



**High Operating Precision
Basic Switches with High
Capacity and Long Life**

AM1 (NZ) SWITCHES



(Unit: mm)

RoHS compliant

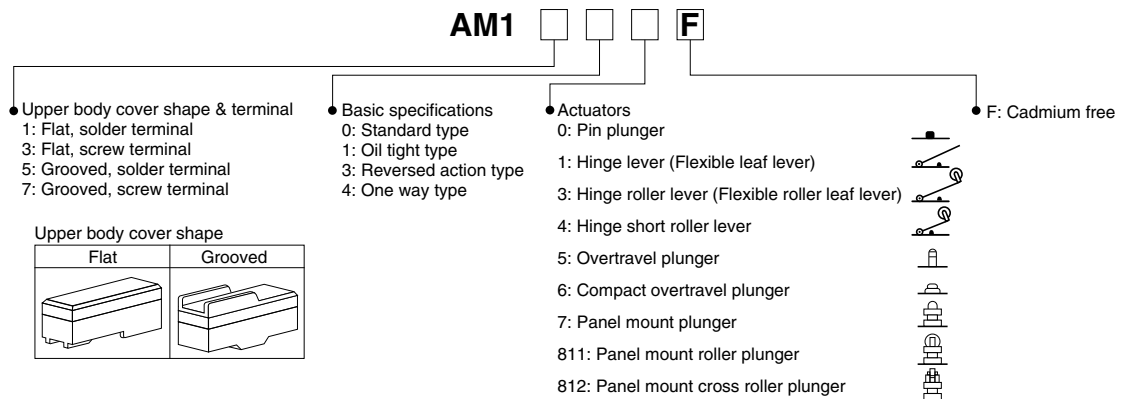
FEATURES

- 10 A Current switching capacity
- High precision and long life
- Versatile variety of actuators
- Screw terminal types can be used with M4 crimp terminals

TYPICAL APPLICATIONS

- Transfer machine
- Packing machine
- Textile equipment
- Cutting machine
- Foot operated switch, etc.

ORDERING INFORMATION



Note: Not every combination is available. Please refer to the following table, "PRODUCT TYPES". Standard part number indicates UL/C-UL (CSA standard) mark.

PRODUCT TYPES

■ Standard type

Actuator	Terminal style	
	Solder terminal	Screw terminal
Pin plunger	AM1100F	AM1300F
Over travel plunger	AM1105F	AM1305F
Compact over travel plunger	AM1106F	AM1306F
Panel mount plunger	AM1107F	AM1307F
Panel mount roller plunger	AM110811F	AM130811F
Panel mount cross roller plunger	AM110812F	AM130812F
Flexible leaf lever	AM1101F	AM1301F
Flexible roller leaf lever	AM1103F	AM1303F
Hinge lever	AM1501F	AM1701F
Hinge short roller lever	AM1504F	AM1704F
Hinge roller lever	AM1503F	AM1703F
One way type hinge short roller lever	AM1544F	AM1744F
One way type hinge roller lever	AM1543F	AM1743F
Reversed action type hinge lever	AM1531F	AM1731F
Reversed action type hinge short roller lever	AM1534F	AM1734F
Reversed action type hinge roller lever	AM1533F	AM1733F

Standard packing for inner carton: 20cps.

Note: Standard part number indicates UL/C-UL (CSA standard) mark.

■ Oil tight types

Actuator	Terminal style	
	Solder terminal	Screw terminal
Hinge lever	AM1511F	AM1711F
Hinge short roller lever	AM1514F	AM1714F
Hinge roller lever	AM1513F	AM1713F

Standard packing for inner carton: 20cps.

Note: Standard part number indicates UL/C-UL (CSA standard) mark.

