# V & VT Vitreous Enamelled Resistors

The Vitreous Enamelled Resistors are available in a range from 30 to 625 watts. The nickel-chrome winding is protected by several coats of enamel, which has been fired to produce a high reliability resistor, capable of withstanding adverse conditions.
The Vitreous Enamelled Resistor is RoHS Compliant and can be supplied unmounted or with a variety of mounting styles.

H - Horizontal mounting V - Vertical mounting
TB - Through bolt mounting C - Ferrule clips



## General Notes

Ohmic Values
The range of ohmic values available are shown below. You may select any ohmic value between the max and min values.
Low Inductance Windings
Ayrton Perry windings are available for resistors which are required to have substantially lower inductance.
Thermal cut-outs
Cut-outs can be fitted to certain resistors which will operate a contact to disconnect the resistor to prevent overload damage.
Electrical Data Power Rating - Continuous Duty
The two power ratings given to each type of resistor in the table are based on temperature rises of 280°C and 380°C* respectively and relate to single resistors mounted in free air. * V & VT only.

## Ordering Procedure

Unless otherwise specified resistors will be supplied ready for a mechanical connection.
Fixed Resistors To specify: Type, Mounting, Ohmic Value, Tolerance, e.g.: V130H 400R J
Adjustable Resistors To specify add ADJ,
e.g.: V180H 350R K ADJ
Tapped Resistors To specify add TAPPED,
e.g.: V130H 400R K TAPPED
Faston Terminals To specify add FASTON TAGS,
e.g.: V40 200R J FASTON TAGS
Ferrule Ended Resistors To specify add F dead or WF for live,
e.g.: V180 F 450R K or V90L WF 27R K
Corrugated Tape Resistors To specify prefix VT,
e.g.: VT130H 2R5 K

## Ohmic Value Range and Tolerances (other values and tolerances are available on request)

| Size | | 30 | 40 | 45 | 60 | 90 | 130 | 150 | 180 | 220 | 320 | 380 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Type | Range | Ohmic Value | | | | | | | | | | | Tolerance |
| V<br>Fixed Wire | Min<br>Max | 2R2<br>5K0 | 4R7<br>10K | 4R7<br>10K | 4R7<br>15K | 10R<br>30K | 10R<br>60K | 12R<br>70K | 22R<br>100K | 22R<br>120K | 33R<br>120K | 47R<br>125K | Over 10R ± 5%<br>10R or less ±10% |
| VT<br>Fixed Tape | Min<br>Max | 0R02<br>2R0 | 0R15<br>4R5 | 0R2<br>4R5 | 0R2<br>4R5 | 0R3<br>9R0 | 0R7<br>9R0 | 0R8<br>10R | 1R0<br>20R | 1R0<br>20R | 1R5<br>30R | 1R5<br>30R | ±10% |
| NI<br>Non Inductive | Min<br>Max | 1R0<br>500R | 2R0<br>500R | 2R0<br>500R | 3R0<br>500R | 3R0<br>1K0 | 5R0<br>1K5 | 6R0<br>1K5 | 7R0<br>1K5 | 10R<br>1K5 | 25R<br>2K0 | 30R<br>2K5 | ±10% |
| ADJ<br>Adjustable | Min<br>Max | 2R2<br>1K3 | 2R2<br>3K9 | 4R7<br>2K2 | 4R7<br>3K9 | 8R2<br>6K2 | 15R<br>11K | 16R<br>13K | 20R<br>16K | 27R<br>22K | 36R<br>22K | 43R<br>22K | ±10% |
| V Rating<br>Watts | @280°C<br>@380°C | 30<br>35 | 40<br>65 | 45<br>65 | 60<br>75 | 90<br>125 | 130<br>175 | 150<br>195 | 180<br>230 | 220<br>285 | 320<br>420 | 380<br>500 | |
| VT Rating<br>Watts | @280°C<br>@380°C | 35<br>44 | 50<br>80 | 55<br>80 | 75<br>90 | 110<br>185 | 160<br>215 | 185<br>245 | 220<br>285 | 275<br>400 | 400<br>560 | 476<br>625 | |

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The information contained herein does not form part of a contract and is subject to change without notice. Arcol operate a policy of continual product development, therefore, specifications may change.

It is the responsibility of the customer to ensure that the component selected from our range is suitable for the intended application. If in doubt please ask Arcol.



3/13.06

# O Open Wire Wound Resistors

The Open Wire Wound Resistors are close wound with oxidised resistance wire and each resistor is fitted with an adjustable nickel silver tapping clip as standard. Extra tappings can be provided on request.

The Open Wire Wound Resistor is RoHS Compliant and can be supplied unmounted or with a variety of mounting styles.

