

## Industrial 16mm Diameter Carbon Composition Rotary Potentiometer

### Features

- Versatile Mounting Styles
  - Bushing
  - Twist or Bend Tab
  - Snap-in PC Bracket
  - PC Terminal
- Single, Tandem, or Concentric Units
- Power Switch Available
- Panel Seal Available
- Wide Resistance Range
- Low Noise
- RoHS compliant



### Electrical and Mechanical Specifications

#### Resistance Range

500 ohms through 2 Megohms, linear  
5K ohms through 200K ohms, audio

#### Resistance Tolerance

±30%, ±20%, ±10%

#### Power Rating

1/4 watts @ 55°C (Resistance up to 100K ohms)  
1/5 watts @ 55°C (Resistance above 100K ohms)

#### Dielectric Strength

750 VAC for 1 minute

#### Maximum Operating Voltage

500 VDC

#### Insulation Resistance

100 Megohms minimum @ 250 VDC

#### Angle of Rotation

Total Rotation (Potentiometer and Switch)

Without Switch: 300°

With Switch: 315°

Effective Electrical Angle (Potentiometer)

Without Switch: 300°

With Switch: 290°

#### Rotational Torque

36-360 gf-cm

#### Stop Strength

5.76 kgf-cm minimum

#### Push-Pull Strength of Shaft

10 kg for 10 seconds

#### Rotational life

10K cycles

#### Operating temperature

-10°C to +70°C

#### Solder Heat Resistance

260°C for 5 seconds

#### Mounting Information

- Bushing
- Twist Tab
- Bend Tab
- Snap-in PC Bracket
- PC Terminal

## Electrical and Mechanical Specifications

### Shaft and Bushing Information

#### Metal Shaft and Bushing

*Single or Dual Section Potentiometer with One Shaft*

Shaft Diameter		Bushing Diameter	
inch	mm	inch	mm
.125	3.20	1/4" – 32UNEF-2A	M7 X .75P
.156	4.00	1/4" – 32UNEF-2A	M7 X .75P
.187	4.70	3/8" – 32UNEF-2A	M7 X .75P
.236	6.00	3/8" – 32UNEF-2A	M8 X .75P
.250	6.35	3/8" – 32UNEF-2A	M9 X .75P

*Concentric Tandem Potentiometer with Two Shafts*

Outer Shaft Diameter		Inner Shaft Diameter		Bushing Diameter	
inch	mm	inch	mm	inch	mm
.236	6.00	.156	4.0	3/8" – 32UNEF-2A	M8 X .75P
.250	6.35	.125	3.2	3/8" – 32UNEF-2A	M9 X .75P

#### Molded Shaft and Bushing

*Single Section Potentiometer with One Shaft*

Shaft Diameter		Bushing Diameter	
inch	mm	inch	mm
.156	4.00	1/4" – 32UNEF-2A	M7 X .75P
.187	4.70	3/8" – 32UNEF-2A	M7 X .75P
.236	6.00	3/8" – 32UNEF-2A	M8 X .75P
.250	6.35	3/8" – 32UNEF-2A	M9 X .75P

#### Shaft with Twist Tab, Bend Tab, Snap-in PC Bracket, or PC Terminal

*All metal or molded shaft diameters can be used except .187"(4.7mm), which can be used with snap-in PC bracket only.*

### Terminal Information

#### Standard:

- T: Solder lug formed 90° to the rear on single and multi-section.
- X: PC terminals standard .438" (11.1mm) from center line of control to PC board, straight terminals extend .156" (4.0mm) into PC board.
- U: PC terminals formed 90° forward toward mounting surface. Terminals extend .187" (4.7mm) beyond mounting surface.
- V: PC terminals formed 90° to the rear, away from panel mounting. Terminals extend .442" (11.2mm) from mounting surface.

