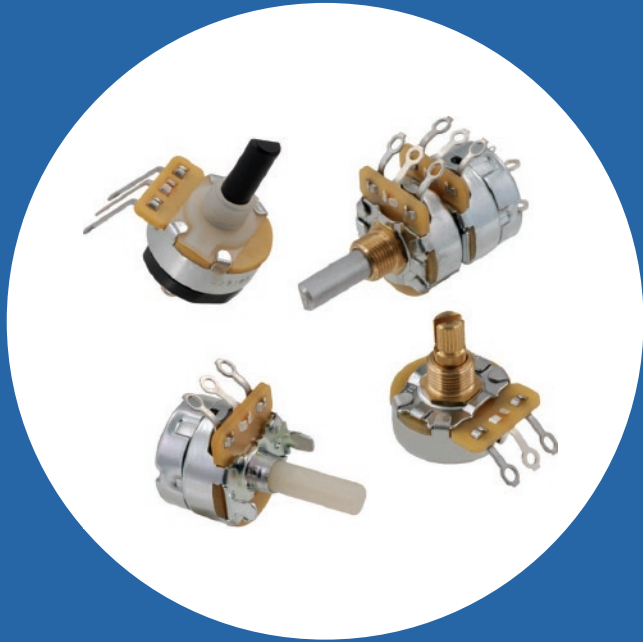


### Industrial 24mm Diameter 1/2 Watt, Composition Rotary Potentiometer

#### 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

100 ohms through 10 Megohms, linear  
1K ohms through 1 Megohms, audio

##### Resistance Tolerance

±30%, ±20%, ±10%

##### Power Rating

1/2 watts @ 55°C (Resistance up to 100K ohms)  
1/3 watts @ 55°C (Resistance above 100K ohms)

##### Dielectric Strength

1080 VAC for 1 minute

##### Maximum Operating Voltage

750 VDC

##### Insulation Resistance

100 Megohms minimum @ 250 VDC

##### Angle of Rotation

Total Rotation (Potentiometer and Switch)  
With rotary switch: 320°  
Without switch or with push switch: 300°  
Electrical Effective Angle (Potentiometer)  
300°

##### Rotational Torque

Standard: 54 - 432 gf-cm  
(Consult CTS for special torque)

##### Stop Strength

10.36 kgf-cm minimum

##### Push-Pull Strength of Shaft

10 kg for 10 seconds

##### Rotational Life

Standard: 10K cycles  
Special: 100K, 250K cycles

##### Operating Temperature

-10°C to +80°C

##### Solder Heat Resistance

260°C for 5 seconds

##### Mounting Information

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

# OPTIONAL POWER SWITCHES

Series	Contact Arrangement	Electrical Rating	Outline Drawing
<p><b>FR-GC</b></p> <p><b>GC</b></p> <p>Actuating Angle – 20°</p> <p>Actuating Torque – 7 to 17 in. oz. (504 to 1224 gf-cm)</p>	<p><b>SPST</b> Rotary</p> <p><b>SPST</b> Rotary</p>	<p>3 amps @ 125 volts, 1 amp @ 250 volts AC UL Recognized</p> <p>5 amps @ 20 volts DC (Automotive)</p>	

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

<p><b>TGC</b></p> <p>Actuating Angle – 20°</p> <p>Actuating Torque – 7 to 17 in. oz. (504 to 1224 gf-cm)</p>	<p><b>SPST</b> Rotary</p>	<p>6 amps @ 125 volts AC UL &amp; CSA Recognized</p>	
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DIMENSION:  $\frac{\text{mm}}{\text{inch}}$

