



SPECIFICATIONS

CONTACT RATING: Dependent upon contact material.

MECHANICAL LIFE: 40,000 make-and-break cycles.

CONTACT RESISTANCE: 10mΩ max. initial @ 2-4VDC
100mA for both silver and gold plated contacts.

INSULATION RESISTANCE: 1,000MΩ min.

DIELECTRIC STRENGTH: 1,000 V RMS@sea level.

OPERATING TEMPERATURE: -30°C to 85°C.

MATERIALS

CASE: Diallyl phthalate (DAP) (UL94v-0).

ACTUATOR: Brass,chrome plated.

BUSHING: Brass,nickel plated.

HOUSING: Stainless Steel.









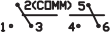
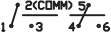
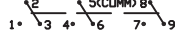
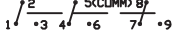
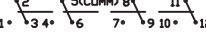
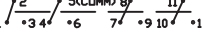
SWITCH SUPPORT: Brass,tin plated.

TERMINAL/CONTACT:Silver or gold plated. (See Page 11)

HOW TO ORDER

MODEL NO.	ACTUATOR	BUSHING	TERMINATIONS	CONTACT MATERIAL	SEAL	ROHS SOLDERING
<div> <div>MODEL NO.</div> <div> <div>1MS1</div> <div>SP On-None-On</div> </div> <div> <div>1MS2</div> <div>SP On-None-Mom.</div> </div> <div> <div>1MS3</div> <div>SP On- Off -On</div> </div> <div> <div>1MS4</div> <div>SP Mom.-Off-Mom.</div> </div> <div> <div>1MS5</div> <div>SP On- Off -Mom.</div> </div> <div> <div>1MD1</div> <div>DP On-None-On</div> </div> <div> <div>1MD2</div> <div>DP On-None-Mom.</div> </div> <div> <div>1MD3</div> <div>DP On- Off -On</div> </div> <div> <div>1MD4</div> <div>DP Mom.-Off-Mom.</div> </div> <div> <div>1MD5</div> <div>DP On- Off -Mom.</div> </div> <div> <div>1MD6</div> <div>DP On- On -On</div> </div> <div> <div>1MD7</div> <div>DP Mom.-On-Mom.</div> </div> <div> <div>1MD8</div> <div>DP On- On -Mom.</div> </div> <div> <div>1M31</div> <div>3P On-None-On</div> </div> <div> <div>1M32</div> <div>3P On-None-Mom.</div> </div> <div> <div>1M33</div> <div>3P On- Off -On</div> </div> <div> <div>1M34</div> <div>3P Mom.-Off-Mom.</div> </div> <div> <div>1M35</div> <div>3P On- Off -Mom.</div> </div> <div> <div>1M41</div> <div>4P On-None-On</div> </div> <div> <div>1M42</div> <div>4P On-None-Mom.</div> </div> <div> <div>1M43</div> <div>4P On- Off -On</div> </div> <div> <div>1M44</div> <div>4P Mom.-Off-Mom.</div> </div> <div> <div>1M45</div> <div>4P On- Off -Mom.</div> </div> <div> <div>1M46</div> <div>4P On- On -On</div> </div> <div> <div>1M47</div> <div>4P MOM.-On-Mom.</div> </div> <div> <div>1M48</div> <div>4P On- On -Mom.</div> </div> </div>	<div> <div>ACTUATOR</div> <div> <div>T1</div> <div>10.41 high</div> </div> <div> <div>T2</div> <div>5.08 high</div> </div> <div> <div>T3</div> <div>13.97 high</div> </div> <div> <div>T4</div> <div>16.26 high</div> </div> <div> <div>T5</div> <div>21.34 high</div> </div> <div> <div>T6</div> <div>Flatted,anti-rotation 12.30 high</div> </div> <div> <div>T61</div> <div>Flatted,anti-rotation 21.0 high</div> </div> <div> <div>T62</div> <div>Lever handle with cap 13.49 high</div> </div> <div> <div>T63</div> <div>Flatted,anti-rotation 6.35 high</div> </div> <div> <div>T7</div> <div>12.37 high,15/32 bushing</div> </div> <div> <div>T8</div> <div>17.56 high,15/32 bushing</div> </div> <div> <div>T9</div> <div>Plastic,21.3 high</div> </div> <div> <div>TA</div> <div>26.30 high lever handle with cap,15/32 