

\* RoHS COMPLIANT  
VERSIONS  
AVAILABLE



**BOURNS®**

## Features

- Compatible with other members of the Model 80 Series
- The only 10-turn precision potentiometer in a modular panel control package
- Up to 2 sections available

## 83/84 - 5/8 " Square 10-Turn

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

|   | Wirewound Element (J Taper)             | Hybriton <sup>®</sup> Element (K Taper) |
|---|---|---|
| Standard Resistance Range   | 200 to 100 K ohms                       | 1 K to 100 K ohms                       |
| Total Resistance Tolerance  | ±5 %                                    | ±10 %                                   |
| Independent Linearity   | ±0.25 %                                 | ±0.25 %                                 |
| Absolute Minimum Resistance (J Taper)   | 1.0 ohm or 0.1 % (whichever is greater) | —                                       |
| Effective Electrical Angle  | 3600 ° +10 °, -0 °                      | 3600 ° +10 °, -0 °                      |
| Dielectric Withstanding Voltage (MIL-STD-202, Method 301)                         |   |   |
| Sea Level   | 1,000 VAC minimum                       | 1,000 VAC minimum                       |
| Insulation Resistance (500 VDC)   | 1,000 megohms minimum                   | 1,000 megohms minimum                   |
| Power Rating (Voltage Limited By Power Dissipation or 350 VAC, Whichever Is Less) |   |   |
| +70 °C  | 1 watt                                  | 1 watt                                  |
| +125 °C   | 0 watt                                  | 0 watt                                  |
| Theoretical Resolution  | See table                               | Essentially infinite                    |
| End Voltage (K Taper)   | —                                       | 0.2 % of applied voltage                |
| Noise (J Taper)   | 100 ohms ENR maximum                    | —                                       |
| Output Smoothness (K Taper)   | —                                       | 0.15 % maximum                          |

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

|  |                             |                             |
|--|-----------------------------|-----------------------------|
| Operating Temperature Range                                | +1 °C to +125 °C            | +1 °C to +125 °C            |
| Storage Temperature Range                                  | -55 °C to +125 °C           | -55 °C to +125 °C           |
| Temperature Coefficient Over Storage Temperature Range     | ±50 ppm/°C                  | ±100 ppm/°C                 |
| Vibration  | 15 G                        | 15 G                        |
| Total Resistance Shift                                     | ±2 %                        | ±2 %                        |
| Voltage Ratio Shift  | ±0.2 %                      | ±0.2 %                      |
| Wiper Bounce   | 0.1 millisecond maximum     | 0.1 millisecond maximum     |
| Shock  | 50 G                        | 50 G                        |
| Total Resistance Shift                                     | ±2 %                        | ±2 %                        |
| Voltage Ratio Shift  | ±0.2 %                      | ±0.2 %                      |
| Wiper Bounce   | 0.1 millisecond maximum     | 0.1 millisecond maximum     |
| Load Life  | 1,000 hours                 | 1,000 hours                 |
| Total Resistance Shift                                     | ±2 % maximum                | ±5 % maximum                |
| Rotational Life (No Load)                                  | 1,000,000 shaft revolutions | 4,000,000 shaft revolutions |
| Total Resistance Shift                                     | ±5 % maximum                | ±5 % maximum                |
| Moisture Resistance (MIL-STD-202, Method 103, Condition B) |                             |                             |
| Total Resistance Shift                                     | ±2 % maximum                | ±5 % maximum                |
| Insulation Resistance (500 VDC)                            | 100 megohms minimum         | 100 megohms minimum         |
| IP Rating  | IP 40                       | IP 40                       |

