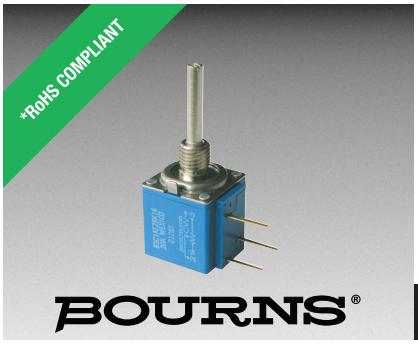



## Features

- 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
- RoHS compliant*

## Additional Information

Click these links for more information:

PRODUCT | TECHNICAL LIBRARY | INVENTORY | SAMPLES | CONTACT

# 83/84 – 5/8 ″ Square 10-Turn Panel Control

### Initial Electrical Characteristics[1]

| | Wirewound Element (J Taper) | Hybritron® 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 watts |
| +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[1]

| | | |
|---|---|---|
| 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[1]

| | |
|---|---|
| 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. 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; locking bushing versions are shipped with one additional locking nut (Bushing A: H-37-2 & H-38-2; Bushing B: H-37-2, H-38-2 & H-38-4; Bushing C: H-37-1 & H-38-1; Bushing E: H-37-1, H-38-1 & H-38-3; Bushing J: H-37-2 & H-38-2; Bushing N: H-37-1 & H-38-1; Bushing R: H-37-4 & H-38-9; Bushing U: H-37-3 & H-38-8) |

NOTE: Model 83/84 performance specifications do not apply to units subjected to printed circuit board cleaning procedures.

[1]Electrical specifications tested at 250 RPM, at room ambient: +25 °C nominal.

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

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

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# 83/84 – 5/8 ″ Square 10-Turn Panel Control

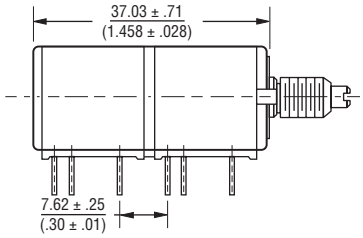
BOURNS®

## 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 |

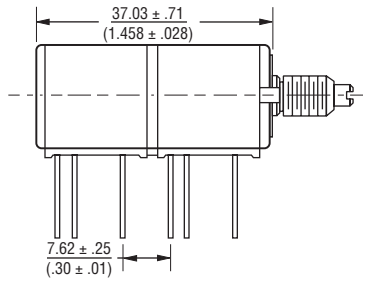
## Dimensional Drawings

**Dual Section Model 84 Solder Lugs**



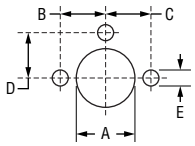

Note: The Models 83/84 dimensions for dual section assembly are for either single or dual concentric shaft styles.

**Dual Section Model 83 PC Pins**




DIMENSIONS: MM / (INCHES)

## Suggested Panel Layout

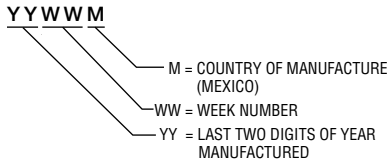



| BUSHING | DIM A |
|---|---|
| A, B & J | 9.91 (.39) |
| C, E & N | 6.73 (.265) |
| R & S | 10.5 (.413) |
| U | 7.5 (.295) |

DIMENSIONS: MM / (INCHES)

| ANTI-ROTATION LUG | DIM B | DIM C | DIM D | DIM E |
|---|---|---|---|---|
| A | 7.75 (.305) | N/A | N/A | 2.49 (.098) |
| B | 7.75 (.305) | 7.75 (.305) | N/A | 2.49 (.098) |
| C | N/A | 7.75 (.305) | N/A | 2.49 (.098) |
| E | 13.49 (.531) | N/A | N/A | 3.45 (.136) |
| F | N/A | N/A | 7.75 (.305) | 2.54 (.100) |
| J | 9.53 (.375) | N/A | N/A | 2.54 (.100) |

