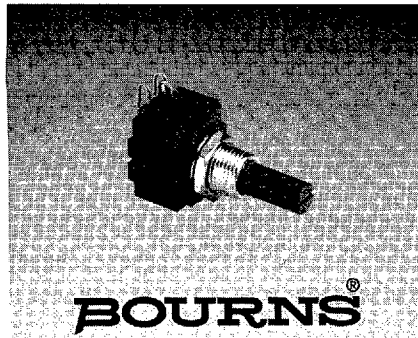




## Features

- Features one-piece molded plastic
- Available in a variety of pin-out shaft and rotor assemblies configurations
- Virtually infinite electrical circuit
- Model 96 sealed for board wash
- Metal shaft available as special feature

## 91, 93, 95, 96 - 5/8" Square Single-Turn

| Initial Electrical Characteristics*                                                  | Conductive Plastic Element                    | Cermet Element                             |
|--------------------------------------------------------------------------------------|-----------------------------------------------|--------------------------------------------|
| Standard Resistance Range                                                            |                                               |                                            |
| Linear Tapers (A, B, E, & H) .....                                                   | (B & E) 150 ohms to 1 megohms .....           | (A & H) 50 ohms to 1 megohms               |
| Audio Tapers (C, D, F, G S, & T) .....                                               | (D, G, S, & T) 1K ohms to 5.0 megohms .....   | (C & F) 1K ohms to 5.0 megohms             |
| Resistance Tolerance .....                                                           | (B, D, & G tapers) $\pm 20\%$ .....           | (A, C, & F tapers) $\pm 10\%$              |
| Independent Linearity .....                                                          | (E, S, & T tapers) $\pm 10\%$ .....           | (H taper) $\pm 5\%$                        |
| Absolute Minimum Resistance .....                                                    | (B & E tapers) $\pm 5\%$ .....                | (A & H tapers) $\pm 5\%$                   |
| Continuity .....                                                                     | 2 ohms maximum .....                          | 2 ohms maximum                             |
| Effective Electrical Angle .....                                                     | Maintained for full mechanical angle .....    | Maintained for full mechanical angle       |
| Contact Resistance Variation .....                                                   | 240° $\pm 5^\circ$ .....                      | 240° $\pm 6^\circ$                         |
| Dielectric Withstanding Voltage .....                                                | $\pm 1\%$ .....                               | $\pm 1\%$ or 3 ohms (whichever is greater) |
| Sea Level .....                                                                      | MIL-STD-202, Method 301 .....                 | MIL-STD-202, Method 301                    |
| 70,000 Feet .....                                                                    | 1,500 VAC minimum .....                       | 1,500 VAC minimum                          |
| Insulation Resistance (500 VDC) .....                                                | 500 VAC minimum .....                         | 500 VAC minimum                            |
| Power Rating (Voltage Limited By Power<br>Dissipation or 350 VAC, Whichever Is Less) | 1,000 megohms minimum .....                   | 1,000 megohms minimum                      |
| +70°C Single Section Assembly .....                                                  | (B & E tapers) 0.5 watt .....                 | (A & H tapers) 2 watts                     |
| +70°C Multiple Section Assembly .....                                                | (D, G, S, & T tapers) 0.25 watt .....         | (C & F tapers) 1 watt                      |
| +125°C .....                                                                         | (B & E tapers) 0.5 watt/section .....         | (A & H tapers) 1 watt/section              |
| Roll-on/Roll-off .....                                                               | (D, G, S, & T tapers) 0.25 watt/section ..... | (C & F tapers) 0.5 watt/section            |
| Theoretical Resolution .....                                                         | 0 watt .....                                  | 0 watt                                     |
|                                                                                      | (B & E tapers) 0.25% maximum .....            | (A & H tapers) 0.5% maximum                |
|                                                                                      | (D & S tapers) 0.1% maximum CCW end .....     | (C taper) 0.1% maximum CCW end             |
|                                                                                      | (G & T tapers) 0.1% maximum CW end .....      | (F taper) 0.1% maximum CW end              |
|                                                                                      | (D & S tapers) 0.5% maximum CW end .....      | (C taper) 1.0% maximum CW end              |
|                                                                                      | (G & T tapers) 0.5% maximum CCW end .....     | (F taper) 1.0% maximum CCW end             |
|                                                                                      | Essentially infinite .....                    | Essentially infinite                       |