#### Special:

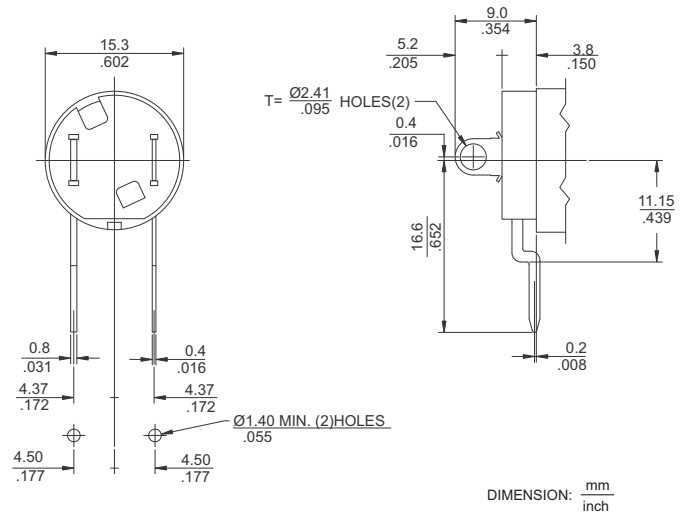
- T: Solder lug perpendicular to shaft. Or, solder lug formed 60° to the rear.
- W: Wire wrap terminals — .156" (4.0mm) terminal extension beyond base, formed 60° to the rear.

# Electrical and Mechanical Specifications

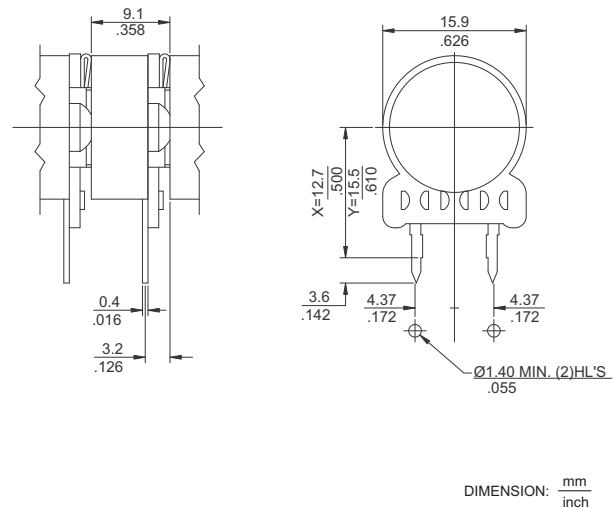
## Optional Power Switches (All SPST)

SERIES	TYPE	ELECTRICAL RATING
057	Rotary	5A @ 20 VDC
		3A @ 125 VAC (UL Recognized)

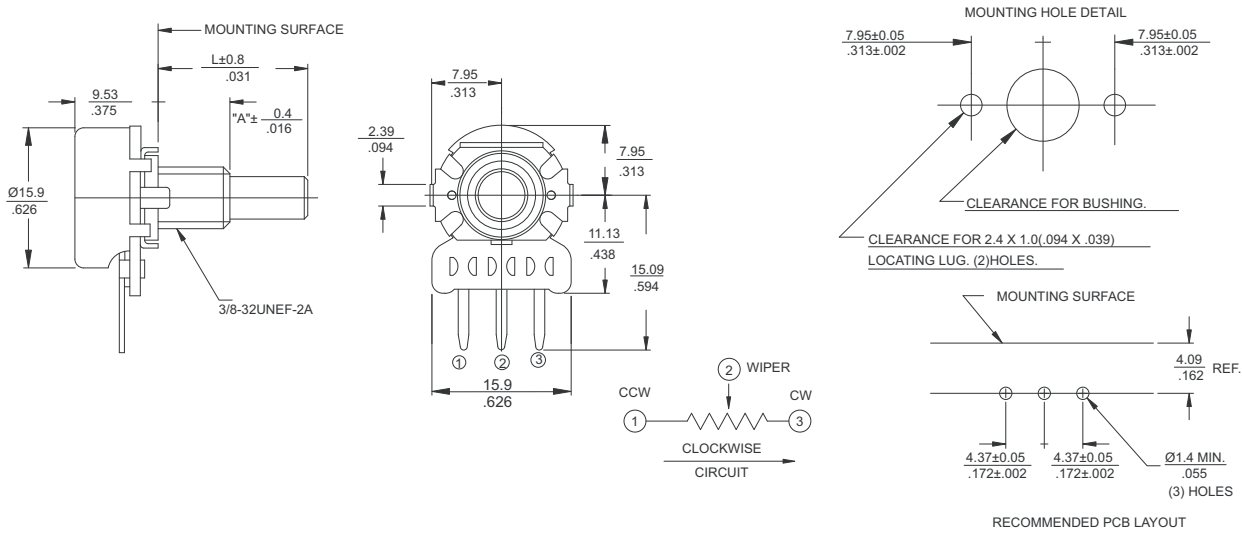
Switch Actuating Angle -25°  
 Switch Actuating Torque - 2 to 10 in. oz.  
 (144 to 720gf-cm)



