# Adjustable Wirewound Enamelled Resistors

"B" Ring

## FEATURES

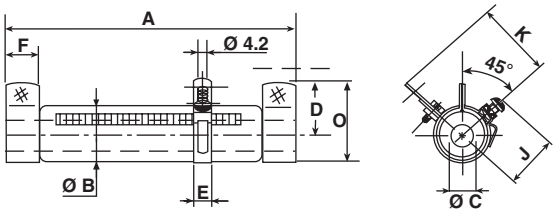
- 21 W to 180 W at 25 °C
- NF C 93-214
  - RBA 13 x 70
  - RBA 20 x 117
  - RBA 25 x 168
- Compliant to RoHS directive 2002/95/EC

RoHS COMPLIANT

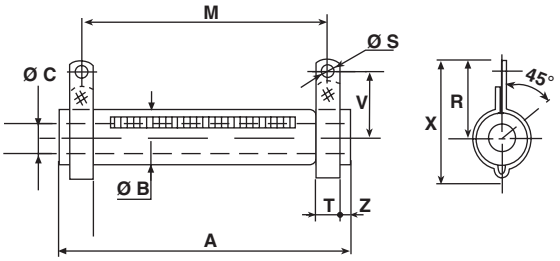
The ceramic tubular core ensures high dissipation capacity and excellent resistance to thermal shock and overload. The resistor winding is evenly coiled on the core and protected by an enamel coating. A longitudinal opening provides for one or more electrical connections by means of sliding collars equipped with a tongued connector.

## DIMENSIONS in millimeters

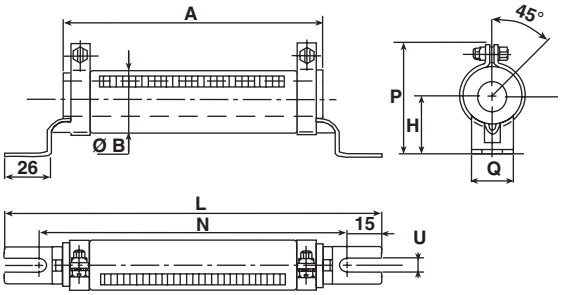
WELDED STAINLESS STEEL 304 L BAND "B"




WELDED STAINLESS STEEL 304 L COLLAR "AN" TYPE 1




SCREWED STAINLESS STEEL 304 L "CS" TYPE 1




| RA SERIES | CONNECTION | A ± 2 | Ø B MAX. | Ø C MIN. | D | E + 0.5 + 0 | F + 0.5 + 0 | H ± 1 | J MAX. | K MAX. | L - 0 - 4 | M | N - 0 - 4 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **13 x 70** | AN-B (1) | 70 | 16 | 5 | 16 ± 0.5 | 7 | 10.5 | - | 19.5 | 24 | - | 56 ± 2 | - |
| **16 x 94** | AN-B | 94 | 19.5 | 9 | 17.5 ± 0.5 | 8 | 12 | - | 23 | 29.5 | - | 78 ± 2 | - |
| **20 x 117** | AN-B | 117 | 23 | 9 | 21 ± 0.7 | 8 | 14 | - | 25 | 31.5 | - | 98 ± 2 | - |
| **25 x 138** | AN-B-CS | 138 | 28 | 12 | 23.5 ± 1 | 8 | 15 | 27 | 27.5 | 34 | 199 | 117 ± 2 | 169 |
| **25 x 168** | AN-B-CS | 168 | 28 | 12 | 23.5 ± 1 | 8 | 15 | 27 | 27.5 | 34 | 229 | 147 ± 2 | 199 |
| **30 x 250** | AN-B-CS | 250 | 33 | 17 | 26 ± 1 | 8 | 18 | 30 | 30 | 36.5 | 317 | 227 ± 2.5 | 287 |