| Environmental Characteristics*                     | Conductive Plastic Element                         | Cermet Element                       |
|----------------------------------------------------|----------------------------------------------------|--------------------------------------|
| Operating Temperature .....                        | +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 .....               | $\pm 1,000\text{PPM}/^\circ\text{C}$ .....         | $\pm 150\text{PPM}/^\circ\text{C}$   |
| Vibration (Single Section) .....                   | 15G .....                                          | 15G                                  |
| Total Resistance Shift .....                       | $\pm 2\%$ maximum .....                            | $\pm 2\%$ maximum                    |
| Voltage Ratio Shift .....                          | $\pm 5\%$ maximum .....                            | $\pm 5\%$ maximum                    |
| Shock (Single Section) .....                       | 30G .....                                          | 30G                                  |
| Total Resistance Shift .....                       | $\pm 2\%$ maximum .....                            | $\pm 2\%$ maximum                    |
| Voltage Ratio Shift .....                          | $\pm 5\%$ maximum .....                            | $\pm 5\%$ maximum                    |
| Load Life .....                                    | 1,000 hours .....                                  | 1,000 hours                          |
| Total Resistance Shift .....                       | $\pm 10\%$ maximum .....                           | $\pm 5\%$ maximum                    |
| Rotational Life (No Load) .....                    | 100,000 cycles .....                               | 100,000 cycles                       |
| Total Resistance Shift .....                       | (B & E tapers) 10 ohms or $\pm 15\%$ maximum ..... | 10 ohms or $\pm 10\%$ maximum        |
|                                                    | (whichever is greater)                             | (whichever is greater)               |
|                                                    | (D, G, S, & T tapers) $\pm 20\%$ maximum           |                                      |
| Contact Resistance Variation @ 50,000 cycles ..... | (B & E tapers) $\pm 2\%$ .....                     |                                      |
|                                                    | (D, G, S, & T tapers) $\pm 3\%$ .....              |                                      |
| Moisture Resistance .....                          | MIL-STD-202, Method 103, Condition B .....         | MIL-STD-202, Method 103, Condition B |
| Total Resistance Shift .....                       | (B & E tapers) $\pm 10\%$ maximum .....            | (All tapers) $\pm 5\%$ maximum       |
|                                                    | (D, G, S, & T tapers) $\pm 20\%$ maximum           |                                      |
| Insulation Resistance (500 VDC) .....              | 100 megohms minimum .....                          | 100 megohms minimum                  |

| Mechanical Characteristics*                      | Conductive Plastic Element                                                        | Cermet Element                                                              |
|--------------------------------------------------|-----------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| Running Torque                                   |                                                                                   |                                                                             |
| Single or Dual Section (A, D & r Bushings) ..... | 0.3 to 1.5 oz.-in. (0.21 to 1.06 Ncm) .....                                       | 0.3 to 1.5 oz.-in. (0.21 to 1.06 Ncm)                                       |
| Single or Dual Section (C & U Bushings) .....    | 0.2 to 1.5 oz.-in. (0.14 to 1.06 Ncm) .....                                       | 0.2 to 1.5 oz.-in. (0.14 to 1.06 Ncm)                                       |
| Starting Torque .....                            | 0.3 maximum above average running torque .....                                    | 0.3 maximum above average running torque                                    |
| Torque Variation .....                           | 0.5 oz.-in. (0.35 Ncm) max. in 45° shaft travel .....                             | 0.5 oz.-in. (0.35 Ncm) max. in 45° shaft travel                             |
| Stop Strength (1/4" D shaft) .....               | 4 in.-lb. (45.19 Ncm) .....                                                       | 4 in.-lb. (45.19 Ncm)                                                       |
| (1/8" D shaft) .....                             | 3 in.-lb. (33.89 Ncm) .....                                                       | 3 in.-lb. (33.89 Ncm)                                                       |
| Mechanical Angle .....                           | 300° $\pm 5^\circ$ .....                                                          | 300° $\pm 5^\circ$                                                          |
| Weight (Single Section) .....                    | 7 grams maximum .....                                                             | 7 grams maximum                                                             |
| Each Additional Section .....                    | 4 grams maximum .....                                                             | 4 grams maximum                                                             |
| Terminals .....                                  | Printed circuit terminals, J-Hooks or solder lugs .....                           | Printed circuit terminals, J-Hooks or solder lugs                           |
| Marking .....                                    | Manufacturer's trademark, date code, resistance, manufacturer's part number ..... | Manufacturer's trademark, date code, resistance, manufacturer's part number |

FOR DIMENSIONAL DRAWINGS SEE PAGE 208.

FOR ORDERING INFORMATION SEE PAGE 209.

NOTE: ALL MODEL 90 PERFORMANCE SPECIFICATIONS DO NOT APPLY TO UNITS SUBJECTED TO PRINTED CIRCUIT BOARD CLEANING PROCEDURES, EXCEPT FOR THE SEALED VERSION (MODEL 96).