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

|   |   |
|---|---|
| Stop Strength                             | 33.90 N-cm (48.0 oz.-in.) minimum   |
| Mechanical Angle                          | 3600 ° +15 °, -0 °  |
| Torque                                    |   |
| Starting                                  | Running torque plus 0.7 N-cm (1.0 oz.-in.) maximum  |
| Running (1 or 2 Section)                  | 0.18 to 1.41 N-cm (0.25 to 2.0 oz.-in.)   |
| Mounting (Torque on Bushing)              | 1.7-2.0 N-m (15-18 lb.-in.) maximum   |
| Shaft Runout                              | 0.15 mm (0.006 in.) T.I.R.  |
| Shaft End Play                            | 0.36 mm (0.014 in.) T.I.R.  |
| Shaft Radial Play                         | 0.13 mm (0.005 in.) T.I.R.  |
| Weight (Single Section)                   | 21 gm (0.75 oz.)  |
| (Each Additional Section)                 | 18 gm (0.65 oz.)  |
| Terminals                                 | Printed circuit terminals or solder lugs  |
| Soldering Condition                       | Recommended hand soldering using Sn95/Ag5 no clean solder, 0.025 " wire diameter.<br>Maximum temperature 399 °C (750 °F) for 3 seconds. No wash process to be used with no clean flux |
| Marking                                   | Manufacturer's trademark, wiring diagram, date code and resistance, manufacturer's part number  |
| Ganging (Multiple Section Potentiometers) | 2 cup maximum   |
| Hardware                                  | One lockwasher and one mounting nut is shipped with each potentiometer, except where noted in the part number.  |

NOTE: MODEL 83/84 PERFORMANCE SPECIFICATIONS DO NOT APPLY TO UNITS SUBJECTED TO PRINTED CIRCUIT BOARD CLEANING PROCEDURES.

<sup>1</sup>AT ROOM AMBIENT: +25 °C NOMINAL AND 50 % RELATIVE HUMIDITY NOMINAL, EXCEPT AS NOTED.

\*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.

# 83/84 - 5/8 " Square 10-Turn

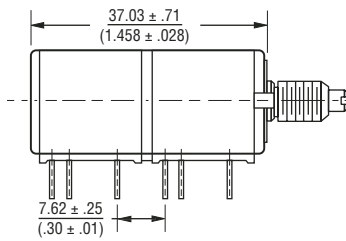
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## Wirewound Resolution Table

| Resistance (Ohms) | Resolution (Nom.) (%) |
|-------------------|-----------------------|
| 200               | .048                  |
| 500               | .037                  |
| 1 K               | .032                  |
| 2 K               | .031                  |
| 5 K               | .023                  |
| 10 K              | .020                  |
| 20 K              | .015                  |
| 50 K              | .012                  |
| 100 K             | .010                  |

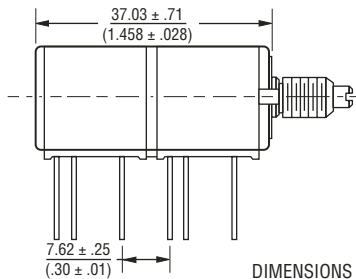
## Dimensional Drawings

Dual Section Model 84 Solder Lugs



Note: The Models 83/84 dimensions for dual section assembly are for either single or dual concentric shaft styles.

Dual Section Model 83 PC Pins



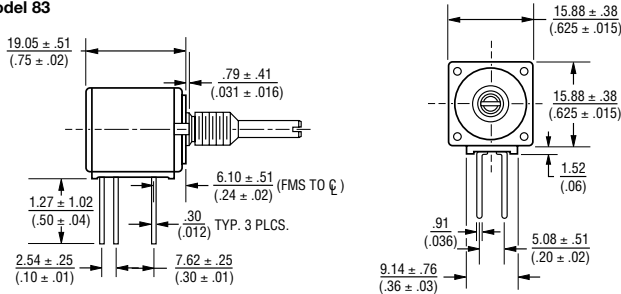
DIMENSIONS ARE:  $\frac{\text{MM}}{\text{(INCHES)}}$

