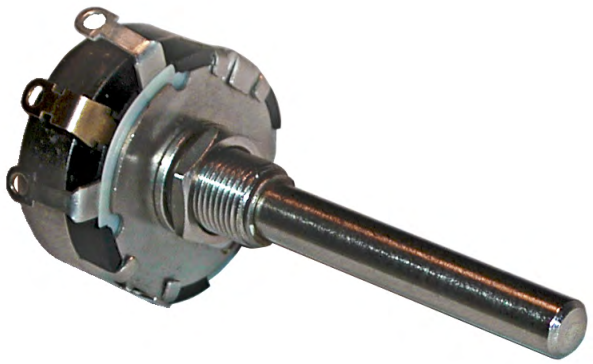
Series RA20
Wirewound Mil-Spec Potentiometer - 2 Watt



Description

Series RA20

- 2 Watt Wirewound element.
- Nickel-plated brass shaft and bushings
- Locking style bushing optional
- Panel and bushing seal optional
- Flatted shaft optional
- Meets MIL-R-19.

Note that Mil-Spec does not include all of the possible combinations and options.

Commercial equivalents available:

Series 48
- 1 1/8 in. diameter potentiometer.
  2 watt wirewound element
  Many optional features.

Series A48
- Pick-A-Shaft version of the 48 series

Series 50
- 4 watt power rating version of the 48 series

Series RA20 Electrical Specifications

Resistance Range
1 ohms to 50Kohm. Linear taper standard
Log, Reverse Log available

Resistance Tolerance
±10% standard; ±5% and ±1% available

Power Rating
Single section: 2Watts @ 40°C; 0 @ 105°C
Additional sections: 1.5Watts @40°C; 0 @ 105°C

Watts/Degree
.0071 watt per degree of effective rotation maximum

Effective Rotation
280° ±5° without switch; less than 280°, special;
260° ±5° with switch

Electrical Rotation
300° ±5° with or without switch

Tapers
90 ohms per degree maximum

Independent Linearity
±5% standard; ±1 available

End Resistance
1 to 50 ohms - 0.3 ohms
51 to 100 ohms - 0.5 ohms.
Over 100 ohms - 0.2% of total or 1 ohm, whichever is greater.

Dielectric Withstanding Voltage
1000 Vac for 60 seconds @ ATM.
450 Vac for 60 seconds @ 3.4 in. Hg.

Working Voltage (Max.)
310 Volts maximum

Switch
S.P.S.T. rotary

Insulation Resistance
100 Megohms minimum

Operating Temperature Range
-55 °C to 105 °C

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Series RA20 Mechanical Specifications

Mechanical Rotation
300° +/-5° with or without switch; 360° available

Stop Torque
8 lbs. in. maximum

Torque Range
0.5 to 6 oz in.; 15 oz. in. increase for switch actuation.
Locking type bushing: 25 oz. in. minimum with jam nut tightened to 10 lb. in.

Maximum Number of Sections
Two recommended, three available.

Weight
Single .077 lb. without switch.
Additional section 0.041 lb.; 0.87 lb with switch.

Hardware
(a) Hex mounting nut, 3/8 in. (9.53mm) x 32 thread 1/2 in(12.7mm) across flats, 3/32 in (2.38mm) thick.
(b) Internal tooth lockwasher 11/16 in. (17.46mm) O.D. x 0.22 in (0.56mm) thick.
(c) Jam hex nut 1/2 in. (12.7mm) across flats, 7/32 in. (5.56mm) thick, supplied on locking type bushing.

Marking
Will appear on rear surface without switch. On periphery when switch is used. Unless otherwise specified, marking will consist of
(a) Customer part number or State Electronics part number
(b) EIA source and date code

Switch Option
S.P.S.T. rotary switch
1A, 250V; 3A125V (ac or dc)

Torque: 12 oz. in.

Series RA20 Operational Specifications

Potentiometers per MIL-R-19 specifications.

Operating Temperature
-55°C to +105°C.