SPECIFICATIONS

■ Contact Rating

Type	Voltage	Resistive load (cos ϕ = 1)	Inductive load (cos ϕ = 0.4)	Motor or lamp load	
				NC	NO
Standard type	125 V AC	10 A	6 A	3 A	1.5 A
	250 V AC	10 A	6 A	2 A	1 A
	480 V AC	1 A	0.5 A	—	—
	125 V DC	0.5 A	0.05 A	—	—
	250 V DC	0.25 A	0.03 A	—	—
Oil tight type	125 V AC	10 A	6 A	3 A	1.5 A
	250 V AC	10 A	6 A	2 A	1.0 A
	125 V DC	0.5 A	0.05 A	—	—

■ Characteristics

Item		Specifications
Expected life	Mechanical	Pin plunger types Min. 2×10^7 (60 cpm) (OT: specified value) (Oil tight: Min. 1.5×10^6)
		Other actuator types Min. 5×10^6 (60 cpm) (OT: specified value) (Oil tight: Min. 1.5×10^6)
	Electrical (OT: Max.)	Min. 5×10^5 (20 cpm) (at rated load) (Oil tight: Min. 1.5×10^5)
Insulation resistance		Min. 100 M Ω (at 500 V DC)
Dielectric strength	Between non-continuous terminals	1,000 Vrms for 1 min.
	Between each terminal and other exposed metal parts	2,000 Vrms for 1 min.
	Between each terminal and ground	2,000 Vrms for 1 min.
Contact resistance (initial)		Max. 50 m Ω (by voltage drop, 1 A, 6 to 8 V DC)
Vibration resistance (Pin plunger type)		Single amplitude: 0.75 mm, 10 to 55 Hz (contact opening: max. 1 msec.)
Shock resistance	Pin plunger types	Min. 300 m/s ² (contact opening: max. 1 msec.)
	Other actuator types	Min. 50 m/s ² (contact opening: max. 1 msec.)
Allowable operating speed (at no load)		0.1 to 1,000 mm/sec. (at pin plunger position)
Max. operating cycle rate (at no load)		240 cpm
Ambient temperature		-25°C to +80°C (no freezing and condensing)
Unit weight		Approx. 20 to 55 g
Contact specifications	Contact material	Ag alloy
Protection grade		IP40

■ Operating Characteristics

1) Standard type

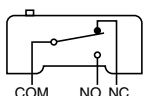
Actuator	Operating Force OF, max.	Release Force RF, min.	Pretravel PT, max.	Movement Differential MD, max.	Overtravel OT, min.	Free Position FP, max.	Operating Position OP
Pin plunger	3.63 N	0.12 N	0.4 mm	0.05 mm	0.13 mm	—	15.9±0.4 mm
Overtravel plunger	3.63 N	0.12 N	0.4 mm	0.05 mm	1.5 mm	—	28.2±0.5 mm
Compact overtravel plunger	3.63 N	0.12 N	0.4 mm	0.05 mm	1.5 mm	—	21.2±0.5 mm
Panel mount plunger	3.63 N	0.12 N	0.4 mm	0.05 mm	5.6 mm	—	21.8±0.8 mm
Panel mount roller plunger	3.63 N	0.12 N	0.4 mm	0.05 mm	3.6 mm	—	33.3±1.2 mm
Panel mount cross roller plunger	3.63 N	0.12 N	0.4 mm	0.05 mm	3.6 mm	—	33.3±1.2 mm
Flexible leaf lever	1.47 N	0.14 N	4 mm	1.3 mm	1.6 mm	—	17.5±0.8 mm
Flexible roller leaf lever	1.47 N	0.14 N	4 mm	1.3 mm	1.6 mm	—	28.6±0.8 mm
Hinge lever	0.69 N	0.14 N	10 mm	1.3 mm	5.6 mm	—	19.1±0.7 mm
Hinge short roller lever	1.57 N	0.42 N	4.5 mm	0.7 mm	2.4 mm	—	30.2±0.4 mm
Hinge roller lever	0.98 N	0.2 N	7.5 mm	1.3 mm	3.6 mm	—	30.2±0.7 mm
One way type hinge short roller lever	2.23 N	0.42 N	3.5 mm	0.4 mm	1.5 mm	31.8 mm	30.2±0.4 mm
One way type hinge roller lever	1.67 N	0.42 N	4.5 mm	0.5 mm	2.4 mm	43.3 mm	41.3±0.4 mm
Reversed action type hinge lever	1.67 N	0.27 N	5.0 mm	0.9 mm	5.6 mm	—	19.1±0.8 mm
Reversed action type hinge short roller lever	5.30 N	1.67 N	2.5 mm	0.4 mm	2.0 mm	—	30.2±0.5 mm
Reversed action type hinge roller lever	2.35 N	0.56 N	3.6 mm	0.7 mm	4.0 mm	—	30.2±0.8 mm