SERIES	TYPE	ELECTRICAL RATING
DEMI	Push On-Pull Off	3A @ 20 VDC
DEMI	Momentary Contact Push On	3A @ 20 VDC

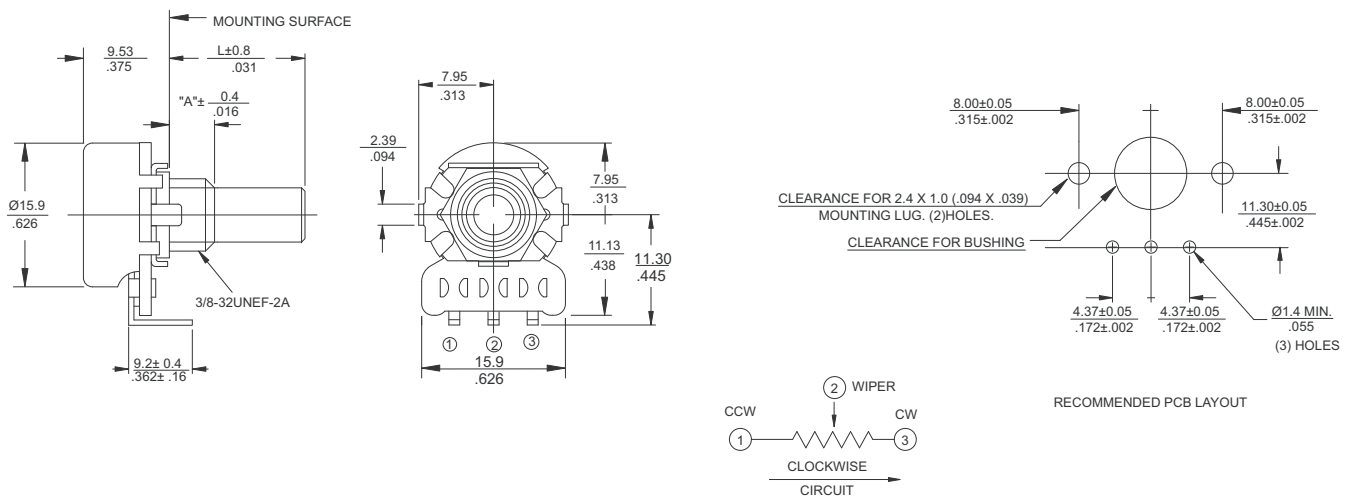


