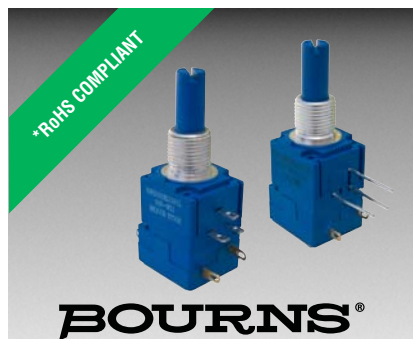




## Features

- Virtually infinite electrical circuit isolation
- Metal or plastic shaft options
- DPST and DPDT switch options
- RoHS compliant\*

## Model 97 & 99 - 5/8" Square Single-Turn Panel Control with Rotary Switch

### Potentiometer Specifications

| Initial Electrical Characteristics <sup>1</sup>                                   | Conductive Plastic Element                     | Cermet Element                        |
|-----------------------------------------------------------------------------------|------------------------------------------------|---------------------------------------|
| Standard Resistance Range                                                         |                                                |                                       |
| Linear Tapers (A, B, E, & H) .....                                                | (B & E) 1 K ohms to 1 megohm .....             | (A & H) 100 ohms to 1 megohm          |
| Audio Tapers (C, D, F, G, S, & T) .....                                           | (D, G, S, & T) 1 K ohms to 1 megohm .....      | (C & F) 1 K ohms to 1 megohm          |
| Total Resistance Tolerance .....                                                  | 10 % or 20 % .....                             | 5% or 10%                             |
| Independent Linearity .....                                                       | ±5 % .....                                     | ±5 %                                  |
| Absolute Minimum Resistance .....                                                 | 2 ohms maximum .....                           | 2 ohms maximum                        |
| Effective Electrical Angle .....                                                  | (Linear tapers) 240 ° ± 5 ° .....              | (Linear tapers) 240 ° ± 6 °           |
|                                                                                   | (Audio tapers) 225 ° ± 5 ° .....               | (Audio tapers) 225 ° ± 6 °            |
| Contact Resistance Variation .....                                                | ±1 % .....                                     | ±1 % or 3 ohms (whichever is greater) |
| Dielectric Withstanding Voltage (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 .....                                              | (Linear tapers) 1 watt .....                   | (Linear tapers) 2 watts               |
|                                                                                   | (Audio tapers) 0.5 watt .....                  | (Audio tapers) 1 watt                 |
| +70 °C Multiple Section Assembly .....                                            | (Linear tapers) 0.5 watt/section .....         | (Linear tapers) 1 watt/section        |
|                                                                                   | (Audio tapers) 0.25 watt/section .....         | (Audio tapers) 0.5 watt/section       |
| +125 °C .....                                                                     | 0 watt .....                                   | 0 watt                                |
| Theoretical Resolution .....                                                      | Essentially infinite .....                     | Essentially infinite                  |
| Environmental Characteristics <sup>1</sup>                                        |                                                |                                       |
| Operating Temperature Range .....                                                 | -40 °C to +125 °C .....                        | -40 °C to +125 °C                     |
| Storage Temperature Range .....                                                   | -55 °C to +125 °C .....                        | -55 °C to +125 °C                     |
| Temperature Coefficient Over Storage                                              |                                                |                                       |
| Temperature Range .....                                                           | ±1,000 ppm/°C .....                            | ±150 ppm/°C                           |
| Vibration (Single Section)                                                        |                                                |                                       |
| Total Resistance Shift .....                                                      | 15 G .....                                     | 15 G                                  |
| Voltage Ratio Shift .....                                                         | ±2 % maximum .....                             | ±2 % maximum                          |
|                                                                                   | ±5 % maximum .....                             | ±5 % maximum                          |
| Shock (Single Section)                                                            |                                                |                                       |
| Total Resistance Shift .....                                                      | 30 G .....                                     | 30 G                                  |
| Voltage Ratio Shift .....                                                         | ±2 % maximum .....                             | ±2 % maximum                          |
|                                                                                   | ±5 % maximum .....                             | ±5 % maximum                          |
| Load Life .....                                                                   |                                                |                                       |
| Total Resistance Shift .....                                                      | 1,000 hours .....                              | 1,000 hours                           |
|                                                                                   | ±10 % maximum .....                            | ±5 % maximum                          |
| Rotational Life (No Load) .....                                                   |                                                |                                       |
| Total Resistance Shift .....                                                      | 100,000 cycles .....                           | 100,000 cycles                        |
|                                                                                   | (Linear tapers) 10 ohms or ±15 % TRS max. .... | (All tapers) ±5 % TRS max.            |
|                                                                                   | (whichever is greater)                         |                                       |
|                                                                                   | (Audio tapers) ±20 % maximum                   |                                       |
| Contact Resistance Variation                                                      |                                                |                                       |
| @ 50,000 cycles .....                                                             | (Linear tapers) ±2 % .....                     | ±2 %                                  |
|                                                                                   | (Audio tapers) ±3 % .....                      | ±3 %                                  |
| Moisture Resistance (MIL-STD-202, Method 103, Condition B)                        |                                                |                                       |
| Total Resistance Shift .....                                                      | (Linear tapers) ±10 % TRS maximum .....        | (All tapers) ±5 % TRS maximum         |
|                                                                                   | (Audio tapers) ±20 % TRS maximum               |                                       |
| Insulation Resistance (500 VDC) .....                                             | 100 megohms minimum .....                      | 100 megohms minimum                   |
| IP Rating .....                                                                   | IP 40 .....                                    | IP 40                                 |