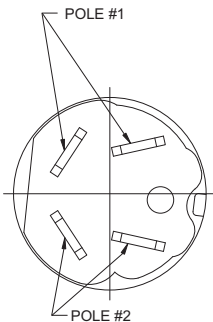
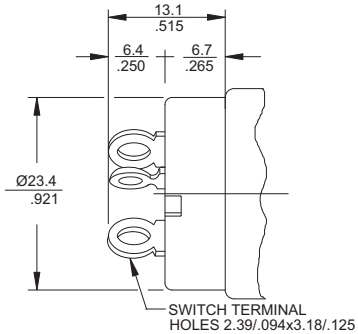
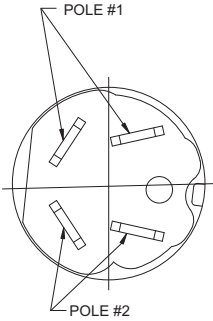
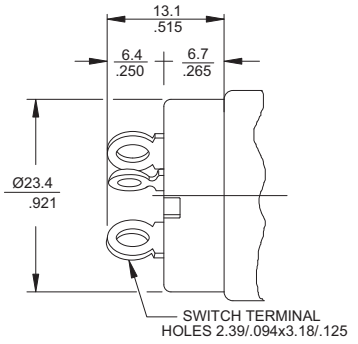
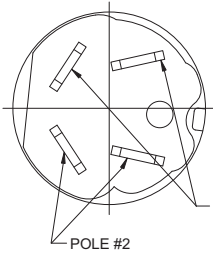
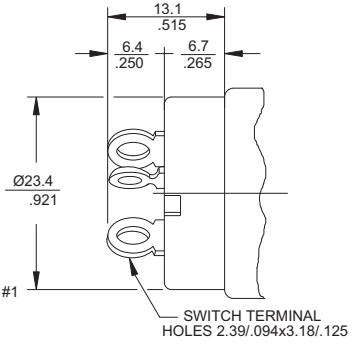
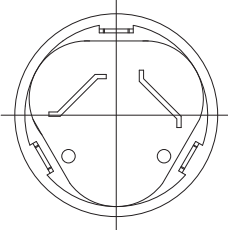
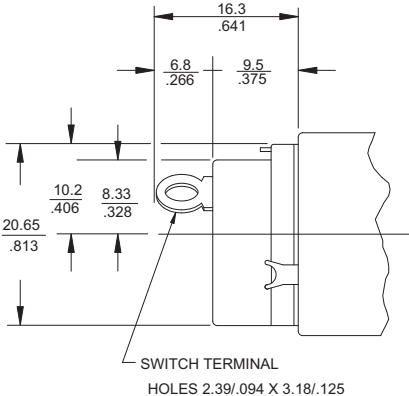
<p><b>TV-023</b></p> <p>Actuating Angle – 20°</p> <p>Actuating Torque – 10 to 20 in. oz. (720 to 1440 gf-cm)</p>	<p><b>SPST</b> Rotary</p>	<p>TV-5 rating UL &amp; CSA Recognized</p>	
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DIMENSION:  $\frac{\text{mm}}{\text{inch}}$

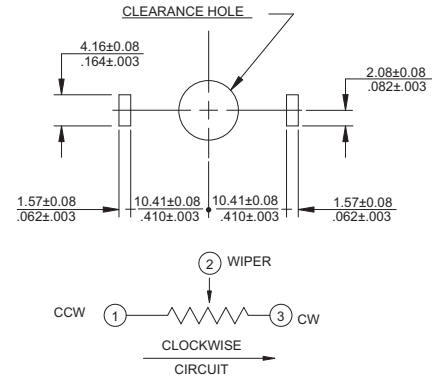
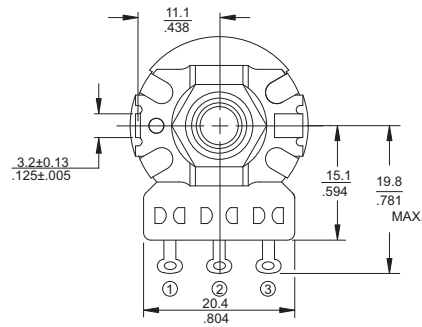
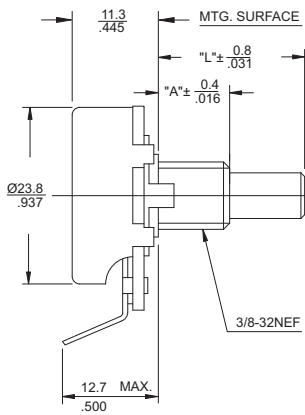
# OPTIONAL POWER SWITCHES

Series	Contact Arrangement	Electrical Rating	Outline Drawing
<p><b>040</b></p> <p>Pre-travel 13/64" (5.2 mm) Activating Force: 2 to 5 lb (0.9 to 2.3 kgf)</p> <p>DIMENSION: <math>\frac{\text{mm}}{\text{inch}}</math></p>	<p><b>SPST</b> Push-on Push-off</p>	<p>6 amps @ 125 volts AC</p>	
<p><b>041</b></p> <p>Pre-travel 13/64" (5.2mm) Activating Force: 2 to 5 lb (0.9 to 2.3 kgf)</p> <p>DIMENSION: <math>\frac{\text{mm}}{\text{inch}}</math></p>	<p><b>SPDT</b> Push-on Push-off</p>	<p>6 amps @ 125 volts AC</p>	
<p><b>050</b></p> <p>Actuating Angle: 25° Actuating Torque: 2 to 15 in. oz. (144 to 1080 gf-cm)</p> <p>DIMENSION: <math>\frac{\text{mm}}{\text{inch}}</math></p>	<p><b>SPST</b> Rotary</p>	<p>3 amps @ 125 volts AC (Shallow construction switch) UL &amp; CSA Recognized 7.5 amps @ 20 volts DC (Automotive)</p>	
<p><b>FR-027</b></p> <p>Actuating Angle: 20° Actuating Torque: 10 to 20 in. oz. (720 to 1440 gf-cm)</p> <p>DIMENSION: <math>\frac{\text{mm}}{\text{inch}}</math></p>	<p><b>DPST</b> Rotary</p>	<p>3 amps @ 125 volts, 1 amp @ 250 volts AC UL Recognized</p>	

