

## 25mm Diameter, Single-Turn, Wirewound Industrial Panel Controls



### Features

- 25mm diameter, single-turn industrial panel controls
- Wirewound element
- Linear or audio tapers
- Single and tandem units, single shaft; dual unit, dual shaft
- Metal shaft and bushing
- Shaft lock models available
- Panel mounting styles only
- Right angle ear-lug terminals
- 6mm diameter shafts in slot, flat or round end styles
- Standard 15mm or 20mm shaft length
- Low operating temperature option of  $-10^{\circ}\text{C}$  or  $-30^{\circ}\text{C}$ , up to  $+100^{\circ}\text{C}$

### Specifications

#### Electrical

**Standard Resistance Range** . . . . . B =  $5\Omega$  to  $20\text{k}\Omega$   
 A, C =  $100\Omega$  to  $5\text{k}\Omega$

**Resistance Tolerance** . . . . .  $\pm 10\%$  standard  
 ( $\pm 5\%$ ,  $\pm 2\%$  or  $\pm 1\%$  special order)

**End Resistance** . . . . .  $R < 500\Omega = 1\Omega$  max.  
 $R \geq 500\Omega = 0.2\%$  max.

**Resistance Taper** . . . . B = linear; A = CW audio (logarithm);  
 C = CCW audio (logarithm); RA25YPR model is linear only.

**Power Rating** . . . . . B = 1.2 watts; A, C = 0.6 watt, at  $+40^{\circ}\text{C}$

**Insulation Resistance** . . . . .  $100\text{M}\Omega$  minimum at 500VDC

**Dielectric Strength** . . . . . 500VAC, 1 minute

#### Theoretical Resolution

| Resistance ( $\Omega$ ) | Resolution (%) | Resistance ( $\Omega$ ) | Resolution (%) |
|-------------------------|----------------|-------------------------|----------------|
| 5                       | 1.93           | 500                     | 0.29           |
| 10                      | 1.32           | 1,000                   | 0.19           |
| 20                      | 0.85           | 2,000                   | 0.26           |
| 50                      | 0.62           | 5,000                   | 0.19           |
| 100                     | 0.45           | 10,000                  | 0.15           |
| 200                     | 0.38           | -                       | -              |

#### Mechanical

**Mechanical Travel** . . . . .  $300^{\circ} \pm 5^{\circ}$

**Shaft Torque**

Single Unit . . . . . 71.4 to 306 gf·cm (0.99 to 4.242 oz·in)

Tandem Unit . . . . . 71.4 to 714 gf·cm (0.987 to 9.899 oz·in)

Dual Unit . . . . . 71.4 to 459 gf·cm (0.987 to 6.363 oz·in)

**Stop Strength** . . . . . 10.2 kgf·cm (141.4 oz·in) max.

**Mounting Nut Torque** . . . . . 15 kgf·cm (207.94 oz·in) max.

**Solderability** . . . . .  $235^{\circ}\text{C}$ , 3 seconds

**Marking** . . . . . Taper, resistance, resistance tolerance,  
 terminal identification, date code

#### Environmental

**Temperature Range** . . . . . Y =  $-10^{\circ}\text{C}$  to  $+100^{\circ}\text{C}$   
 or X =  $-30^{\circ}\text{C}$  to  $+100^{\circ}\text{C}$

**Temperature Characteristics** . . . . .  $+85^{\circ}\text{C}$ , 5 hours  
 without load  
 $\Delta T/R \leq \pm 5\%$

**Low Temperature Exposure** . . . . .  $-10^{\circ}\text{C}$  (Y),  $-30^{\circ}\text{C}$  (X)  
 1 hour without load  
 $\Delta T/R \leq \pm 3\%$

**Load Life** . . . . .  $+40^{\circ}\text{C}$ , 1,000 hours with rated load  
 $\Delta T/R \leq \pm 3\%$

**Moisture and Load Life** . . . . .  $+40^{\circ}\text{C}$ , 90-95% RH,  
 500 hours with 1/10 rated load  
 $\Delta T/R \leq \pm 5\%$