\*AT ROOM AMBIENT: +25°C NOMINAL AND 50% RELATIVE HUMIDITY NOMINAL, EXCEPT AS NOTED.

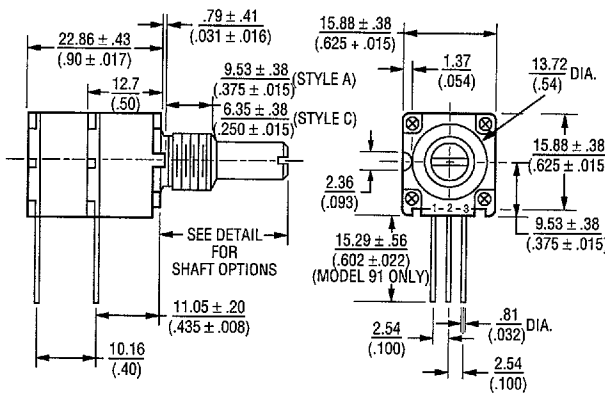
Specifications are subject to change without notice.

D 21F 1556573 0002096 69T

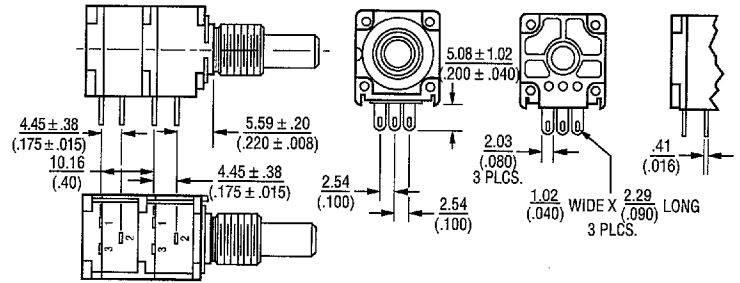
# 91, 93, 95, 96 Dimensions and Tolerances

**BOURNS®**

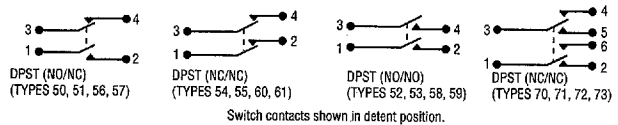
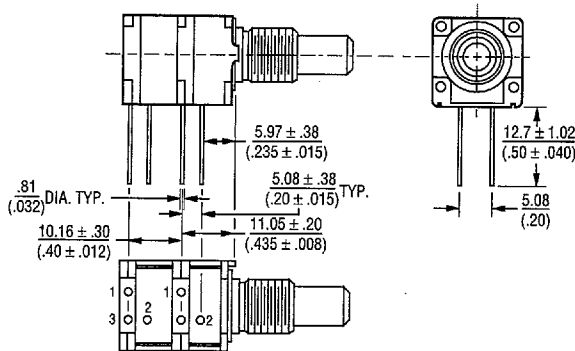
## Model 91 PC Pin Terminals, In-Line



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

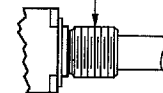


## Model 93 PC Pin Terminals, "L" Pattern

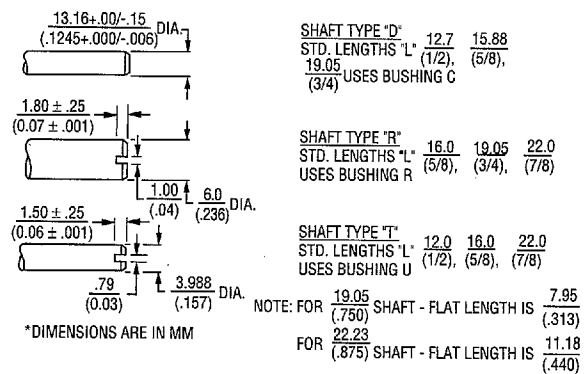
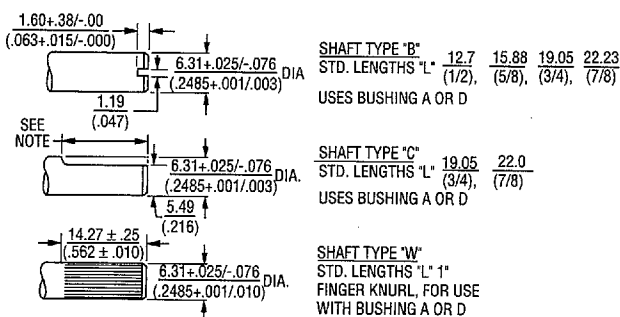