# OPTIONAL POWER SWITCHES

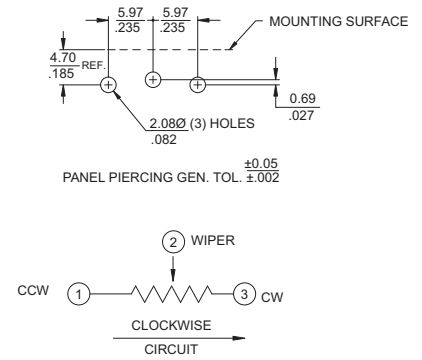
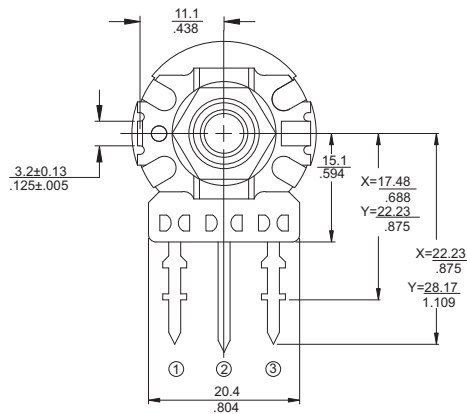
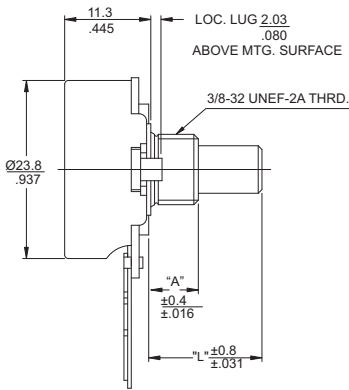
Series	Contact Arrangement	Electrical Rating	Outline Drawing	
<p><b>TV-020</b></p> <p>Actuating Angle: 20° Actuating Torque: 10 to 20 in. oz. (720 to 1440 gf-cm)</p> <p>DIMENSION: <math>\frac{\text{mm}}{\text{inch}}</math></p>	<p><b>DPST</b> Rotary</p>	<p>125 volts AC Pole #1, TV-1 rating Pole #2, TV-3 rating UL &amp; CSA Recognized</p>		
<p><b>FR-028</b></p> <p>Actuating Angle: 20° Actuating Torque: 10 to 20 in. oz. (720 to 1440 gf-cm)</p> <p>DIMENSION: <math>\frac{\text{mm}}{\text{inch}}</math></p>	<p><b>SPDT</b> Rotary</p>	<p>3 amps @ 125 volts AC UL Recognized</p>		
<p><b>TV-021</b></p> <p>Actuating Angle: 20° Actuating Torque: 10 to 20 in. oz. (720 to 1440 gf-cm)</p> <p>DIMENSION: <math>\frac{\text{mm}}{\text{inch}}</math></p>	<p><b>SPDT</b> Rotary</p>	<p>TV-4 rating UL Recognized</p>		
<p><b>FR-K</b></p> <p>Pre-travel: 5/32" (3.97mm) Actuating force: 7 to 16 oz. - Single section control (198 to 454 gf) 7 to 20 oz. - Tandem control (198 to 567 gf)</p> <p>DIMENSION: <math>\frac{\text{mm}}{\text{inch}}</math></p>	<p><b>SPST</b> Pull-on Push-off</p>	<p>3 amps @ 125 volts AC UL &amp; CSA Recognized</p>		