Humidity
85% RH @ 40°C, 240 hours

Power Rating
Single section: 2Watts @ 40°C; 0 @ 105°C
Additional sections: 1.5Watts @40°C; 0 @ 105°C

Watts/Degree
.0071 watt per degree of effective rotation max.

Figure 1. Power Derating Graph

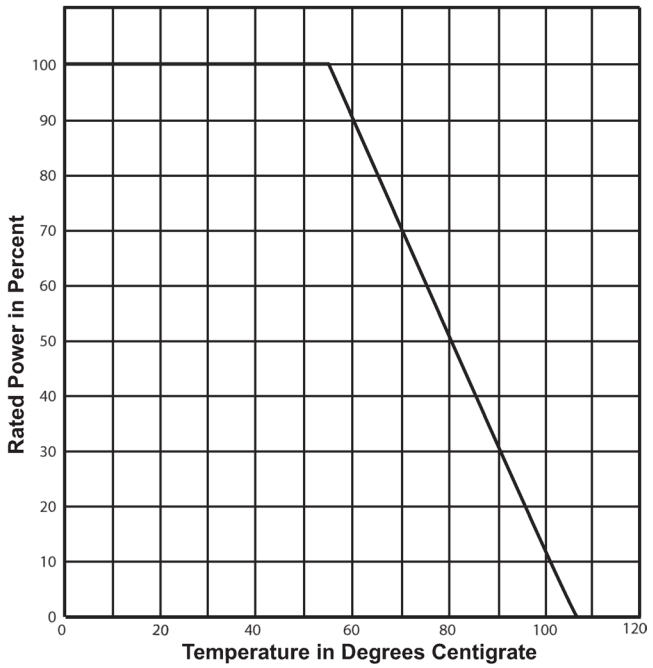
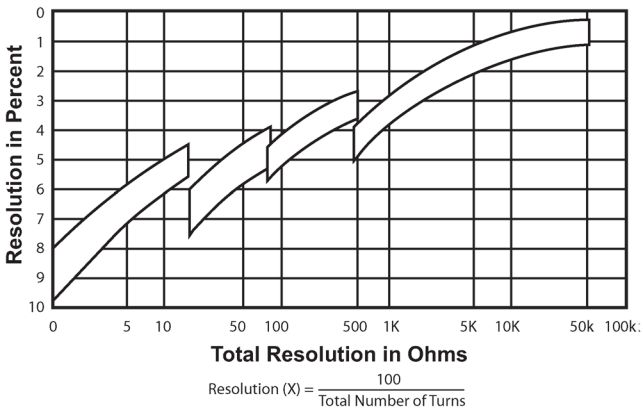
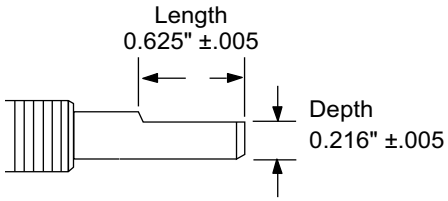


Figure 2. Resolution Graph



$$\text{Resolution (X)} = \frac{100}{\text{Total Number of Turns}}$$

Figure 3. Flatted Shaft Option



Notes:
1. Flatted Shaft is not available with Locking or Shaft Seal Options
2. Flat will extend to within 0.031 (0.79) of mounting bushing where shaft length will not permit standard flat.

