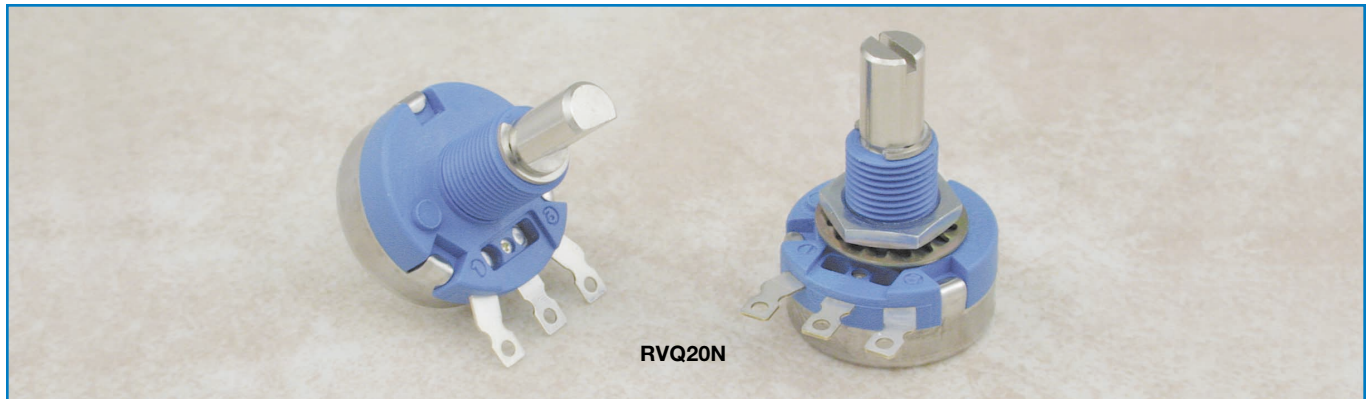


## Long Life 20mm Diameter, Single-Turn, Carbon Panel Controls



### Features

- Long life 20mm diameter, single-turn industrial panel controls
- Carbon film element
- Single unit, single shaft
- 1,000,000 cycle rotational life
- Linear taper
- Independent linearity,  $\pm 5\%$  max.
- Plastic bushing, metal shaft
- Panel mount style
- 6mm diameter shafts in slot or flat end styles
- Standard 15mm or 20mm shaft length
- Right angle ear-lug terminals
- Higher rotational torque (50 to 200 gf·cm) available as special order

### Specifications

#### Electrical

<b>Standard Resistance Range</b>	2.5k $\Omega$ to 200k $\Omega$
<b>Resistance Tolerance</b>	$\pm 20\%$ standard
<b>End Resistance</b>	3 $\Omega$ max.
<b>Resistance Taper</b>	B = linear
<b>Independent Linearity</b>	$\pm 5\%$ max.
<b>Peak Noise (C.R.V.)</b>	2% max.
<b>Power Rating</b>	0.5 watt at +40°C, 0 watt at +80°C
<b>Maximum Input Voltage</b>	250VDC or power rating, whichever is smaller
<b>Insulation Resistance</b>	100M $\Omega$ minimum at 500VDC
<b>Dielectric Strength</b>	500VAC, 1 minute
<b>Adjustment Travel</b>	220° $\pm$ 10°

#### Mechanical

<b>Mechanical Travel</b>	240° $\pm$ 10°
<b>Shaft Torque</b>	50 gf·cm (0.693 oz·in) max.
<b>Stop Strength</b>	9 kgf·cm (124.76 oz·in) min.
<b>Shaft Strength (push)</b>	29.4 N (3 kgf) min.
<b>Shaft Strength (tensile)</b>	29.4 N (3 kgf) min.
<b>Shaft End Play</b>	$\pm 0.4 \times$ (shaft length/30) mm max.
<b>Mounting Nut Torque</b>	5 kgf·cm (69.31 oz·in) min.
<b>Solderability</b>	235°C, 5 seconds
<b>Marking</b>	Model type, taper, resistance code, shaft type, terminal identification, date code