## 450T Metal Shaft, Bushing Mount, Type "T" Solder Lug Terminals



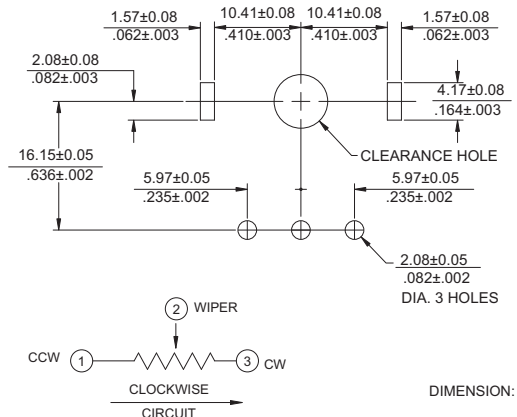
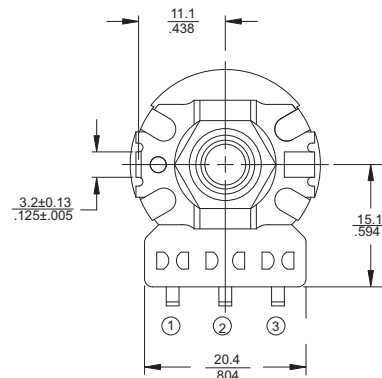
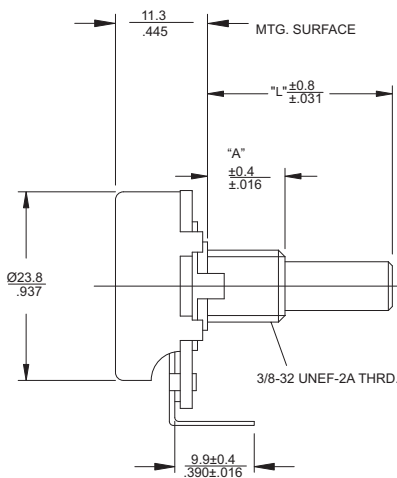
DIMENSION:  $\frac{\text{mm}}{\text{inch}}$

## 450X / 450Y Metal Shaft, Bushing Mount, Printed Circuit Type "X" Or "Y" Terminals



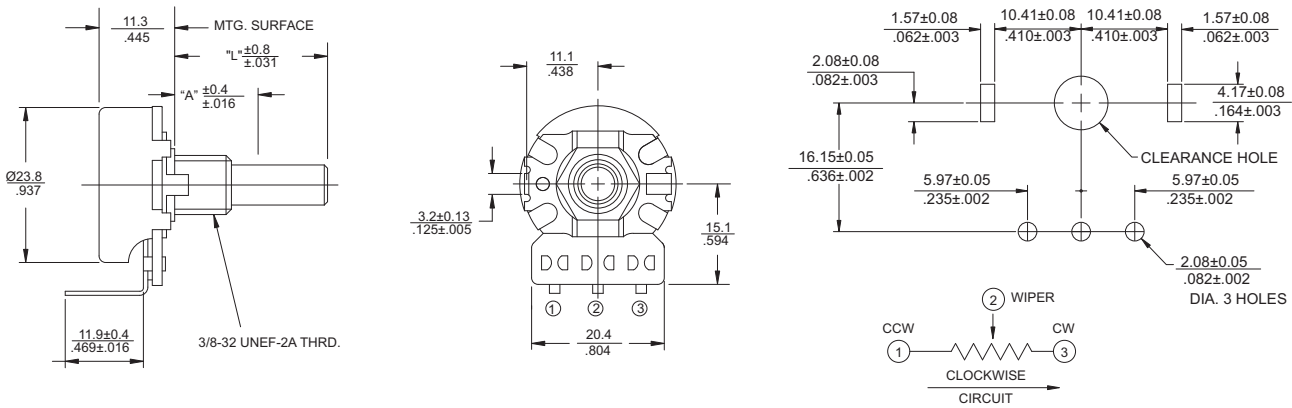
DIMENSION:  $\frac{\text{mm}}{\text{inch}}$

## 450U Metal Shaft, Bushing Mount, Printed Circuit Type "U" Terminals



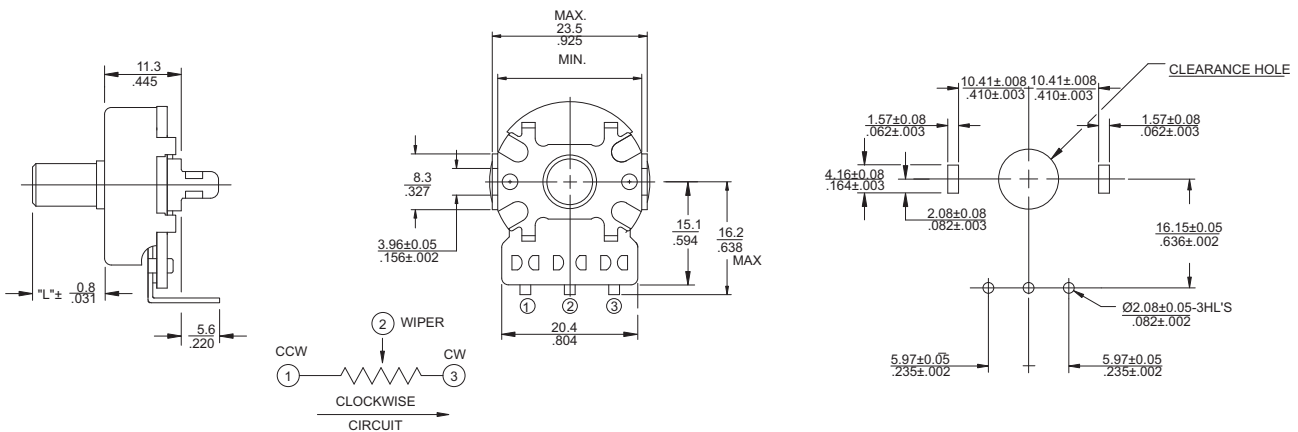
DIMENSION:  $\frac{\text{mm}}{\text{inch}}$

