

Model 91, 92, 93, 94 & 95 – 5/8" Square Single-Turn Panel Control

BOURNS®

Mechanical Characteristics¹

Stop Strength (1/4" D shaft)	45.19 N-cm (4 lb.-in.)
(1/8" D shaft)	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 (Bushings A: H-37-2 & H-38-2; Bushings C: H-37-1 & H-38-1; Bushings R: H-37-4 & H-38-9; Bushings U: H-37-3 & H-38-8)

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

¹Electrical specifications tested at 200 RPM, at room ambient: +25 °C nominal.

Specifications are subject to change without notice.

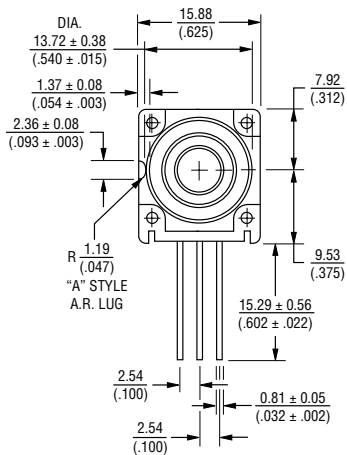
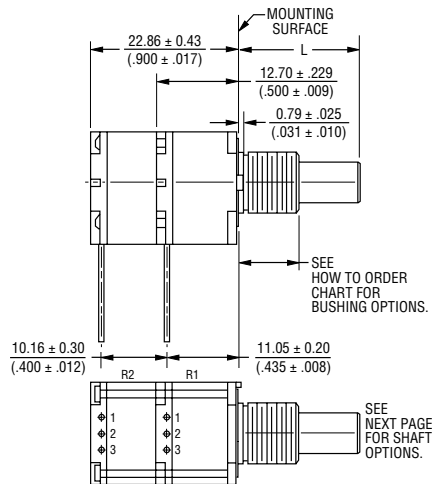
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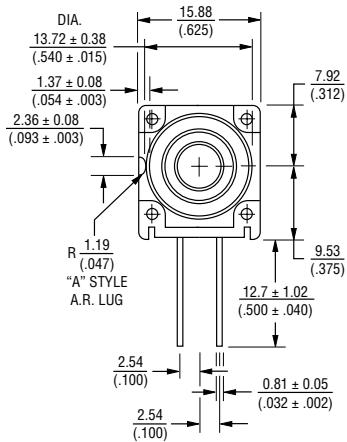
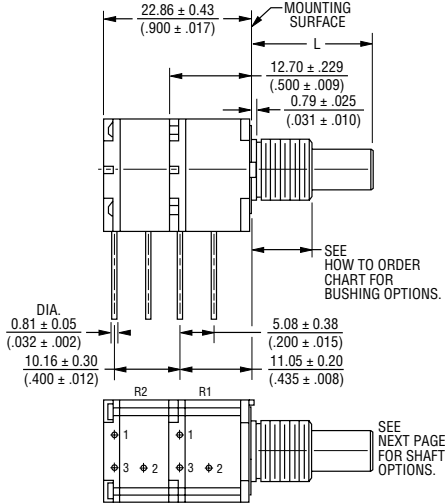
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Product Dimensions