\*RoHS Directive 2002/95/EC Jan. 27, 2003 including annex and RoHS Recast 2011/65/EU June 8, 2011.  
Specifications are subject to change without notice.  
Customers should verify actual device performance in their specific applications.

## Model 97 & 99 - 5/8 " Square Single-Turn Panel Control with Rotary Switch

**BOURNS®**

### Potentiometer Specifications

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

|                                                 |                                                                                                                |
|-------------------------------------------------|----------------------------------------------------------------------------------------------------------------|
| 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, except where noted in the part number. |

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

<sup>1</sup>At room ambient: +25 °C nominal and 50 % relative humidity nominal, except as noted.

## Model 97 & 99 - 5/8 " Square Single-Turn Panel Control with Rotary Switch

**BOURNS®**

### Rotary Switch Specifications

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

|                                                           |                                                                      |
|-----------------------------------------------------------|----------------------------------------------------------------------|
| Contacts:                                                 |                                                                      |
| DPST .....                                                | N.O./N.O., N.C./N.C. or N.O./N.C.                                    |
| DPDT .....                                                | 2 N.O./N.C. (break before make)                                      |
| Power Rating (Resistive Load):                            |                                                                      |
| DPST .....                                                | 2 A @ 125 volts RMS-60 Hz or 2 A @ 28 VDC, 1 A @ 250 volts RMS-60 Hz |
| DPDT .....                                                | 1 A @ 125 volts RMS-60 Hz or 1 A @ 28 VDC                            |
| Contact Resistance (0.1 VDC-10 mA) .....                  | 10 milliohms nominal                                                 |
| Contact Bounce .....                                      | 5 milliseconds maximum                                               |
| Dielectric Withstanding Voltage (MIL-STD-202, Method 301) |                                                                      |
| Sea Level .....                                           | 1500 VAC minimum                                                     |
| Insulation Resistance .....                               | 1000 megohms minimum                                                 |