## 450V Metal Shaft, Bushing Mount, Printed Circuit Type "V" Terminals



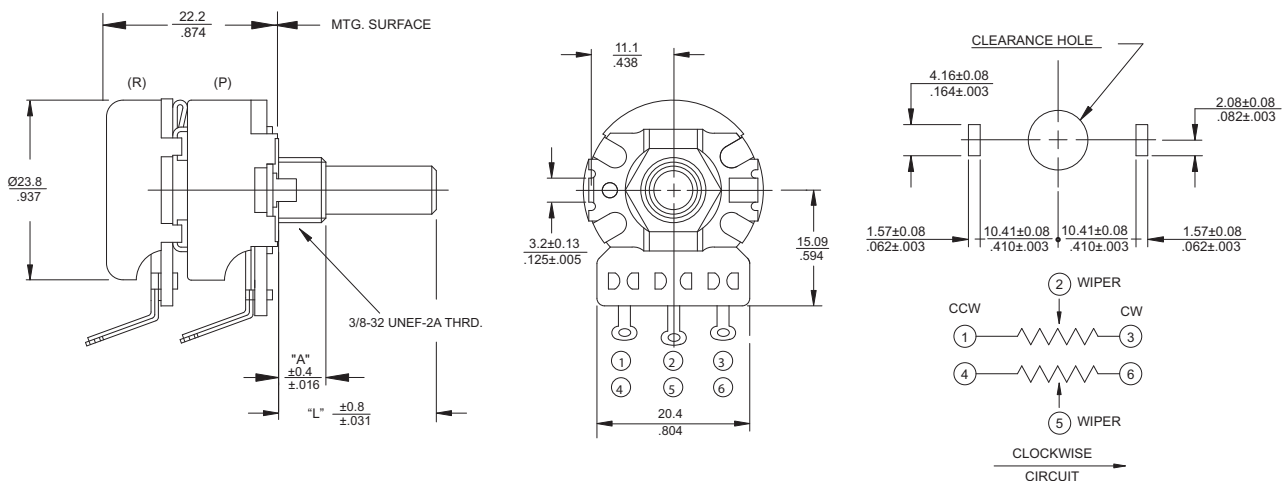
DIMENSION:  $\frac{\text{mm}}{\text{inch}}$

## UPE450RE Rear Extended Metal Shaft, Twist Tab Mount, Printed Circuit Type "U" Terminals



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

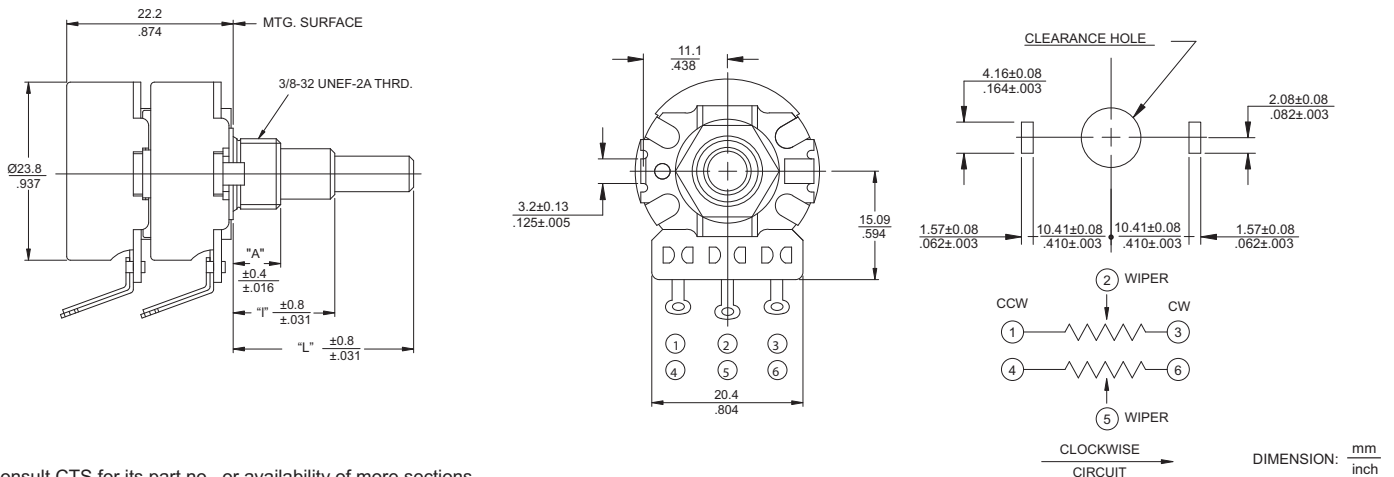
## T2-450 Dual-section, Metal Shaft, Bushing Mount, Type "T" Solder Lug Terminals