H - Horizontal mounting V - Vertical mounting
TB - Through bolt mounting C - Ferrule clips



## General Notes

Ohmic Values
The range of ohmic values available are show below. You may select any ohmic value between the max and min values.
Power Ratings - Continuous Duty
Open wound resistors are designed to operate at a maximum temperature rise of 280°C. If a lower surface temperature is required, please contact ARCOL.
Resistance Tolerance
The standard tolerance on resistance for open wound resistors is ± 10% when fitted with one tapping clip.

## Ordering Procedure

Unless otherwise specified resistors will be supplied ready for a mechanical connection.

Fixed Resistors To specify fixed: Type, Mounting, Ohmic Value, Tolerance, e.g.: O130H 400R K
Adjustable Resistors To specify add ADJ,
e.g.: O180H 350R K ADJ
Additional Tap Resistors To specify add Tapped,
e.g.: O130H 400R K TAP
Faston Terminals To specify add FASTON TAGS,
e.g.: O40 200R K FASTON TAGS
Ferrule Ended Resistors To specify add F dead or WF for live,
e.g.: O180 F 450R K or O90L WF 27R K

## Standard Ohmic Values and Tolerances

| Size | | 30 | 40 | 45 | 60L | 60S | 90L | 90S | 130 | 150 | 180 | 220 | 320 | 380 | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Type | Range | Ohmic Value | | | | | | | | | | | | | Tolerance |
| O with one tapping | Min | 0R2 | 0R5 | 0R5 | 0R5 | 0R4 | 0R5 | 0R4 | 0R4 | 0R5 | 0R7 | 0R7 | 1R0 | 1R2 | ±10% as standard |
| | Max | 510R | 1KR | 720R | 1K3 | 1K3 | 2K1 | 3K2 | 3K2 | 4K0 | 5K2 | 6K8 | 9K8 | 9K8 | |
| O Rating Watts | @280°C | 30 | 40 | 45 | 60 | 60 | 90 | 90 | 130 | 150 | 180 | 220 | 320 | 380 | |

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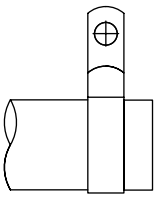
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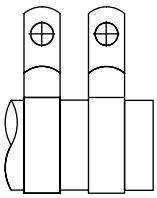
It is the responsibility of the customer to ensure that the component selected from our range is suitable for the intended application. If in doubt please ask Arcol.

# V, VT, O Vitreous & Open Wound Resistors

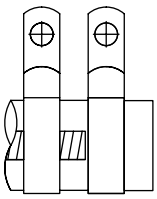
## Termination Styles



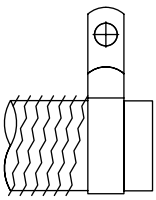
Type V
Standard resistor with untinned terminals.



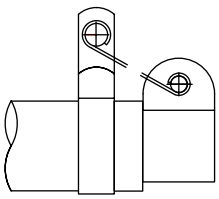
Type V (Tapped)
Tapped resistor.



Type V (ADJ)
Adjustable resistor.

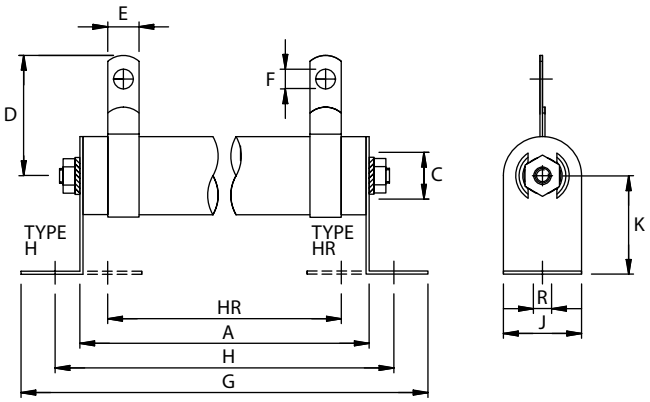


Type VT
Corrugated tape wound resistor.

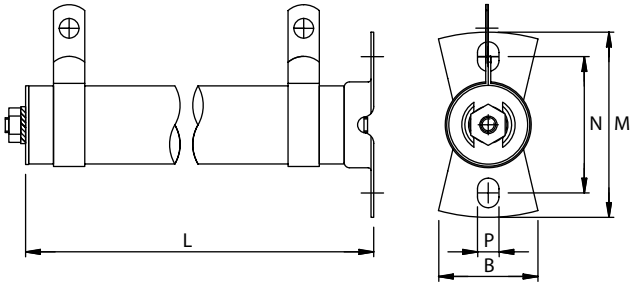


Type V - - - F and WF
Resistor with live and dead ferrule ends.