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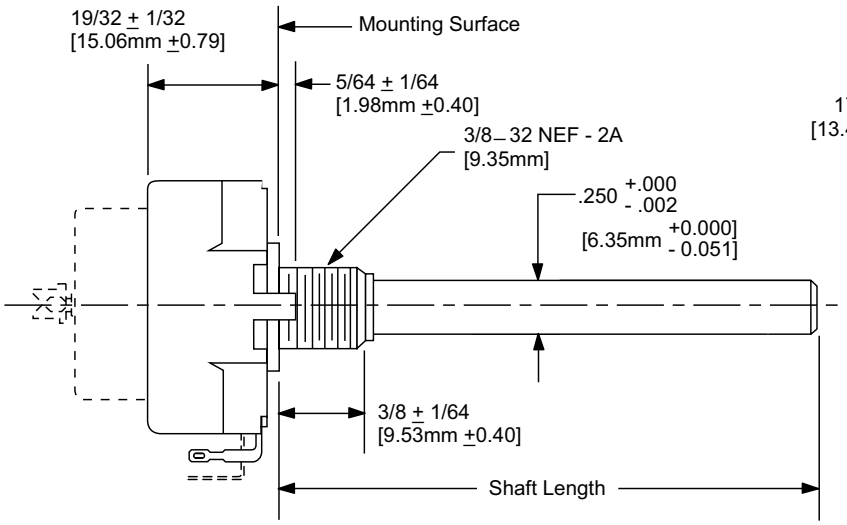
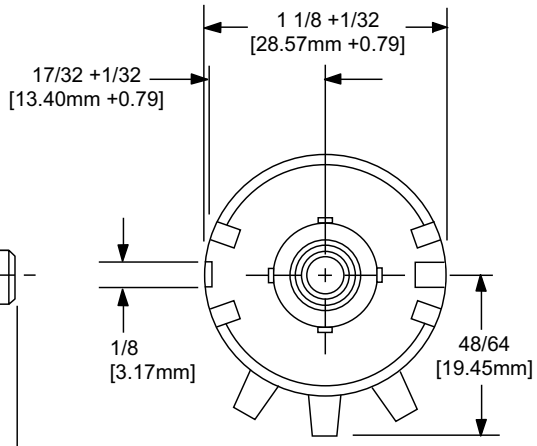
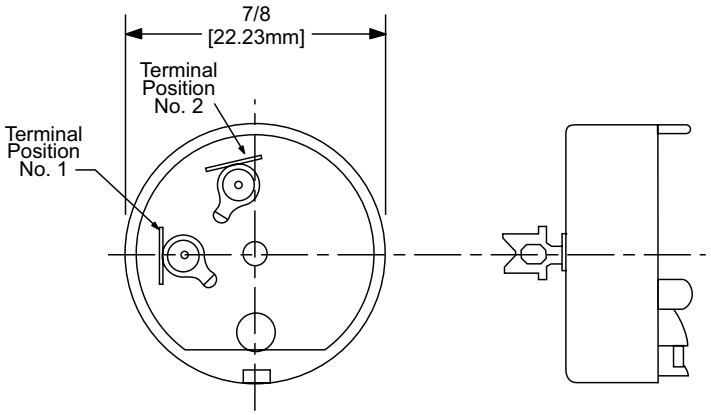
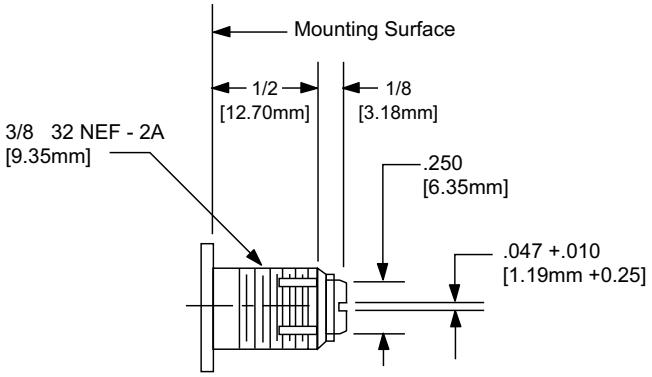




For Reference Only - in/mm





Optional Split Bushing
Jam Nut Supplied

Series RA20 - How to Order

Part Number Example: **RA20-NBSA-503A**

RA20 — **Series**

N — **Shaft & Bushing**

N = Standard
L = Locking
S = Panel and shaft seal (Standard)
T = Panel and shaft seal (Locking)

A — **Switch**

A = None
B = SPST 1A, 250V

S — **Shaft Style**

S = Slotted
F = Flatted
X = Custom

A — **Shaft Length**

A = 1/2"*
B = 5/8"
D = 7/8"
G = 1 1/4"
K = 2 1/2"*
*Not Available for Locking Bushing

50 **3** — **Resistance**

First two digits
Number of zeros

A — **Linearity**

A = Linear
C = Log
E = Rev. Log

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