | 8-32                         | 1918930  | 3-18                         | 1954345  | 8-19             |
| 1757892  | 4-24                         | 1877652  | 8-32                         | 1918931  | 3-10                         | 1954346  | 8-19             |
| 1811010  | 6-16                         | 1877694  | 8-21                         | 1918932  | 3-10                         | 1954347  | 8-19             |
| 1811119  | 8-32                         | 1877696  | 8-21                         | 1918933  | 3-10                         | 1954348  | 8-19             |
| 1811121  | 8-21, 8-32                   | 1877698  | 8-21                         | 1918934  | 3-10                         | 1954349  | 8-19             |
| 1811122  | 8-21, 8-32                   | 1877700  | 8-21                         | 1918937  | 3-10                         | 1954350  | 8-19             |
| 1811184  | 6-26, 6-27                   | 1877702  | 8-21                         | 1918939  | 3-10                         | 1954353  | 6-26, 6-29       |
| 1811269  | 6-16                         | 1877704  | 8-21                         | 1918940  | 3-10                         | 1954355  | 6-26, 6-29       |
| 1811481  | 6-19                         | 1877706  | 8-21                         | 1918941  | 3-10                         | 1954573  | 8-27             |
| 1811633  | 6-19                         | 1877708  | 8-21                         | 1918943  | 3-10                         | 1954576  | 6-16, 6-18       |
| 1811646  | 8-15                         | 1877719  | 8-15                         | 1925026  | 7-30                         | 1954577  | 6-26, 6-30       |
| 1811648  | 8-15                         | 1877720  | 8-15                         | 1925027  | 7-30                         | 1954723  | 8-19             |
| 1811650  | 8-15, 8-31                   | 1877732  | 6-26, 6-28                   | 1925028  | 7-31                         | 1954724  | 8-18             |
| 1811680  | 8-9                          | 1877736  | 8-31                         | 1925029  | 7-38                         | 1954739  | 8-18             |
| 1811865  | 6-16, 6-18, 8-29, 8-32       | 1877774  | 6-26, 6-27                   | 1925030  | 7-38                         | 1985006  | 3-22             |
| 1811866  | 6-18, 8-29, 8-32             | 1877775  | 6-26, 6-27                   | 1925031  | 7-39                         | 1985021  | 3-16             |
| 1811892  | 8-15                         | 1877888  | 8-31                         | 1925248  | 6-10, 6-11                   | 1985107  | 3-13, 3-16       |
| 1811894  | 8-15                         | 1877921  | 6-26, 6-29                   | 1925249  | 6-10                         | 1985140  | 3-5              |
| 1811901  | 6-26, 6-29                   | 1877943  | 8-9                          | 1925250  | 6-10                         | 1985162  | 3-59             |
| 1811902  | 6-26, 6-28                   | 1877945  | 8-9                          | 1925251  | 6-10, 6-11                   | 1985319  | 3-11             |
| 1811927  | 6-26, 6-30                   | 1877985  | 8-30                         | 1925252  | 6-10                         | 1985335  | 3-30             |
| 1811928  | 6-26, 6-30                   | 1877986  | 8-30                         | 1925253  | 6-10                         | 1985368  | 3-60             |
| 1811943  | 6-19                         | 1883005  | 8-82                         | 1925254  | 6-10, 6-11                   | 1985635  | 3-13, 3-16       |
| 1828199  | 3-30, 3-31, 4-14, 8-24, 8-29 | 1883006  | 8-82                         | 1925255  | 6-10                         | 1985801  | 3-60             |
| 1828200  | 3-30, 3-31, 4-14, 8-24, 8-29 | 1883007  | 8-83                         | 1925256  | 6-10                         | 1985915  | 3-10             |
| 1828335  | 3-18, 3-33                   | 1883008  | 8-83                         | 1925257  | 6-10                         | 1996328  | 2-36             |
| 1828349  | 3-33                         | 1883053  | 8-84                         | 1925258  | 6-10, 6-12                   | 1996373  | 6-24             |
| 1828350  | 3-33                         | 1883054  | 8-84                         | 1925259  | 6-10                         | 1996390  | 2-38             |
| 1828352  | 3-23, 3-33                   | 1883055  | 8-85                         | 1925260  | 6-10                         | 1996453  | 8-29             |
| 1828353  | 3-23, 3-33                   | 1883056  | 8-85                         | 1925261  | 6-10, 6-12                   | 1996454  | 8-29             |
| 1828355  | 3-33                         | 1883057  | 8-85                         | 1950030  | 6-24                         | 1996481  | 8-29             |
| 1828465  | 3-33                         | 1883630  | 8-64                         | 1954043  | 8-17                         | 1996487  | 8-33             |
| 1828536  | 3-18                         | 1918016  | 3-22                         | 1954044  | 8-17                         | 1996488  | 8-33             |
| 1828573  | 3-57                         | 1918024  | 3-16                         | 1954046  | 8-29, 8-32                   | 1996500  | 6-36             |
| 1828574  | 3-57                         | 1918025  | 3-16                         | 1954067  | 8-21                         | 1996544  | 6-24             |
| 1828618  | 3-53                         | 1918082  | 3-22                         | 1954284  | 8-9                          | 1996705  | 2-38             |
| 1828619  | 3-53                         | 1918153  | 3-56                         | 1954285  | 8-9                          | 1996706  | 2-38             |
| 1828644  | 3-33                         | 1918154  | 3-57                         | 1954321  | 8-18                         | 1996771  | 2-38             |
| 1828650  | 3-11, 3-18                   | 1918177  | 3-53                         | 1954322  | 8-18                         | 1996883  | 2-38             |
| 1828698  | 3-5                          | 1918185  | 3-5                          | 1954325  | 8-18                         | 1996884  | 2-38             |
| 1828699  | 3-5                          | 1918222  | 3-33                         | 1954326  | 8-18                         | 2000108  | 8-21             |
| 1828700  | 3-5                          | 1918223  | 3-33                         | 1954327  | 8-18                         | 2000126  | 8-19             |
| 1828740  | 3-53                         | 1918227  | 3-57                         | 1954328  | 8-18                         | 2000142  | 8-9              |
| 1828826  | 3-5                          | 1918228  | 3-56                         | 1954329  | 8-18                         | 2000143  | 8-21             |
| 1828889  | 3-33                         | 1918497  | 3-11                         | 1954330  | 8-18                         | 2000189  | 3-27, 8-21, 8-26 |
| 1828935  | 3-53                         | 1918498  | 3-11                         | 1954331  | 8-18                         | 2000190  | 3-27, 8-21, 8-26 |
| 1828979  | 3-30                         | 1918509  | 3-33                         | 1954332  | 8-18                         | 2000263  | 6-25             |
| 1828980  | 3-30                         | 1918510  | 3-33                         | 1954333  | 8-18                         | 2000314  | 6-25             |
| 1828995  | 3-30                         | 1918511  | 3-33                         |          |                              | 2000317  | 6-25             |
| 1828996  | 3-30                         | 1918603  | 3-5                          |          |                              | 2000676  | 1-4, 1-8         |
| 1828997  | 3-30                         | 1918614  | 3-30, 3-31, 4-14, 8-24, 8-29 |          |                              | 2000677  | 1-8              |
|          |                              |          |                              |          |                              | 2000713  | 1-4, 1-5, 1-8    |