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

|                                                                           |                                                          |
|---------------------------------------------------------------------------|----------------------------------------------------------|
| Operating Temperature Range .....                                         | 0 °C to +70 °C                                           |
| Exposure Temperature Range .....                                          | -65 °C to +125 °C                                        |
| Vibration (Dual Section) .....                                            | 8 G                                                      |
| Contact Resistance .....                                                  | 10 milliohms maximum                                     |
| Contact Bounce .....                                                      | 0.1 millisecond maximum                                  |
| Shock (Dual Section) .....                                                | 20 G                                                     |
| Contact Resistance .....                                                  | 10 milliohms maximum                                     |
| Contact Bounce .....                                                      | 0.1 millisecond maximum                                  |
| Rotational Life .....                                                     | 25,000 cycles                                            |
| Switch Actuating Torque (50% Duty cycle @ Rated Power Load) .....         | 1.41 to 4.94 N-cm (2 to 7 oz.-in.)                       |
| Contact Resistance .....                                                  | 100 milliohms maximum                                    |
| Moisture Resistance (MIL-STD-202, Method 106, Condition B)                |                                                          |
| Contact Resistance (0.1 VDC-10 mA) .....                                  | 10 milliohms maximum                                     |
| Insulation Resistance (After 24 Hours @ Room Temperature) (500 VDC) ..... | 100 megohms minimum                                      |
| Housing Material .....                                                    | High temperature, flame retardant, thermosetting plastic |

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

|                                                                    |                                      |
|--------------------------------------------------------------------|--------------------------------------|
| Actuating Torque (Each Section, Switch Module Only) .....          | 3.53 to 10.59 N-cm (5 to 15 oz.-in.) |
| Running Torque (Out of Detent, 2-4 Module Assembly) .....          | 0.21 to 1.41 N-cm (0.3 to 2 oz.-in.) |
| Detent .....                                                       | CW or CCW standard                   |
| Actuation Angle .....                                              | 20 ° ±5 °                            |
| Contact Materials .....                                            | Fine silver with gold overlay        |
| Terminal Styles .....                                              | Solder lug only                      |
| Standard Orientation .....                                         | In-line with control terminals       |
| Optional .....                                                     | Rotated 90 ° CCW from standard       |
| Terminal Strength (Before and After Soldering Heat Exposure) ..... | 0.9 kg (2 lbs.) minimum              |

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

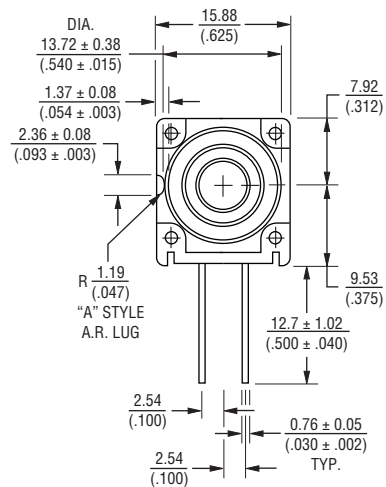
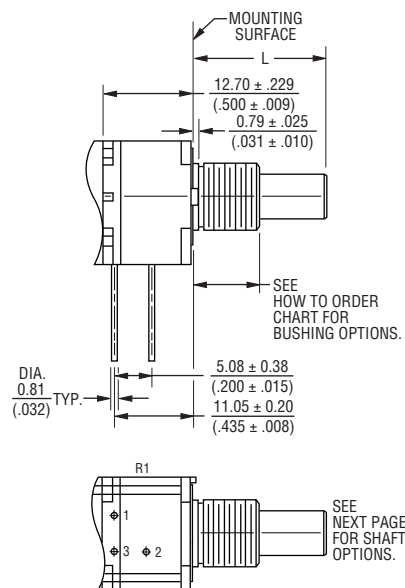
<sup>1</sup>At room ambient: +25 °C nominal and 50 % relative humidity nominal, except as noted.