| RA SERIES | CONNECTION | O MAX. | P ± 1.5 | Q ± 0.5 | R | S | T | U | V | X | Z | AVERAGE UNIT WEIGHT IN g |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **13 x 70** | AN-B (1) | 24.5 | - | - | 24 ± 0.5 | 4.2 | 6.35 | - | 20 ± 0.5 | 34.5 ± 1 | 3.5 | 40 |
| **16 x 94** | AN-B | 28 | - | - | 26.5 ± 0.5 | 4.2 | 6.35 | - | 21 ± 0.5 | 38 ± 1 | 5 | 70 |
| **20 x 117** | AN-B | 33 | - | - | 31 ± 0.7 | 4.2 | 6.35 | - | 24 ± 0.7 | 42 ± 1 | 6 | 116 |
| **25 x 138** | AN-B-CS | 38.5 | 50 | 24 | 33.5 ± 1 | 5.7 | 9 | 6.5 | 28 ± 1 | 51 ± 1.5 | 6 | 200 |
| **25 x 168** | AN-B-CS | 38.5 | 50 | 24 | 33.5 ± 1 | 5.7 | 9 | 6.5 | 28 ± 1 | 51 ± 1.5 | 6 | 225 |
| **30 x 250** | AN-B-CS | 43.5 | 60 | 25 | 36 ± 1 | 5.7 | 13 | 9 | 33 ± 1 | 55 ± 1.5 | 5 | 415 |

**Note**

(1) Also with CS and CR collars; see RW datasheet

## MECHANICAL SPECIFICATIONS

| | |
|---|---|
| **Mechanical Protection** | Vitreous enamel |
| **Resistive Element** | Ni-Cr wire |
| **Connections** | B band<br>AN or CS collar |
| **Average Unit Weight** | 40 g to 415 g |

## ELECTRICAL SPECIFICATIONS

| | |
|---|---|
| **Resistance Range** | 33 to 22K<br>(E6 series) |
| **Tolerance** | |
| **Standard** | ± 10 % |
| **Power Rating** | 21 W to 180 W at 25 °C |
| **Temperature Coefficient** | + 75 ppm/°C (typical) |

## ENVIRONMENTAL SPECIFICATIONS

| | |
|---|---|
| **Temperature Limits** | - 55 °C + 350 °C |
| **Climatic Category** | - 55 °C/+ 200 °C/56 days |

## PERFORMANCE

| TESTS | CONDITIONS | REQUIREMENTS | TYPICAL VALUES AND DRIFTS |
|---|---|---|---|
| **Short Time Overload** | 10 $P_r$ 5 s<br>Voltage < 6000 V | 2 % or 0.05 | 0.5 % |
| **Climatic Sequence** | - 55 °C + 200 °C<br>5 cycles | 3 % or 0.05<br>Insulation resistance > 100M | 1 % |
| **Humidity (Steady State)** | 56 days<br>95 % R.H. | 2 % or 0.05<br>Insulation resistance > 100M | 0.5 % |
| **Thermal Shock** | Load at $P_r$<br>followed by exposure at - 55 °C/15 | 2 % or 0.05 | 0.5 % |
| **Resistor Strength** | 200 N ± 10 N | 2 % or 0.05 | 0.25 % |
| **Vibration** | 55/10 | 1 % (1) or 0.05 | 0.5 % |
| **Terminal Strength** AN<br>B | Traction 40 Ncm<br>Torque 60 Ncm | 1 % or 0.05 | 0.25 % |
| **Load Life** | 1000 h at $P_r$<br>25 °C<br>90'/30' | 5 % | 1.5 % |

**Note**

(1) 1 % of total resistance and 2 % between sliding collar and fixed connection

## SPECIAL FEATURES

| RA STYLE | 13 x 70 | 16 x 94 | 20 x 117 | 25 x 138 | 25 x 168 | 30 x 250 |
|---|---|---|---|---|---|---|
| **Designation NF C 93-214** | RBA 13 x 70 | - | RBA 20 x 117 | - | RBA 25 x 168 | - |
| **Power Rating NF C 93-214 at 25 °C** | 13 W | - | 25 W | - | 50 W | - |
| **Maximum Power Rating at 25 °C** | 21 W | 35 W | 50 W | 75 W | 120 W | 180 W |
| **Ohmic Range (E6, E24 series)** | 33 3.9K | 68 3.9K | 100 4.7K | 150 6.8K | 220 10K | 330 22K |

## ADMISSIBLE RATED AMPERAGE

This must in all cases be less than:

$$I_n = \sqrt{\frac{P_n(W)}{R_n(\Omega)}}$$

## SLIDING COLLAR

Resistors are normally supplied with 1 sliding collar fi tted and locked in a specifi c position.
Additional collars can be supplied and adjusted at the factory to special order (on request). (1)

