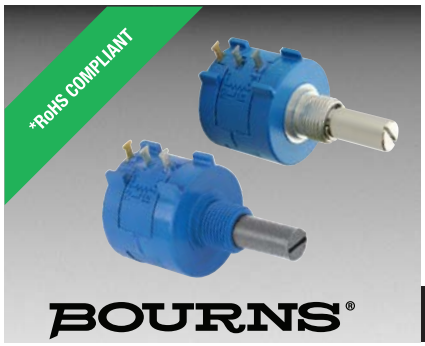

Features

- 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
- RoHS compliant*

3590 - Precision Potentiometer

Electrical Characteristics[1]

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
RPM (Operating)	200 maximum
Resolution	See recommended part numbers

Environmental Characteristics[1]

Operating Temperature Range	-40 °C to +125 °C
Storage Temperature Range	-55 °C to +125 °C
Temperature Coefficient Over Storage Temperature Range [2]	±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
Moisture Sensitivity Level	1
ESD Classification (HBM)	N/A

Mechanical Characteristics[1]

Stop Strength	45 N-cm (64 oz.-in.) minimum
Mechanical Angle	3600 ° +10 °, -0 °
Torque	
Starting & Running	0.85 N-cm (1.2 oz.-in.) maximum (unsealed)
	1.41 N-cm (2.0 oz.-in.) maximum (sealed)
Mounting	55-80 N-cm (5-7 lb.-in.) (plastic)
	90-113 N-cm (8-10 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.

[1] At room ambient: +25 °C nominal and 50 % relative humidity nominal, except as noted.

[2] Consult manufacturer for complete specification details for resistances below 1k ohms.

WARNING Cancer and Reproductive Harm
www.P65Warnings.ca.gov

*RoHS Directive 2015/863, Mar 31, 2015 and Annex.

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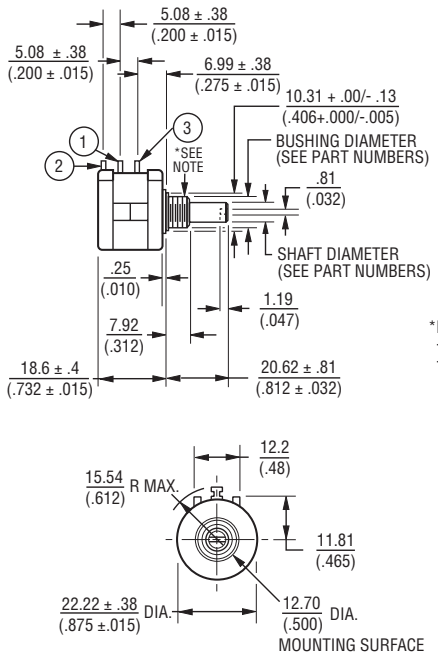
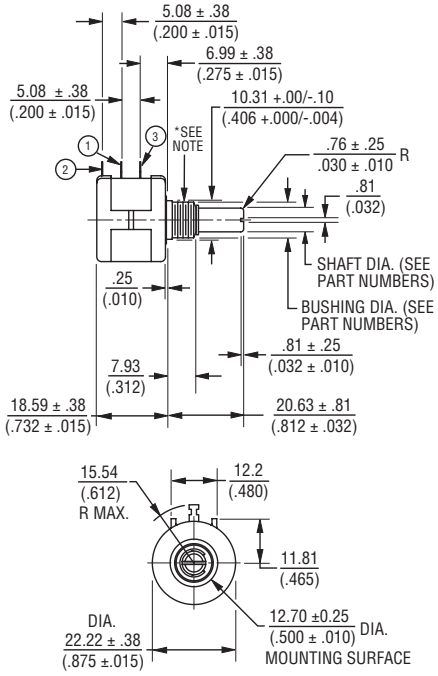
Product Dimensions

-1, -3, -5, -7 Configurations

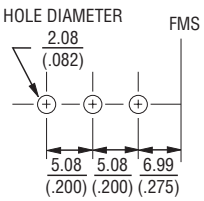


*BUSHING THREAD SPECIFICATIONS:
-1, -2, -3, -4 .... 3/8-32 UNF
-5, -6, -7, -8 .... M9 x 0.75-7H

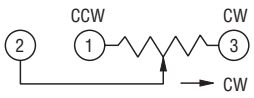
-2, -4, -6, -8 Configurations



Recommended PCB Layout



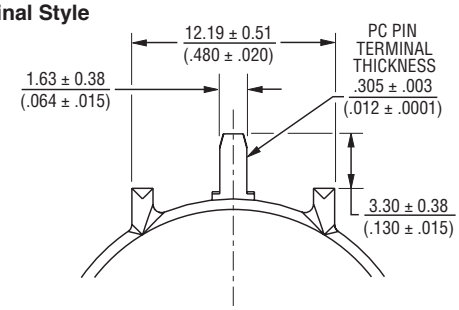
Schematic



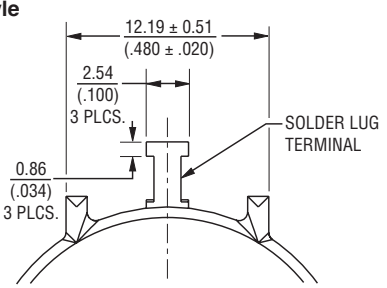
TOLERANCES: EXCEPT WHERE NOTED
DECIMALS: .XX ± .508 (.02), .XXX ± .127 (.005)
FRACTIONS: ±1/64
DIMENSIONS: MM (IN.)

Terminal Styles

"P" Terminal Style



"S" Terminal Style



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3590 - Precision Potentiometer

BOURNS®

Recommended Part Numbers

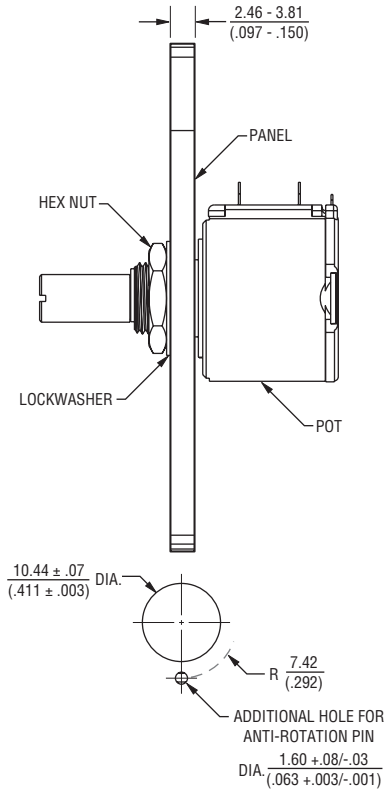
(Printed Circuit)	(Solder Lug)	(Solder Lug)	Resistance (Ω)	Resolution (%)
3590P-2-102L	**3590S-2-102L**	3590S-1-102L	**1,000**	**.029**
3590P-2-202L	**3590S-2-202L**	3590S-1-202L	**2,000**	**.023**
3590P-2-502L	**3590S-2-502L**	3590S-1-502L	**5,000**	**.025**
3590P-2-103L	**3590S-2-103L**	3590S-1-103L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

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

ROHS IDENTIFIER:
L = COMPLIANT

Panel Thickness Dimensions

(For Bushing Mount Only)



Anti-rotation pin hole is shown at six o'clock position for reference only. The actual location is determined by the customer's application. Refer to the front view of the potentiometer to see the location of the optional A/R pin.

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

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)

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