# Model 97 & 99 - 5/8" Square Single-Turn Panel Control with Rotary Switch

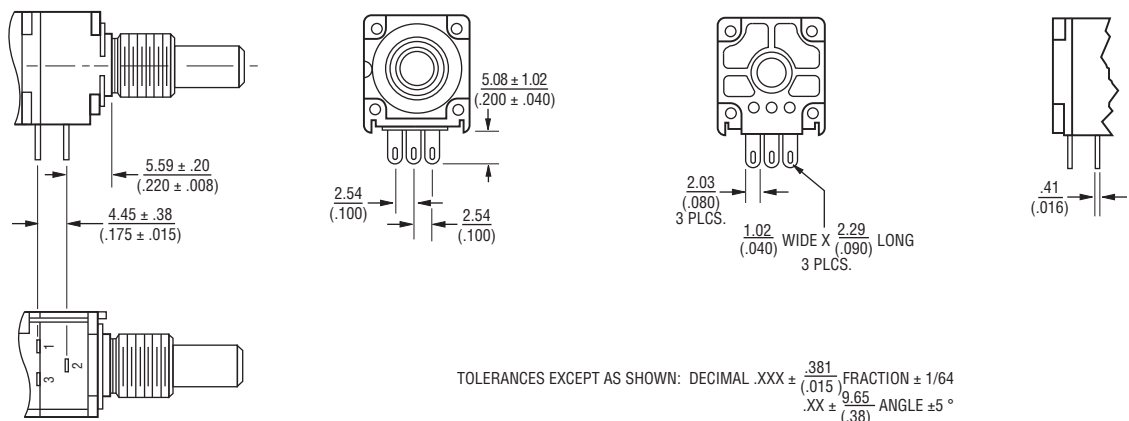
**BOURNS®**

## Product Dimensions

### Model 97 PC Pin Terminals, "L" Pattern



### Model 99 Solder Lug Terminals, "Triangular" Pattern

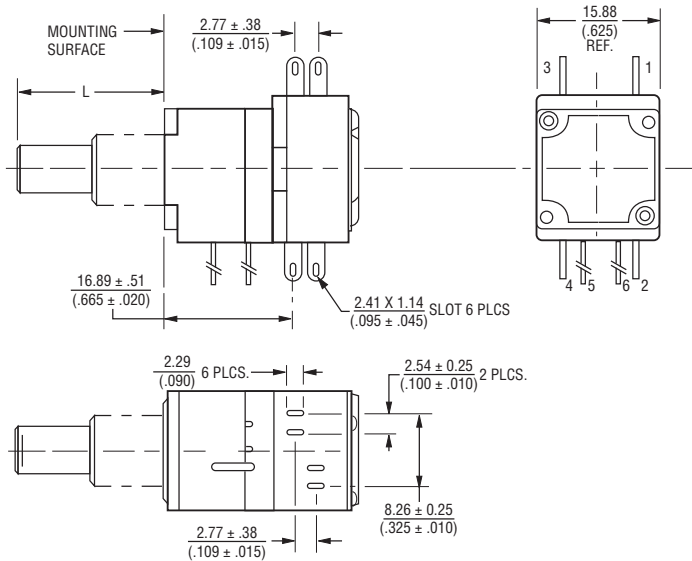


# Model 97 & 99 - 5/8" Square Single-Turn Panel Control with Rotary Switch

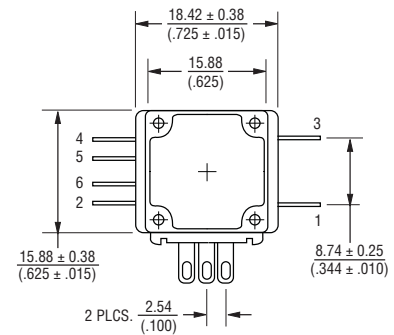
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## Product Dimensions