## 270X Metal Shaft, Bushing Mount, Printed Circuit "X" Type Terminals



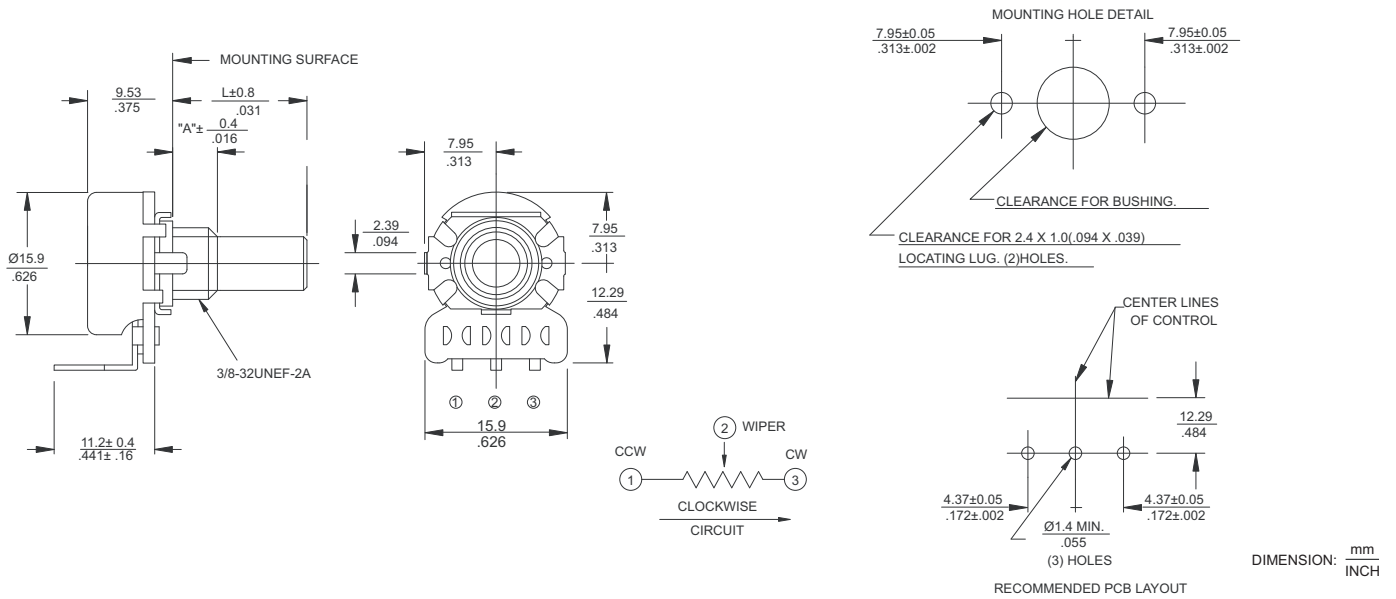
DIMENSION:  $\frac{\text{mm}}{\text{INCH}}$

