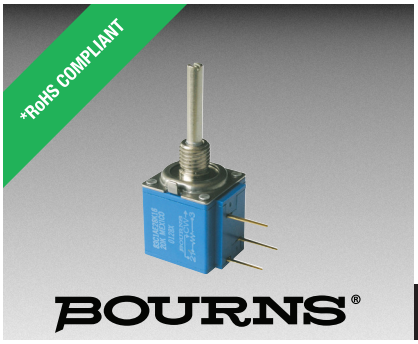

Features

- 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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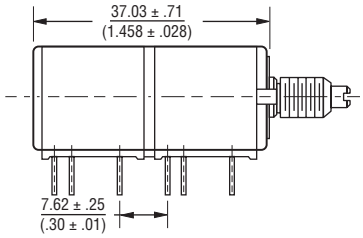
Wirewound Resolution Table

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

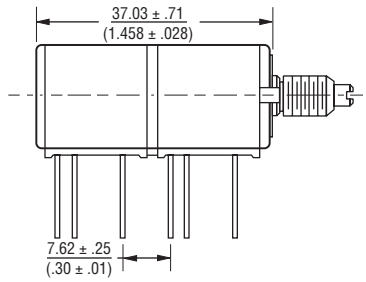
Dimensional Drawings

Dual Section Model 84 Solder Lugs



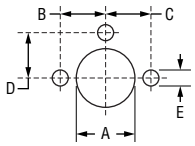
Note: The Models 83/84 dimensions for dual section assembly are for either single or dual concentric shaft styles.

Dual Section Model 83 PC Pins



DIMENSIONS: MM / (INCHES)

Suggested Panel Layout

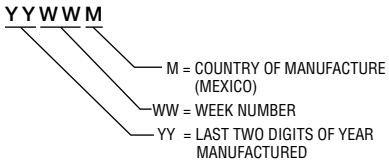


BUSHING	DIM A
A, B & J	9.91 (.39)
C, E & N	6.73 (.265)
R & S	10.5 (.413)
U	7.5 (.295)

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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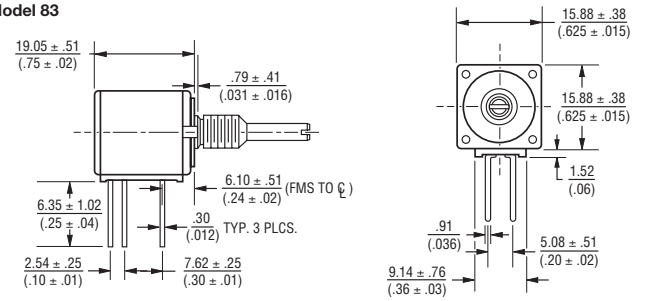
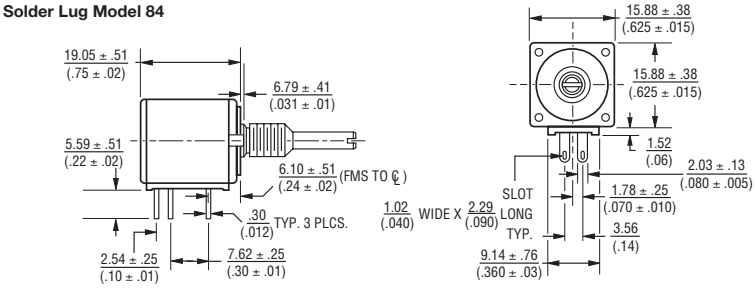
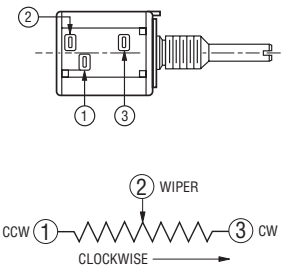
Product Dimensions

PC Pin Model 83

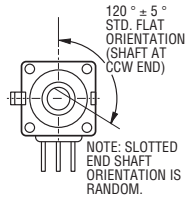


Solder Lug Model 84

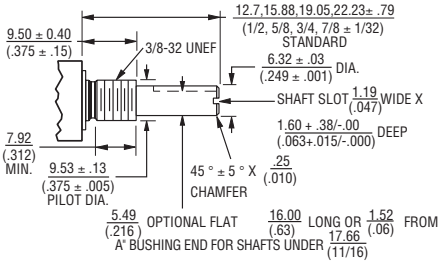




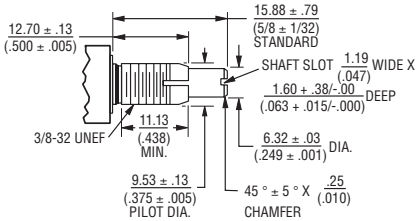
Shaft Flat Orientation



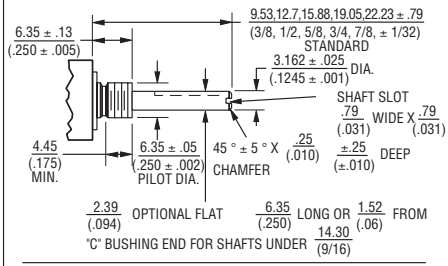
"A" Bushing
3/8 " (9.53 mm) Dia. Plain - Single Shaft



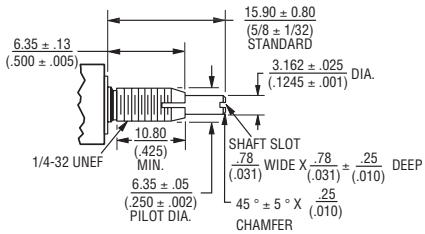
"B" Bushing
3/8 " (9.53 mm) Dia. Plain - Single Shaft



