



Product Update Memo

PRECISION POTENTIOMETERS

Bourns Manufacturers Representatives
Corporate Distributor Product Managers
Americas Sales Team
Asia Sales Team
Europe Sales Team

July, 2009

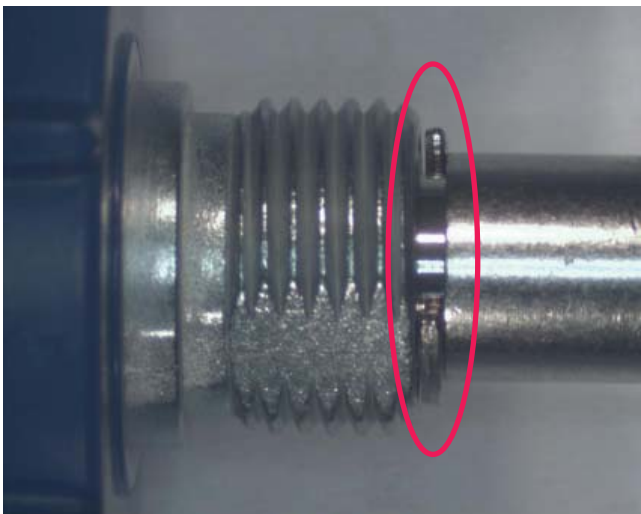


Model 3590 Update

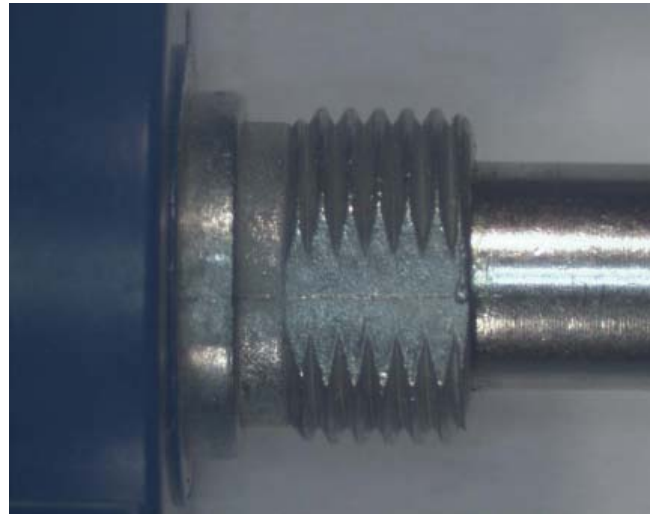
In line with our commitment to continuous improvement, Sensors and Controls is announcing another update to our [Model 3590 Precision Potentiometer](#).

In order to build a more robust product, we are now adding a c-ring to the base of the shaft. The addition of the c-ring reinforces the shaft from axial loads exerted on the shaft that may occur when installing gears or other mechanical couplings.

The photos below show the shaft with and without the c-ring.



New shaft with c-ring



Old shaft without c-ring

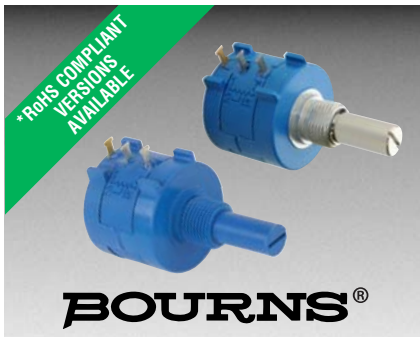
This upgrade is being done on the metal shaft/metal bushing versions of this model only. The plastic bushing/plastic shaft versions will not have the c-ring. The c-ring upgrade was implemented in production beginning with date code 0913M.

There are no changes to prices currently listed in the 2009 Distribution Price Book for this product upgrade. Please refer to the on-line Model 3590 data sheet for the updated outline dimensions.

Please contact me, or any of our Field Application Engineers, with questions regarding this update.