## Part Number Index (Continued)

| Part No. | Page       | Part No. | Page       | Part No. | Page       | Part No.  | Page                                     |
|----------|------------|----------|------------|----------|------------|-----------|------------------------------------------|
| 2000856  | 8-21, 8-24 | 2102093  | 1-8        | 2157469  | 7-18       | 2221478   | 6-5                                      |
| 2000857  | 8-21, 8-24 | 2102094  | 1-8        | 2157538  | 7-18       | 2201712   | 7-20                                     |
| 2000858  | 8-21, 8-24 | 2102096  | 1-8        | 2157539  | 7-18       | 2201713   | 7-20                                     |
| 2000859  | 8-21, 8-24 | 2102098  | 1-8        | 2157628  | 6-30       | 2221682   | 6-5                                      |
| 2000860  | 8-21, 8-24 | 2102114  | 1-8        | 2157694  | 6-26, 6-27 | 2226127   | 1-5                                      |
| 2000861  | 8-21, 8-24 | 2102155  | 1-8        | 2157695  | 6-26, 6-28 | 2229015   | 7-24                                     |
| 2000862  | 8-21, 8-24 | 2102157  | 1-8        | 2157696  | 6-26, 6-29 | 5205817   | 8-93                                     |
| 2000863  | 8-21, 8-24 | 2102159  | 1-8        | 2157738  | 7-18       | 5205818   | 8-93                                     |
| 2000890  | 1-8        | 2102161  | 1-8        | 2157739  | 7-18       | 5205933   | 8-95                                     |
| 2000891  | 1-7, 1-8   | 2102227  | 8-20       | 2157927  | 7-17       | 5205980   | 8-94                                     |
| 2000892  | 1-8        | 2102228  | 8-20       | 2157928  | 7-17       | 5207871   | 8-94                                     |
| 2000895  | 1-8        | 2102229  | 8-20       | 2157929  | 7-17       | 5207872   | 8-93                                     |
| 2000896  | 1-7, 1-8   | 2102230  | 8-20       | 2157930  | 7-17       | 5225395   | 2-8                                      |
| 2000903  | 1-8        | 2102232  | 1-8        | 2157945  | 7-18       | 5225396   | 2-8                                      |
| 2000905  | 1-8        | 2102234  | 1-8        | 2157946  | 7-18       | 5225398   | 2-8                                      |
| 2000973  | 3-40, 3-54 | 2102247  | 1-8        | 2157947  | 7-18       | 5225554   | 2-10                                     |
| 2000974  | 3-40, 3-54 | 2102248  | 1-8        | 2157948  | 7-18       | 5225555   | 2-10                                     |
| 202A111  | 7-17       | 2102314  | 1-8        | 2157949  | 7-18       | 5225557   | 2-10                                     |
| 202A121  | 7-17       | 2102315  | 1-8        | 2157950  | 7-18       | 5225559   | 2-10                                     |
| 202A132  | 7-17       | 2102316  | 1-8        | 2157951  | 7-18       | 5225974   | 2-8                                      |
| 2033989  | 8-21       | 2102317  | 1-8        | 2157952  | 7-18       | 5745136   | 8-94                                     |
| 2033990  | 8-19       | 2102318  | 1-8        | 2174191  | 7-20       | 5747404   | 8-93                                     |
| 2033995  | 8-19       | 2102319  | 1-8        | 2174192  | 7-20       | 5747877   | 8-93                                     |
| 2033996  | 8-19       | 2102320  | 1-8        | 2174193  | 7-20       | 5748270   | 8-93                                     |
| 2033997  | 8-21       | 2102343  | 6-4, 6-5   | 2174194  | 7-20       | 5748271   | 8-93                                     |
| 2033998  | 8-21       | 2102349  | 6-5        | 2174195  | 7-20       | 5748558   | 8-93                                     |
| 2064163  | 3-16       | 2102350  | 6-5        | 2174196  | 7-20       | 5749765   | 8-93                                     |
| 2064166  | 3-16       | 2102351  | 6-4, 6-5   | 2174197  | 7-20       | 5830637   | 9-17                                     |
| 2064556  | 3-4        | 2102352  | 6-4, 6-5   | 2174198  | 7-20       | 5849587   | 9-20                                     |
| 2064557  | 3-4        | 2102353  | 6-4, 6-5   | 2174199  | 7-20       | 6374613   | 3-33                                     |
| 2064558  | 3-4        | 2102429  | 1-10       | 2174201  | 7-20       | 6374615   | 3-33                                     |
| 2064559  | 3-4        | 2102430  | 1-10       | 2174202  | 7-20       | 6754475   | 3-18                                     |
| 2064560  | 3-4        | 2102453  | 6-4, 6-5   | 2174205  | 7-20       | 6754518   | 3-16                                     |
| 2064561  | 3-4        | 2102515  | 1-8        | 2174206  | 7-20       | 6754519   | 3-16                                     |
| 2064562  | 3-4        | 2102516  | 1-8        | 2174208  | 7-20       | 6754520   | 3-16                                     |
| 2064563  | 3-4        | 2102735  | 1-4, 1-5   | 2174209  | 7-20       | 6828094   | 3-56                                     |
| 2064564  | 3-4        | 2102736  | 1-4, 1-5   | 2174210  | 7-20       | 6828095   | 3-56                                     |
| 2064565  | 3-4        | 2102737  | 1-4, 1-5   | 2174211  | 7-20       | 6828099   | 3-57                                     |
| 2064566  | 3-4        | 2102768  | 1-5        | 2174212  | 7-20       | 6828100   | 3-57                                     |
| 2064567  | 3-4        | 2102771  | 1-4        | 2174213  | 7-20       | 6828129   | 3-56                                     |
| 2064757  | 3-58       | 2102772  | 1-4        | 2174214  | 7-20       | 6828130   | 3-56                                     |
| 2064764  | 3-58, 3-60 | 2102773  | 1-5        | 2174215  | 7-20       | 6828413   | 3-10                                     |
| 2101395  | 6-26, 6-30 | 2102774  | 1-5        | 2174216  | 7-20       | 6828454   | 3-18                                     |
| 2101549  | 7-18       | 2102775  | 1-5        | 2174217  | 7-20       | 456099SM  | 3-52                                     |
| 2101550  | 7-18       | 2102847  | 1-4, 1-5   | 2174218  | 7-20       | 1726A1424 | 8-32                                     |
| 2101551  | 7-18       | 2102848  | 1-5        | 2174219  | 7-20       | A6*       | 4-41                                     |
| 2101553  | 7-18       | 2102849  | 1-5        | 2174220  | 7-20       | BND*      | 6-7                                      |
| 2101579  | 7-17       | 2102850  | 1-5        | 2174221  | 7-20       | CEC-RWC*  | 6-32 to 6-35                             |
| 2101580  | 7-17       | 2102851  | 1-5        | 2174222  | 7-20       | CHA*      | 8-123, 8-127, 8-138                      |
| 2101676  | 7-18       | 2102866  | 3-54       | 2174223  | 7-20       | CTA*      | 8-120, 8-123, 8-125, 8-127, 8-134, 8-137 |
| 2101677  | 7-18       | 2123265  | 3-56       | 2174224  | 7-20       | CX*       | 2-96, 2-98, 2-100                        |
| 2101752  | 6-24       | 2123524  | 3-56       | 2174225  | 7-20       | D-150*    | 11-5                                     |
| 2102060  | 1-10       | 2157014  | 7-17       | 2174226  | 7-20       | D-600*    | 11-5                                     |
| 2102061  | 1-10       | 2157015  | 7-17       | 2174227  | 7-20       | D-602*    | 8-120, 8-125                             |
| 2102077  | 1-8        | 2157322  | 6-24       | 2201010  | 7-24       | D-621*    | 11-5 to 11-8                             |
| 2102079  | 1-10       | 2157342  | 7-18       | 2201011  | 7-24       | D-659*    | 8-138                                    |
| 2102080  | 1-10       | 2157343  | 7-18       | 2201012  | 7-24       | DK-3716*  | 11-8                                     |
| 2102081  | 1-8        | 2157344  | 7-18       | 2201013  | 7-24       | DK-602*   | 11-9                                     |
| 2102086  | 1-8        | 2157375  | 7-18       | 2201014  | 7-24       | DK-621*   | 11-2, 11-3, 11-4, 11-6, 11-7             |
| 2102087  | 1-8        | 2157376  | 7-18       | 2201015  | 7-24       | GPRA*     | 8-7, 8-8, 8-16, 8-17, 8-22, 8-30         |
| 2102088  | 1-8        | 2157455  | 6-26, 6-28 | 2201481  | 7-20       |           |                                          |
| 2102092  | 1-8        | 2157468  | 7-18       | 2201482  | 7-20       |           |                                          |