## Date Code Description

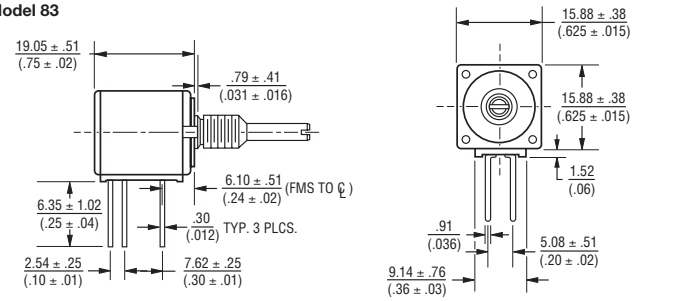



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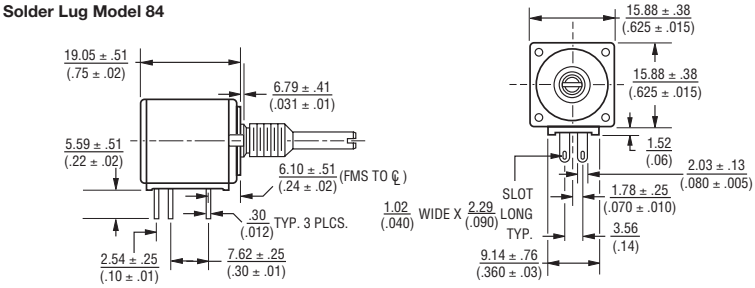
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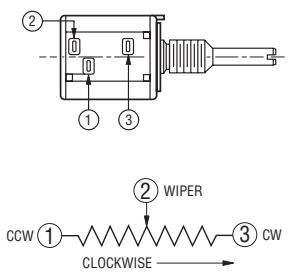
## Product Dimensions