2) Oil tight types

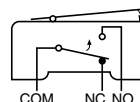
Actuator	Operating Force OF, max.	Release Force RF, min.	Pretravel PT, max.	Movement Differential MD, max.	Overtravel OT, min.	Operating Position OP
Hinge lever	0.69 N	0.14 N	10 mm	1.5 mm	5.6 mm	19.1±0.7 mm
Hinge short roller lever	1.67 N	0.42 N	4.5 mm	0.7 mm	2.4 mm	30.2±0.4 mm
Hinge roller lever	0.98 N	0.20 N	7.5 mm	1.3 mm	3.6 mm	30.2±0.7 mm

CONTACT FORM

■ SPDT



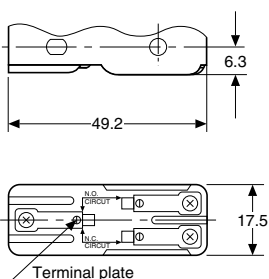
■ Reversed action type



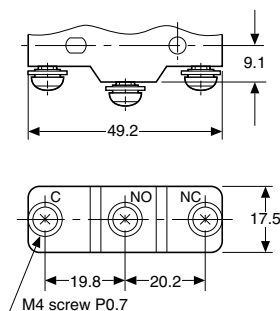
Contact return when actuator operates.
Even in the free position (FP), excellent vibration resistance and shock resistance owing to immobilization by external force.

TERMINAL STYLE

■ Solder terminal



■ Screw terminal



Note: The position of reversed action type of NO and NC is reverse.

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DIMENSIONS

(Unit: mm) General tolerance: ± 0.4

The CAD data of the products with a **CAD Data** mark can be downloaded from: <http://industrial.panasonic.com/ac/e/>

Standard types

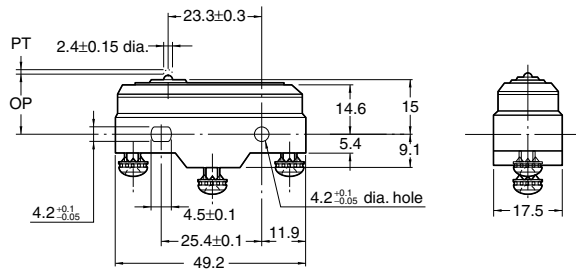
Pin plunger

The photograph is a case of a screw terminal. The dimension is an intersection except a terminal section. Please refer to "TERMINAL STYLE" for the shape and size of terminal section.

CAD Data



AM1100F (Solder terminal)
AM1300F (Screw terminal)



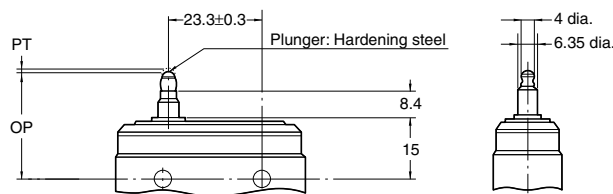
Operating Force OF, max.	3.63 N
Release Force RF, min.	1.12 N
Pretravel PT, max.	0.4 mm
Movement Differential MD, max.	0.05 mm
Overtravel OT, min.	0.13 mm
Operating Position OP	15.9±0.4 mm

Overtravel plunger

CAD Data



AM1105F (Solder terminal)
AM1305F (Screw terminal)



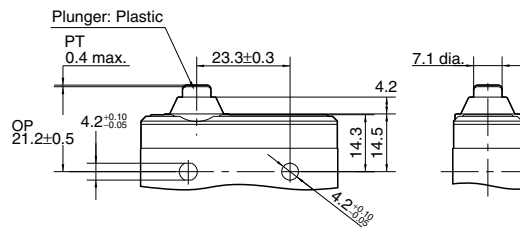
Operating Force OF, max.	3.63 N
Release Force RF, min.	1.12 N
Pretravel PT, max.	0.4 mm
Movement Differential MD, max.	0.05 mm
Overtravel OT, min.	1.5 mm
Operating Position OP	28.2±0.5 mm

Compact overtravel plunger

CAD Data



AM1106F (Solder terminal)
AM1306F (Screw terminal)