## Part Number Index (Continued)

| Part No. | Page                                                            |
|----------|-----------------------------------------------------------------|
| GPRA1*   | 8-5                                                             |
| GPRB*    | 8-9, 8-11 to 8-16,<br>8-18 to 8-21, 8-23,<br>8-26, 8-30 to 8-33 |
| GPRB*    | 8-11                                                            |
| GPRB1    | 8-5                                                             |
| GPRB2    | 8-5                                                             |
| HDSM*    | 5-100                                                           |
| HET*     | 4-74                                                            |
| HEX07*   | 4-74                                                            |
| HEXA6*   | 4-74                                                            |
| HEXDB*   | 4-74                                                            |
| HEXY*    | 4-73                                                            |
| J*       | 5-14                                                            |
| JS*      | 5-39                                                            |

| Part No. | Page                            |
|----------|---------------------------------|
| JT*      | 5-39                            |
| JT*      | 5-40                            |
| M6*      | 4-39                            |
| MC3*     | 3-39                            |
| MC4*     | 3-41                            |
| MC5*     | 3-45                            |
| MC6*     | 3-48                            |
| MCD*     | 5-54, 5-58, 5-59,<br>5-73, 5-75 |
| MCDM1*   | 5-73                            |
| MCDM3*   | 5-75                            |
| MCDR3*   | 5-79, 5-80, 5-81                |
| MCE*     | 5-87                            |
| MCEM*    | 5-90                            |

| Part No. | Page                                                       |
|----------|------------------------------------------------------------|
| MCJ*     | 5-93                                                       |
| MCJM*    | 5-95                                                       |
| MCK*     | 5-54, 5-56, 5-63,<br>5-64, 5-66, 5-67,<br>5-70, 5-81, 5-82 |
| MCKS*    | 5-78, 5-79                                                 |
| MCS*     | 5-96                                                       |
| MCSAR*   | 5-96                                                       |
| MTC*     | 8-122, 8-128,<br>8-129, 8-139                              |
| MTCP*    | 8-118 to 8-120, 8-134                                      |
| MTCR*    | 8-125                                                      |
| MTCTQ*   | 8-135, 8-136                                               |
| NIC66*   | 4-5                                                        |
| NIC66S*  | 4-28                                                       |

| Part No. | Page                       |
|----------|----------------------------|
| P*       | 5-34                       |
| PT*      | 5-43                       |
| QCM*     | 7-46                       |
| RBD*     | 2-79                       |
| RME*     | 4-46                       |
| RSC*     | 3-52                       |
| RSC07HE* | 3-52                       |
| RSC30E   | 3-52                       |
| RSC40E   | 3-52                       |
| RTD*     | 2-80, 2-81                 |
| S*       | 5-9, 5-26, 5-28, 5-31      |
| SS*      | 5-35, 5-36, 5-40 to 5-43   |
| ST*      | 5-36 to 5-39, 5-41 to 5-43 |
| USS*     | 5-50, 5-46                 |