**PC Pin Model 83**

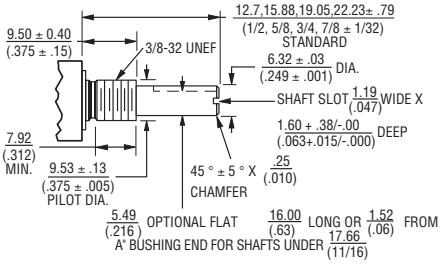



**Solder Lug Model 84**

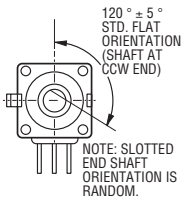


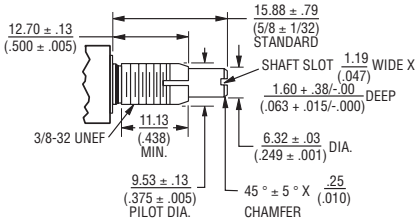

**"A" Bushing**
**3/8 " (9.53 mm) Dia. Plain - Single Shaft**



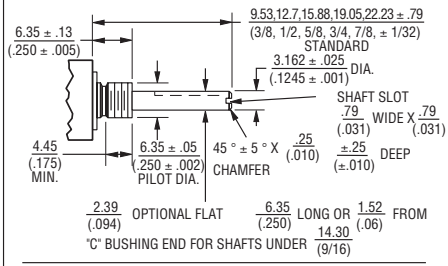

**Shaft Flat Orientation**



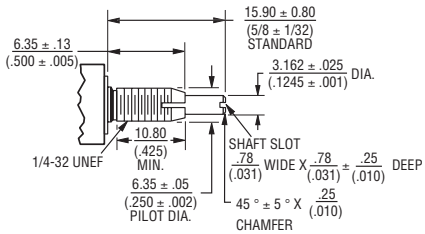

**"B" Bushing**
**3/8 " (9.53 mm) Dia. Plain - Single Shaft**



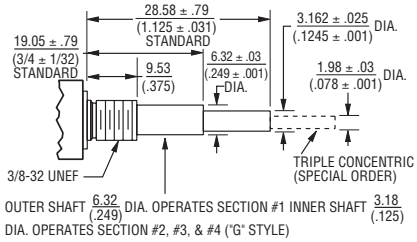

**"C" Bushing**
**1/4 " (6.35 mm) Dia. Plain - Single Shaft**



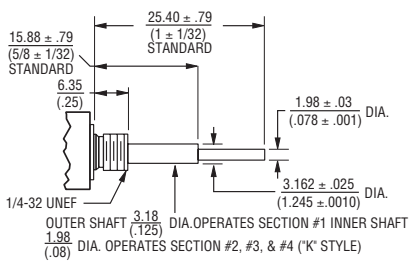

**"E" Bushing**
**1/4 " (6.35 mm) Dia. Locking - Single Shaft**



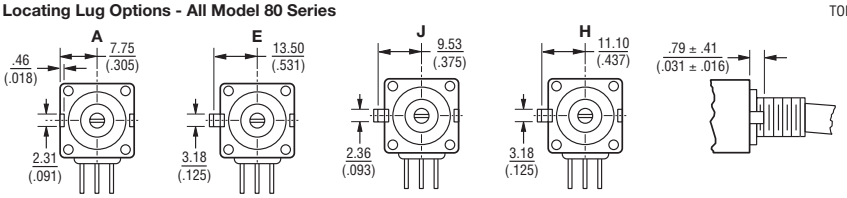

**"A" Bushing**
**3/8 " (9.53 mm) Dia. Plain - Concentric Shaft**




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




**Locating Lug Options - All Model 80 Series**




TOLERANCES EXCEPT AS SHOWN: DECIMALS .XXX ± .127 (.005)
.XX± .38 (.015)
ANGLE ± 5 °
FRACTIONS ± 1/64

DIMENSIONS: MM / (INCHES)

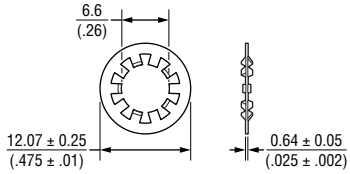
NOTE: "D" OPTION - NO A/R LUG. OTHER LOCATING LUG OPTIONS AVAILABLE. FOR DETAILS CONSULT FACTORY.

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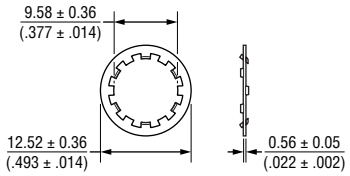
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## Hardware