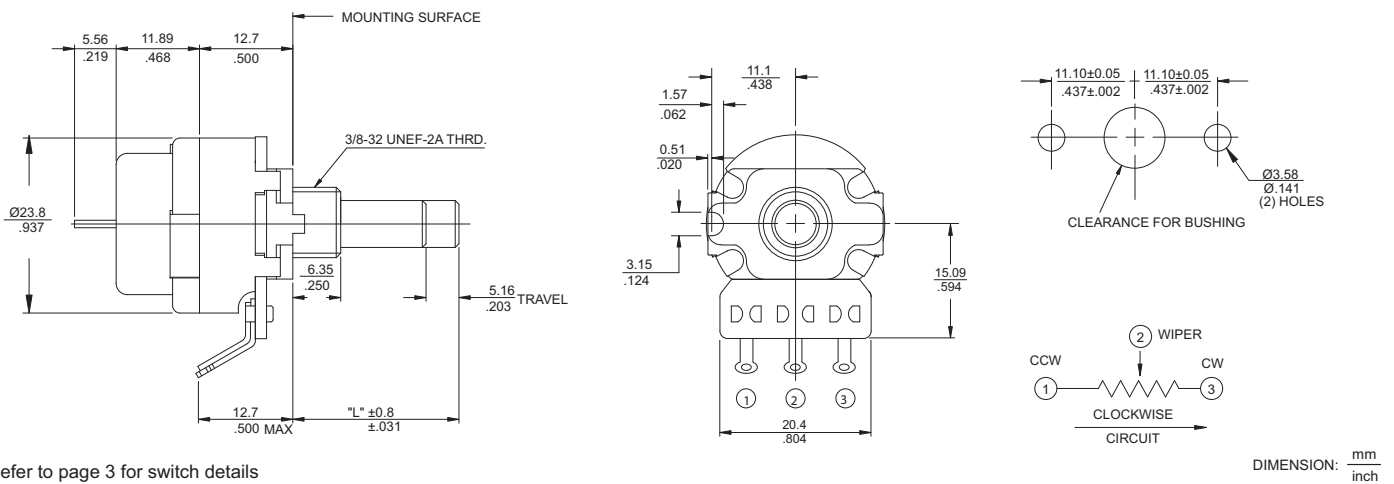
DIMENSION:  $\frac{\text{mm}}{\text{inch}}$

\* Consult CTS for its part no. or availability of more sections

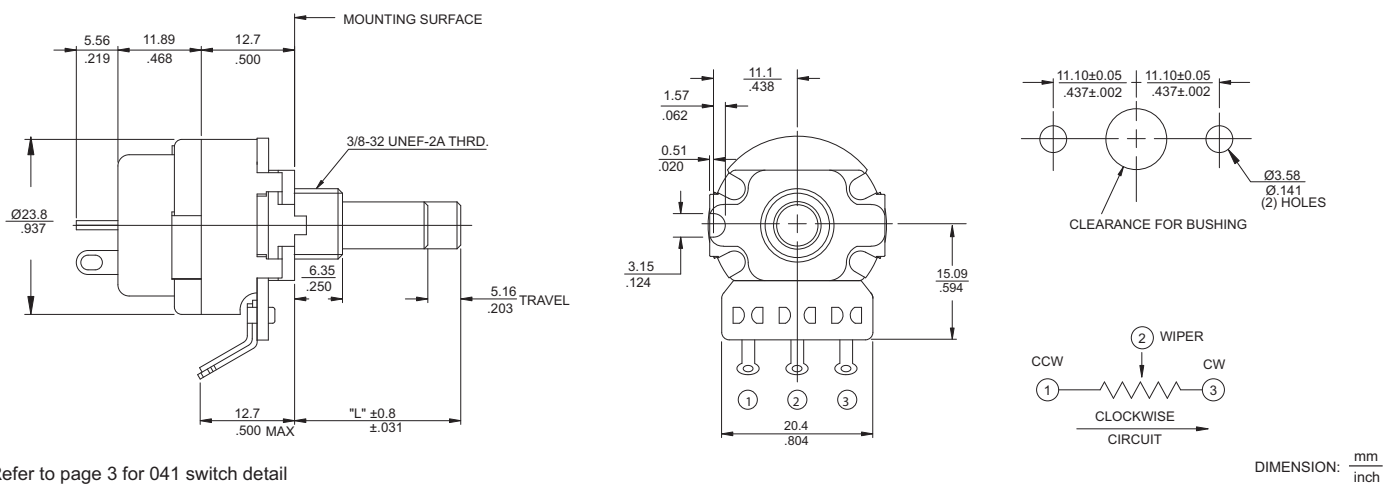
## TC2-450 Dual-section, Concentric Metal Shafts, Bushing Mount, Type "T" Solder Lug Terminals