## Military Part Number Index

**Note:** This index lists all cataloged parts by base no. only. Complete part nos. (with prefixes and/or suffixes) are shown on the page(s) indicated.

| Part No.  | Page                                                                                 |
|-----------|--------------------------------------------------------------------------------------|
| 21097     | 1-100 to 1-103, 1-105                                                                |
| 530745    | 1-13                                                                                 |
| AF8627286 | 2-22                                                                                 |
| AS39029   | 8-37, 8-38, 8-68                                                                     |
| M21097    | 1-106                                                                                |
| M2252     | 6-13                                                                                 |
| M22520    | 2-82, 4-19, 4-23, 4-24,<br>4-25, 4-34, 6-3, 6-13,<br>6-20, 8-28, 8-74,<br>8-75, 8-87 |
| M24308    | 8-38, 8-41, 8-42, 8-47,<br>8-51, 8-52, 8-68,<br>8-70 to 8-73, 8-94,<br>8-97 to 8-101 |
| M29504    | 3-2, 3-3, 3-17                                                                       |

| Part No. | Page                                                                                           |
|----------|------------------------------------------------------------------------------------------------|
| M39012   | 2-6, 2-18 to 2-26,<br>2-88 to 2-91                                                             |
| M39029   | 4-53, 4-54, 8-38,<br>8-68, 8-160                                                               |
| M55302   | 1-27, 1-56, 1-77, 1-78,                                                                        |
| M55339   | 2-26, 2-91                                                                                     |
| M7928    | 10-5, 10-32, 10-33,<br>10-34, 10-36, 10-38,<br>10-39, 10-40                                    |
| M81714   | 8-161, 8-162,<br>8-164 to 8-167,<br>8-173 to 8-179                                             |
| M81969   | 1-78, 3-30, 8-28, 8-29,<br>8-38 to 8-40, 8-44,<br>8-45, 8-68, 8-69, 8-74,<br>8-75, 8-87, 8-160 |
| M83513   | 5-61, 5-66, 5-78, 5-79,<br>5-80, 5-81, 5-82                                                    |
| M83517   | 2-27 to 2-32, 2-91, 2-92                                                                       |
| M83526   | 3-2, 3-4                                                                                       |

| Part No.    | Page                                                                                                                             |
|-------------|----------------------------------------------------------------------------------------------------------------------------------|
| MIL-A-55339 | 2-26                                                                                                                             |
| MIL-C-21097 | 1-11, 1-99                                                                                                                       |
| MIL-C-22520 | 2-84, 4-34                                                                                                                       |
| MIL-C-24308 | 8-40                                                                                                                             |
| MIL-C-34029 | 4-45                                                                                                                             |
| MIL-C-38999 | 3-3, 3-36, 3-42,<br>3-46, 9-37                                                                                                   |
| MIL-C-39012 | 2-63                                                                                                                             |
| MIL-C-39029 | 4-40, 4-53, 4-54,<br>8-37, 8-39, 8-67,<br>8-69, 8-125                                                                            |
| MIL-C-55302 | 1-11 to 1-17, 1-22,<br>1-23, 1-28, 1-29,<br>1-38 to 1-42, 1-45 to 1-58,<br>1-60 to 1-63, 1-66, 1-68,<br>1-77, 1-78, 1-91 to 1-98 |
| MIL-C-55339 | 2-4                                                                                                                              |
| MIL-C-81659 | 4-45, 4-64 to 4-70                                                                                                               |

| Part No.      | Page                                                                                                                                                                           |
|---------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| MIL-C-83517   | 2-4, 2-27 to 2-32                                                                                                                                                              |
| MIL-C-85049   | 4-71                                                                                                                                                                           |
| MIL-E-5400    | 1-11                                                                                                                                                                           |
| MIL-M-24519   | 1-40, 1-51, 1-13,<br>1-14, 1-16, 1-17,<br>1-28 to 1-31, 1-33 to 1-35,<br>1-40, 1-43, 1-49, 1-50,<br>1-52 to 1-56, 1-58, 1-60,<br>1-61, 1-63 to 1-66, 1-68,<br>1-92, 1-95, 1-98 |
| MIL-PRF-39012 | 2-4 to 2-26,<br>2-37, 2-76                                                                                                                                                     |
| MIL-PRF-85045 | 3-20, 3-56, 3-57                                                                                                                                                               |
| MIL-T29504    | 1-11                                                                                                                                                                           |
| MS17143       | 10-35                                                                                                                                                                          |
| MS20659       | 10-6                                                                                                                                                                           |
| MS25036       | 10-30, 10-31, 10-42                                                                                                                                                            |
| MS27488       | 8-125, 8-160                                                                                                                                                                   |

## DSCC Part Number Index

**Note:** This index lists all cataloged parts by base no. only. Complete part nos. (with prefixes and/or suffixes) are shown on the page(s) indicated.

| Part No.  | Page       |
|-----------|------------|
| 89065     | 1-11, 1-30 |
| 84149SSG  | 2-22, 2-92 |
| 84149SSGA | 2-22       |
| 8501814FP | 2-33, 2-92 |

| Part No.  | Page       |
|-----------|------------|
| 85022SSG  | 2-24, 2-92 |
| 85022SSGA | 2-24       |
| 85037SSG  | 2-23, 2-92 |
| 85037SSGA | 2-23       |
| 8503812FP | 2-34, 2-92 |
| 8604412SP | 2-33, 2-92 |
| 86116ZSG  | 2-68, 2-92 |
| 86117ZSG  | 2-68       |

| Part No.    | Page       |
|-------------|------------|
| 86118ZSG    | 2-68       |
| 86119ZSG    | 2-69, 2-92 |
| 86120ZSG    | 2-69, 2-92 |
| 94007ZCG    | 2-41, 2-92 |
| 94007ZSP    | 2-41       |
| 94008ZCG    | 2-41, 2-92 |
| 99012NAFPR  | 8-86       |
| 99012SAFPRA | 8-86       |

| Part No.   | Page |
|------------|------|
| 99013NAEPR | 8-86 |
| 99013SAEPR | 8-86 |
| 99014NAESR | 8-86 |
| 99014SAESR | 8-86 |
| 99015NAESR | 8-86 |
| 99015SAESR | 8-86 |