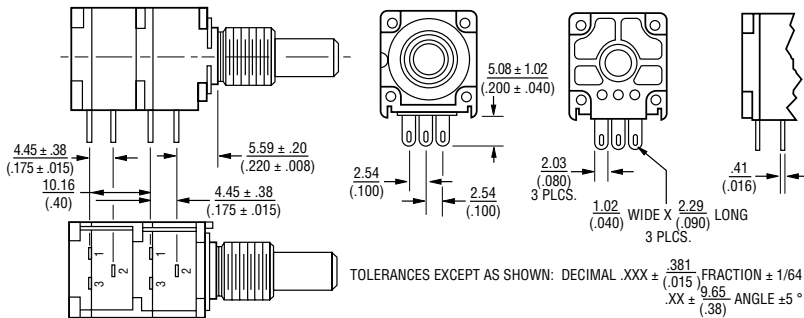
Model 91 PC Pin Terminals, In-Line



Model 93 PC Pin Terminals, "L" Pattern

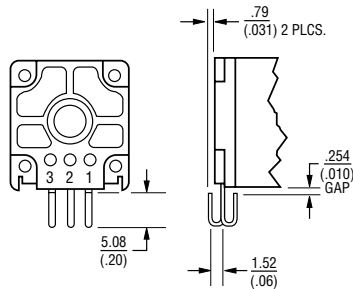


Model 95 Solder Lug Terminals, "Triangular" Pattern

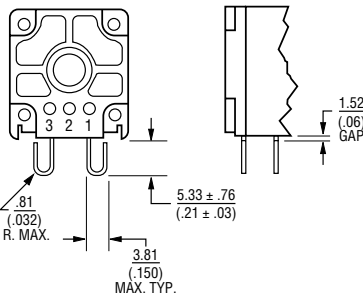


TOLERANCES EXCEPT AS SHOWN: DECIMAL .XXX ± $\frac{.381}{(.015)}$ FRACTION ± 1/64
 .XX ± $\frac{9.65}{(.38)}$ ANGLE ± 5°

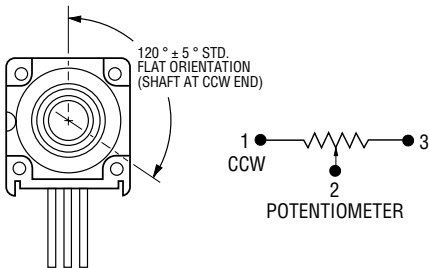
Model 92 J-Hooked Terminals, In-Line



Model 94 J-Hooked Terminals, "L" Pattern



Shaft Flat Orientation



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

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Plastic Shaft Styles

1.60+.38/-0.00
(.063+.015/-0.000)

1.19
(.047)

0.632+.000/-0.152
(.249+.000/.006)
DIA.

STD. LENGTHS:			
$\frac{12.70}{(.500)}$	$\frac{15.88}{(.625)}$	$\frac{19.05}{(.750)}$	$\frac{22.23}{(.875)}$

Technical drawing of a shaft with the following dimensions:

- Top diameter: $11.18 \pm .38$ ($.440 \pm .015$)
- Bottom diameter: $6.30 + .000 / -.152$ ($.248 + .000 / .006$)
- Length: 5.49 ($.216$)
- Feature: DIA.

STD. LENGTHS:	
$\frac{19.05}{(.750)}$	$\frac{22.23}{(.875)}$

$\frac{3.16+0.00/-0.15}{(.1245+.000/-0.006)}$ DIA. 

STD. LENGTHS:		
$\frac{12.70}{(.500)}$	$\frac{15.88}{(.625)}$	$\frac{19.05}{(.750)}$

Technical drawing of a shaft showing dimensions:

- Diameter: $\frac{1.80 \pm .25}{(0.07 \pm .001)}$
- Length: $\frac{5.994 + 0.000 - 0.051}{(236 + .000 / -.002)} \text{ DIA.}$
- Step height: $\frac{1.00}{(.04)}$

STD. LENGTHS:	
$\frac{16.0}{(.630)}$	$\frac{22.0}{(.866)}$

STD. LENGTHS	
$\frac{16.0}{(.630)}$	$\frac{22.0}{(.866)}$

Technical drawing of a 48-tooth gear. The drawing shows the gear profile with a hatched section on the left. Dimensions are provided for the outer diameter, pitch diameter, and addendum.

48 TOOTH

Outer Diameter: $14.27 \pm .25$
(.562 $\pm$.010)

Pitch Diameter: $6.31 + .025 / -.051$
(.2485 + .001 / .002)

DIA

STD. LENGTHS

25.40
(1.00)

$\frac{6.32 + .010 / -.025}{(.2490 + .0004 / .0010)}$
DIA

STD. LENGTHS:				
$\frac{12.70}{(.500)}$	$\frac{15.88}{(.625)}$	$\frac{19.05}{(.750)}$	$\frac{22.23}{(.875)}$	$\frac{25.4}{(1.000)}$

Figure 10 shows a shaft with a step. The shaft has a diameter of 0.79 inches with a tolerance of ± 0.031 inches. The step has a width of 0.316 inches with a tolerance of ± 0.1245 inches. The drawing shows the shaft with a step, and the dimensions are given in inches.

STD. LENGTHS:		
$\frac{12.0}{(.500)}$	$\frac{16.0}{(.625)}$	$\frac{19.0}{(.750)}$

Technical drawing of a shaft with the following dimensions and tolerances:

- Left end diameter: $1.60 \pm .38 / -.00$ ($.063 \pm .015 / -.000$)
- Right end diameter: $6.32 \pm .010 / -.025$ ($.2490 \pm .0004 / .0010$) DIA.
- Step diameter: 1.194 ($.047$)

STD. LENGTHS:			
$\frac{12.70}{(.500)}$	$\frac{15.88}{(.625)}$	$\frac{19.05}{(.750)}$	$\frac{22.23}{(.875)}$

Figure 1 shows a technical drawing of a shaft with a step. The shaft has a diameter of 5.486 ± .051 (216 ± .002) inches. The step has a diameter of 6.32 ± .010 / -.025 (2490 ± .0004 / .0010) inches. The distance from the center of the shaft to the center of the step is 4.000 ± .015 inches. The drawing shows the shaft in cross-section with a dashed line indicating the centerline.

