

## Features

- Available in a variety of pin-out configurations
- Virtually infinite electrical circuit isolation
- Extended rotational life
- RoHS compliant\*

## Applications

- Test and measurement equipment
- Medical and laboratory equipment
- Avionics controls

## Model 91, 92, 93 & 95 – Long Life Series

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

### Conductive Plastic Element

Standard Resistance Range.....	1K, 5K, 10K ohms
Total Resistance Tolerance.....	10 %
Independent Linearity.....	±2 %
Effective Electrical Angle.....	240 ° ± 5 °
Output Smoothness.....	0.15 % maximum
Dielectric Withstanding Voltage (MIL-STD-202, Method 301)	
Sea Level.....	1,500 VAC minimum
70,000 Feet.....	500 VAC minimum
Insulation Resistance (500 VDC).....	1,000 megohms minimum
Power Rating (Voltage Limited By Power Dissipation or 350 VAC, Whichever Is Less)	
+70 °C Single Section Assembly.....	1 watt
+70 °C Multiple Section Assembly.....	0.5 watt/section
+125 °C.....	0 watt
Theoretical Resolution.....	Essentially infinite

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

Operating Temperature Range.....	-40 °C to +125 °C
Storage Temperature Range.....	-55 °C to +125 °C
Temperature Coefficient Over Storage	
Temperature Range.....	±1,000 ppm/°C
Vibration (Single Section).....	15 G
Total Resistance Shift.....	±2 % maximum
Voltage Ratio Shift.....	±5 % maximum
Shock (Single Section).....	30 G
Total Resistance Shift.....	±2 % maximum
Voltage Ratio Shift.....	±5 % maximum
Load Life.....	1,000 hours
Total Resistance Shift.....	±10 % maximum
Rotational Life (No Load).....	1,000,000 cycles
Total Resistance Shift.....	±15 % TRS maximum
Moisture Resistance (MIL-STD-202, Method 103, Condition B)	
Total Resistance Shift.....	±10 % TRS maximum
Insulation Resistance (500 VDC).....	100 megohms minimum
IP Rating.....	IP40 (potentiometer body); IP65 (shaft and bushing interface only)
Moisture Sensitivity Level.....	1
ESD Classification (HBM).....	N/A

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

Stop Strength (A & R Bushings).....	45.19 N-cm (4 lb.-in.)
(C & U Bushings).....	33.89 N-cm (3 lb.-in.)
Mechanical Angle.....	300 ° ±5 °
Torque	
Starting.....	0.3 max. above average running torque
Running Torque	
Single or Dual Section (A & R Bushings).....	0.21 to 1.06 N-cm (0.3 to 1.5 oz.-in.)
Single or Dual Section (C & U Bushings).....	0.14 to 1.06 N-cm (0.2 to 1.5 oz.-in.)
Mounting.....	1.7-2.0 N-m (15-18 lb.-in.) maximum
Variation.....	0.35 N-cm (0.5 oz.-in.) maximum in 45 ° shaft travel
Weight (Single Section, Metal Bushing).....	12.7 grams nominal
(Each Additional Section).....	4 grams nominal
Terminals Printed circuit terminals, J-Hooks 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, date code, resistance, manufacturer's part number.
Ganging (Multiple Section Potentiometers).....	2 cups maximum
Hardware.....	One lockwasher and one mounting nut is shipped with each potentiometer (Bushing A: H-37-2 & H-38-2; Bushing C: H-37-1 & H-38-1; Bushing R: H-37-4 & H-38-9)

NOTE: Performance specifications do not apply to units subjected to printed circuit board cleaning procedures.

<sup>1</sup> Electrical specifications tested at 200 RPM, at room ambient: +25 °C.



**WARNING**  
**Cancer and Reproductive Harm**  
[www.P65Warnings.ca.gov](http://www.P65Warnings.ca.gov)

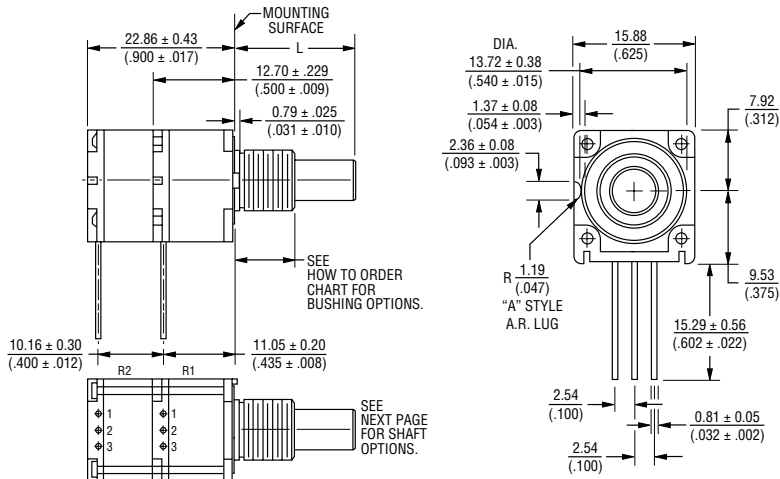
\*RoHS Directive 2015/863, Mar 31, 2015 and Annex.  
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# Model 91, 92, 93 & 95 – Long Life Series

