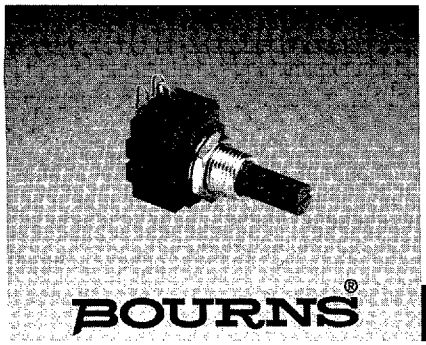
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*For technical assistance call the Sensors/ Controls Products number on the back cover.*



BOURNS®

## 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[1] | 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) ±20%<br>(E, S, & T tapers) ±10% | (A,C, & F tapers) ±10%<br>(H taper) ±5% |
| Independent Linearity | (B & E tapers) ±5% | (A & H tapers) ±5% |
| Absolute Minimum Resistance | 2 ohms maximum | 2 ohms maximum |
| Continuity | Maintained for full mechanical angle | Maintained for full mechanical angle |
| Effective Electrical Angle | 240° ±5° | 240° ±6° |
| Contact Resistance Variation | ±1% | ±1% or 3 ohms (whichever is greater) |
| Dielectric Withstanding Voltage | MIL-STD-202, Method 301 | MIL-STD-202, Method 301 |
| Sea Level | 1,500 VAC minimum | 1,500 VAC minimum |
| 70,000 Feet | 500 VAC minimum | 500 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 Single Section Assembly | (B & E tapers) 0.5 watt<br>(D,G,S, & T tapers) 0.25 watt | (A & H tapers) 2 watts<br>(C & F tapers) 1 watt |
| +70°C Multiple Section Assembly | (B & E tapers) 0.5 watt/section<br>(D,G,S, & T tapers) 0.25 watt/section | (A & H tapers) 1 watt/section<br>(C & F tapers) 0.5 watt/section |
| +125°C | 0 watt | 0 watt |
| Roll-on/Roll-off | (B & E tapers) 0.25% maximum<br>(D & S tapers) 0.1% maximum CCW end<br>(G & T tapers) 0.1% maximum CW end<br>(D & S tapers) 0.5% maximum CW end<br>(G & T tapers) 0.5% maximum CCW end | (A & H tapers) 0.5% maximum<br>(C taper) 0.1% maximum CCW end<br>(F taper) 0.1% maximum CW end<br>(C taper) 1.0% maximum CW end<br>(F taper) 1.0% maximum CCW end |
| Theoretical Resolution | Essentially infinite | Essentially infinite |

| Environmental Characteristics[1] | | |
|---|---|---|
| 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 | ±1,000PPM/°C | ±150PPM/°C |
| Vibration (Single Section) | 15G | 15G |
| Total Resistance Shift | ±2% maximum | ±2% maximum |
| Voltage Ratio Shift | ±5% maximum | ±5% maximum |
| Shock (Single Section) | 30G | 30G |
| Total Resistance Shift | ±2% maximum | ±2% maximum |
| Voltage Ratio Shift | ±5% maximum | ±5% maximum |
| Load Life | 1,000 hours | 1,000 hours |
| Total Resistance Shift | ±10% maximum | ±5% maximum |
| Rotational Life (No Load) | 100,000 cycles | 100,000 cycles |
| Total Resistance Shift | (B & E tapers) 10 ohms or ±15% maximum (whichever is greater)<br>(D,G,S, & T tapers) ±20% maximum | 10 ohms or ±10% maximum (whichever is greater) |
| Contact Resistance Variation @ 50,000 cycles | (B & E tapers) ±2%<br>(D,G, S, & T tapers) ±3% | |
| Moisture Resistance | MIL-STD-202, Method 103, Condition B | MIL-STD-202, Method 103, Condition B |
| Total Resistance Shift | (B & E tapers) ±10% maximum<br>(D,G, S, & T tapers) ±20% maximum | (All tapers) ±5% maximum |
| Insulation Resistance (500 VDC) | 100 megohms minimum | 100 megohms minimum |

| Mechanical Characteristics[1] | | |
|---|---|---|
| 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° ±5° | 300° ±5° |
| Weight (Single Section) | 7 grams maximum | 7 grams maximum |
| Each Additional Section | 4 grams maximum | 4 grams maxixmum |
| 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).