## NASA Part Number Index

**Note:** This index lists all cataloged parts by base no. only. Complete part nos. (with prefixes and/or suffixes) are shown on the page(s) indicated.

| Part No. | Page |
|----------|------|
| 212518   | 8-60 |
| 212522   | 8-60 |
| 212526   | 8-60 |

| Part No. | Page  |
|----------|-------|
| 212530   | 8-60  |
| 212534   | 8-60  |
| 212538   | 8-60  |
| 212542   | 8-60  |
| 311-P-4  | 8-102 |
| 445705   | 8-60  |
| 445730   | 8-60  |

| Part No. | Page                                   |
|----------|----------------------------------------|
| 446405   | 8-60                                   |
| 448153   | 8-60                                   |
| 311P405  | 8-85                                   |
| 311P407  | 8-74, 8-75, 8-83,<br>8-85, 8-86, 8-103 |
| 311P409  | 8-44, 8-45, 8-82,<br>8-84, 8-86, 8-103 |

| Part No. | Page        |
|----------|-------------|
| G-08-P1  | 8-74, 8-103 |
| G-08-S1  | 8-75, 8-103 |
| G-10-P1  | 8-44, 8-103 |
| G-10-S1  | 8-45, 8-103 |
| GSFC*    | 8-37, 8-67  |

## Tooling Part Number Index

**Note:** This index lists all cataloged parts by base no. only. Complete part nos. (with prefixes and/or suffixes) are shown on the page(s) indicated.

| Part No. | Page                       |
|----------|----------------------------|
| 0003     | 2-105, 2-107               |
| 0004     | 2-105, 2-107               |
| 0005     | 2-105, 2-107               |
| 0007     | 2-111, 2-112, 2-115, 2-116 |
| 0008     | 2-115                      |
| 0016     | 2-106, 2-112, 2-115        |
| 0017     | 2-106, 2-112, 2-115        |
| 0031     | 2-117                      |
| 0035     | 2-105, 2-107               |
| 0036     | 2-111, 2-112, 2-115        |
| 0044     | 2-105                      |
| 0065     | 2-127                      |
| 0081     | 2-127, 2-137               |
| 0082     | 2-127                      |
| 0083     | 2-127                      |
| 0132     | 2-134                      |
| 0172     | 2-117                      |
| 0186     | 2-117                      |
| 0800     | 1-77                       |
| 1001     | 2-134                      |
| 1004     | 2-137                      |
| 1008     | 2-111                      |
| 1008     | 2-112                      |
| 1009     | 2-116                      |
| 13126    | 2-82                       |
| 13127    | 2-82                       |
| 21027    | 2-82                       |
| 35940    | 4-25                       |
| 45098    | 8-150, 8-151, 9-35         |
| 45433    | 10-7, 10-22                |
| 45436    | 10-7, 10-22                |
| 45442    | 10-7                       |
| 45445    | 10-7                       |
| 45639    | 8-148, 8-149, 10-7         |
| 45730    | 10-21                      |
| 45740    | 8-149                      |
| 46121    | 10-37                      |
| 46447    | 10-21                      |
| 46467    | 10-21                      |
| 46468    | 10-21                      |
| 46673    | 10-21                      |
| 46988    | 10-21                      |
| 47386    | 10-37, 10-40               |
| 47387    | 10-37, 10-40               |
| 47806    | 10-37, 10-40               |
| 47807    | 10-37, 10-40               |
| 47808    | 10-37, 10-40               |
| 47812    | 10-7                       |
| 47813    | 10-7                       |
| 47814    | 10-7                       |
| 47824    | 10-41                      |
| 47825    | 10-41                      |
| 47915    | 10-41                      |
| 47918    | 10-41                      |
| 48172    | 10-7, 10-22                |
| 48173    | 10-7, 10-22                |
| 48174    | 10-7, 10-22                |
| 48183    | 10-7, 10-22                |

| Part No. | Page                         |
|----------|------------------------------|
| 48816    | 10-7                         |
| 48817    | 10-7                         |
| 48818    | 10-7                         |
| 48819    | 10-7                         |
| 49592    | 10-7                         |
| 49935    | 10-7                         |
| 49956    | 10-7, 10-22                  |
| 58277    | 1-88                         |
| 58279    | 1-88                         |
| 58280    | 1-88                         |
| 58284    | 4-25, 4-34, 4-40, 8-29       |
| 58305    | 9-35                         |
| 58433    | 10-37                        |
| 58483    | 4-25                         |
| 58495    | 8-145, 8-146                 |
| 58537    | 2-82                         |
| 58541    | 8-144                        |
| 58546    | 10-7                         |
| 59239    | 10-37, 10-40                 |
| 59250    | 10-37, 10-40                 |
| 59275    | 10-37                        |
| 59287    | 10-37                        |
| 59294    | 10-21                        |
| 59300    | 10-40                        |
| 59461    | 10-21                        |
| 59824    | 10-37                        |
| 59826    | 10-37                        |
| 59827    | 10-37                        |
| 59828    | 10-37                        |
| 59877    | 10-25 to 10-27               |
| 59975    | 10-22                        |
| 59980    | 2-82, 2-85, 4-23, 4-56, 8-65 |
| 59981    | 2-22, 2-23, 2-25, 2-82       |
| 68006    | 10-25, 10-27                 |
| 68007    | 10-25 to 10-27               |
| 68008    | 10-25 to 10-27               |
| 68009    | 10-25 to 10-27               |
| 68010    | 10-25 to 10-27               |
| 68011    | 10-25 to 10-27               |
| 68240    | 10-7                         |
| 68241    | 10-7                         |
| 68242    | 10-7                         |
| 68243    | 10-7                         |
| 68250    | 10-5, 10-7                   |
| 68284    | 10-28                        |
| 68312    | 10-7                         |
| 68313    | 10-7                         |
| 68343    | 10-37                        |
| 69015    | 10-7, 10-22                  |
| 69147    | 8-149                        |
| 69151    | 10-40                        |
| 69163    | 10-37                        |
| 69186    | 8-148                        |
| 69186    | 8-149                        |
| 69216    | 10-21                        |
| 69216    | 10-7, 10-22                  |
| 69217    | 10-7, 10-21, 10-22           |
| 69218    | 10-7, 10-22                  |
| 69220    | 8-148, 8-149                 |
| 69222    | 8-148, 8-149                 |
| 69227    | 8-148, 8-149                 |