bushing</div> </div> <div> <div>T11</div> <div>Plastic,12.2 high</div> </div> <div> <div>TL1</div> <div>Locking lever 16.00 high</div> </div> <div> <div>TL2</div> <div>Locking lever 16.26 high</div> </div> <div> <div>TL3</div> <div>Locking lever 17.28 high</div> </div> </div>	<div> <div>BUSHING</div> <div> <div>B1</div> <div>8.89 high,keyway(thd std)</div> </div> <div> <div>B2</div> <div>8.89 high,keyway(non-thd)</div> </div> <div> <div>B3</div> <div>7.10 high,keyway(thd)</div> </div> <div> <div>B4</div> <div>7.10 high,keyway(non-thd)</div> </div> <div> <div>B5</div> <div>7.52 high,flat(torque)</div> </div> <div> <div>B6</div> <div>8.00 high,keyway(torque)</div> </div> <div> <div>B7</div> <div>8.89 high,flat(thd std)</div> </div> <div> <div>B8</div> <div>8.89 high,keyway(metric thd)</div> </div> <div> <div>B9</div> <div>7.52 high,flat(splash proof)</div> </div> <div> <div>B11</div> <div>7.55 high,keyway(thd std)</div> </div> <div> <div>B12</div> <div>7.55 high,keyway(non-thd)</div> </div> <div> <div>B13</div> <div>11.38 high,keyway(15/32 bushing)</div> </div> <div> <div>B14</div> <div>11.90 high,flat(splash proof)</div> </div> <div> <div>B15</div> <div>7.55 high,flat(thd std)</div> </div> <div> <div>B16</div> <div>7.55 high,flat(non-thd)</div> </div> <div> <div>B17</div> <div>3.50 high,keyway</div> </div> <div> <div>B18</div> <div>11.38 high,keyway(15/32 bushing)</div> </div> <div> <div>B20</div> <div>11.38 high,keyway(15/32 bushing)</div> </div> <div> <div>B25</div> <div>8.00 high,keyway,locking lever(thd)</div> </div> <div> <div>B26</div> <div>8.00 high,keyway,locking lever(non-thd)</div> </div> </div>	<div> <div>TERMINATIONS</div> <div> <div>M1</div> <div>Solder Lug</div> </div> <div> <div>M2</div> <div>PC thru-hole</div> </div> <div> <div>M3</div> <div>Quick Connect</div> </div> <div> <div>M5-1</div> <div>18.70 high, wire wrap</div> </div> <div> <div>M5-2</div> <div>24.20 high, wire wrap</div> </div> <div> <div>M5-3</div> <div>10.55 high, wire wrap</div> </div> <div> <div>M5-4</div> <div>26.97 high, wire wrap</div> </div> <div> <div>M6</div> <div>Right angle, PC thru-hole</div> </div> <div> <div>M6N</div> <div>Right angle, snap-in, PC thru-hole</div> </div> <div> <div>M7</div> <div>Vertical right angle, PC thru-hole</div> </div> <div> <div>VS2</div> <div>11.68 high, V-bracket</div> </div> <div> <div>V2N</div> <div>11.68 high, snap-in V-bracket</div> </div> <div> <div>VS3</div> <div>16.00 high, V-bracket</div> </div> <div> <div>VS4</div> <div>11.68 high, V-bracket</div> </div> <div> <div>VS5</div> <div>16.00 high, V-bracket</div> </div> </div>	<div> <div>CONTACT MATERIAL</div> <div> <div>Q</div> <div>Silver</div> </div> <div> <div>R</div> <div>Gold</div> </div> <div> <div>G</div> <div>Gold,pure-tin</div> </div> <div> <div>S</div> <div>Silver,pure-tin</div> </div> <div> <div>C</div> <div>Gold over silver</div> </div> <div> <div>K</div> <div>Gold over silver, pure-tin</div> </div> </div>	<div> <div>SEAL</div> <div> <div>E</div> <div>EPOXY (std)</div> </div> <div> <div>N</div> <div>NO EPOXY</div> </div> </div>	<div> <div>ROHS SOLDERING</div> <div> <div>□</div> <div>Rohs Compliant</div> </div> <div> <div>S</div> <div>Rohs & Lead Free</div> </div> </div>