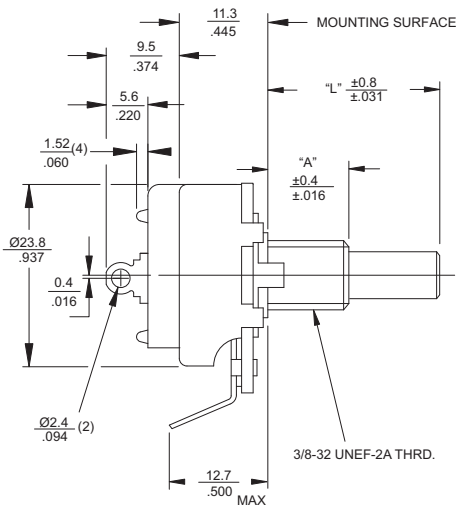
## 040-TMG450 Metal Shaft, Bushing Mount with Insulated Plate, Type "T" Solder Lug Terminals, 040 Switch



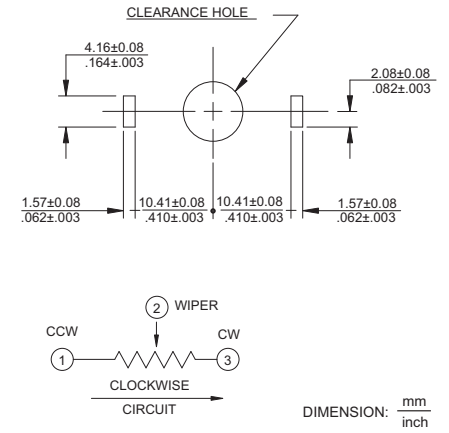
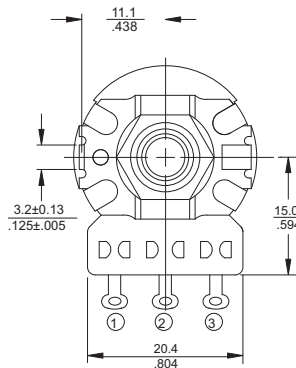
## 041-TMG450 Metal Shaft, Bushing Mount with Insulated Plate, Type "T" Solder Lug Terminals, 041 Switch



## 050-T450 Metal Shaft, Bushing Mount, Solder Lug terminals, 050 Switch

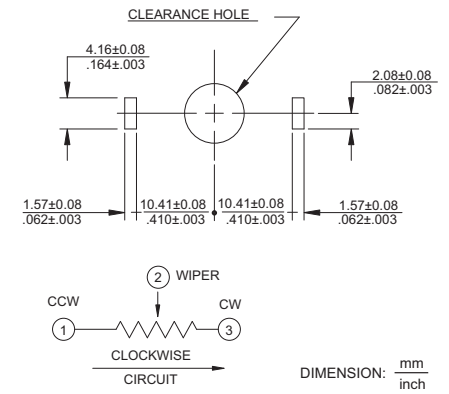
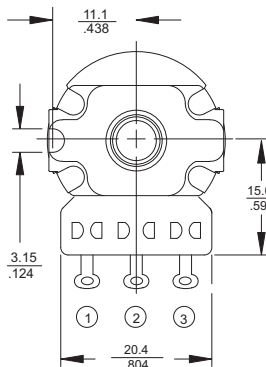
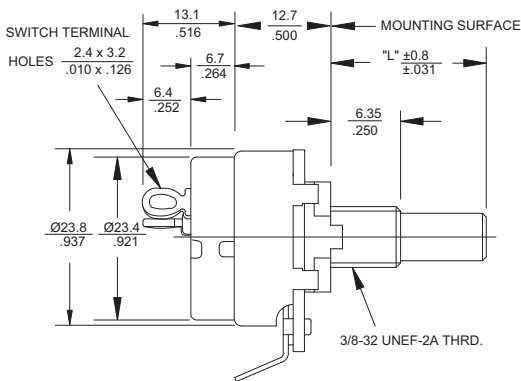