| Part No. | Page                            |
|----------|---------------------------------|
| 69248    | 8-148                           |
| 69272    | 10-11                           |
| 69315    | 8-148                           |
| 69327    | 10-21                           |
| 69328    | 10-21                           |
| 69329    | 10-21                           |
| 69344    | 10-37                           |
| 69355    | 10-7, 10-22                     |
| 69363    | 10-7                            |
| 69365    | 8-64, 8-143                     |
| 69373    | 8-148, 8-149                    |
| 69440    | 8-149                           |
| 69463    | 10-41                           |
| 69656    | 8-150, 8-151                    |
| 69672    | 8-149                           |
| 69675    | 8-148                           |
| 69690    | 8-150, 8-151                    |
| 69692    | 10-21                           |
| 69693    | 10-21                           |
| 69710    | 2-82, 8-64, 8-156, 10-37, 10-40 |
| 69731    | 10-21                           |
| 69732    | 10-21                           |
| 69733    | 10-21                           |
| 69734    | 10-21                           |
| 69735    | 10-21                           |
| 69872    | 10-37                           |
| 69873    | 10-37                           |
| 69874    | 10-37                           |
| 69875    | 8-144, 10-5, 10-7, 10-21        |
| 69877    | 10-37                           |
| 69897    | 10-37                           |
| 69911    | 10-7                            |
| 69912    | 10-7                            |
| 69913    | 10-7                            |
| 69914    | 10-7                            |
| 69930    | 10-21                           |
| 69931    | 10-21                           |
| 69932    | 10-21                           |
| 69936    | 10-21                           |
| 69937    | 10-21                           |
| 69954    | 10-21                           |
| 69955    | 10-21                           |
| 69956    | 10-21                           |
| 90067    | 9-33                            |
| 90121    | 8-143                           |
| 90122    | 8-143                           |
| 90136    | 8-144                           |
| 90140    | 8-147, 9-30                     |
| 90145    | 8-147, 9-30                     |
| 90223    | 8-105                           |
| 90225    | 8-145                           |
| 90230    | 8-144                           |
| 90231    | 8-144                           |
| 90249    | 8-144                           |
| 90250    | 8-144                           |
| 90294    | 8-67                            |
| 90302    | 8-37                            |
| 90312    | 8-37                            |
| 90327    | 8-146                           |
| 90346    | 1-56                            |
| 90374    | 8-37                            |

| Part No.    | Page                                            |
|-------------|-------------------------------------------------|
| 90566       | 10-7                                            |
| 91002       | 8-145, 8-146                                    |
| 91019       | 8-147                                           |
| 91035       | 1-78                                            |
| 91038       | 8-105                                           |
| 91038       | 9-28                                            |
| 91042       | 8-105                                           |
| 91066       | 4-19, 4-20, 4-21, 4-34, 4-40, 4-53, 4-54, 4-58  |
| 91067       | 4-53, 8-37, 8-38, 8-67, 8-68, 8-74, 8-75, 8-87  |
| 91074       | 4-34, 4-58                                      |
| 91117       | 1-77, 1-89                                      |
| 91156       | 1-78                                            |
| 91362       | 2-83, 2-84, 2-87                                |
| 91505       | 8-145, 9-29                                     |
| 91507       | 9-29                                            |
| 91515       | 8-145, 8-146                                    |
| 91519       | 8-145                                           |
| 91521       | 8-145                                           |
| 91523       | 8-145, 9-29                                     |
| 91538       | 8-144                                           |
| 91539       | 8-144                                           |
| 91540       | 1-59                                            |
| 91542       | 8-145                                           |
| 91544       | 8-105, 9-28                                     |
| 91550       | 8-146                                           |
| 91902       | 4-23, 4-56                                      |
| 91904       | 4-23, 4-24                                      |
| 91905       | 4-23, 4-24, 4-56 to 4-58                        |
| 91907       | 4-25                                            |
| 91911       | 8-150, 8-151                                    |
| 91912       | 8-148, 8-149                                    |
| 125905      | 4-53, 4-54                                      |
| 126195      | 8-39, 8-40, 8-44, 8-45, 8-69, 8-74, 8-75, 8-87  |
| 126237      | 8-69, 8-74, 8-75, 8-87                          |
| 189721      | 8-144, 8-145, 8-150, 8-151, 10-7, 10-21         |
| 1897228-144 | 8-145, 8-150, 8-151, 10-7, 10-21                |
| 189767      | 10-21                                           |
| 189928      | 8-144, 8-145, 10-21                             |
| 200893      | 8-144                                           |
| 201142      | 8-148, 8-149                                    |
| 217200      | 10-21, 10-40                                    |
| 217206      | 10-21                                           |
| 220015      | 2-82, 4-23, 4-56, 4-57                          |
| 220020      | 4-24, 4-58                                      |
| 220061      | 2-14, 2-15                                      |
| 220215      | 1-70                                            |
| 220216      | 1-70                                            |
| 220220      | 2-25, 2-82, 4-23, 4-56                          |
| 220221      | 2-22, 2-82                                      |
| 220222      | 2-82                                            |
| 220224      | 2-82                                            |
| 265871      | 1-78                                            |
| 305183      | 8-65, 8-143, 8-145, 8-146, 8-148 to 8-151, 9-37 |