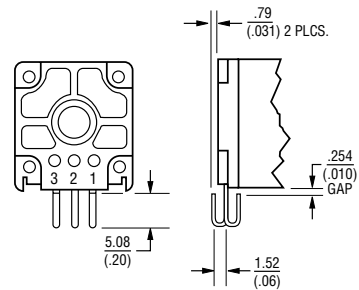
**BOURNS®**

## Product Dimensions

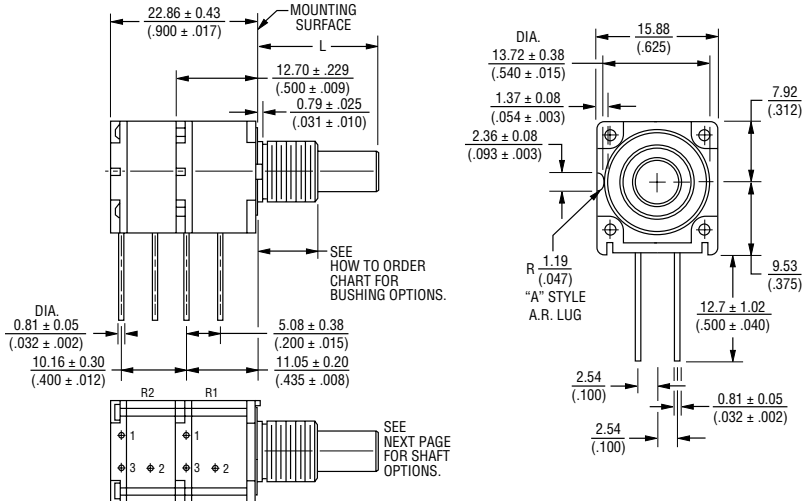
### Model 91 PC Pin Terminals, In-Line



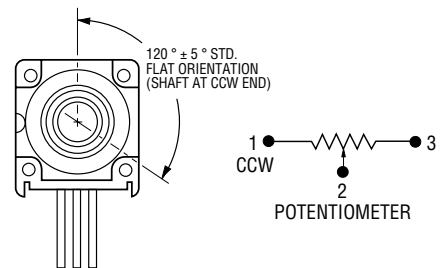
### Model 92 J-Hooked Terminals, In-Line



### Model 93 PC Pin Terminals, "L" Pattern

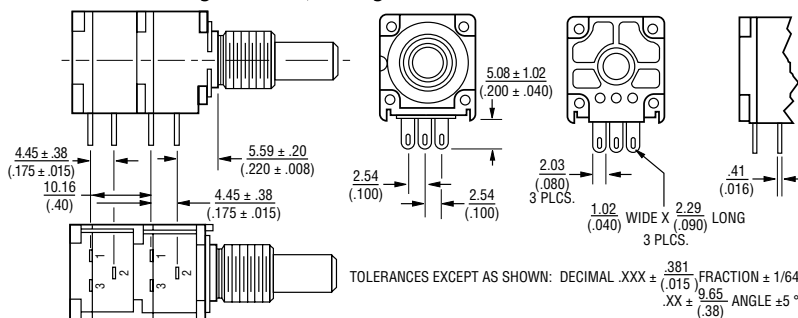


### Shaft Flat Orientation



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

### Model 95 Solder Lug Terminals, "Triangular" Pattern



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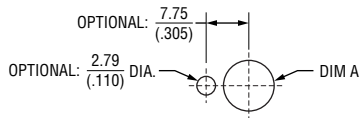
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# Model 91, 92, 93 & 95 – Long Life Series

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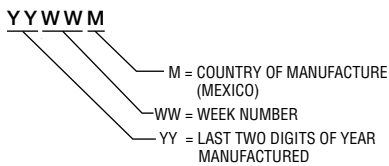
## Suggested Panel Layout



BUSHING	DIM A
A	$\frac{9.91}{(.39)}$
C	$\frac{6.73}{(.265)}$
R	$\frac{10.5}{(.413)}$

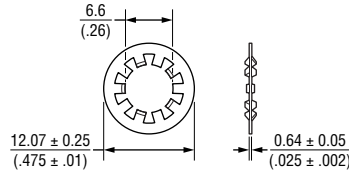
DIMENSIONS:  $\frac{\text{MM}}{\text{(INCHES)}}$