# 83/84 - 5/8 " Square 10-Turn

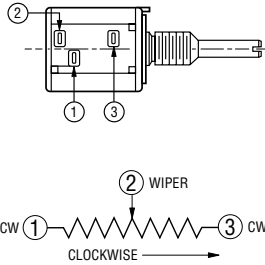
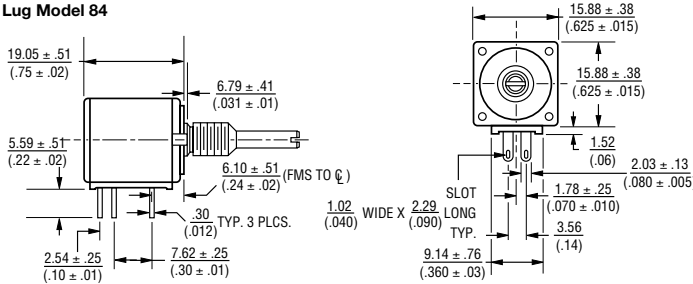
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## Product Dimensions

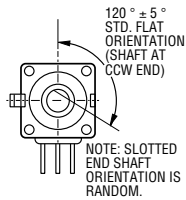
### PC Pin Model 83



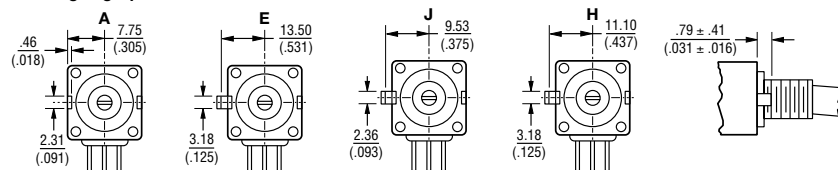
### Solder Lug Model 84



### Shaft Flat Orientation

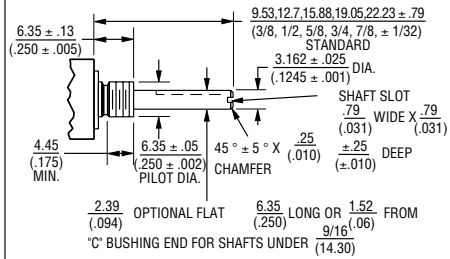


### Locating Lug Options - All Model 80 Series

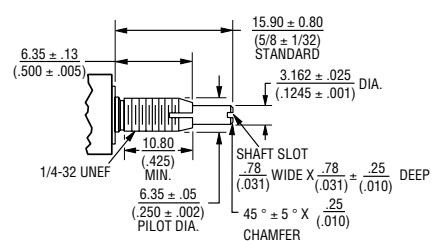


NOTE: "D" OPTION - NO A/R LUG. OTHER LOCATING LUG OPTIONS AVAILABLE. FOR DETAILS CONSULT FACTORY.

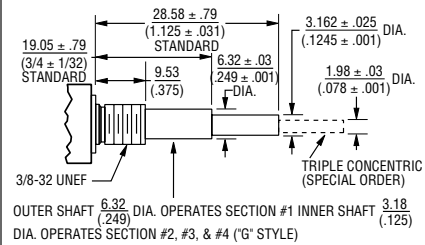
### "C" Bushing 1/4 " (6.35 mm) Dia. Plain - Single Shaft



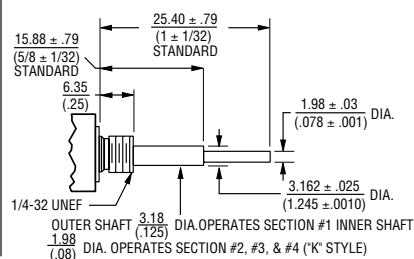
### "E" Bushing 1/4 " (6.35 mm) Dia. Locking - Single Shaft



### "A" Bushing 3/8 " (9.53 mm) Dia. Plain - Concentric Shaft



### "C" Bushing 1/4 " (6.35 mm) Dia. Plain - Concentric Shaft



TOLERANCES EXCEPT AS SHOWN: DECIMALS .XXX ± .127 (.005)

.XX ± .38 (.015)