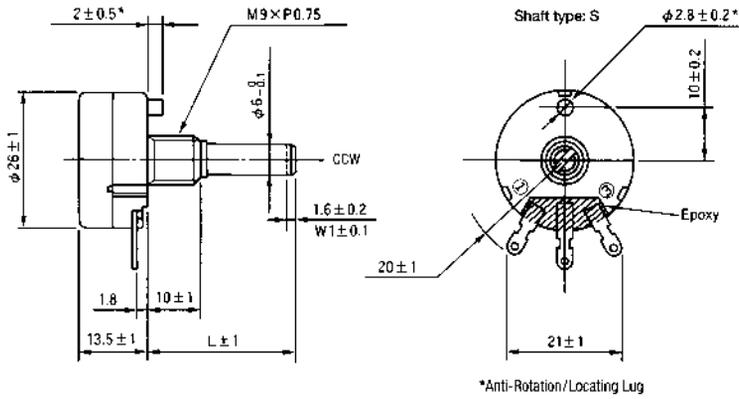
**Vibration** . . . . . 10-55Hz, 1.5mm amplitude,  
 2 directions, 2 hours each  
 $\Delta T/R \leq \pm 1\%$

**Soldering Heat Resistance** . . . . .  $350^{\circ}\text{C}$ , 3.5 seconds;  
 $\Delta T/R \leq \pm 2\%$

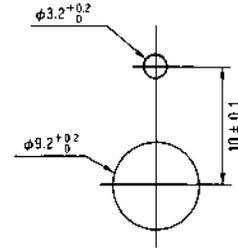
**Rotational Life** . . . . . 15,000 cycles (500 cycles for shaft lock  
 models only) with 1/2 rated load  
 $\Delta T/R \leq \pm 3\%$

R = Total Resistance Value;  $\Delta T/R$  = Total Resistance Change

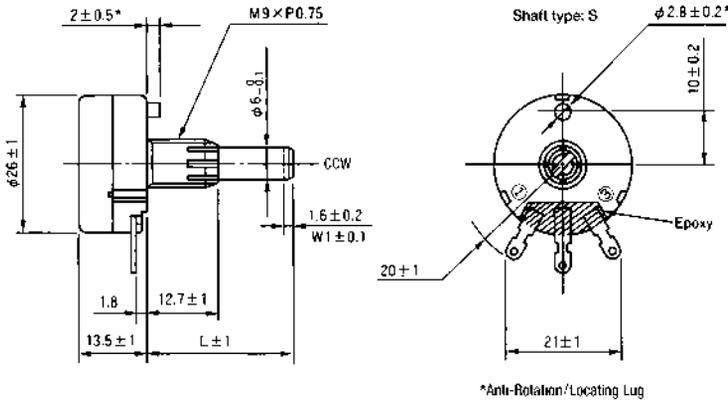
**RA25Y & RA25X**  
**Panel Mount, Single Unit, Single Shaft**  
**Right Angle Ear-Lug Terminals**



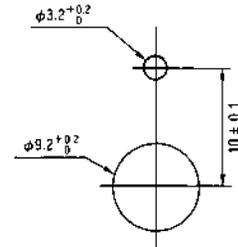
**Recommended Panel Mounting Holes**



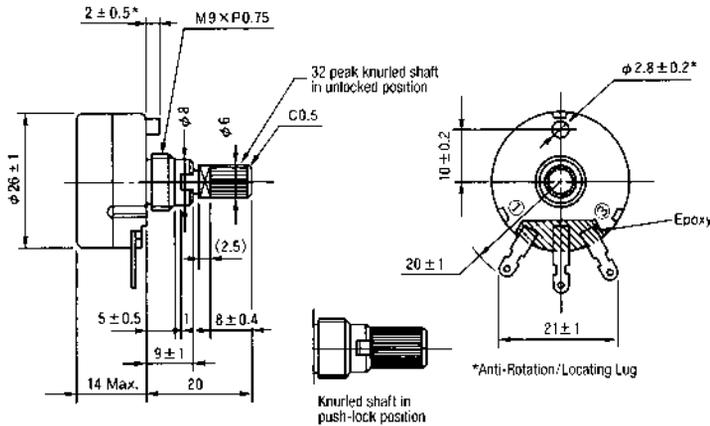
**RA25YL & RA25XL**  
**Panel Mount, Single Unit, Single Shaft with Shaft Lock**  
**Right Angle Ear-Lug Terminals**