## Bushing Styles

3/8 THREADLESS (9.53mm) (STYLE "D")  
3/8-32 UNEF (9.53mm) (STYLE "A")  
1/4-32 UNEF (6.35mm) (STYLE "C")  
M10 X 0.75-6g (STYLE "R")  
M7 X 0.75-6g (STYLE "U")



## Shaft Styles

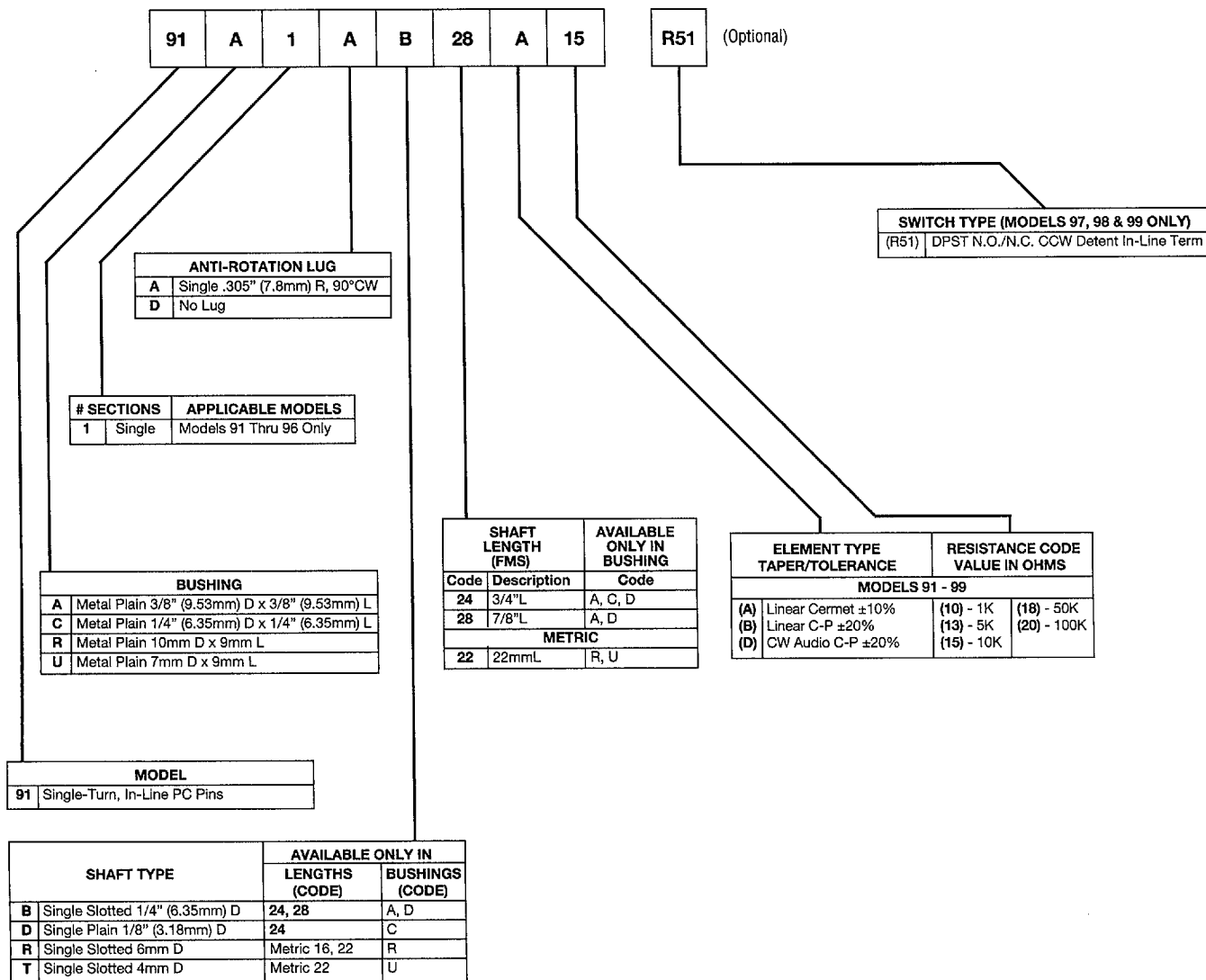


TOLERANCES EXCEPT AS SHOWN: DECIMAL .XXX ±  $\frac{.128}{.015}$  FRACTION ± 1/64  
XX ±  $\frac{.005}{.38}$  ANGLE ± 5°

DIMENSIONS ARE: METRIC  
(INCHES)

# 90 Series Panel Controls Dimensions and Tolerances **BOURNS®**

## How To Order



Recommended part numbers.  
For other options contact the factory.  
Boldface listings are in stock and readily available through distribution.