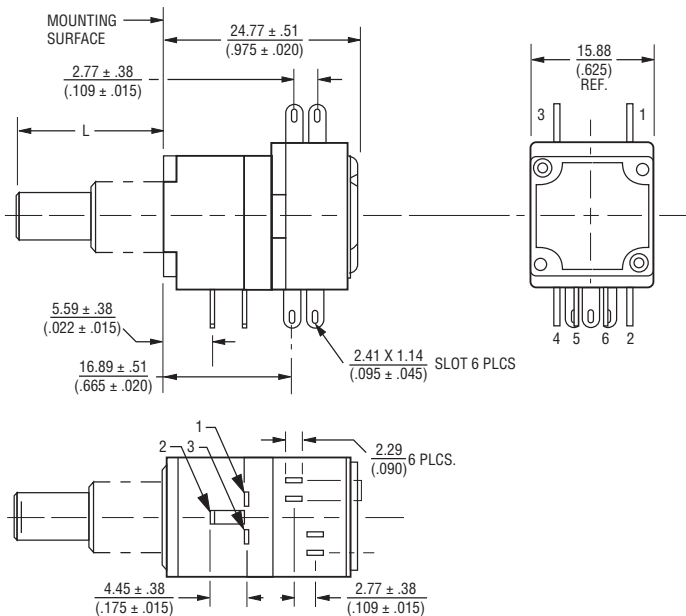
### Model 97 (2nd Cup - Switch)



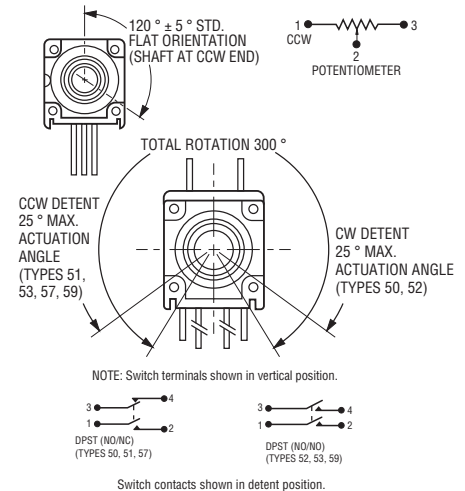
### Horizontal Term. (Switch Types R57, R59)



### Model 99 (2nd Cup - Switch)



### Switch Module Variations Shaft Flat Orientation



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

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

Specifications are subject to change without notice.  
 Customers should verify actual device performance in their specific applications.

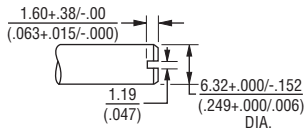
# Model 97 & 99 - 5/8" Square Single-Turn Panel Control with Rotary Switch

**BOURNS®**

## Product Dimensions

### Plastic Shaft Styles

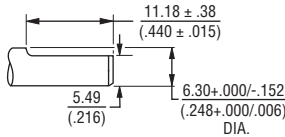
**SHAFT TYPE "B"** (USES BUSHING A)



STD. LENGTHS:

|                 |                 |                 |                 |
|-----------------|-----------------|-----------------|-----------------|
| 12.70<br>(.500) | 15.88<br>(.625) | 19.05<br>(.750) | 22.23<br>(.875) |
|-----------------|-----------------|-----------------|-----------------|

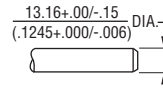
**SHAFT TYPE "C"** (USES BUSHING A)



STD. LENGTHS:

|                 |                 |
|-----------------|-----------------|
| 19.05<br>(.750) | 22.23<br>(.875) |
|-----------------|-----------------|

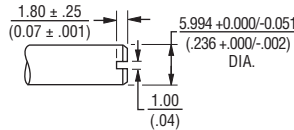
**SHAFT TYPE "D"** (USES BUSHING C)



STD. LENGTHS:

|                 |                 |                 |
|-----------------|-----------------|-----------------|
| 12.70<br>(.500) | 15.88<br>(.625) | 19.05<br>(.750) |
|-----------------|-----------------|-----------------|

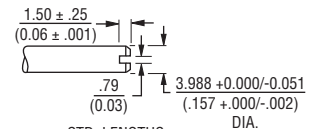
**SHAFT TYPE "R"** (USES BUSHING R)



STD. LENGTHS:

|                |                |
|----------------|----------------|
| 16.0<br>(.630) | 22.0<br>(.866) |
|----------------|----------------|

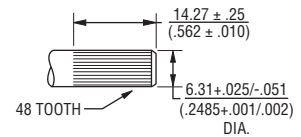
**SHAFT TYPE "T"** (USES BUSHING U)