[1]AT ROOM AMBIENT: +25°C NOMINAL AND 50% RELATIVE HUMIDITY NOMINAL, EXCEPT AS NOTED.

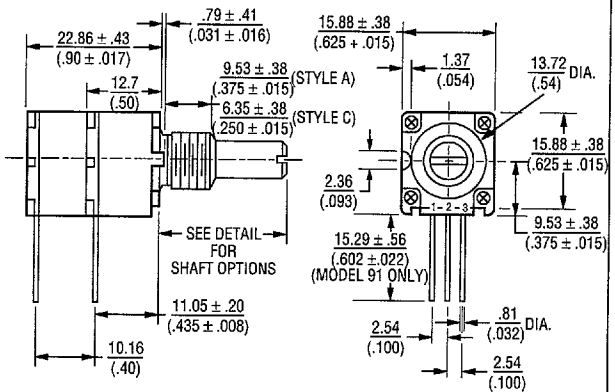


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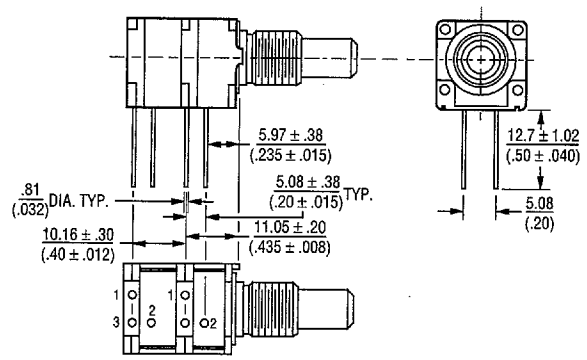
# 91, 93, 95, 96 Dimensions and Tolerances

BOURNS®

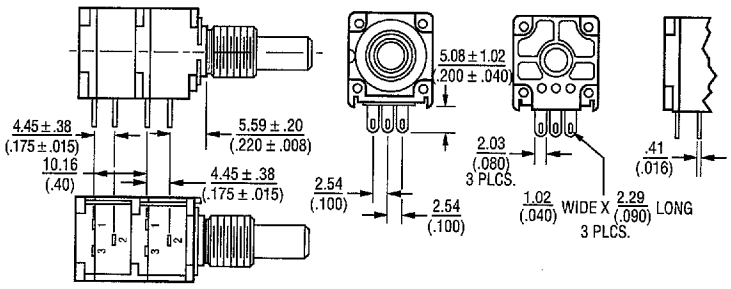
## Model 91 PC Pin Terminals, In-Line

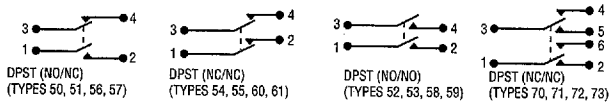



## Model 93 PC Pin Terminals, "L" Pattern




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

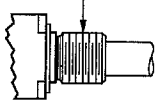


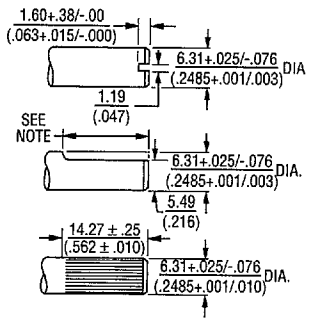

Switch contacts shown in detent position.

## 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")



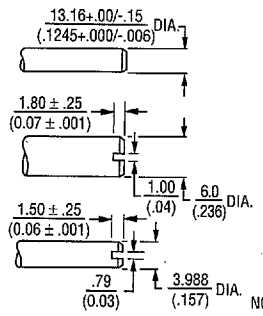
## Shaft Styles




SHAFT TYPE "B"
STD. LENGTHS "L" 12.7 (1/2), 15.88 (5/8), 19.05 (3/4), 22.23 (7/8)
USES BUSHING A OR D

SHAFT TYPE "C"
STD. LENGTHS "L" 19.05 (3/4), 22.0 (7/8)
USES BUSHING A OR D

SHAFT TYPE "W"
STD. LENGTHS "L" 1"
FINGER KNURL, FOR USE WITH BUSHING A OR D




*DIMENSIONS ARE IN MM

SHAFT TYPE "D"
STD. LENGTHS "L" 12.7 (1/2), 15.88 (5/8), 19.05 (3/4) USES BUSHING C

SHAFT TYPE "R"
STD. LENGTHS "L" 16.0 (5/8), 19.05 (3/4), 22.0 (7/8)
USES BUSHING R

SHAFT TYPE "T"
STD. LENGTHS "L" 12.0 (1/2), 16.0 (5/8), 22.0 (7/8)
USES BUSHING U

NOTE: FOR 19.05 (.750) SHAFT - FLAT LENGTH IS 7.95 (.313)
FOR 22.23 (.875) SHAFT - FLAT LENGTH IS 11.18 (.440)