## Tooling Part Number Index (Continued)

| Part No. | Page                                        |
|----------|---------------------------------------------|
| 307581   | 2-82                                        |
| 311386   | 2-82                                        |
| 311392   | 2-82                                        |
| 311395   | 2-82                                        |
| 311396   | 2-82                                        |
| 312067   | 2-82                                        |
| 312173   | 2-23                                        |
| 312253   | 2-22, 2-23, 2-25,<br>2-82, 4-23, 4-56, 8-65 |
| 312317   | 2-82                                        |
| 314269   | 10-37, 10-40                                |
| 314270   | 10-37, 10-40                                |
| 314516   | 10-7                                        |
| 314517   | 10-7                                        |
| 314518   | 10-7                                        |
| 314537   | 10-37                                       |
| 314948   | 10-25, 10-26                                |
| 314964   | 10-25, 10-26, 10-27                         |
| 318161   | 8-144, 8-147 to 8-151,<br>10-21             |
| 318813   | 8-63, 8-64                                  |
| 354500   | 8-116, 8-156                                |
| 354940   | 2-82, 4-24, 4-58,<br>8-148 to 8-151         |
| 356302   | 10-21                                       |
| 356304   | 8-144, 8-145, 8-150,<br>8-151, 10-21        |
| 356500   | 8-115, 8-158                                |
| 445147   | 4-19, 4-21, 4-34,<br>4-40, 4-54             |
| 445815   | 4-20                                        |
| 448703   | 4-25, 4-34                                  |
| 450490   | 3-41                                        |
| 451716   | 3-44                                        |
| 453228   | 3-41                                        |
| 454257   | 3-41                                        |
| 454297   | 3-41                                        |
| 454335   | 3-41                                        |
| 454342   | 3-41                                        |
| 454481   | 3-41                                        |
| 454482   | 3-41                                        |
| 454483   | 3-41                                        |
| 454484   | 3-41                                        |
| 454539   | 3-41                                        |
| 454899   | 3-41                                        |
| 454900   | 3-41                                        |
| 466321   | 8-145, 8-146                                |
| 466323   | 8-145, 8-146                                |
| 466324   | 8-145                                       |
| 466325   | 8-145                                       |
| 466326   | 8-145                                       |
| 466383   | 8-145                                       |
| 466384   | 8-146                                       |
| 466585   | 8-145                                       |
| 466598   | 8-145                                       |
| 466906   | 8-145                                       |
| 466907   | 8-145, 8-146                                |
| 466908   | 8-145, 8-146                                |
| 466914   | 8-146                                       |
| 466923   | 8-145                                       |
| 466942   | 8-145                                       |
| 466958   | 8-145                                       |
| 466979   | 8-145                                       |

| Part No. | Page                                            |
|----------|-------------------------------------------------|
| 471273   | 8-115                                           |
| 471273   | 8-156                                           |
| 528324   | 8-158                                           |
| 567363   | 8-145                                           |
| 567364   | 8-145                                           |
| 576778   | 10-20, 10-22                                    |
| 576779   | 10-20, 10-22                                    |
| 576780   | 10-20, 10-22                                    |
| 576781   | 10-20, 10-22                                    |
| 576782   | 10-20, 10-22                                    |
| 576783   | 10-20, 10-22                                    |
| 576784   | 10-20, 10-22                                    |
| 592105   | 8-160                                           |
| 599406   | 4-34, 4-53 to 4-55                              |
| 601963   | 4-58                                            |
| 601966   | 4-23 to 4-25, 4-34,<br>4-55 to 4-58, 8-74, 8-75 |
| 601967   | 4-34, 4-55, 8-144,<br>8-150, 8-151              |
| 603995   | 2-85                                            |
| 608650   | 4-23 to 4-25                                    |
| 608651   | 8-63                                            |
| 679300   | 10-37, 10-40                                    |
| 679301   | 10-7                                            |
| 679305   | 10-37, 10-40                                    |
| 687997   | 8-146                                           |
| 768625   | 10-7                                            |
| 811145   | 1-105                                           |
| 811262   | 8-93                                            |
| 852113   | 8-65                                            |
| 852115   | 8-65                                            |
| 861751   | 9-29, 9-33, 9-35                                |
| 863558   | 9-30                                            |
| 864437   | 9-37                                            |
| 864886   | 9-37                                            |
| 904870   | 10-21                                           |
| 1055236  | 2-84                                            |
| 1055270  | 2-84                                            |
| 1055420  | 2-83                                            |
| 1055421  | 2-84                                            |
| 1055439  | 2-83, 2-87                                      |
| 1055440  | 2-83                                            |
| 1055441  | 2-83, 2-87                                      |
| 1055442  | 2-83                                            |
| 1055443  | 2-83                                            |
| 1055446  | 2-83, 2-84                                      |
| 1055447  | 2-83                                            |
| 1055448  | 2-83                                            |
| 1055449  | 2-83, 2-87                                      |
| 1055450  | 2-83                                            |
| 1055451  | 2-83, 2-84                                      |
| 1055454  | 2-83, 2-84                                      |
| 1055455  | 2-85                                            |
| 1055456  | 2-87                                            |
| 1055457  | 2-87                                            |
| 1055458  | 2-87                                            |
| 1055459  | 2-87                                            |
| 1055460  | 2-87                                            |
| 1055461  | 2-87                                            |
| 1055463  | 2-87                                            |
| 1055464  | 2-87                                            |
| 1055465  | 2-85                                            |

| Part No. | Page                                |
|----------|-------------------------------------|
| 1055466  | 2-87                                |
| 1055467  | 2-87                                |
| 1055478  | 2-85                                |
| 1055479  | 2-85                                |
| 1055496  | 2-86                                |
| 1055497  | 2-86                                |
| 1055524  | 2-86                                |
| 1055525  | 2-86                                |
| 1055526  | 2-86                                |
| 1055527  | 2-86                                |
| 1055528  | 2-86                                |
| 1055530  | 2-86                                |
| 1055547  | 2-87                                |
| 1055779  | 2-87                                |
| 1055780  | 2-87                                |
| 1055781  | 2-87                                |
| 1055782  | 2-87                                |
| 1055811  | 2-85                                |
| 1055813  | 2-85                                |
| 1055814  | 2-85                                |
| 1055815  | 2-85                                |
| 1055823  | 2-85                                |
| 1055824  | 2-85                                |
| 1055825  | 2-85                                |
| 1055827  | 2-85                                |
| 1055831  | 2-83                                |
| 1055832  | 2-83                                |
| 1055833  | 2-83                                |
| 1055834  | 2-83                                |
| 1055835  | 2-83                                |
| 1055836  | 2-83                                |
| 1055837  | 2-83                                |
| 1055838  | 2-83                                |
| 1055839  | 2-83                                |
| 1055840  | 2-83                                |
| 1055841  | 2-83                                |
| 1055842  | 2-83                                |
| 1055843  | 2-83                                |
| 1060713  | 2-84                                |
| 1060714  | 2-84                                |
| 1060715  | 2-84                                |
| 1060716  | 2-84                                |
| 1080269  | 2-86                                |
| 1320420  | 8-115, 8-158                        |
| 1320895  | 8-116, 8-157                        |
| 1338600  | 8-116, 8-157                        |
| 1338757  | 10-7                                |
| 1338758  | 10-7                                |
| 1490406  | 10-41                               |
| 1490413  | 10-7, 10-22                         |
| 1490414  | 10-7, 10-22                         |
| 1490597  | 10-41                               |
| 1490598  | 10-41                               |
| 1490599  | 10-41                               |
| 1490745  | 10-7, 10-22                         |
| 1490746  | 10-7, 10-22, 10-41                  |
| 1490748  | 10-7, 10-22                         |
| 1490749  | 10-7, 10-41                         |
| 1583659  | 10-7, 10-21, 10-22,<br>10-28, 10-41 |
| 1583661  | 10-7, 10-21, 10-22,<br>10-28, 10-41 |