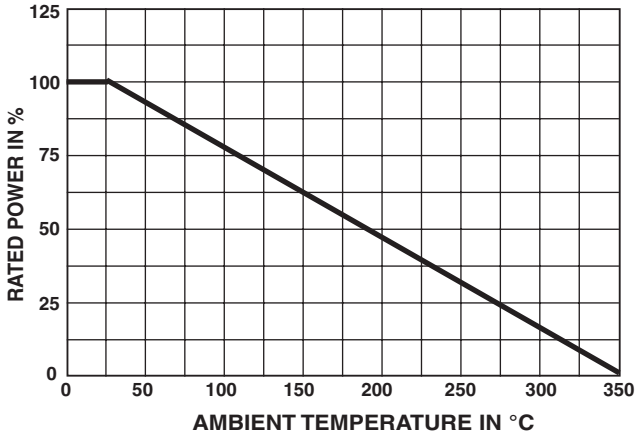
**Note**

(1) Quote ohmic value and tolerance of each resistance section, and $R_n$ value.

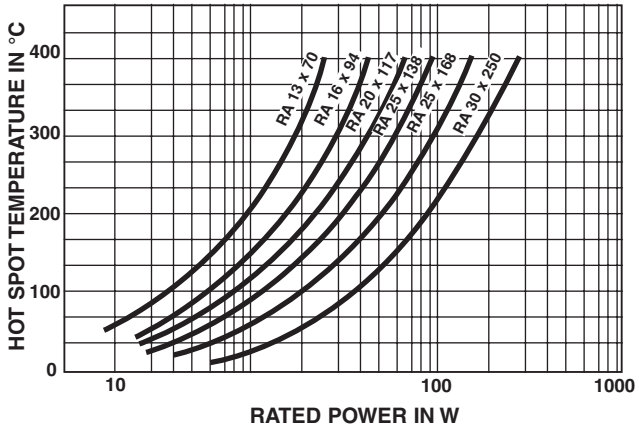
## MAXIMUM ADDITIONAL COLLARS

| MODEL AND TYPE | RA 13 x 70 | RA 16 x 94 | RA 20 x 117 | RA 25 x 138 | RA 25 x 168 | RA 30 x 250 |
|---|---|---|---|---|---|---|
| **Additional sliding collar** | 1 | 1 | 1 | 2 | 3 | 4 |

## POWER RATING




## TEMPERATURE RISE




## MARKING

Vishay Sfernice trademark, model, style, NF style (if applicable) ohmic value (in Ω), tolerance (in %), manufacturing date.

## ORDERING INFORMATION

| RA | 13 x 70 | | AN | 470U | ± 10 % | 1 C. SUP. | BO10 | e |
|---|---|---|---|---|---|---|---|---|
| MODEL | STYLE | SPECIAL DESIGN | CONNECTIONS | OHMIC VALUE | TOLERANCE | ADDITIONAL SLIDING COLLAR | PACKAGING | LEAD (Pb)-FREE |
| | | In option | Custom items are subject to extra-charge and min. order. Please see price list. | | | | | |

## GLOBAL PART NUMBER INFORMATION

| R | A | 3 | 0 | 2 | 5 | 0 | A | 6 | 8 | 0 | R | 0 | K | B | 0 | 3 | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|

| GLOBAL MODEL | SIZE | LEADS | OHMIC VALUE | TOLERANCE | PACKAGING | SPECIAL |
|---|---|---|---|---|---|---|
| **RA** | **13 x 70**<br>**16 x 94**<br>**20 x 117**<br>**25 x 138**<br>**25 x 168**<br>**30 x 250** | **A** = AN<br>**B** = B<br>**C** = CS<br>**D** = CR | The first four digits are significant figures and the last digit specifies the number of zeros to follow. R designates decimal point.<br>**680R0** = 630 Ω<br>**20301** = 20.3 kΩ<br>**88R88** = 88.88 Ω | **K** = 10 % | **Box:**<br>BO10<br>BO10NA<br>BO20<br>BO30<br>BO30NA<br>BO40<br>BO40NA | As applicable.<br>Example: **BA7** |

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