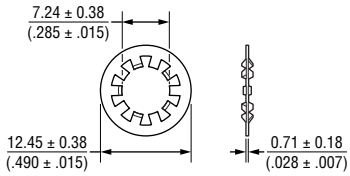
**LOCKWASHER H-37-1**



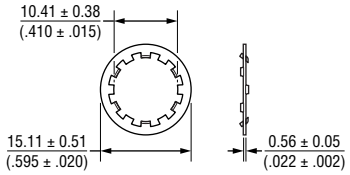

**LOCKWASHER H-37-2**



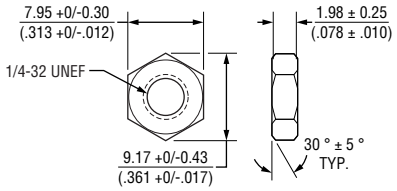

**LOCKWASHER H-37-3**



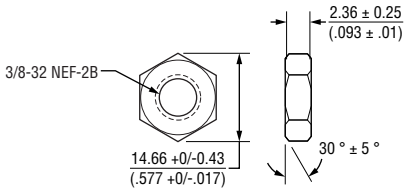

**LOCKWASHER H-37-4**



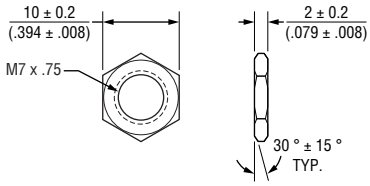

**NUT H-38-1**



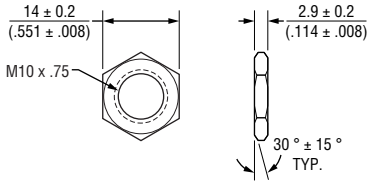

**NUT H-38-2**




**NUT H-38-8**

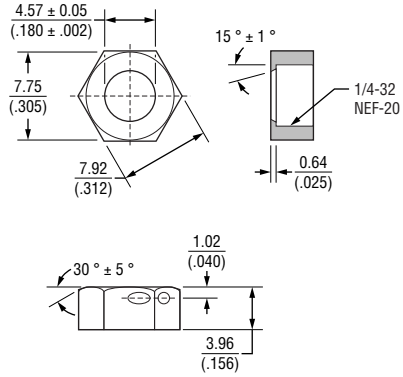



**NUT H-38-9**

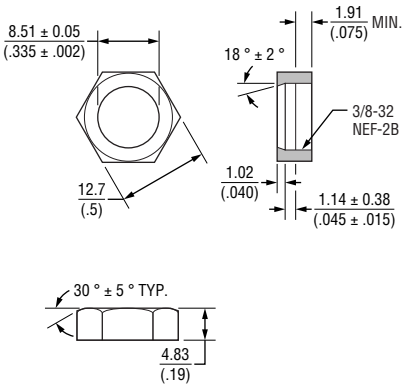



DIMENSIONS: MM / (INCHES)

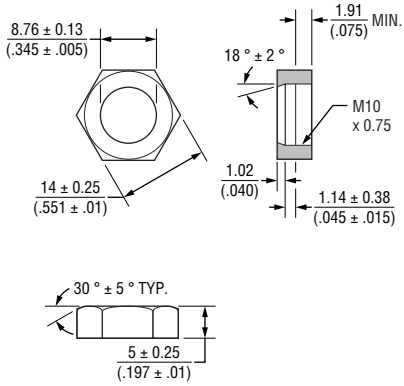
**LOCKNUT H-38-3**




**LOCKNUT H-38-4**




**LOCKNUT H-38-10**




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## How To Order

| 83 | A | 1 | A | - | B | 28 | - | J | 15 | L |
|---|---|---|---|---|---|---|---|---|---|---|

| RoHS IDENTIFIER | |
|---|---|
| **L** | **Compliant** |

| ANTI-ROTATION LUG | |
|---|---|
| **A** | **Single .305 R, 90 °CW** |
| B | Double .305 R, 90 ° & 270 °CW |
| C | Single .305 R, 270 °CW |
| **D** | **No Lug** |
| E | Single .531 R, 90 °CW |
| F | Single .305 R, 180 °CW |
| J | Single .375 R, 90 °CW |

| # SECTIONS | |
|---|---|
| **1** | **Single** |
| **2** | **Double** |
| 3 | Triple |

| SHAFT LENGTH (FMS) | | AVAILABLE ONLY IN BUSHING |
|---|---|---|
| **Code** | **Description** | **Code** |
| 12 | 3/8 ” L | C, N, J |
| 16 | 1/2 ” L | A, C, J, N |
| 20 | 5/8 ” L | A, B, C, E, J, N |
| **24** | **3/4 ” L** | A, B, C, E, J, N |
| **28** | **7/8 ” L** | A, B, C, E, J, N |
| 32 | 1 ” L | A, B, C, E, J, N |
| 36 | 1-1/8 ” L | A, B, C, E, J, N |
| 40 | 1-1/4 ” L | A, B, C, E, J, N |
| **Metric** | | |
| 10 | 10 mmL | U |
| 13 | 13 mmL | U |
| 16 | 16 mmL | R |
| 19 | 19 mmL | R |
| **22** | **22 mmL** | R, U |
| 30 | 30 mmL | R |
| 42 | 42 mmL | R |
| 50 | 50 mmL | R |