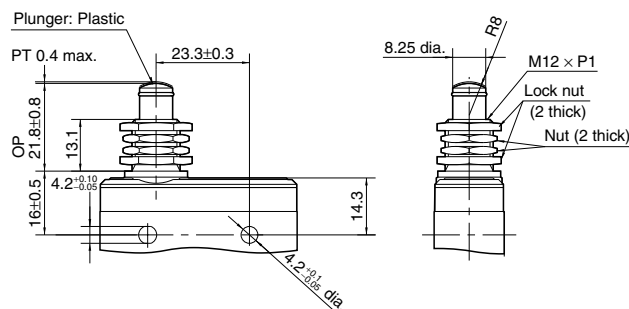
Operating Force OF, max.	3.63 N
Release Force RF, min.	1.12 N
Pretravel PT, max.	0.4 mm
Movement Differential MD, max.	0.05 mm
Overtravel OT, min.	1.5 mm
Operating Position OP	21.2±0.5 mm

Panel mount plunger

CAD Data



AM1107F (Solder terminal)
AM1307F (Screw terminal)



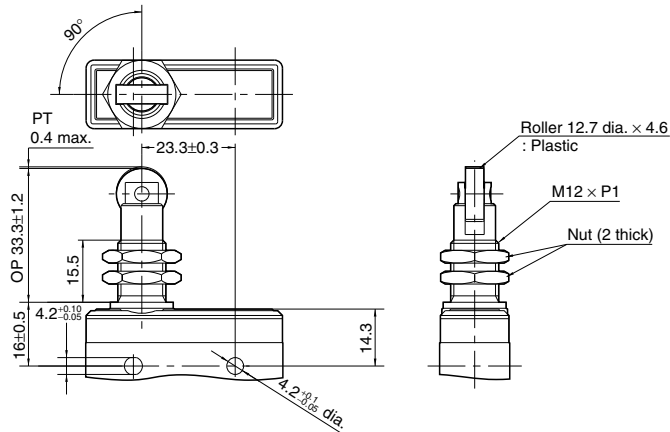
Operating Force OF, max.	3.63 N
Release Force RF, min.	1.12 N
Pretravel PT, max.	0.4 mm
Movement Differential MD, max.	0.05 mm
Overtravel OT, min.	5.6 mm
Operating Position OP	21.8±0.8 mm

Panel mount roller plunger

CAD Data



AM110811F (Solder terminal)
AM130811F (Screw terminal)



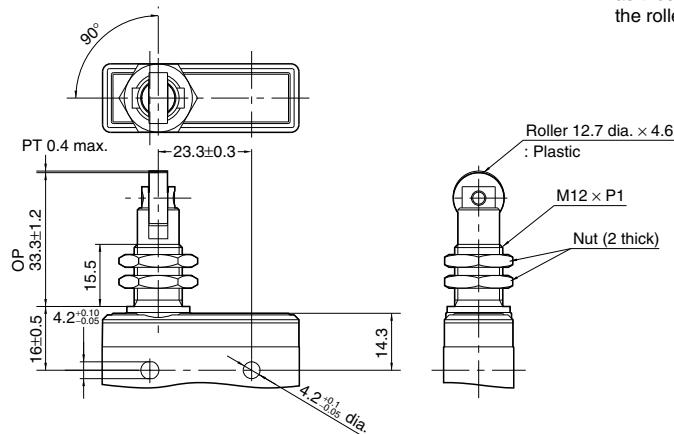
Operating Force OF, max.	3.63 N
Release Force RF, min.	1.12 N
Pretravel PT, max.	0.4 mm
Movement Differential MD, max.	0.05 mm
Overtravel OT, min.	3.6 mm
Operating Position OP	33.3±1.2 mm

Panel mount cross roller plunger

CAD Data



AM110812F (Solder terminal)
AM130812F (Screw terminal)



Dimensions and Operating characteristics are the same as those of Panel mount roller plunger type. However, the roller joins the switch body at an angle of 90°.