## H and HR Mounting




## V Mounting

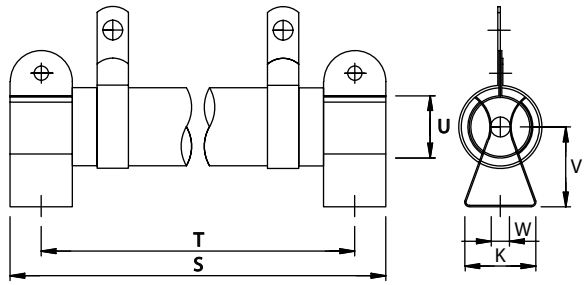



## Dimensions (mm)

| Type | Size | Watts 280°C | Watts 380°C* | A | B | C | D | E | F | G | H | HR | J | K | L | M | N | P | R |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| O & V VT | 30 | 30<br>35 | 35<br>44 | 51 | 19 | 9.5 | 25 | 6.3 | 4 | 72 | 62 | 42 | 16 | 20 | 64 | 38 | 25 | 4x6 | 4x6 |
| O & V VT | 40 | 40<br>50 | 65<br>80 | 102 | 19 | 9.5 | 25 | 6.3 | 4 | 123 | 113 | 93 | 16 | 20 | 114 | 38 | 25 | 4x6 | 4x6 |
| O & V VT | 45 | 45<br>55 | 65<br>80 | 51 | 32 | 19 | 37 | 6.3 | 4 | 91 | 75 | 30 | 28 | 27 | 64 | 54 | 41 | 5x8 | 5x13 |
| O & V VT | 60L | 60<br>75 | 75<br>90 | 89 | 22 | 12.6 | 30 | 6.3 | 4 | 117 | 103 | 77 | 20 | 27 | 102 | 45 | 32 | 4x6 | 5x8 |
| O & V VT | 60S | 60<br>75 | 75<br>90 | 70 | 32 | 19 | 37 | 6.3 | 4 | 110 | 94 | 48 | 28 | 27 | 83 | 54 | 41 | 5x8 | 5x13 |
| O & V VT | 90L | 90<br>110 | 125<br>185 | 165 | 22 | 12.6 | 30 | 6.3 | 4 | 193 | 179 | 153 | 20 | 27 | 178 | 45 | 32 | 4x6 | 5x8 |
| O & V VT | 90S | 90<br>110 | 125<br>185 | 102 | 32 | 19 | 37 | 9.5 | 6 | 142 | 126 | 80 | 28 | 27 | 114 | 54 | 41 | 5x8 | 5x13 |
| O & V VT | 130 | 130<br>160 | 175<br>215 | 152 | 32 | 19 | 37 | 9.5 | 6 | 192 | 176 | 130 | 28 | 27 | 165 | 54 | 41 | 5x8 | 5x13 |
| O & V VT | 150 | 150<br>180 | 195<br>245 | 178 | 32 | 19 | 37 | 9.5 | 6 | 218 | 202 | 156 | 28 | 27 | 191 | 54 | 41 | 5x8 | 5x13 |
| O & V VT | 180 | 180<br>220 | 230<br>285 | 216 | 32 | 19 | 37 | 9.5 | 6 | 256 | 240 | 194 | 28 | 27 | 229 | 54 | 41 | 5x8 | 5x13 |
| O & V VT | 220 | 220<br>275 | 285<br>400 | 267 | 32 | 19 | 37 | 9.5 | 6 | 307 | 291 | 245 | 28 | 27 | 279 | 54 | 41 | 5x8 | 5x13 |
| O & V VT | 320 | 320<br>400 | 420<br>560 | 267 | 45 | 28 | 43 | 9.5 | 6 | 318 | 291 | 248 | 44 | 51 | - | - | - | - | 7x14 |
| O & V VT | 380 | 380<br>476 | 500<br>625 | 305 | 45 | 28 | 43 | 9.5 | 6 | 356 | 327 | 286 | 44 | 51 | - | - | - | - | 7x14 |

VT Resistors - Dimension 'B' may vary up to 10mm greater, depending on the resistance value specified. *380°C applies to vitreous resistors only.