STD. LENGTHS:

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

$\frac{7.95}{(.313)}$	$\frac{11.13}{(.438)}$
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STD. LENGTHS:	
$\frac{16.0}{(.630)}$	$\frac{22.0}{(.866)}$

FLAT LENGTH "F":

$\frac{6.99}{(.275)}$	$\frac{12.98}{(.511)}$
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Technical drawing of a shaft with a keyway. The drawing shows the shaft in profile with a keyway cut into it. Dimensions are given in inches and millimeters.

- Top dimension: 1.80 ± 0.25 inches, $(.071 \pm .010)$ inches.
- Bottom dimension: 1.00 ± 0.13 inches, $(.039 \pm .054)$ inches.
- Right side dimension: $6.00 + .000 / -.035$ inches, $(.2362 + .0000 / .0010)$ inches, DIA.

STD. LENGTHS:	
$\frac{16.0}{(.630)}$	$\frac{22.0}{(.866)}$

Technical drawing of a shaft with the following dimensions and tolerances:

- Top dimension: 1.50 ± 0.25 (tolerance zone: $.059 \pm .010$)
- Bottom dimension: 0.79 ± 0.13
- Right dimension: $3.99 + .000 / -.035$ (tolerance zone: $.1571 + .0000 / .0010$ DIA)

STD. LENGTHS:

16.0	22.0
(630)	(866)

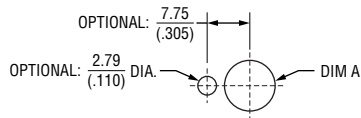
TOLERANCES EXCEPT AS SHOWN: .XX = $\pm \frac{.02}{(.050)}$
 .XXX = $\pm \frac{.005}{(.127)}$
 .XXXX = $\pm \frac{.0005}{(.0127)}$

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

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Suggested Panel Layout



BUSHING	DIM A
A	$\frac{9.91}{(.39)}$
C	$\frac{6.73}{(.265)}$
R	$\frac{10.5}{(.413)}$
U	$\frac{7.5}{(.295)}$

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

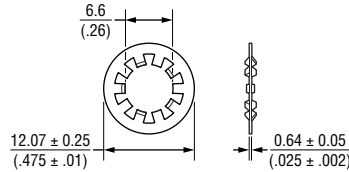
Date Code Description

YYWWMM

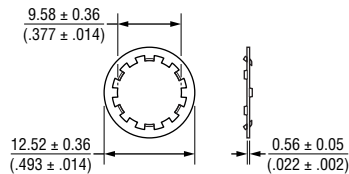
M = COUNTRY OF MANUFACTURE
(MEXICO)
WW = WEEK NUMBER
YY = LAST TWO DIGITS OF YEAR
MANUFACTURED