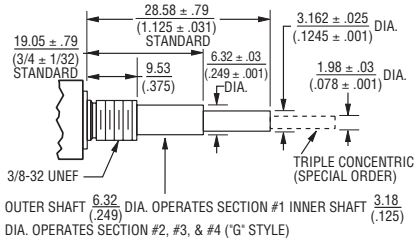
"C" Bushing
1/4 " (6.35 mm) Dia. Plain - Single Shaft



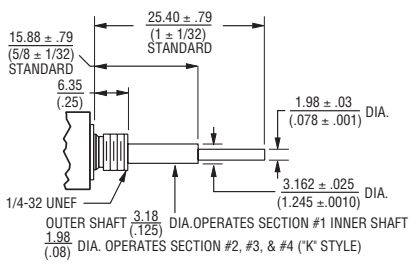
"E" Bushing
1/4 " (6.35 mm) Dia. Locking - Single Shaft



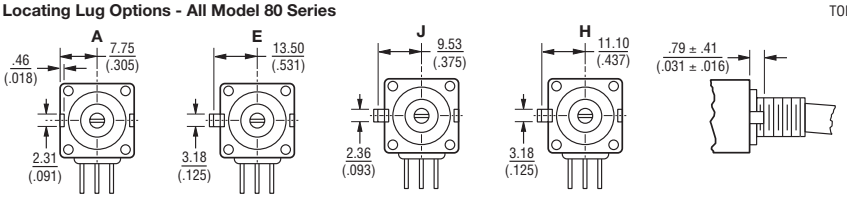
"A" Bushing
3/8 " (9.53 mm) Dia. Plain - Concentric Shaft



"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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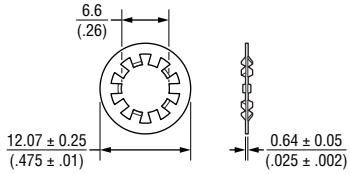
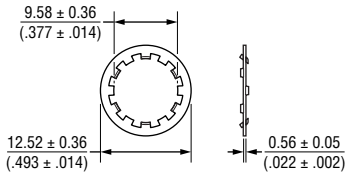
Hardware

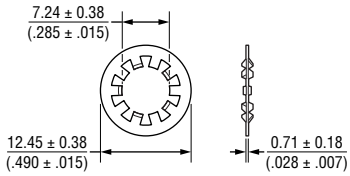
LOCKWASHER H-37-1



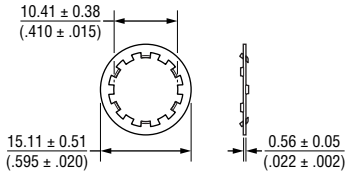
LOCKWASHER H-37-2



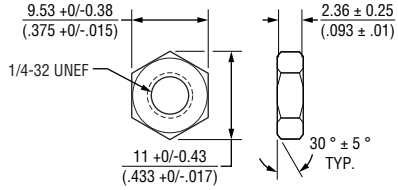
LOCKWASHER H-37-3



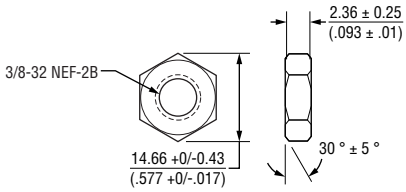
LOCKWASHER H-37-4



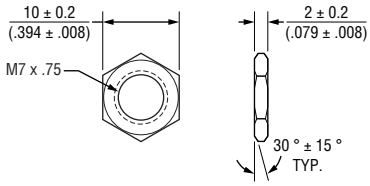
NUT H-38-1



NUT H-38-2



NUT H-38-8



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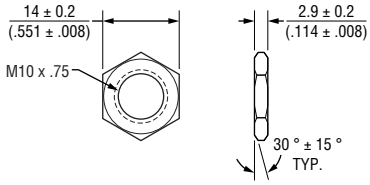
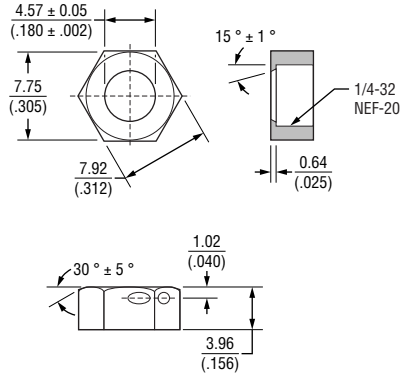
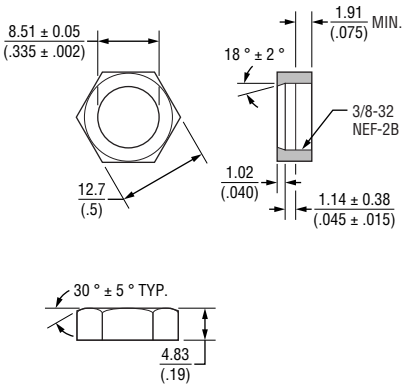


DIMENSIONS: MM / (INCHES)

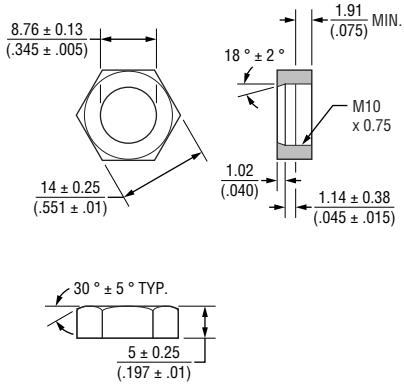
LOCKNUT H-38-3



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

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 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	

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. 03/22

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