TOLERANCES EXCEPT AS SHOWN: DECIMAL .XXX ± .128 (.015) FRACTION ± 1/64
.XX ± .005 (.38) ANGLE ±5°

DIMENSIONS ARE: METRIC (INCHES)



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Specifications are subject to change without notice.

# 90 Series Panel Controls Dimensions and Tolerances BOURNS®

## How To Order

| 91 | A | 1 | A | B | 28 | A | 15 | R51 (Optional) |
|---|---|---|---|---|---|---|---|---|

**SWITCH TYPE (MODELS 97, 98 & 99 ONLY)**

| | |
|---|---|
| (R51) | DPST N.O./N.C. CCW Detent In-Line Term |

**ANTI-ROTATION LUG**

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

| # SECTIONS | | APPLICABLE MODELS |
|---|---|---|
| 1 | Single | Models 91 Thru 96 Only |

**BUSHING**

| | |
|---|---|
| A | Metal Plain 3/8" (9.53mm) D x 3/8" (9.53mm) L |
| C | Metal Plain 1/4" (6.35mm) D x 1/4" (6.35mm) L |
| R | Metal Plain 10mm D x 9mm L |
| U | Metal Plain 7mm D x 9mm L |

| SHAFT LENGTH (FMS) | | AVAILABLE ONLY IN BUSHING |
|---|---|---|
| Code | Description | Code |
| 24 | 3/4"L | A, C, D |
| 28 | 7/8"L | A, D |
| METRIC | | |
| 22 | 22mmL | R, U |

| ELEMENT TYPE TAPER/TOLERANCE | | RESISTANCE CODE VALUE IN OHMS | |
|---|---|---|---|
| MODELS 91 - 99 | | | |
| **(A)** | Linear Cermet ±10% | **(10)** - 1K | **(18)** - 50K |
| **(B)** | Linear C-P ±20% | **(13)** - 5K | **(20)** - 100K |
| **(D)** | CW Audio C-P ±20% | **(15)** - 10K | |

**MODEL**

| | |
|---|---|
| 91 | Single-Turn, In-Line PC Pins |

| SHAFT TYPE | | AVAILABLE ONLY IN LENGTHS (CODE) | BUSHINGS (CODE) |
|---|---|---|---|
| B | Single Slotted 1/4" (6.35mm) D | **24, 28** | A, D |
| D | Single Plain 1/8" (3.18mm) D | **24** | C |
| R | Single Slotted 6mm D | Metric 16, 22 | R |
| T | Single Slotted 4mm D | Metric 22 | U |

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

Общество с ограниченной ответственностью «МосЧип» ИНН 7719860671 / КПП 771901001
Адрес: 105318, г.Москва, ул.Щербаковская д.3, офис 1107

**Данный компонент на территории Российской Федерации**

**Вы можете приобрести в компании MosChip.**

Для оперативного оформления запроса Вам необходимо перейти по данной ссылке:

http://moschip.ru/get-element

Вы можете разместить у нас заказ для любого Вашего проекта, будь то серийное производство или разработка единичного прибора.

В нашем ассортименте представлены ведущие мировые производители активных и пассивных электронных компонентов.

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Сотрудничество с глобальными дистрибьюторами электронных компонентов, предоставляет возможность заказывать и получать с международных складов практически любой перечень компонентов в оптимальные для Вас сроки.

На всех этапах разработки и производства наши партнеры могут получить квалифицированную поддержку опытных инженеров.

Система менеджмента качества компании отвечает требованиям в соответствии с ГОСТ Р ИСО 9001, ГОСТ РВ 0015-002 и ЭС РД 009

**Офис по работе с юридическими лицами:**

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