| Part No. | Page                                                         |
|----------|--------------------------------------------------------------|
| 1583662  | 10-28                                                        |
| 1673672  | 10-7, 10-22                                                  |
| 1738215  | 8-30                                                         |
| 1738216  | 8-30                                                         |
| 1738217  | 8-30                                                         |
| 1738218  | 8-30                                                         |
| 1738219  | 8-30                                                         |
| 1738220  | 8-30                                                         |
| 1738221  | 8-30                                                         |
| 1738894  | 6-19                                                         |
| 1738894  | 6-20                                                         |
| 1752786  | 10-7                                                         |
| 1752788  | 10-7                                                         |
| 1752787  | 10-25 to 10-28, 10-41                                        |
| 1752868  | 10-7, 10-22                                                  |
| 1752877  | 10-25 to 10-28, 10-41                                        |
| 1804700  | 10-7, 10-21, 10-22,<br>10-25, 10-28, 10-41                   |
| 1901775  | 10-28                                                        |
| 1901776  | 10-28                                                        |
| 1901777  | 10-28                                                        |
| 1901782  | 10-28                                                        |
| 1901783  | 10-28                                                        |
| 1976230  | 10-22, 10-41                                                 |
| 2217375  | 6-3                                                          |
| 2217376  | 6-3                                                          |
| A30199   | 6-7                                                          |
| CE*      | 8-119, 8-134                                                 |
| CTA*     | 8-119                                                        |
| CTA*     | 8-134                                                        |
| DAK83    | 3-30                                                         |
| ES*      | 8-119                                                        |
| HG*      | 6-8                                                          |
| HL1910E  | 6-8                                                          |
| M22520   | 4-53 to 4-58, 6-3,<br>8-38, 8-44, 8-45,<br>8-68, 8-160, 9-37 |
| M81969   | 8-125                                                        |
| MS81969  | 4-53, 4-54                                                   |
| TP*      | 9-37                                                         |

## Americas

**United States** – Harrisburg, PA  
**Product Information Center:**  
**(Technical Support)**  
 Phone: +800-522-6752  
 Fax: +717-986-7575

Menlo Park, CA 94025-1164  
 USA  
 Phone: +1-800-926-2425  
 +1-650-361-3860  
 Fax: +1-717-986-7575

## Asia

Phone: +86-400-820-6015

## Europe

**Austria**  
 Phone: +43-1-905-601-228

**Baltic Regions**  
 Phone: +46-8-5072-5000

**Benelux**  
 Phone: +31-73-6246-999

**France**  
 Phone: +33-1-34-20-86-86

**Germany**  
 Phone: +49-6251-133-1999

**Italy**  
 Phone: +39-011-401-2632

**Nordic**  
 Phone: ++46-8-5072-5000

**Spain/Portugal**  
 Phone: +34-93-2910366

**Switzerland**  
 Phone: +41-52-633-66-26

**United Kingdom**  
 Phone: +44-800-267-666

**Czech Republic**  
 Phone: +420-800-701-462

**Poland**  
 Phone: +48-800-702-309

**Hungary**  
 Phone: +36-809-874-04

**Russia**  
 Phone: +7495-790-790-2

## Need more information?

Technical Support is staffed with specialists well versed in all TE Connectivity products. They can provide you with:

- Technical Support
- Catalogs
- Technical Documents
- Product Samples
- TE Authorized Distributor Locations

## Web Site

Visit **www.te.com/ADM**

for additional information on all our products and market segments for the Aerospace, Defense and Marine markets.



© 2010, 2006, 2003, 2002 and 2014 by TE Connectivity  
 All Rights Reserved.

ACTION PIN, AMP, AMP-BLADE, AMP-HDI, AMP-O-LETRIC, AMP-O-MATIC, AMP-TAPEMATIC, AMP-TAPETRONIC, AMPLIMITE, AMPMODU, AMPOMATOR, CEELOK FAS-T, CERTI-CRIMP, COAXICON, COPALUM, DEUTSCH, -DIAMOND GRIP, DYNA-CRIMP, FASTON, FORTIS ZD, HOLTITE, JACKMATE, LEPRACON, LGH, MATE-N-LOK, MEZALOK, MINIRAY, MULTIGIG RT, NANONICS, OSP, PIDG, PRO BEAM, PRO-CRIMPER, SOLISTRAND, STRATO-THERM, T-HEAD, TE (logo), TERMI-POINT, TERMINYL, TETRA-CRIMP, TE CONNECTIVITY, ULTRA-LITE are trademarks of TE group

of companies and its licensors. Other products, logos, and company names mentioned herein may be trademarks of their respective owners.

## Disclaimer

All information, including illustrations, is believed to be reliable. Users, however, should independently evaluate the suitability of each product for their application. TE Connectivity makes no warranties as to the accuracy or completeness of the information, and disclaims any liability regarding its use. TE Connectivity only obligations are those in the Standard Terms and Conditions of Sale for these products and in no case will TE Connectivity be liable for any incidental, indirect or consequential damages arising from the sale, resale, use, or misuse of the product.

TE Specifications are subject to change without notice. In addition, TE Connectivity reserves the right to make changes in materials or processing without notification to the Buyer which do not affect compliance with any applicable specification.

Export of TE products may require licensing.

**te.com**

© 2024 TE Connectivity Ltd. family of companies. All Rights Reserved  
1308940 ADM Updated 5/24

TE Connectivity, TE connectivity (logo) and TE (logo) are trademarks. Other logos, product and/or company names might be trademarks of their respective owners.