## F and WF Mounting




## Dimensions (mm)

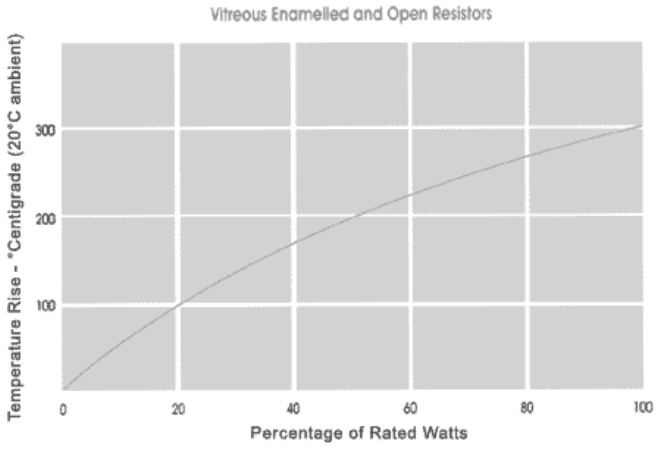
| Type | Size | Watts 280°C | Watts 380°C* | S | T | U | V | W |
|---|---|---|---|---|---|---|---|---|
| O & V VT | 30 | 30<br>35 | 35<br>44 | 76 | 65 | 14 | 19 | 4 |
| O & V VT | 40 | 40<br>50 | 65<br>80 | 127 | 116 | 14 | 19 | 4 |
| O & V VT | 45 | 45<br>55 | 65<br>80 | 83 | 70 | 27 | 32 | 6 |
| O & V VT | 60L | 60<br>75 | 75<br>90 | 121 | 108 | 21 | 32 | 5 |
| O & V VT | 60S | 60<br>75 | 75<br>90 | 102 | 90 | 27 | 32 | 6 |
| O & V VT | 90L | 90<br>110 | 150<br>185 | 197 | 184 | 21 | 32 | 5 |
| O & V VT | 90S | 90<br>110 | 125<br>185 | 133 | 121 | 27 | 32 | 6 |
| O & V VT | 130 | 130<br>160 | 175<br>215 | 184 | 171 | 27 | 32 | 6 |
| O & V VT | 180 | 180<br>220 | 230<br>285 | 248 | 235 | 27 | 32 | 6 |
| O & V VT | 220 | 220<br>275 | 285<br>400 | 298 | 286 | 27 | 32 | 6 |

*380°C applies to vitreous enamelled resistors only.

## Temperature Rise and Power Dissipation

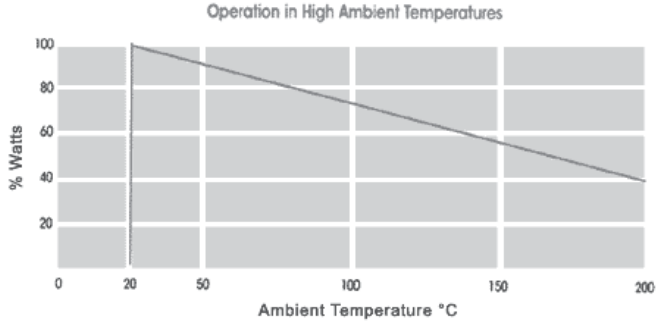
Power Rating - Continuous Duty

Where it is desirable to limit the surface temperature of the resistor, refer to this graph.




Operation in High Ambient Temperatures

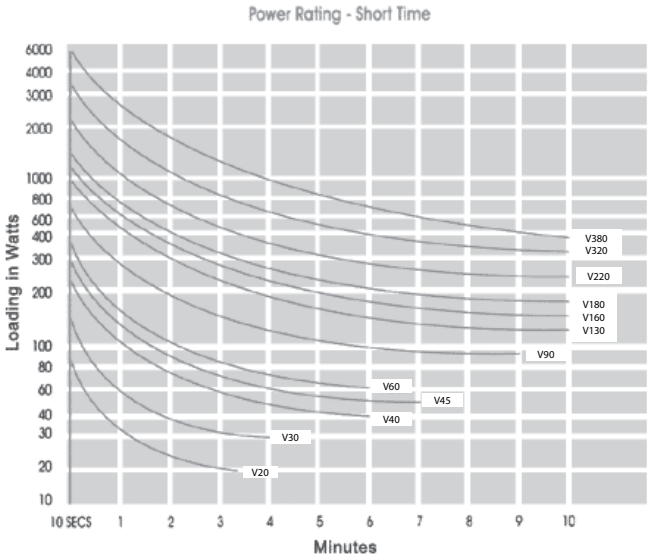
When the ambient temperature is above 20°C resistors should be de-rated as shown on the graph below.




Power Rating - Short Time

In cases where resistors are only required to be operated intermittently, a higher short time rating may be considered. Where it is desirable to limit the surface temperature of the resistor, refer to this graph.

The graph shows loading against time assuming a cooling time of at least 20 minutes between duty cycles.



# Mouser Electronics

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Ohmite:

V30 H 15R J  O90L-75R-K  VT30 HR R6 K