## 270U Metal Shaft, Bushing Mount, Printed Circuit "U" Type Terminals

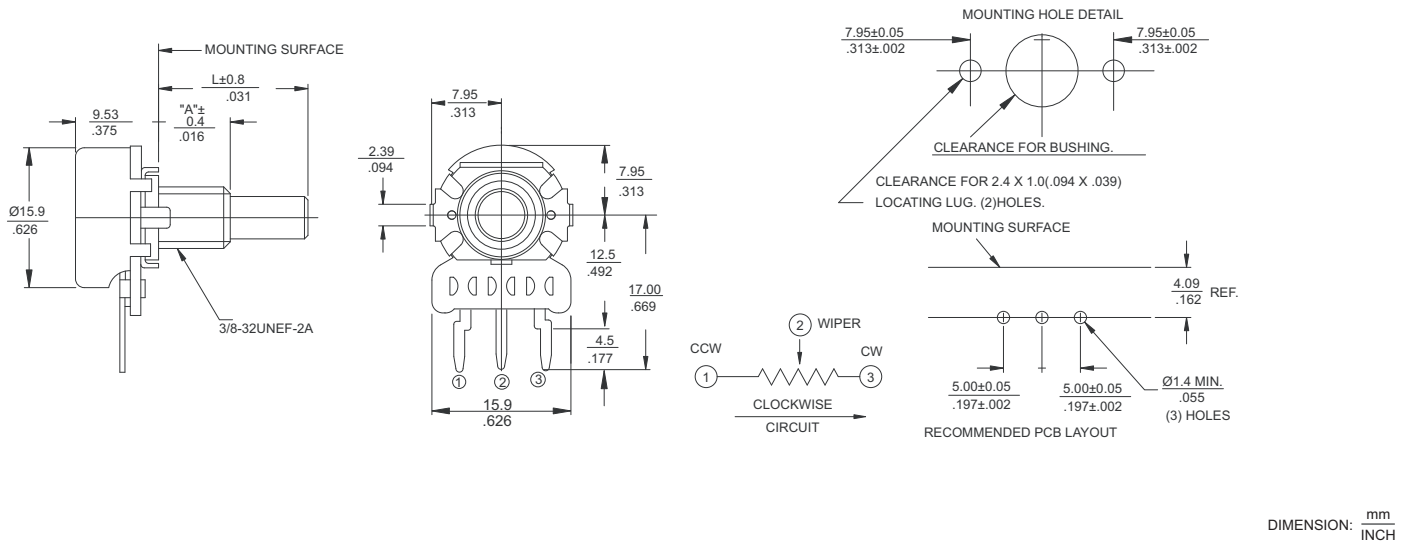


DIMENSION:  $\frac{\text{mm}}{\text{INCH}}$

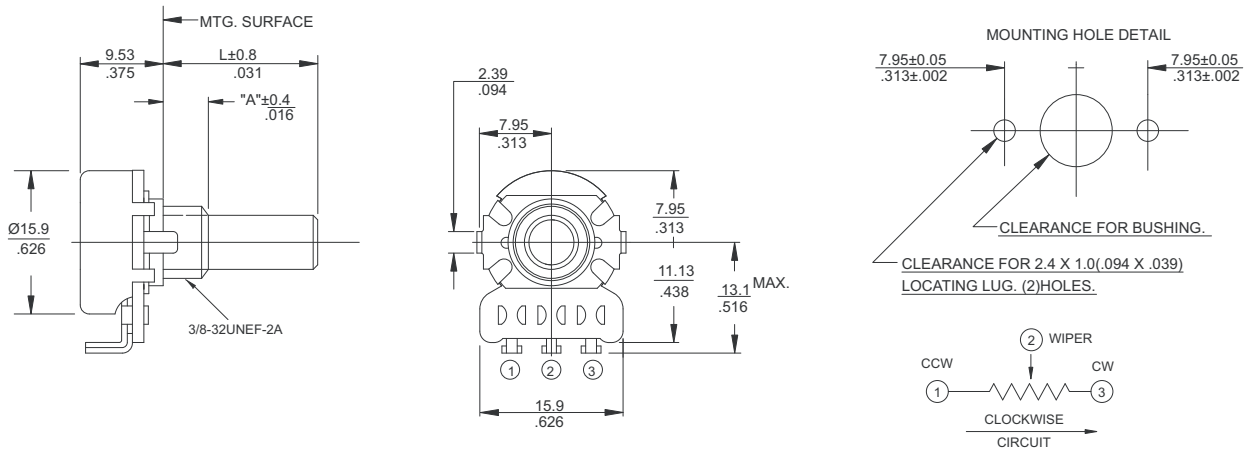
## 270V Metal Shaft, Bushing Mount, Printed Circuit "V" Type Terminals



