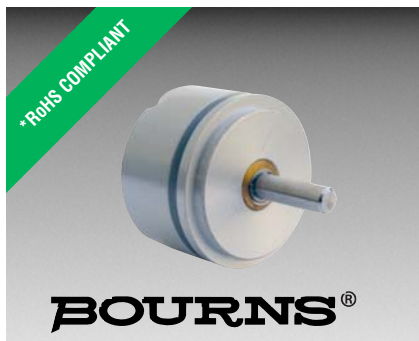




## Features

- Essentially infinite resolution
- Excellent rotational life
- High quality, rugged construction
- General purpose applications
- Non-standard features available
- Cost and space saving

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## 6539/6639 - Precision Potentiometer

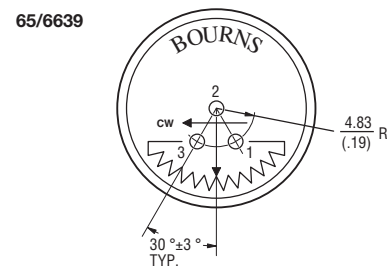
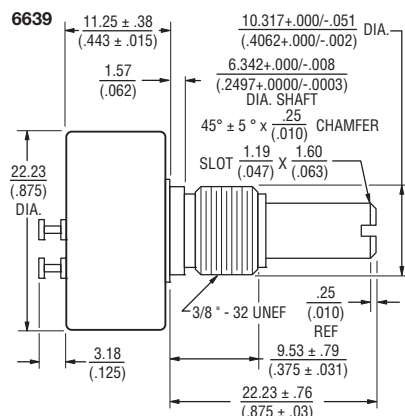
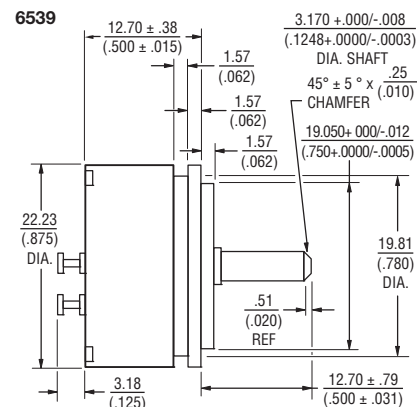
| Electrical Characteristics <sup>1</sup>                                           | 6539 Servo Mount          | 6639 Bushing Mount   |
|-----------------------------------------------------------------------------------|---------------------------|----------------------|
| Standard Resistance Range.....                                                    | 1 K to 100 K ohms.....    | 1 K to 100 K ohms    |
| Total Resistance Tolerance.....                                                   | ±15 %.....                | ±15 %                |
| Independent Linearity.....                                                        | ±2.0 %.....               | ±2.0 %               |
| Effective Electrical Angle.....                                                   | 340 ° +3 °.....           | 340 ° +3 °           |
| End Voltage.....                                                                  | 0.5 % maximum.....        | 0.5 % maximum        |
| Output Smoothness.....                                                            | 0.1 %.....                | 0.1 %                |
| Dielectric Withstanding Voltage (MIL-STD-202, Method 301)                         |                           |                      |
| Sea Level.....                                                                    | 750 VAC minimum.....      | 750 VAC minimum      |
| Power Rating (Voltage Limited By Power Dissipation or 300 VAC, Whichever is Less) |                           |                      |
| +70 °C.....                                                                       | 1.0 watt.....             | 1.0 watt             |
| +125 °C.....                                                                      | 0 watt.....               | 0 watt               |
| Insulation Resistance (500 VDC).....                                              | 500 megohms minimum.....  | 500 megohms minimum  |
| Resolution.....                                                                   | Essentially infinite..... | Essentially infinite |

| Environmental Characteristics <sup>1</sup>    |                                   |                              |
|-----------------------------------------------|-----------------------------------|------------------------------|
| Operating Temperature Range.....              | +1 °C to +125 °C.....             | -40 °C to +125 °C            |
| Storage Temperature Range.....                | -65 °C to +125 °C.....            | -65 °C to +125 °C            |
| Temperature Coefficient                       |                                   |                              |
| Over Storage Temperature Range.....           | ±500 ppm/°C maximum.....          | ±500 ppm/°C maximum          |
| Vibration.....                                | 15 G.....                         | 15 G                         |
| Wiper Bounce.....                             | 0.1 millisecond maximum.....      | 0.1 millisecond maximum      |
| Total Resistance Shift.....                   | ±10 %.....                        | ±10 %                        |
| Voltage Ratio Shift.....                      | ±0.5 %.....                       | ±0.5 %                       |
| Shock.....                                    | 50 G.....                         | 50 G                         |
| Wiper Bounce.....                             | 0.1 millisecond maximum.....      | 0.1 millisecond maximum      |
| Total Resistance Shift.....                   | ±5 %.....                         | ±5 %                         |
| Voltage Ratio Shift.....                      | ±0.5 %.....                       | ±0.5 %                       |
| Load Life.....                                | 1,000 hours, 1 watt.....          | 1,000 hours, 1 watt          |
| Total Resistance Shift.....                   | ±10 %.....                        | ±10 %                        |
| Rotational Life (No Load).....                | 10,000,000 shaft revolutions..... | 10,000,000 shaft revolutions |
| Total Resistance Shift.....                   | ±10 % maximum.....                | ±10 % maximum                |
| Moisture Resistance (MIL-STD-202, Method 106) |                                   |                              |
| Total Resistance Shift.....                   | ±15 %.....                        | ±15 %                        |
| IP Rating.....                                | IP 40.....                        | IP 40                        |