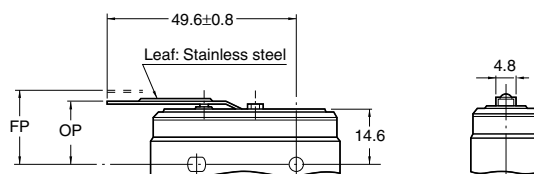
Operating Force OF, max.	3.63 N
Release Force RF, min.	1.12 N
Pretravel PT, max.	0.4 mm
Movement Differential MD, max.	0.05 mm
Overtravel OT, min.	3.6 mm
Operating Position OP	33.3±1.2 mm

Flexible leaf lever

CAD Data



AM1101F (Solder terminal)
AM1301F (Screw terminal)



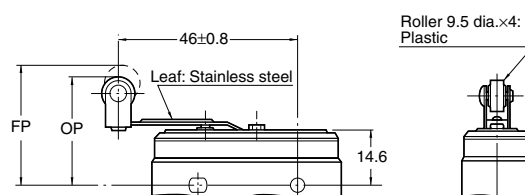
Operating Force OF, max.	1.47 N
Release Force RF, min.	0.14 N
Pretravel PT, max.	4 mm
Movement Differential MD, max.	1.3 mm
Overtravel OT, min.	1.6 mm
Operating Position OP	17.5±0.8 mm

Flexible roller leaf lever

CAD Data



AM1103F (Solder terminal)
AM1303F (Screw terminal)



Operating Force OF, max.	1.47 N
Release Force RF, min.	0.14 N
Pretravel PT, max.	4 mm
Movement Differential MD, max.	1.3 mm
Overtravel OT, min.	1.6 mm
Operating Position OP	28.6±0.8 mm

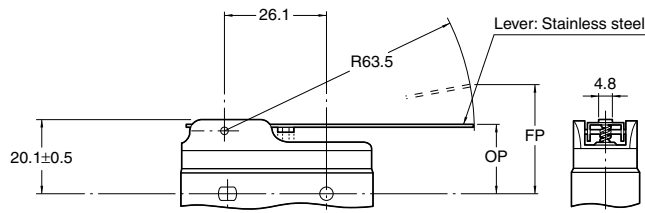
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Hinge lever

CAD Data



AM1501F (Solder terminal)
AM1701F (Screw terminal)



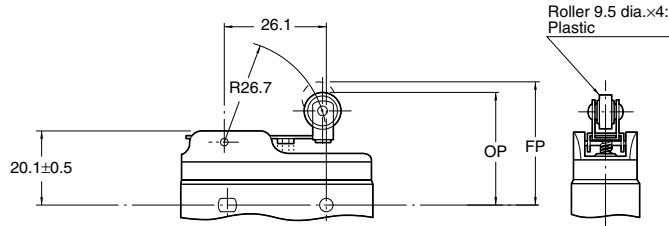
Operating Force OF, max.	0.69 N
Release Force RF, min.	0.14 N
Pretravel PT, max.	10 mm
Movement Differential MD, max.	1.3 mm
Overtravel OT, min.	5.6 mm
Operating Position OP	19.1±0.7 mm

Hinge short roller lever

CAD Data



AM1504F (Solder terminal)
AM1704F (Screw terminal)



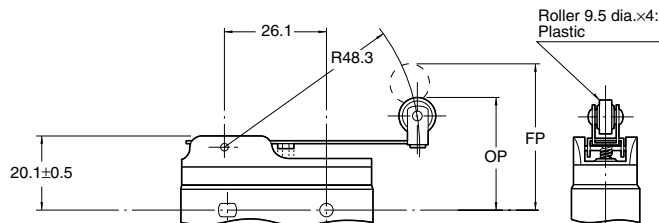
Operating Force OF, max.	1.57 N
Release Force RF, min.	0.42 N
Pretravel PT, max.	4.5 mm
Movement Differential MD, max.	0.7 mm
Overtravel OT, min.	2.4 mm
Operating Position OP	30.2±0.4 mm

Hinge roller lever

CAD Data



AM1503F (Solder terminal)
AM1703F (Screw terminal)



Operating Force OF, max.	0.98 N
Release Force RF, min.	0.2 N
Pretravel PT, max.	7.5 mm
Movement Differential MD, max.	1.3 mm
Overtravel OT, min.	3.6 mm
Operating Position OP	30.2±0.7 mm

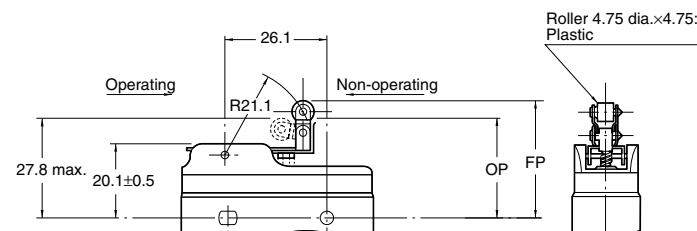
One way types

Hinge short roller lever

CAD Data



AM1544F (Solder terminal)
AM1744F (Screw terminal)



This type is operated only to one direction, not to the reversed direction by the construction of the roller lever, pivoting away from the cam on the return stroke.