#### Environmental

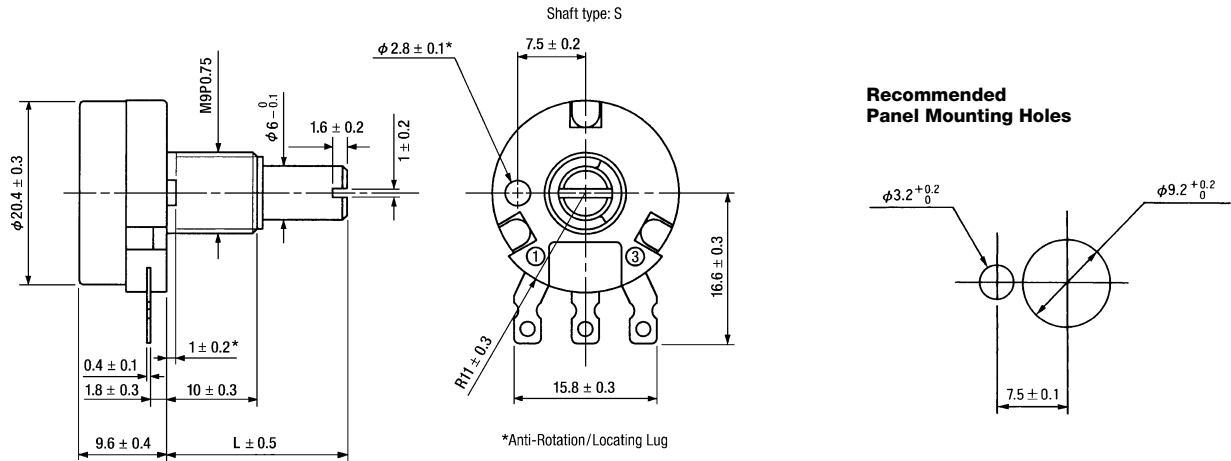
<b>Temperature Range</b>	-10°C to +80°C
<b>Temperature Characteristics</b>	+80°C, 5 hours $\Delta T/R \leq \pm 10\%$
<b>Temperature Cycle</b>	-10°C, +80°C, 30 minutes each, 5 cycles $\Delta T/R \leq \pm 10\%$
<b>Load Life</b>	+40°C, 0.5 watt, 1,000 hours $\Delta T/R \leq \pm 10\%$
<b>Moisture and Load Life</b>	+40°C, 90-95% RH, 0.5 watt, 500 hours $\Delta T/R \leq \pm 10\%$
<b>Vibration</b>	10-55Hz, 1.5mm amplitude, 3 directions, 2 hours each $\Delta T/R \leq \pm 2.5\%$
<b>Soldering Heat Resistance</b>	350°C $\pm$ 5°C, 3 seconds $\Delta T/R \leq \pm 2\%$
<b>Rotational Life</b>	1,000,000 cycles without load $\Delta T/R \leq \pm 10\%$

$\Delta T/R$  = Total Resistance Change

Note: A long life panel control should only be used in a circuit as a potentiometer (3-terminal voltage divider).

**RVQ20N**  
**Panel Mount, Single Unit, Single Shaft**  
**Right Angle Ear-Lug Terminals**

Unit: mm



**Part Numbering System**

**RV Q 20 N 15 S B 103 M**

NOTE: FMS = From Mounting Surface

- **Resistance Tolerance: M** =  $\pm 20\%$  (standard).
- **Resistance Code:** Expressed in ohms. A three digit code where the first two digits are significant figures, and the third digit indicates the number of zeros that follow these figures (i.e., 100 = 10 $\Omega$ ; 101 = 100 $\Omega$ ; 102 = 1,000 $\Omega$ ; 103 = 10,000 $\Omega$ ; 104 = 100,000 $\Omega$ ). See table for standard resistance values.
- **Resistance Taper: B** = Linear.
- **Shaft End Style: S** = Slotted (standard for 15mm or 20mm shaft length).  
**F** = Flatted (special order for 20mm shaft length only).
- **Standard Shaft Length: 15** = 15mm FMS.  
**20** = 20mm FMS.  
 Up to 30mm shaft length available (special order).
- **Style: N** = Panel Mount, Single Unit, Single Shaft, Right Angle Ear-Lug Terminals.
- **Size: 20** = 20mm Diameter.
- **Rotational Life: Q** = Long Life, 1,000,000 cycles.
- **TOCOS Series Name: RV** = Carbon Film Element.

**Standard Resistance Values and Part Numbering Codes**

**Standard Nominal Total Resistance Values and Part Numbering Codes**

Resistance ( $\Omega$ )	Code	Resistance ( $\Omega$ )	Code	Resistance ( $\Omega$ )	Code
2,500	252	10,000	103	100,000	104
5,000	502	20,000	203	200,000	204
		50,000	503		

Refer to Shaft End Styles Specifications and Hardware Specifications for details and availability.  
 For additional information, refer to Guidelines and Precautions for Using Panel Controls.