Hardware

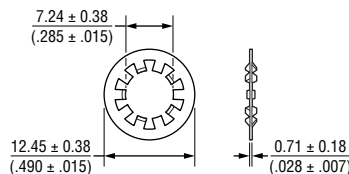
LOCKWASHER H-37-1



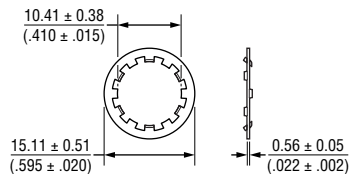
LOCKWASHER H-37-2



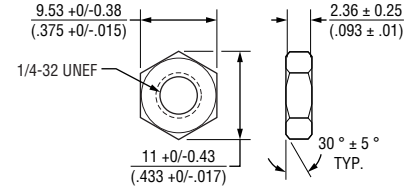
LOCKWASHER H-37-3



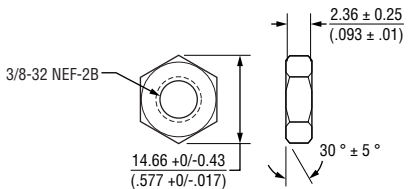
LOCKWASHER H-37-4



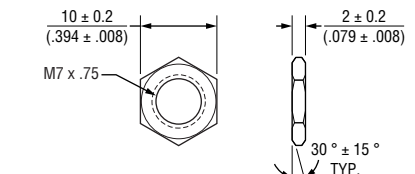
NUT H-38-1



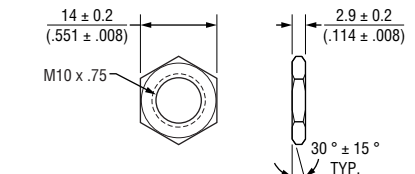
NUT H-38-2



NUT H-38-8



NUT H-38-9



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

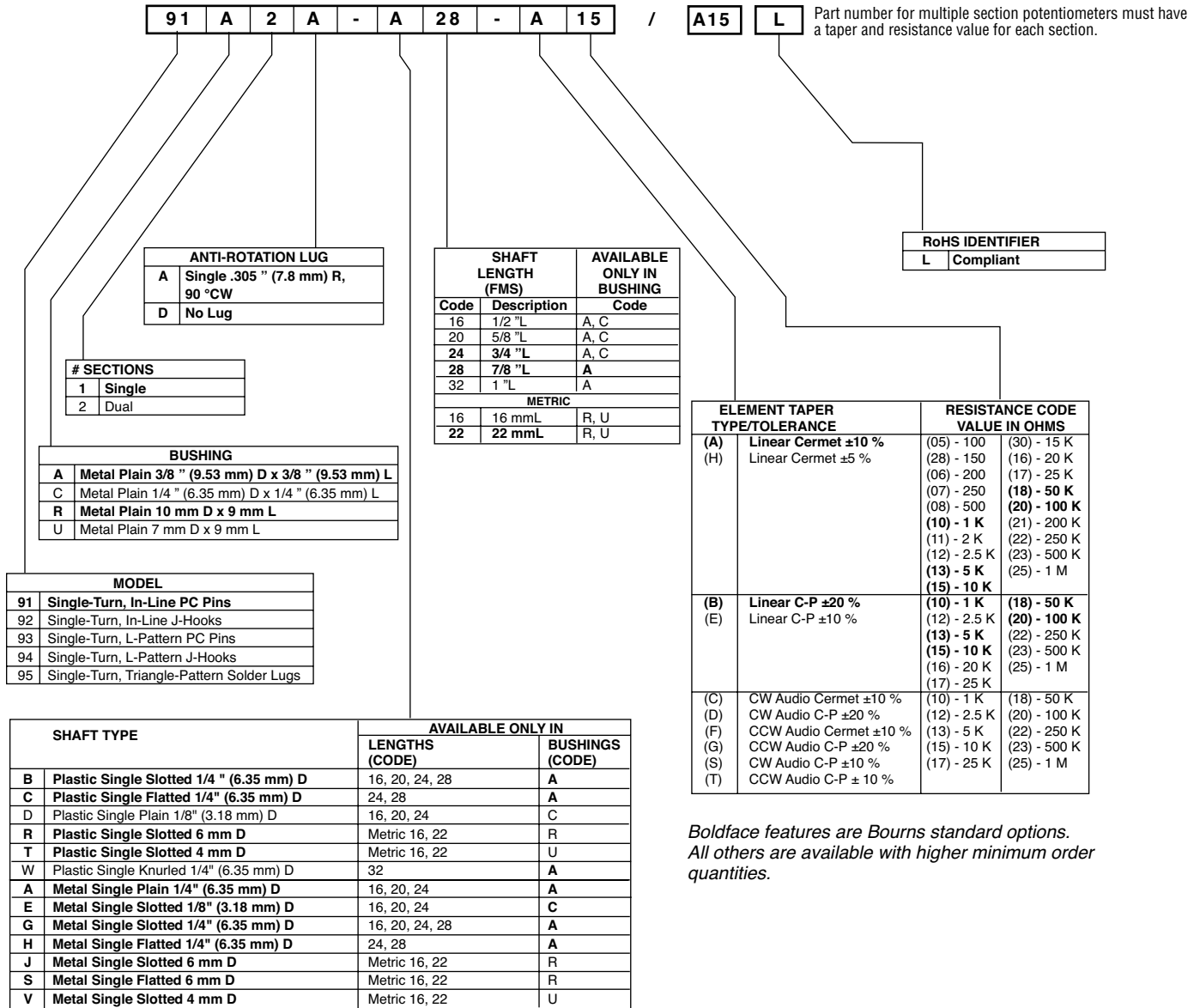
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How to Order Model 91, 92, 93, 94 & 95 Panel Controls

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

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