## Date Code Description

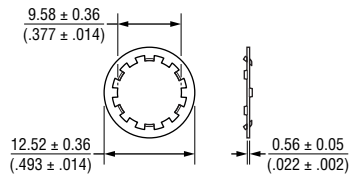


## Hardware

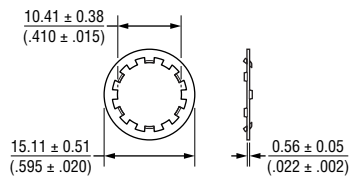
### LOCKWASHER H-37-1



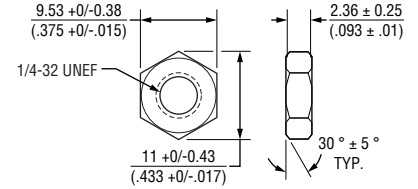
### LOCKWASHER H-37-2



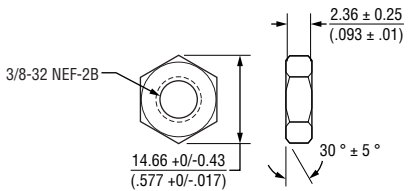
### LOCKWASHER H-37-4



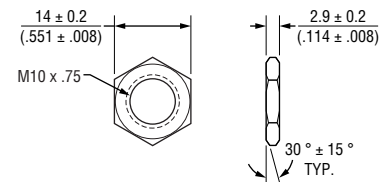
### NUT H-38-1



### NUT H-38-2



### NUT H-38-9



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

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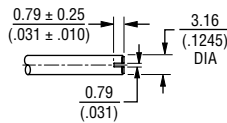
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## Product Dimensions

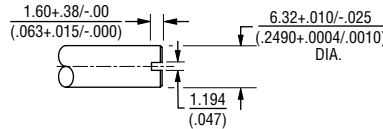
### SHAFT TYPE "E" (USES BUSHING C)



STD. LENGTHS:

12.0 (.500)	16.0 (.625)	19.0 (.750)
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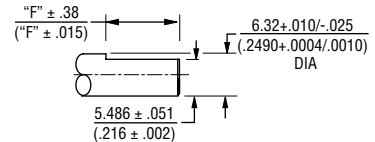
### SHAFT TYPE "G" (USES BUSHING A)



STD. LENGTHS:

12.70 (.500)	15.88 (.625)	19.05 (.750)	22.23 (.875)
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### SHAFT TYPE "H" (USES BUSHING A)



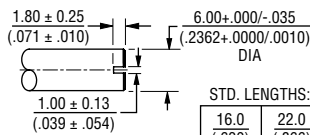
STD. LENGTHS:

19.05 (.750)	22.23 (.875)
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FLAT LENGTH "F":

7.95 (.313)	11.13 (.438)
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### SHAFT TYPE "J" (USES BUSHING R)



STD. LENGTHS:

16.0 (.630)	22.0 (.866)
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TOLERANCES EXCEPT AS SHOWN: .XX = ± .02 (.050)  
 .XXX = ± .005 (.127)  
 .XXXX = ± .0005 (.0127)

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

## How to Order

**91 A 2 A - G 28 - L 15 / L 15 L**

Part number for multiple section potentiometers must have a taper and resistance value for each section.

ANTI-ROTATION LUG	
A	Single .305" (7.8 mm) R, 90 °CW
D	No Lug

# SECTIONS	
1	Single
2	Dual

BUSHING	
A	Metal Plain 3/8" (9.53 mm) D x 3/8" (9.53 mm) L
C	Metal Plain 1/4" (6.35 mm) D x 1/4" (6.35 mm) L
R	Metal Plain 10 mm D x 9 mm L

MODEL	
91	Single-Turn, In-Line PC Pins
92	Single-Turn, In-Line J-Hooks
93	Single-Turn, L-Pattern PC Pins
95	Single-Turn, Triangle-Pattern Solder Lugs

SHAFT LENGTH (FMS)		AVAILABLE ONLY IN BUSHING
Code	Description	Code
16	1/2" L	A, C
20	5/8" L	A, C
24	3/4" L	A, C
28	7/8" L	A
32	1" L	A
METRIC		
16	16 mm L	R
22	22 mm L	R

RoHS IDENTIFIER	
L	Compliant

ELEMENT TAPER TYPE/TOLERANCE	RESISTANCE CODE VALUE IN OHMS
L Long Life Linear C-P ±10 %	(10) - 1 K (13) - 5 K (15) - 10 K

SHAFT TYPE	AVAILABLE ONLY IN	
	LENGTHS (CODE)	BUSHINGS (CODE)
E Metal Single Slotted 1/8" (3.18 mm) D	16, 20, 24	C
G Metal Single Slotted 1/4" (6.35 mm) D	16, 20, 24, 28	A
H Metal Single Flatted 1/4" (6.35 mm) D	24, 28	A
J Metal Single Slotted 6 mm D	Metric 16, 22	R

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

REV. 10/20

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