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Best regards,
Chuck Manzano
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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 Characteristics¹

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 Characteristics¹

Operating Temperature Range.....	+1 °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

Mechanical Characteristics¹

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) 1.1 N-cm (1.5 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.

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
BLANK = NON-COMPLIANT

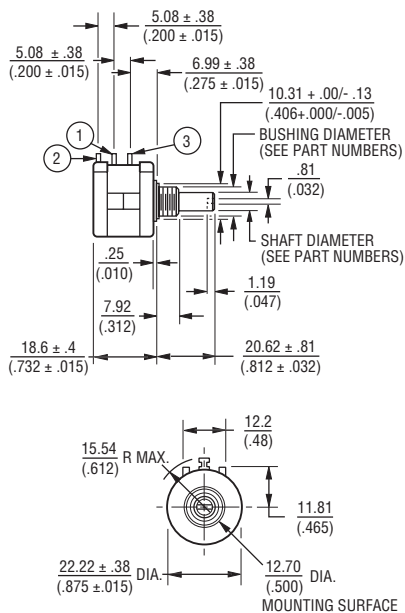
*RoHS Directive 2002/95/EC Jan 27 2003 including Annex Specifications are subject to change without notice. Customers should verify actual device performance in their specific applications.

3590 - Precision Potentiometer

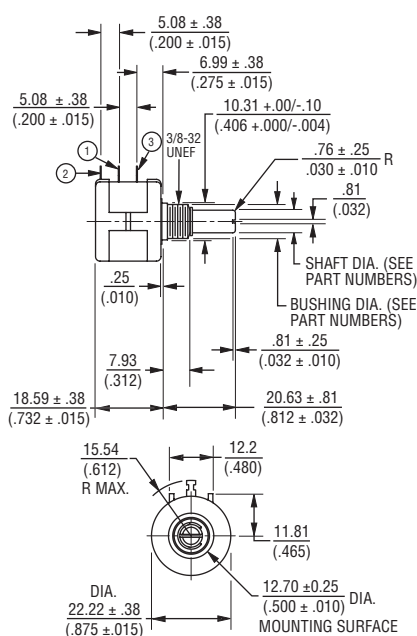
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Product Dimensions

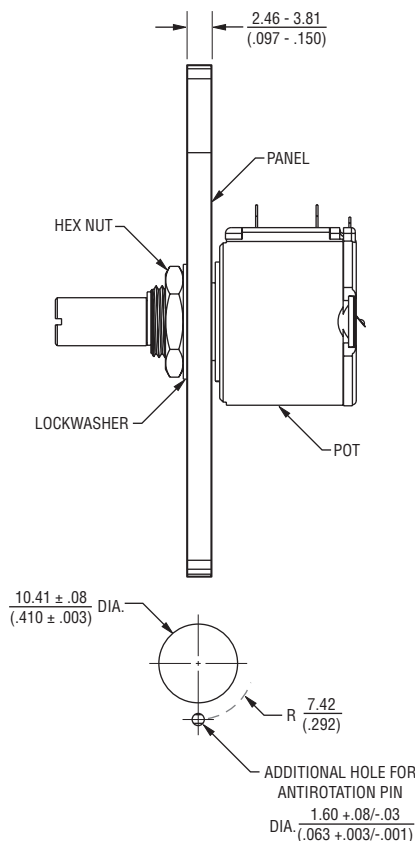
-1, -3, -5, -7 Configurations



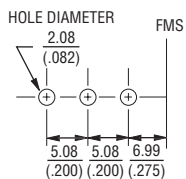
-2, -4, -6, -8 Configurations



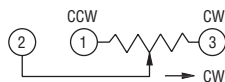
Panel Thickness Dimensions



Recommended PCB Layout



Schematic



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)

TOLERANCES: EXCEPT WHERE NOTED

DECIMALS: .XX ± .02, .XXX ± .005

FRACTIONS: ±1/64

DIMENSIONS: MM (IN.)