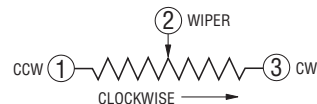
| Mechanical Characteristics <sup>1</sup>        |                                                                                                                          |
|------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|
| Mechanical Angle.....                          | Continuous, Stops (340 ° +8 °, -0 °) available                                                                           |
| Torque (Starting & Running) <sup>2</sup> ..... | 0.40 N-cm (0.5 oz.-in.) max.                                                                                             |
| Mounting.....                                  | 170-200 N-cm (15-18 lb.-in.) maximum                                                                                     |
| Shaft Runout.....                              | 0.13 mm (0.005 in.) T.I.R.                                                                                               |
| Lateral Runout.....                            | 0.08 mm (0.003 in.) T.I.R.                                                                                               |
| Shaft End Play.....                            | 0.13 mm (0.005 in.) T.I.R.                                                                                               |
| Shaft Radial Play.....                         | 0.13 mm (0.005 in.) T.I.R.                                                                                               |
| Pilot Diameter Runout.....                     | 0.06 mm (0.0025 in.) T.I.R.                                                                                              |
| Backlash.....                                  | 0.1 ° maximum                                                                                                            |
| Weight.....                                    | 18 gm (6539 Servo Mount), 24 gm (6639 Bushing Mount)                                                                     |
| Terminals.....                                 | Rear Turret Type                                                                                                         |
| Soldering Condition                            |                                                                                                                          |
| Manual Soldering.....                          | 96.5Sn/3.0Ag/0.5Cu solid wire or no-clean rosin cored wire                                                               |
| Wave Soldering.....                            | 96.5Sn/3.0Ag/0.5Cu solder with no-clean flux                                                                             |
| Wash processes.....                            | Not recommended                                                                                                          |
| Marking.....                                   | Manufacturer's name and part number, resistance value and tolerance, linearity tolerance, wiring diagram, and date code. |
| Ganging (Multiple Section Pots).....           | 1 cup maximum                                                                                                            |
| Hardware (6639 only).....                      | One lockwasher (H-37-2) and one mounting nut (H-38-2) is shipped with potentiometer.                                     |

<sup>1</sup>At room ambient: +25 °C nominal and 50 % relative humidity nominal, except as noted.  
<sup>2</sup>2.82 N-cm (4.0 oz.-in.) max. at -40 °C.

## Product Dimensions



TOLERANCES: EXCEPT WHERE NOTED  
 DECIMALS: .XX ± .51 .XXX ± .13  
 FRACTIONS: ± 1/64  
 DIMENSIONS: MM (IN.)



\*RoHS Directive 2002/95/EC Jan. 27, 2003 including annex and RoHS Recast 2011/65/EU June 8, 2011.

Specifications are subject to change without notice.

The device characteristics and parameters in this data sheet can and do vary in different applications and actual device performance may vary over time.

Users should verify actual device performance in their specific applications.

## 6539/6639 - Precision Potentiometer

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### Recommended Part Numbers

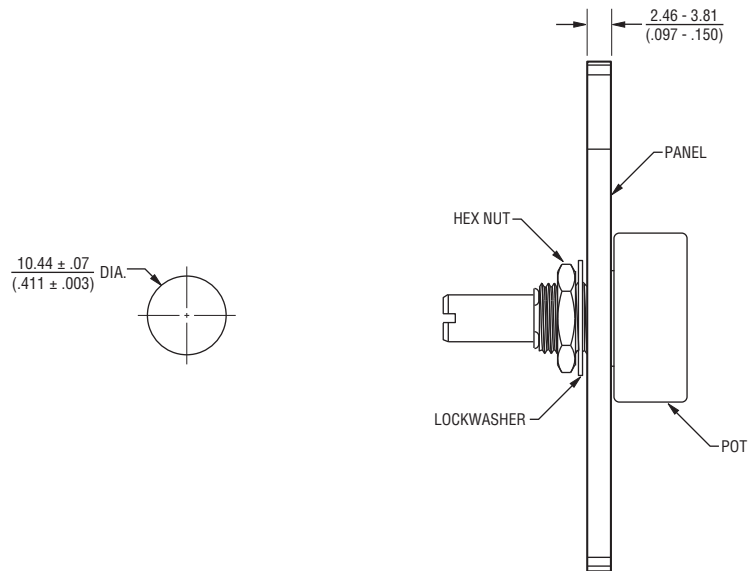
| Part Number | Resistance (Ω) |
|-------------|----------------|
| 6539S-1-102 | 1,000          |
| 6539S-1-502 | 5,000          |
| 6539S-1-103 | 10,000         |

| Part Numbers    |                  | Resistance (Ω) |
|-----------------|------------------|----------------|
| Continuous Turn | Mechanical Stops |                |
| 6639S-1-102     | 6639S-301-102    | 1,000          |
| 6639S-1-202     |                  | 2,000          |
| 6639S-1-502     | 6639S-301-502    | 5,000          |
| 6639S-1-103     | 6639S-301-103    | 10,000         |
| 6639S-1-203     |                  | 20,000         |

**BOLDFACE** LISTINGS ARE IN STOCK AND READILY AVAILABLE THROUGH DISTRIBUTION.  
FOR OTHER OPTIONS CONSULT FACTORY.

### Panel Thickness Dimensions

(For Bushing Mount Only)



Panel thickness and hole diameters are recommended for best fit. However, customers may adjust the dimensions to suit their specific application.

DIMENSIONS:  $\frac{\text{MM}}{(\text{INCHES})}$

TOLERANCES:  $\pm \frac{0.127}{(.005)}$

REV. 10/11

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