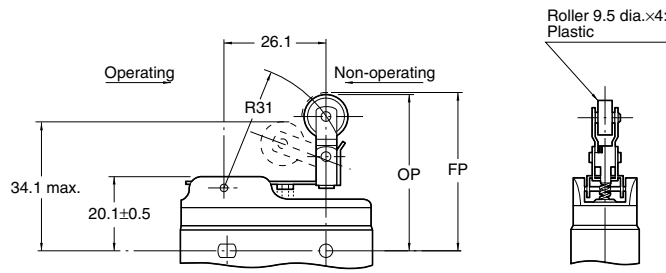
Operating Force OF, max.	2.23 N
Release Force RF, min.	0.42 N
Pretravel PT, max.	3.5 mm
Movement Differential MD, max.	0.4 mm
Overtravel OT, min.	1.5 mm
Operating Position OP	30.2±0.4 mm

Hinge roller lever

CAD Data



AM1543F (Solder terminal)
AM1743F (Screw terminal)



Operating Force OF, max.	1.67 N
Release Force RF, min.	0.42 N
Pretravel PT, max.	4.5 mm
Movement Differential MD, max.	0.5 mm
Overtravel OT, min.	2.4 mm
Operating Position OP	41.3±0.4 mm

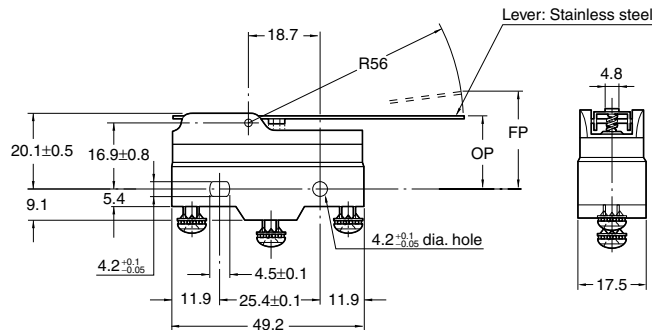
Reversed action types

Hinge lever

CAD Data



AM1531F (Solder terminal)
AM1731F (Screw terminal)



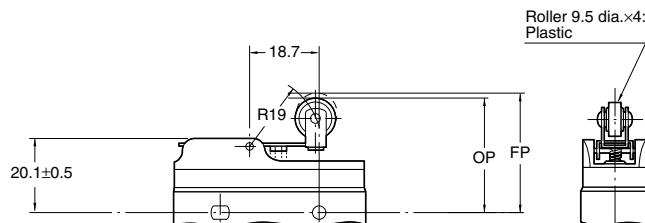
Operating Force OF, max.	1.67 N
Release Force RF, min.	0.27 N
Pretravel PT, max.	5.0 mm
Movement Differential MD, max.	0.9 mm
Overtravel OT, min.	5.6 mm
Operating Position OP	19.1±0.8 mm

Hinge short roller lever

CAD Data



AM1534F (Solder terminal)
AM1734F (Screw terminal)



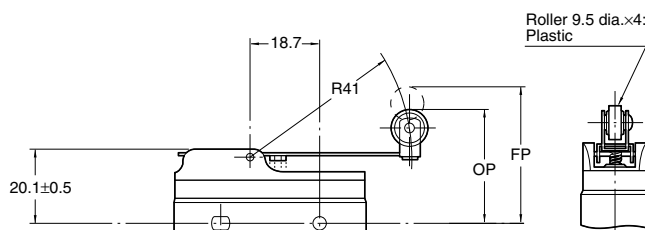
Operating Force OF, max.	5.30 N
Release Force RF, min.	1.67 N
Pretravel PT, max.	2.5 mm
Movement Differential MD, max.	0.4 mm
Overtravel OT, min.	2.0 mm
Operating Position OP	30.2±0.5 mm