## 275X Metal Shaft, Bushing Mount, Printed Circuit "X" Type Terminals

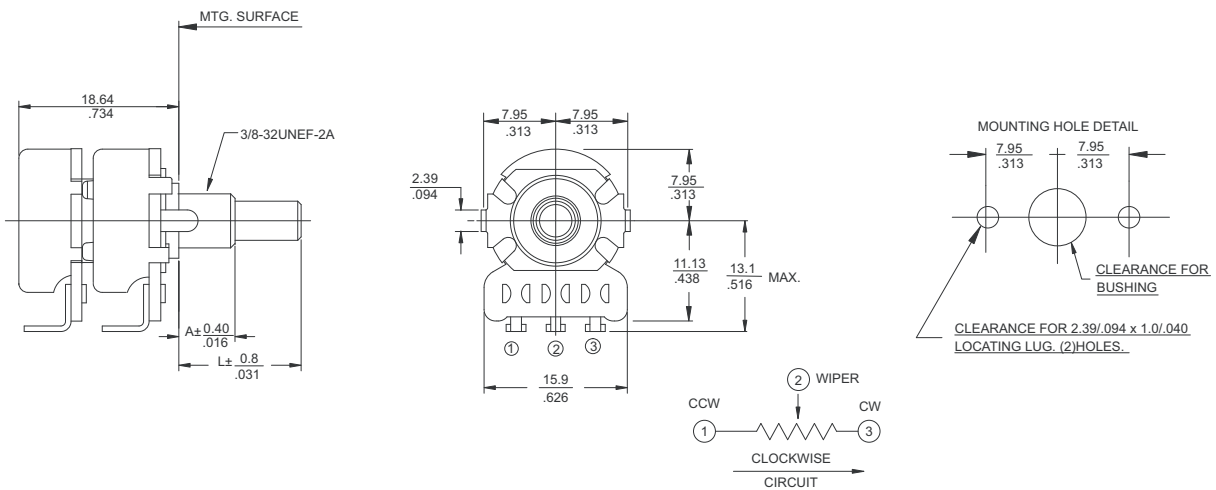


## 270T Metal Shaft, Bushing Mount, Solder Lug "T" Type Terminals



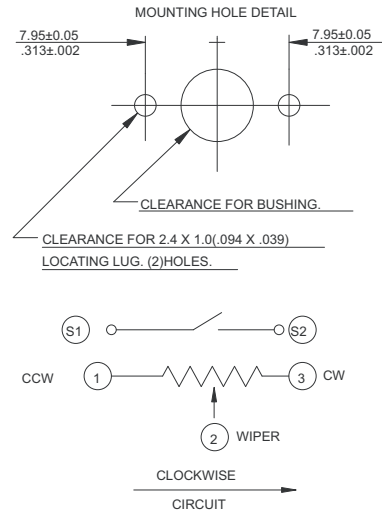
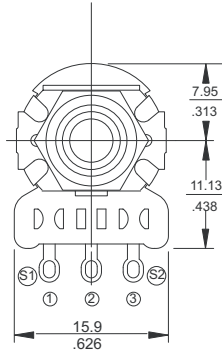
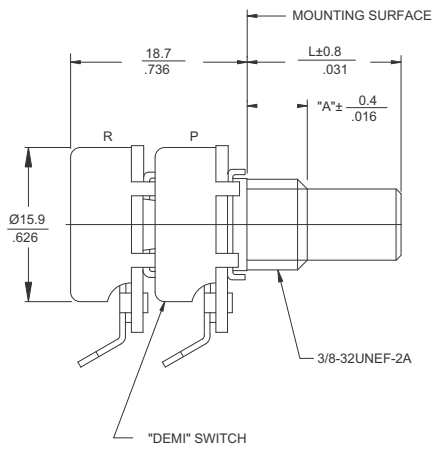
DIMENSION:  $\frac{\text{mm}}{\text{inch}}$