SWITCH FUNCTION

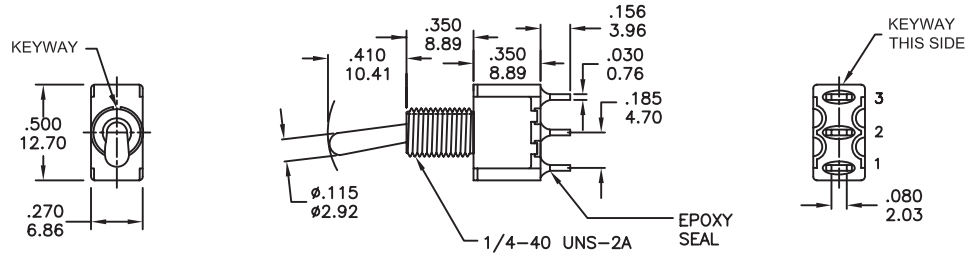
NO. POLES	UL/CSA MODEL NO.	MODEL NO.	SWITCH FUNCTION			CONNECTED TERMINALS / SCHEMATIC		
			POS.1	POS.2	POS.3	POS.1	POS.2	POS.3
								
SP	Q1111	1MS1	ON	NONE	ON	<div>2-3</div> 	N/A	<div>2-1</div> 
	Q1112	1MS2	ON	NONE	MOM			
	Q1113	1MS3	ON	OFF	ON			
	Q1114	1MS4	MOM	OFF	MOM			
	Q1115	1MS5	ON	OFF	MOM			
<div>DP</div> <div>▲</div> <div>▲</div>	Q1121	1MD1	ON	NONE	ON	<div>2-3,5-6</div> 	N/A	<div>2-1,5-4</div> 
	Q1122	1MD2	ON	NONE	MOM			
	Q1123	1MD3	ON	OFF	ON			
	Q1124	1MD4	MOM	OFF	MOM			
	Q1125	1MD5	ON	OFF	MOM			
	Q1126	1MD6	ON	ON	ON	<div>2-3,5-6</div>	<div>2-3,5-4</div>	<div>2-1,5-4</div>
	Q1127	1MD7	MOM	ON	MOM			
	Q1128	1MD8	ON	ON	MOM			
3P	Q1131	1M31	ON	NONE	ON	<div>2-3,5-6,8-9</div> 	N/A	<div>2-1,5-4,8-7</div> 
	Q1132	1M32	ON	NONE	MOM			
	Q1133	1M33	ON	OFF	ON			
	Q1134	1M34	MOM	OFF	MOM			
	Q1135	1M35	ON	OFF	MOM			
<div>4P</div> <div>▲</div> <div>▲</div>	Q1141	1M41	ON	NONE	ON	<div>2-3,5-6,8-9,11-12</div> 	N/A	<div>2-1,5-4,8-7,11-10</div> 
	Q1142	1M42	ON	NONE	MOM			
	Q1143	1M43	ON	OFF	ON			
	Q1144	1M44	MOM	OFF	MOM			
	Q1145	1M45	ON	OFF	MOM			
	Q1146	1M46	ON	ON	ON	<div>2-3,5-6,8-9,11-12</div>	<div>2-3,5-4,8-9,11-10</div>	<div>2-1,5-4,8-7,11-10</div>
	Q1147	1M47	MOM	ON	MOM			
	Q1148	1M48	ON	ON	MOM			