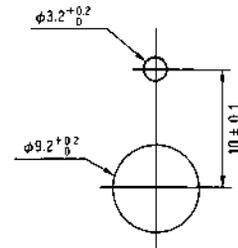
**Recommended Panel Mounting Holes**



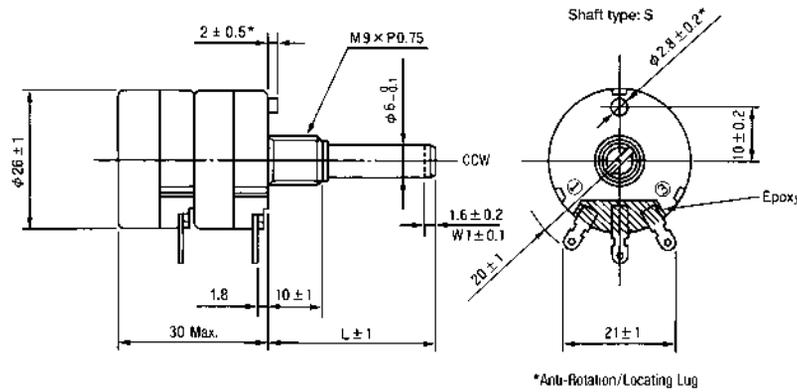
**RA25YPR**  
**Panel Mount, Single Unit, Single Knurled Shaft with Push-Lock**  
**Right Angle Ear-Lug Terminals**



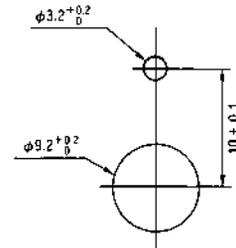
**Recommended Panel Mounting Holes**



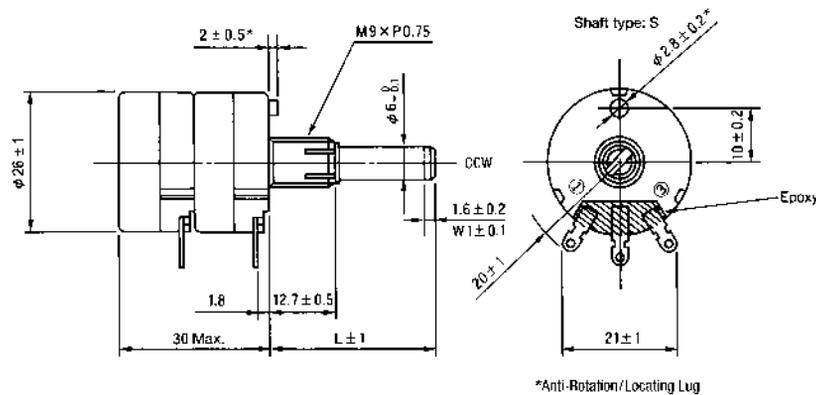
**RA25YG**  
**Panel Mount, Ganged Tandem Unit, Single Shaft**  
**Right Angle Ear-Lug Terminals on Each Unit**



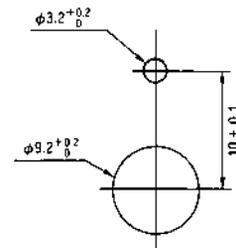
**Recommended Panel Mounting Holes**



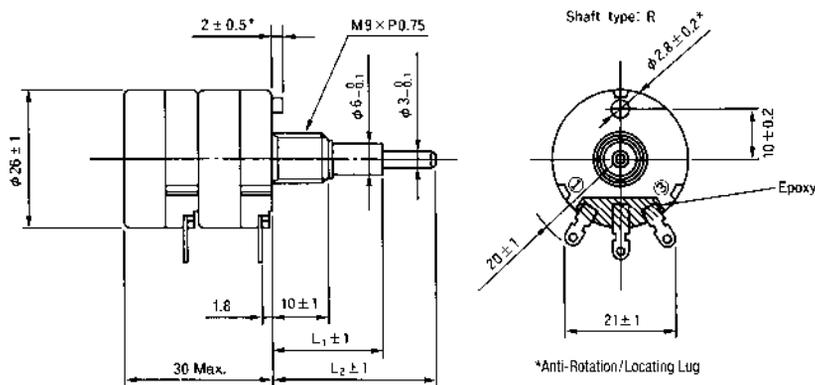
**RA25YGL**  
**Panel Mount, Ganged Tandem Unit, Single Shaft with Shaft Lock**  
**Right Angle Ear-Lug Terminals on Each Unit**