## 270T-2 Dual Section, Metal Shaft, Bushing Mount, Solder Lug "T" Type Terminals



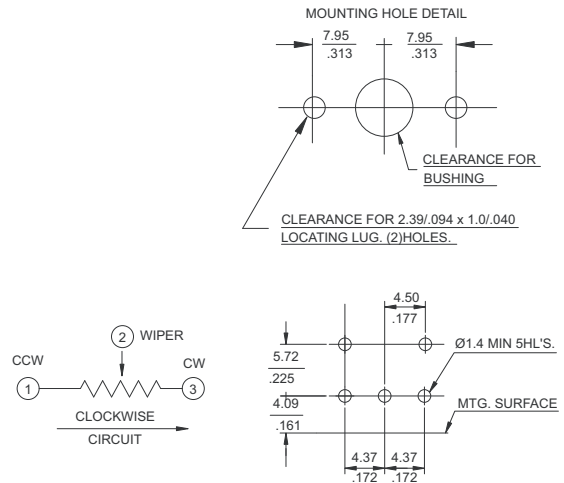
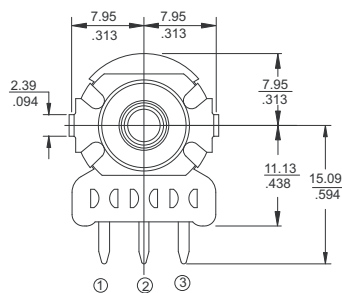
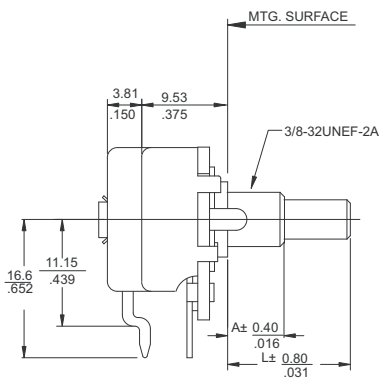
DIMENSION:  $\frac{\text{mm}}{\text{INCH}}$

## 270T-DEMIT Metal Shaft, Bushing Mount, Solder Lug "T" Type Terminals, DEMI Switch.



DIMENSION:  $\frac{\text{mm}}{\text{INCH}}$

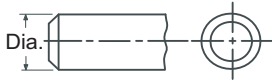
## 270X-057X Metal Shaft, Bushing Mount, Printed Circuit "X" Type Terminals, Rotary 057 Switch



DIMENSION:  $\frac{\text{mm}}{\text{INCH}}$

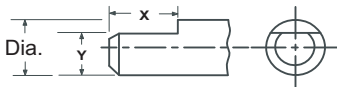
## Shaft Diameter and Trim

ROUND



Type	Diameter
A	.125" (3.18 mm)
R	.156" (3.96 mm)
G	.187" (4.75 mm)
X	.236" (6.00 mm)
P	.250" (6.35 mm)

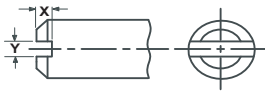
FLATTED



Type	Diameter	X	Y
B	.125" (3.18 mm)	.250" (6.35 mm)	.109" (2.77 mm)
D	.250" (6.35 mm)	.375" (9.52 mm)	.156" (3.96 mm)
H	.187" (4.75 mm)	.250" (6.35 mm)	.156" (3.96 mm)
F	.156" (3.96 mm)	.250" (6.35 mm)	.109" (2.77 mm)
L	.236" (6.00 mm)	.472" (12.0mm)	.177" (4.50 mm)
V*	.187" (4.75 mm)	.313" (7.95 mm)	.156" (3.96 mm)
W**	.236" (6.00 mm)	.472" (12.0 mm)	.177" (4.50 mm)

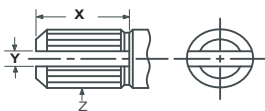
\*Molded Shaft, FMS .875" (22.2 mm), not available with switch  
 \*\*Molded Shaft, FMS .984" (25.0 mm), with rotary switch only

SLOTTED



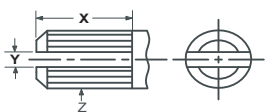
Type	Diameter	X	Y
C	.125" (3.18 mm)	.047" (1.19 mm)	.039" (1.00 mm)
S	.156" (3.96 mm)	.047" (1.19 mm)	.039" (1.00 mm)
J	.187" (4.75 mm)	.047" (1.19 mm)	.039" (1.00 mm)
M	.236" (6.00 mm)	.047" (1.19 mm)	.039" (1.00 mm)
E	.250" (6.35 mm)	.047" (1.19 mm)	.039" (1.00 mm)

KNURLED & SLOTTED  
(Metal Shaft)



Type	Diameter	X	Y	Z
N	.236" (6.00 mm)	.342" (8.70 mm)	.039" (1.00 mm)	18 Teeth
T	.236" (6.00 mm)	.279" (7.10 mm)	.062" (1.57 mm)	24 Teeth