\* Refer to Ordering Information for switch details



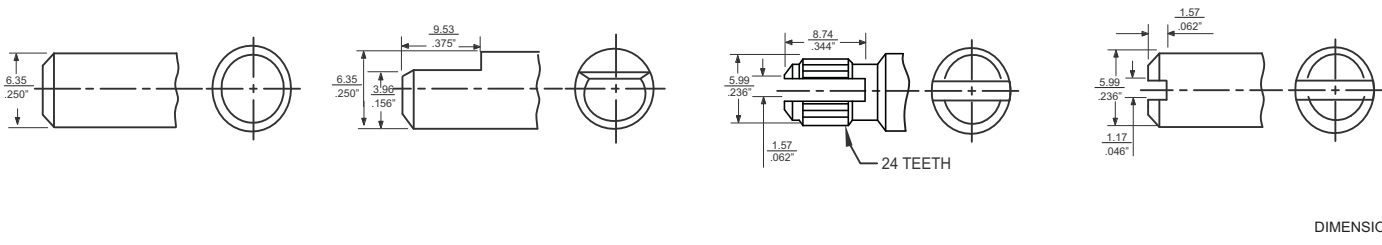
\* Refer to page 3 for 050 switch detail

## TGC-TMG450 Metal Shaft, Bushing Mount with Insulated Plate, Type "T" Solder Lug Terminals, TGC Switch



\* Refer to page 2 for TGC switch detail

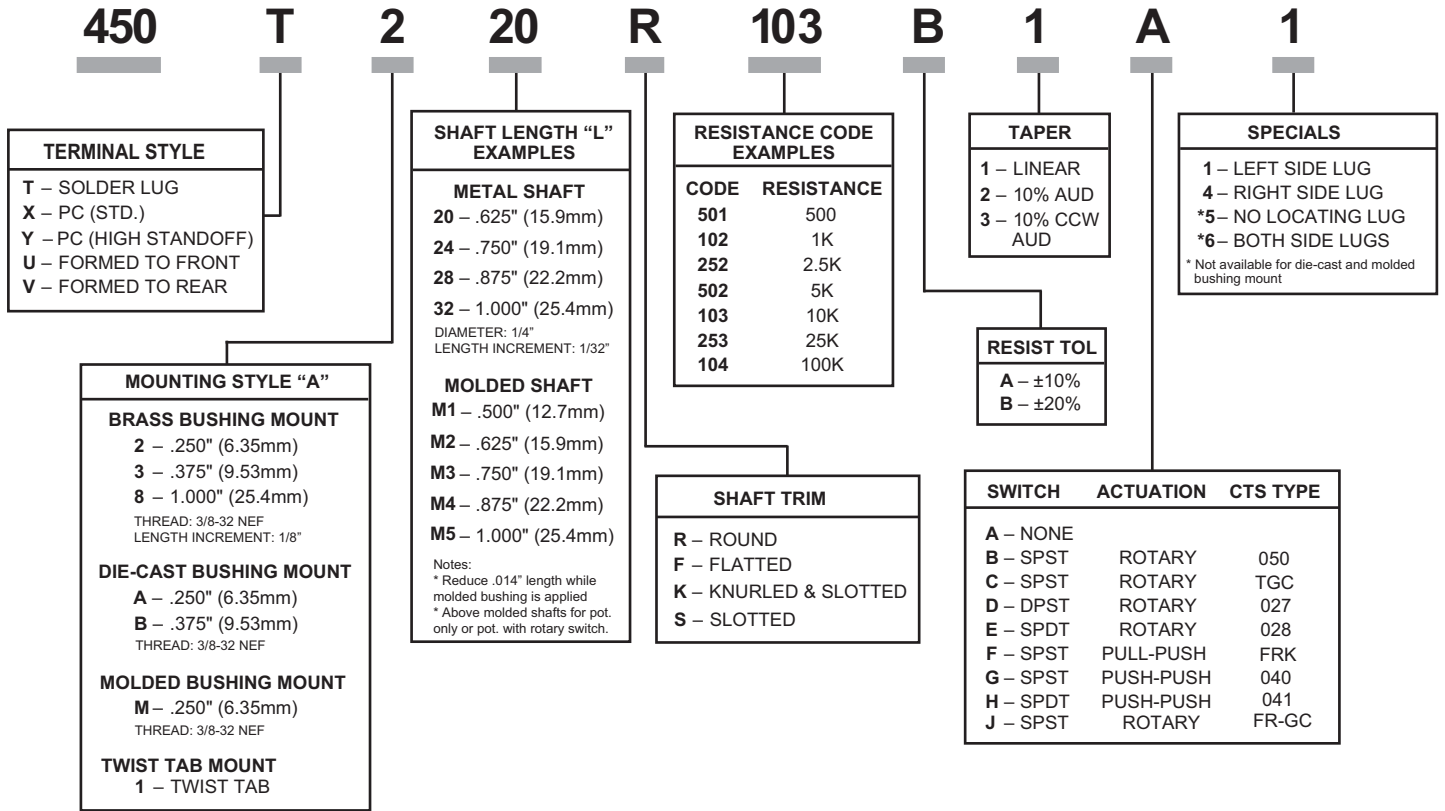
## Shaft Trim Options



DIMENSION: mm / inch



# Ordering Information



Please consult factory for other mounting options or custom features not listed.