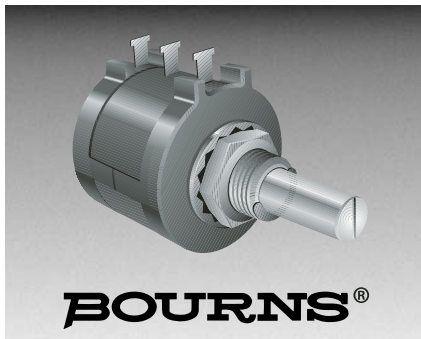




## Features

- Bushing mount
- Optional AR pin feature
- Plastic or metal shaft and bushings
- Wirewound
- Solder lugs or PC pins
- Sealable (Full body seal)

- Designed for use in **HMI applications**

## 3590 - Precision Potentiometer

### Electrical Characteristics<sup>1</sup>

|                                                                                   |                                               |
|-----------------------------------------------------------------------------------|-----------------------------------------------|
| Standard Resistance Range                                                         | 200 to 100 K ohms                             |
| Total Resistance Tolerance                                                        | ±5 %                                          |
| Independent Linearity                                                             | ±0.25 %                                       |
| Effective Electrical Angle                                                        | 3600 ° +10 °, -0 °                            |
| Absolute Minimum Resistance                                                       | 1 ohm or 0.1 % maximum (whichever is greater) |
| Noise                                                                             | 100 ohms ENR maximum                          |
| Dielectric Withstanding Voltage (MIL-STD-202, Method 301)                         |                                               |
| Sea Level                                                                         | 1,500 VAC minimum                             |
| Power Rating (Voltage Limited By Power Dissipation or 450 VAC, Whichever is Less) |                                               |
| +40 °C                                                                            | 2 watts                                       |
| +125 °C                                                                           | 0 watt                                        |
| Insulation Resistance (500 VDC)                                                   | 1,000 megohms minimum                         |
| Resolution                                                                        | See recommended part numbers                  |

### Environmental Characteristics<sup>1</sup>

|                                                                     |                             |
|---------------------------------------------------------------------|-----------------------------|
| Operating Temperature Range                                         | +1 °C to +125 °C            |
| Storage Temperature Range                                           | -55 °C to +125 °C           |
| Temperature Coefficient Over Storage Temperature Range <sup>2</sup> | ±50 ppm/°C maximum/unit     |
| Vibration                                                           | 15 G                        |
| Wiper Bounce                                                        | 0.1 millisecond maximum     |
| Shock                                                               | 50 G                        |
| Wiper Bounce                                                        | 0.1 millisecond maximum     |
| Load Life                                                           | 1,000 hours, 2 watts        |
| Total Resistance Shift                                              | ±2 % maximum                |
| Rotational Life (No Load)                                           | 1,000,000 shaft revolutions |
| Total Resistance Shift                                              | ±5 % maximum                |
| Moisture Resistance (MIL-STD-202, Method 103, Condition B)          |                             |
| Total Resistance Shift                                              | ±2 % maximum                |
| IP Rating                                                           |                             |
| Sealed Versions (-3, -4, -7, and -8)                                | IP 65                       |
| Unsealed Versions (-1 -2, -5, and -6)                               | IP 40                       |

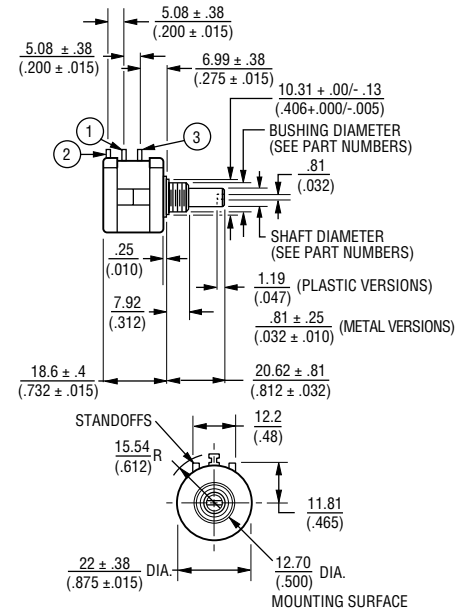
### Mechanical Characteristics<sup>1</sup>