MOM=MOMENTARY

▲ Please check the availability in advance before order

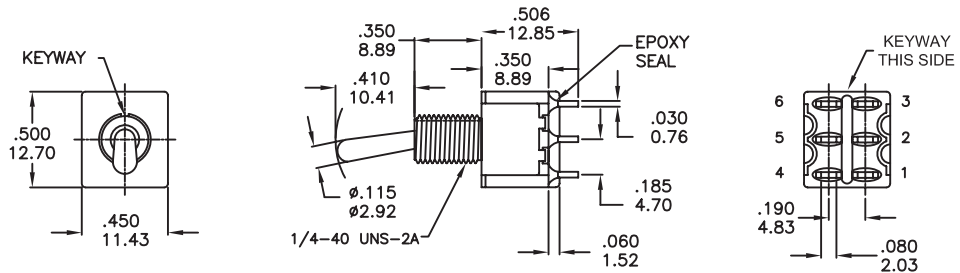
POLE OPTIONS

SPDT



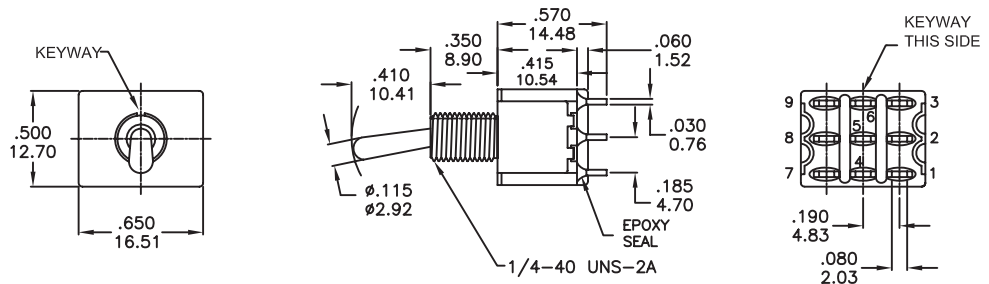
Part No. Shown : 1MS1T1B1M1QE

DPDT



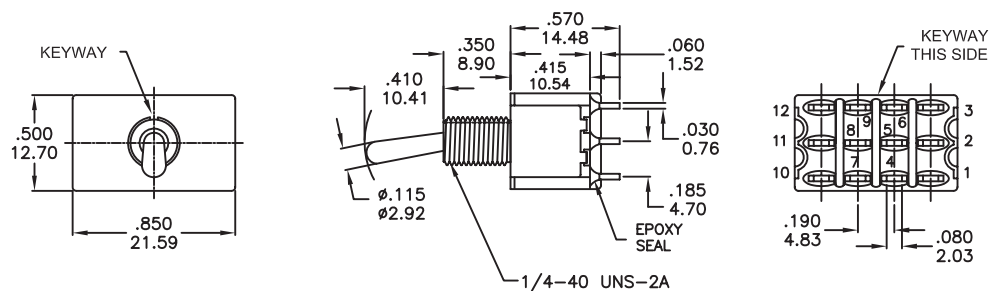
Part No. Shown : 1MD1T1B1M1QE

3PDT



Part No. Shown : 1M31T1B1M1QE

4PDT



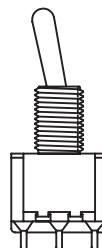
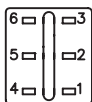
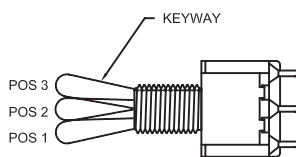
Part No. Shown : 1M41T1B1M1QE

3-WAY SWITCHES

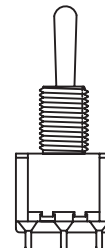
3-WAY WIRING DIAGRAM SCHEMATICS

SINGLE POLE, 3 POSITION

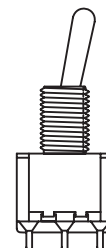
Model No.	POS 1	POS 2	POS 3
1MD6	ON	ON	ON
Term. Comm.	2-3,5-6	2-3,5-4	2-1,5-4



POS. 1



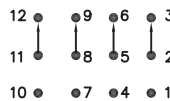
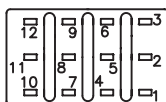
POS. 2



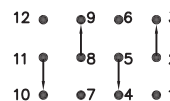
POS. 3

DOUBLE POLE, 3 POSITION

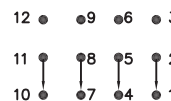
Model No.	POS 1	POS 2	POS 3
1M46	ON	ON	ON
Term. Comm.	2-3, 5-6 8-9, 11-12	2-3, 5-4 8-9, 11-10	2-1, 5-4 8-7, 11-10