Hinge roller lever

CAD Data



AM1533F (Solder terminal)
AM1733F (Screw terminal)



Operating Force OF, max.	2.35 N
Release Force RF, min.	0.56 N
Pretravel PT, max.	3.6 mm
Movement Differential MD, max.	0.7 mm
Overtravel OT, min.	4.0 mm
Operating Position OP	30.2±0.8 mm

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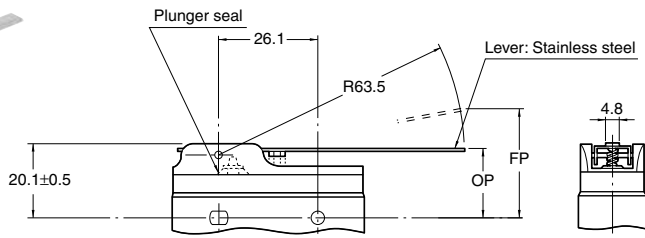
Oil tight types

Hinge lever

CAD Data



AM1511F (Solder terminal)
AM1711F (Screw terminal)



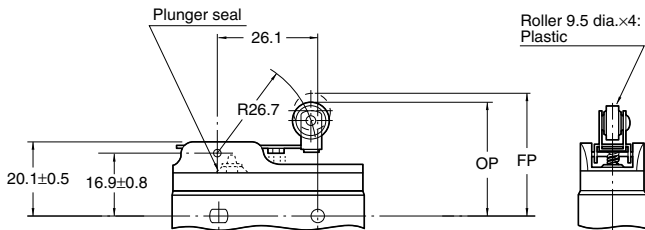
Operating Force OF, max.	0.69 N
Release Force RF, min.	0.14 N
Pretravel PT, max.	10 mm
Movement Differential MD, max.	1.5 mm
Overtravel OT, min.	5.6 mm
Operating Position OP	19.1±0.7 mm

Hinge short roller lever

CAD Data



AM1514F (Solder terminal)
AM1714F (Screw terminal)



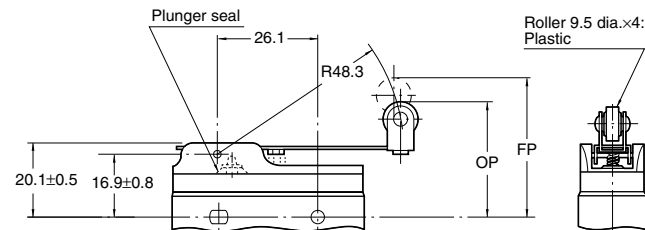
Operating Force OF, max.	1.67 N
Release Force RF, min.	0.42 N
Pretravel PT, max.	4.5 mm
Movement Differential MD, max.	0.7 mm
Overtravel OT, min.	2.4 mm
Operating Position OP	30.2±0.4 mm

Hinge roller lever

CAD Data



AM1513F (Solder terminal)
AM1713F (Screw terminal)



Operating Force OF, max.	0.98 N
Release Force RF, min.	0.20 N
Pretravel PT, max.	7.5 mm
Movement Differential MD, max.	1.3 mm
Overtravel OT, min.	3.6 mm
Operating Position OP	30.2±0.7 mm

The photograph is a case of a screw terminal. The dimension is an intersection except a terminal section. Please refer to "TERMINAL STYLE" for the shape and size of terminal section.

CAUTIONS FOR USE

Regarding fastening of switch body

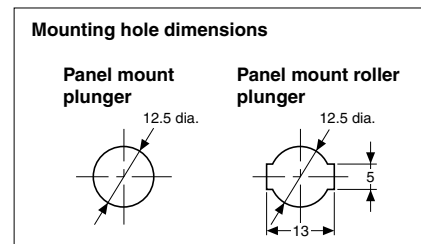
In fastening the switch body, use M4 mounting screws to attach switches with the torque 1.5 N·m or less.

Soldering operations

Soldering should be done in less than 5 seconds, with iron (tip temperature 350°C max.). Care should be taken not to apply force to the terminal during soldering.

Panel mount type

- 1) When mounting the panel, tighten the hex nut for actuator to less than 4.0 N·m.
- 2) Mounting hole dimensions are as shown below.



Environment

Avoid using and storing these switches in a location where they will be exposed to corrosive gases, silicon, or high dust levels, all of which can have an adverse effect on the contacts.