| ELEMENT TAPER TYPE/TOLERANCE | | RESISTANCE CODE VALUE IN OHMS | |
|---|---|---|---|
| | | J | K |
| **(J)** | **Linear Wirewound 10-Turn ±5 %** | **(06) - 200** | **(10) - 1 K** |
| | | (08) - 500 | (11) - 2 K |
| (K) | Linear Hybritron® Elements 10-Turn ±10 % | **(10) - 1 K** | (13) - 5 K |
| | | (11) - 2 K | (15) - 10 K |
| | | **(13) - 5 K** | (16) - 20 K |
| | | **(15) - 10 K** | (18) - 50 K |
| | | (16) - 20 K | (20) - 100 K |
| | | **(18) - 50 K** | |
| | | **(20) - 100 K** | |

| BUSHING | |
|---|---|
| **A** | **Plain 3/8 ” (9.53 mm) D x 3/8 ” (9.53 mm) L** |
| B | Locking 3/8 ” (9.53 mm) D x 1/2 ” (12.7 mm) L |
| **C** | **Plain 1/4 ” (6.35 mm) D x 1/4 ” (6.35 mm) L** |
| E | Locking 1/4 ” (6.35 mm) D x 1/2 ” (12.7 mm) L |
| J | Plain 3/8 ” (9.53 mm) D x 1/4 ” (6.35 mm) L |
| N | Plain 1/4 ” (6.35 mm) D x 3/8 ” (9.53 mm) L |
| **R** | **Plain 10 mm D x 9 mm L** |
| U | Plain 7 mm D x 6 mm L |

| MODEL | |
|---|---|
| **83** | **10-Turn, PC Pins** |
| **84** | **10-Turn, Solder Lugs** |

| | SHAFT TYPE | AVAILABLE ONLY IN LENGTHS (CODE) | AVAILABLE ONLY IN BUSHINGS (CODE) |
|---|---|---|---|
| A | Single Plain 1/4 ” (6.35 mm) D | 16,20,24,28 | A, B, J |
| **B** | **Single Slotted 1/4 ” (6.35 mm) D** | **16,20,24,28** | **A, B, J** |
| C | Single Flatted 1/4 ” (6.35 mm) D | 20,24,28 | A, B, J |
| **E** | **Single Slotted 1/8 ” (3.18 mm) D** | **12,16,20,24,28** | **C, E, N** |
| F | Single Flatted 1/8 ” (3.18 mm) D | Consult Factory | C, N |
| G | Dual Concentric Plain 1/4 ” (6.35 mm) D - 1/8 ” (3.18 mm) D Outer Operates Section 1 | 36,40 | A, J |
| K | Dual Concentric Plain 1/8 ” (3.18 mm) D - 5/64 ” (1.98 mm) D Outer Operates Section 1 | 32,36 | C, N |
| L | Dual Concentric Plain 1/4 ” (6.35 mm) D - 1/8 ” (3.18 mm) D Outer Operates Section 1/2 | 36,40 | A, J |
| M | Dual Concentric Plain 1/8 ” (3.18 mm) D - 5/64 ” (1.98 mm) D Outer Operates Section 1 | 32,36 | C, N |
| N | Dual Concentric Plain 1/4 ” (6.35 mm) D - 1/8 ” (3.18 mm) D Outer Operates Section 1/2/3 | 36,40 | A, J |
| P | Dual Concentric Plain 1/8 ” (3.18 mm) D - 5/64 ” (1.98 mm) D Outer Operates Section 1/2 | 32,36 | C, N |
| **R** | **Single Slotted 6 mm D** | **16,19,22,50** | **R, S** |
| T | Single Slotted 4 mm D | 10, 13, 22 | U |
| V | Dual Concentric Plain 6 mm D - 3 mm D Outer Operates Section 1 | 30, 42 | R |

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

REV. 04/25

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