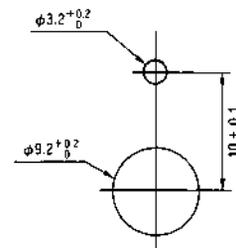
**Recommended Panel Mounting Holes**



**RA25YD**  
**Panel Mount, Dual Unit, Dual Concentric Shaft**  
**Right Angle Ear-Lug Terminals on Each Unit**



**Recommended Panel Mounting Holes**



RA 25 Y L 20 S B 103 K

NOTE: FMS = From Mounting Surface

- ➔ **Resistance Tolerance:** K = ±10% (standard).  
J = ±5% (special order).  
G = ±2% (special order).  
F = ±1% (special order).
- ➔ **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. R indicates decimal point for resistance less than 10Ω (i.e., 5R0 = 5Ω; 100 = 10Ω; 101 = 100Ω; 102 = 1,000Ω; 103 = 10,000Ω). See table for standard resistance values.
- ➔ **For Single Unit:**  
Specify taper and resistance code as shown.
- ➔ **For Ganged Tandem Unit or Dual Unit:**  
Specify a taper code and resistance code for each unit starting with the front unit followed by the rear unit. If both units have the same taper and resistance codes, add "X2" suffix per example below.  
Examples: B103A503 or if both units are the same: B103X2
- ➔ **Resistance Taper:** B = Linear.  
A = CW Audio (logarithm).  
C = CCW Audio (logarithm).
- ➔ **Shaft End Style:** S = Slotted.  
F = Flatted.  
R = Round (RA25YPR model has knurled end style.)
- ➔ **For Single Shaft:**  
Specify the shaft length (FMS) and shaft end style as shown.
- ➔ **For Dual Concentric Shaft:**  
Specify the shaft length (FMS) and shaft end style for the inner shaft followed by the shaft length (FMS) and shaft end style for the outer shaft. Use a dash (-) to separate the code groups for the inner and outer shaft specifications. Example: 30R-20R
- ➔ **Standard Shaft Length:** 15 = 15mm FMS.  
20 = 20mm FMS.  
Up to 50mm shaft length available (special order).
- ➔ **Style:** Blank = Panel Mount, Single Unit, Single Shaft, Right Angle Ear-Lug Terminals.  
L = Panel Mount, Single Unit, Single Shaft with Shaft Lock, Right Angle Ear-Lug Terminals.  
PR = Panel Mount, Single Unit, Single Knurled Shaft with Shaft Lock, Right Angle Ear-Lug Terminals.  
G = Panel Mount, Ganged Tandem Unit, Single Shaft, Right Angle Ear-Lug Terminals on Each Unit.  
GL = Panel Mount, Ganged Tandem Unit, Single Shaft with Shaft Lock, Right Angle Ear-Lug Terminals on Each Unit.  
D = Panel Mount, Dual Unit, Dual Concentric Shaft, Right Angle Ear-Lug Terminals on Each Unit.
- ➔ **Operating Temperature Range:** Y = -10°C to +100°C.  
X = -30°C to +100°C.
- ➔ **Size:** 25 = 25mm Diameter.
- ➔ **TOCOS Series Name:** RA = Wirewound Element.

Standard Resistance Values and Part Numbering Codes

Standard Nominal Total Resistance Values and Part Numbering Codes

| Resistance (Ω) | Code |
|----------------|------|----------------|------|----------------|------|----------------|------|
| 5              | 5R0  | 100            | 101  | 1,000          | 102  | 10,000         | 103  |
| 10             | 100  | 200            | 201  | 2,000          | 202  | 20,000         | 203  |
| 20             | 200  | 500            | 501  | 5,000          | 502  |                |      |
| 50             | 500  |                |      |                |      |                |      |

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.