STD. LENGTHS:

|                |                |
|----------------|----------------|
| 16.0<br>(.630) | 22.0<br>(.866) |
|----------------|----------------|

**SHAFT TYPE "W"** (USES BUSHING A)

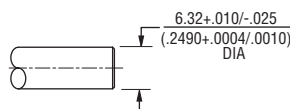


STD. LENGTHS:

|                 |
|-----------------|
| 25.40<br>(1.00) |
|-----------------|

### Metal Shaft Styles

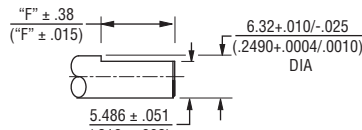
**SHAFT TYPE "A"** (USES BUSHING A)



STD. LENGTHS:

|                 |                 |                 |                 |                 |
|-----------------|-----------------|-----------------|-----------------|-----------------|
| 12.70<br>(.500) | 15.88<br>(.625) | 19.05<br>(.750) | 22.23<br>(.875) | 25.4<br>(1.000) |
|-----------------|-----------------|-----------------|-----------------|-----------------|

**SHAFT TYPE "H"** (USES BUSHING A)



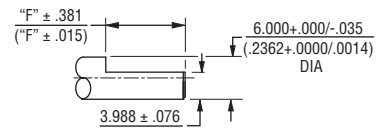
STD. LENGTHS:

|                 |                 |
|-----------------|-----------------|
| 19.05<br>(.750) | 22.23<br>(.875) |
|-----------------|-----------------|

FLAT LENGTH "F":

|                |                 |
|----------------|-----------------|
| 7.95<br>(.313) | 11.13<br>(.438) |
|----------------|-----------------|

**SHAFT TYPE "S"** (USES BUSHING R)



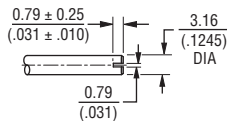
STD. LENGTHS:

|                 |                 |
|-----------------|-----------------|
| 19.05<br>(.750) | 22.23<br>(.875) |
|-----------------|-----------------|

FLAT LENGTH "F":

|                |                 |
|----------------|-----------------|
| 9.98<br>(.393) | 12.98<br>(.511) |
|----------------|-----------------|

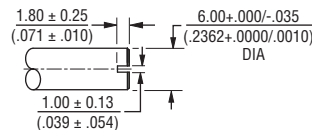
**SHAFT TYPE "E"** (USES BUSHING C)



STD. LENGTHS:

|                |                |                |
|----------------|----------------|----------------|
| 12.0<br>(.500) | 16.0<br>(.625) | 19.0<br>(.750) |
|----------------|----------------|----------------|

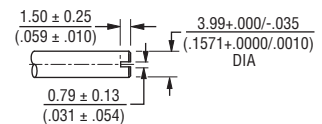
**SHAFT TYPE "J"** (USES BUSHING R)



STD. LENGTHS:

|                |                |
|----------------|----------------|
| 16.0<br>(.630) | 22.0<br>(.866) |
|----------------|----------------|

**SHAFT TYPE "V"** (USES BUSHING U)



STD. LENGTHS:

|                 |                 |
|-----------------|-----------------|
| 19.05<br>(.750) | 22.23<br>(.875) |
|-----------------|-----------------|