ANGLE ± 5°  
FRACTIONS ± 1/64

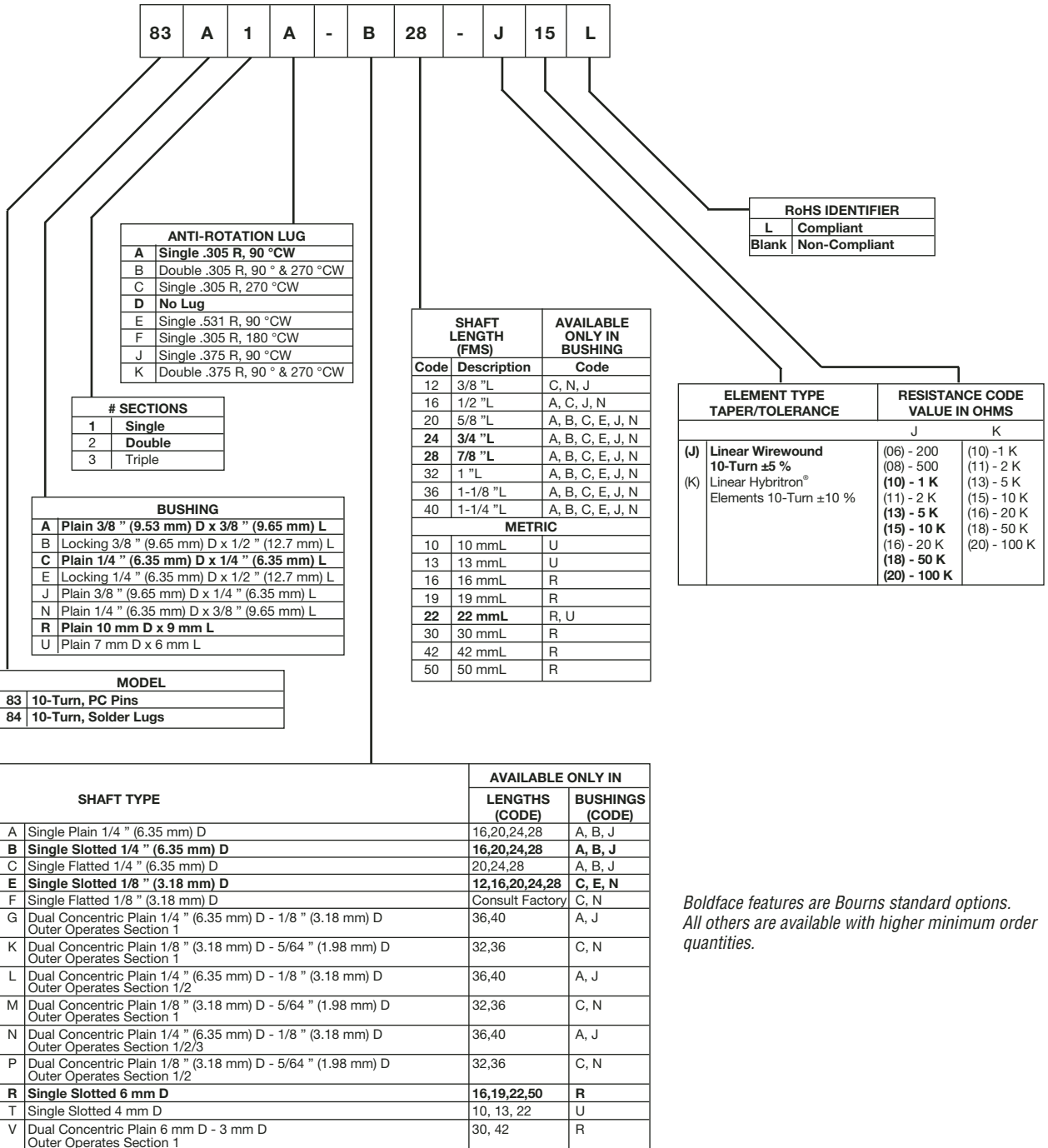
DIMENSIONS ARE: MM  
(INCHES)

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## How to Order



*Boldface features are Bourns standard options. All others are available with higher minimum order quantities.*