|                                           |                                                                                                                          |
|-------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|
| Stop Strength                             | 45 N-cm (64 oz.-in.) minimum                                                                                             |
| Mechanical Angle                          | 3600 ° +10 °, -0 °                                                                                                       |
| Torque (Starting & Running)               | 0.35 N-cm (0.5 oz.-in.) maximum (unsealed)<br>1.1 N-cm (1.5 oz.-in.) maximum (sealed)                                    |
| Mounting                                  | 55-80 N-cm (5-7 lb.-in.) (plastic)<br>170-200 N-cm (15-18 in.-lb.) (metal)                                               |
| Shaft Runout                              | 0.13 mm (0.005 in.) T.I.R.                                                                                               |
| Lateral Runout                            | 0.20 mm (0.008 in.) T.I.R.                                                                                               |
| Shaft End Play                            | 0.25 mm (0.010 in.) T.I.R.                                                                                               |
| Shaft Radial Play                         | 0.13 mm (0.005 in.) T.I.R.                                                                                               |
| Pilot Diameter Runout                     | 0.08 mm (0.003 in.) T.I.R.                                                                                               |
| Backlash                                  | 1.0 ° maximum                                                                                                            |
| Weight                                    | Approximately 19 G                                                                                                       |
| Terminals                                 | Solder lugs or PC pins                                                                                                   |
| Soldering Condition                       |                                                                                                                          |
| Manual Soldering                          | 96.5Sn/3.0Ag/0.5Cu solid wire or no-clean rosin cored wire; 370 °C (700 °F) max. for 3 seconds                           |
| Wave Soldering                            | 96.5Sn/3.0Ag/0.5Cu solder with no-clean flux; 260 °C (500 °F) max. for 5 seconds                                         |
| 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 Potentiometers) | 1 cup maximum                                                                                                            |
| Hardware                                  | One lockwasher and one mounting nut is shipped with each potentiometer.                                                  |

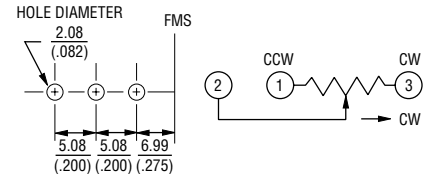
NOTE: For Anti-rotation pin add 91 after configuration dash number. Example: -2 becomes -291 to add AR pin.

### Recommended Part Numbers

| (Printed Circuit) | (Solder Lug)       | (Solder Lug) | Resistance (Ω) | Resolution (%) |
|-------------------|--------------------|--------------|----------------|----------------|
| 3590P-2-102       | <b>3590S-2-102</b> | 3590S-1-102  | <b>1,000</b>   | <b>.029</b>    |
| 3590P-2-202       | <b>3590S-2-202</b> | 3590S-1-202  | <b>2,000</b>   | <b>.023</b>    |
| 3590P-2-502       | <b>3590S-2-502</b> | 3590S-1-502  | <b>5,000</b>   | <b>.025</b>    |
| 3590P-2-103       | <b>3590S-2-103</b> | 3590S-1-103  | <b>10,000</b>  | <b>.020</b>    |
| 3590P-2-203       | <b>3590S-2-203</b> | 3590S-1-203  | <b>20,000</b>  | <b>.019</b>    |
| 3590P-2-503       | <b>3590S-2-503</b> | 3590S-1-503  | <b>50,000</b>  | <b>.013</b>    |
| 3590P-2-104       | <b>3590S-2-104</b> | 3590S-1-104  | <b>100,000</b> | <b>.009</b>    |



### RECOMMENDED PC BOARD MOUNTING HOLE LOCATIONS



TOLERANCES: EXCEPT WHERE NOTED

DECIMALS: .XX ± .01, .XXX ± .013

FRACTIONS: ±1/64

DIMENSIONS: MM (IN.)

### SHAFT & BUSHING CONFIGURATIONS

- (Bushing - DxL, Shaft - D)
- (-1) Plastic Bushing (3/8 " x 5/16 ") and Shaft (.2480 + .001, - .002)
  - (-2) Metal Bushing (3/8 " x 5/16 ") and Shaft (.2497 + .0000, - .0009)**
  - (-3) Sealed, Plastic Bushing (3/8 " x 5/16 ") and Shaft (.2480 + .001, - .002)
  - (-4) Sealed, Metal Bushing (3/8 " x 5/16 ") and Shaft (.2497 + .0000, - .0009)
  - (-5) Metric, Plastic Bushing (9 mm x 7.94 mm) and Shaft (6 mm + 0, - .076 mm)
  - (-6) Metric, Metal Bushing (9 mm x 7.94 mm) and Shaft (6 mm + 0, - .023 mm)
  - (-7) Metric, Sealed, Plastic Bushing (9 mm x 7.94 mm) and Shaft (6 mm + 0, - .076 mm)
  - (-8) Metric, Sealed, Metal Bushing (9 mm x 7.94 mm) and Shaft (6 mm + 0, - .023 mm)

**BOLDFACE LISTINGS ARE IN STOCK AND READILY AVAILABLE THROUGH DISTRIBUTION.**

FOR OTHER OPTIONS CONSULT FACTORY.

REV. 07/05

Specifications are subject to change without notice. Customers should verify actual device performance in their specific applications.