KNURLED & SLOTTED  
(Molded Shaft)



Type	Diameter	X	Y	Z
U*	.187" (4.75 mm)	.062" (1.57 mm)	.046" (1.17 mm)	18 Teeth
K**	.236" (6.00 mm)	.200" (5.08 mm)	.046" (1.17 mm)	18 Teeth

\*Molded Shaft, FMS .500" (12.7 mm), not available with switch  
 \*\*Molded Shaft, FMS .500" (12.7 mm), with rotary switch only



# Ordering Information

**270/275**

**T**

**2**

**20**

**R**

**103**

**B**

**1**

**A**

**1**

**TERMINAL STYLE**

- T – SOLDER LUG
- \*X – PC
- \*U – FORMED TO FRONT
- V – FORMED TO REAR

\* Required for 275 Series

**MOUNTING STYLE "A"**

**BRASS BUSHING MOUNT LENGTH EXAMPLES**

- 2 – .250"
- 3 – .375"
- 8 – 1.000"

3/8" – 32UNEF-2A  
LENGTH INCREMENT: 1/8"

**TWIST TAB MOUNT**

- 1 – TWIST TAB

**BRACKET MOUNT**

- 0 – BRACKET

**SHAFT LENGTH "L"**

**METAL SHAFTS EXAMPLES**

- 16 – .500"
- 20 – .625"
- 24 – .750"
- 28 – .875"
- 32 – 1.000"

LENGTH INCREMENT: 1/32"

**MOLDED SHAFT**

- 16 – .500" (shaft trim "U" & "K" only)
- 28 – .875" (shaft trim "V" only)
- 32 – .984" (shaft trim "W" only)

**RESISTANCE CODE EXAMPLES**

**CODE RESISTANCE**

CODE	RESISTANCE
501	500 OHMS
102	1K
252	2.5K
502	5K
103	10K
253	25K
503	50K
104	100K

**TAPER**

- 1 – LINEAR
- 2 – 10% AUD
- 3 – 10% CCW AUD

**SWITCH TYPE**

- A – NONE
- B – SPST ROTARY
- C – DEMI MOMENTARY
- D – DEMI PUSH-PULL

**RESIST TOL**

- A – ±10%
- B – ±20%
- C – ±30%

**SHAFT DIAMETER AND TRIM**

**METAL SHAFT**

- A – .125" DIA. ROUND
- B – .125" DIA. FLATTED
- C – .125" DIA. SLOTTED
- R – .156" DIA. ROUND
- F – .156" DIA. FLATTED
- S – .156" DIA. SLOTTED
- G – .187" DIA. ROUND
- H – .187" DIA. FLATTED
- J – .187" DIA. SLOTTED
- X – .236" DIA. ROUND
- L – .236" DIA. FLATTED
- M – .236" DIA. SLOTTED
- N – .236" DIA. SLOTTED & KNURLED
- P – .250" DIA. ROUND
- D – .250" DIA. FLATTED
- E – .250" DIA. SLOTTED
- T – .236" DIA. SLOTTED & KNURLED

**MOLDED SHAFT**

- \*U – .187" DIA. SLOTTED & KNURLED (.500" shaft length only)
- \*\*K – .236" DIA. SLOTTED & KNURLED (.500" shaft length only)
- \*V – .187" DIA. FLATTED (.875" shaft length only)
- \*\*W – .236" DIA. FLATTED (.984" shaft length only)

\* Molded shaft not available with switch

\*\* Molded shaft with rotary switch only

**SPECIALS**

- 1 – LEFT LOCATING LUG
- 2 – 50% DETENT WITH LEFT LOCATING LUG
- 3 – 50% DETENT WITH RIGHT LOCATING LUG
- 4 – RIGHT LOCATING LUG
- 5 – NO LOCATING LUG

Note :

Consult CTS for custom or not listed features including shaft, bushing, longer life cycles, solderable cover, anti-static design, etc.