TOLERANCES EXCEPT AS SHOWN: .XX = ± .02

.XXX = ± .005

.XXXX = ± .0005

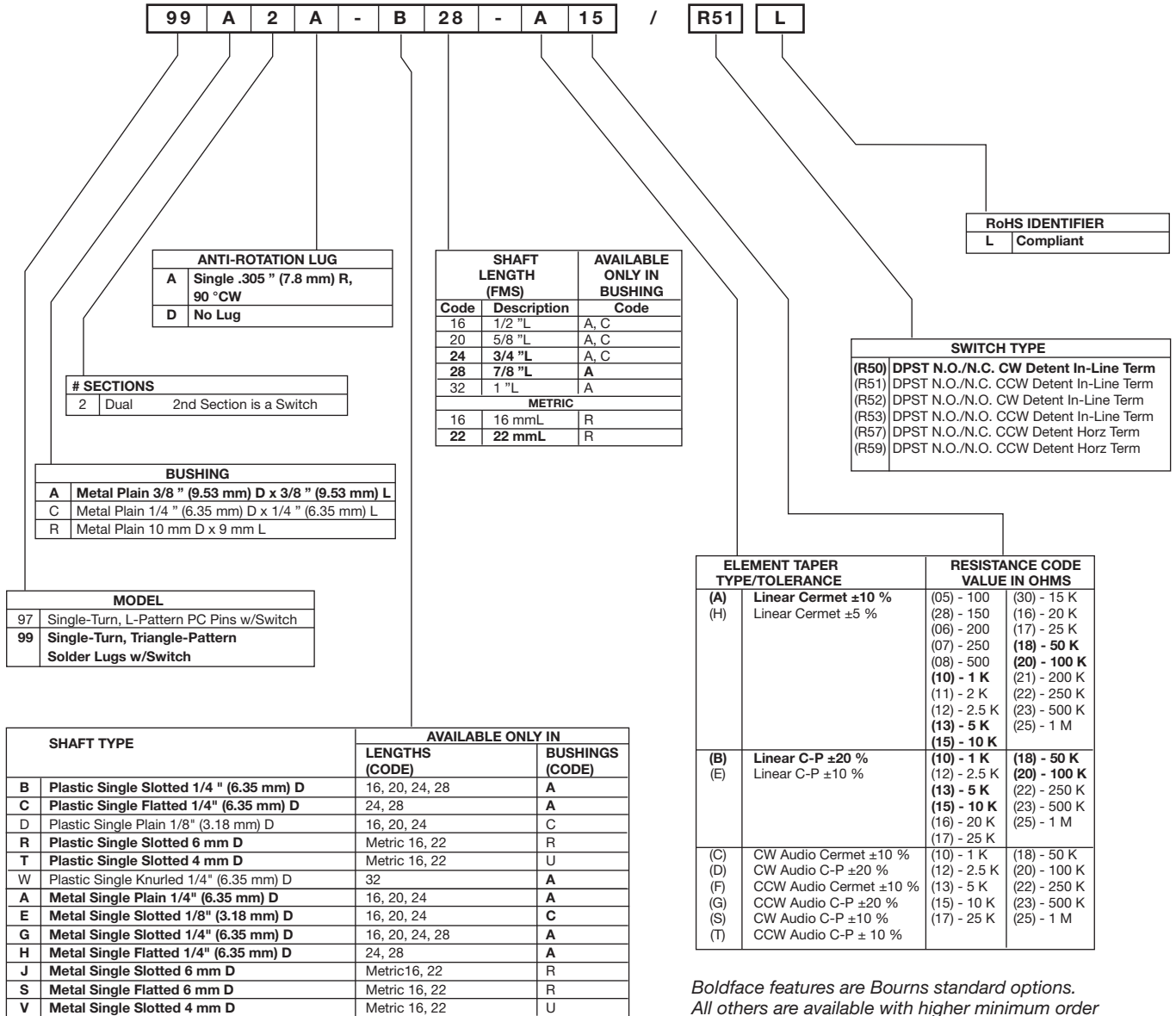
.XXXX = ± .0127

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

Specifications are subject to change without notice.  
Customers should verify actual device performance in their specific applications.

# How to Order Model 97 & 99 Panel Controls

**BOURNS®**



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

REV. 10/12

Specifications are subject to change without notice.  
Customers should verify actual device performance in their specific applications.

## 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.

Нашей специализацией является поставка электронной компонентной базы двойного назначения, продукции таких производителей как XILINX, Intel (ex.ALTERA), Vicor, Microchip, Texas Instruments, Analog Devices, Mini-Circuits, Amphenol, Glenair.

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

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