POS. 1



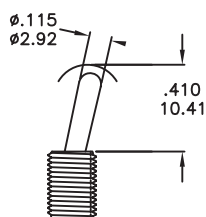
POS. 2



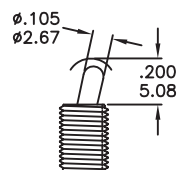
POS. 3

ACTUATOR OPTIONS

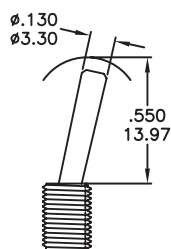
T1 STD



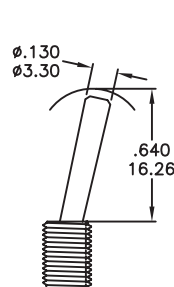
T2



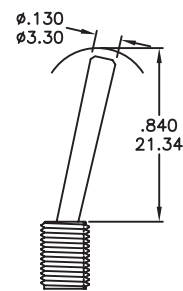
T3



T4

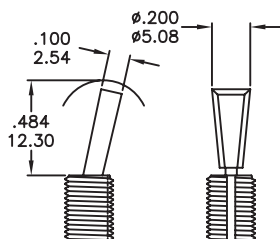


T5

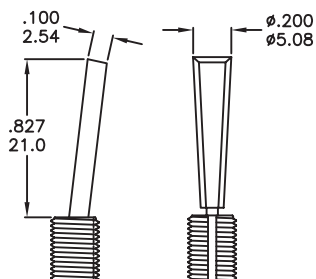


NOTE T1 ~ T5&T11 Actuator shown with standard B1 Bushing ;
Add .070(1.78) for B3 Bushing ;
Subtract .020(0.51) for B6 Bushing.
Std for M1.M2 Terminal sub .016(0.40) for M6.M7.VSX

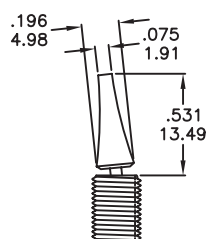
T6 FLATTED WITH ANTIROTATION



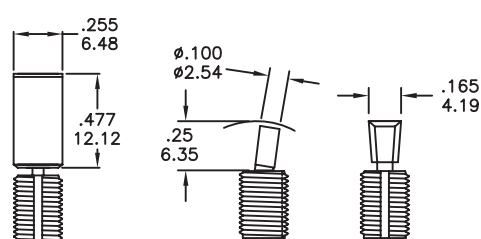
T6-1



T6-2

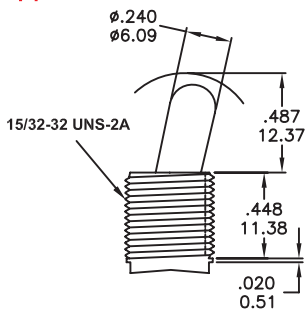


T63



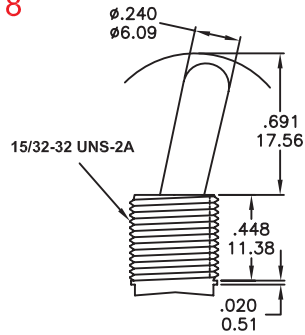
NOTE T6,T6-1,T6-2,T63 use with B11,B12,B15,B16 bushing only

T7



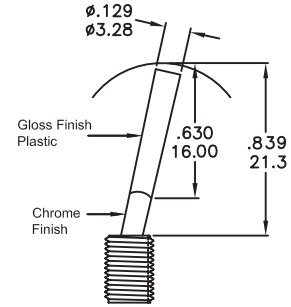
Use with B13 bushing
Use with B18,B20 the lever is antirotation and the size of lever is 13.00mm

T8



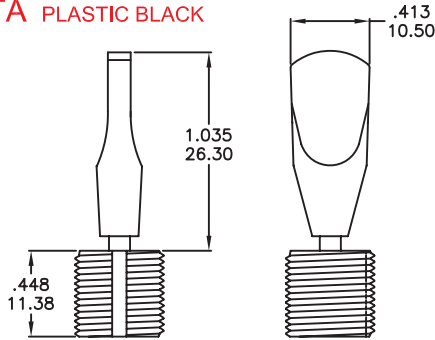
Use with B13 bushing
Use with B18,B20 the lever is antirotation and the size of lever is 18.00mm

T9



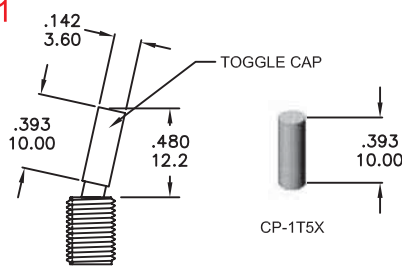
B1/B2 bushing std with black and red color only (std.)

TA PLASTIC BLACK



Use with B18 bushing only

T11



NOTE

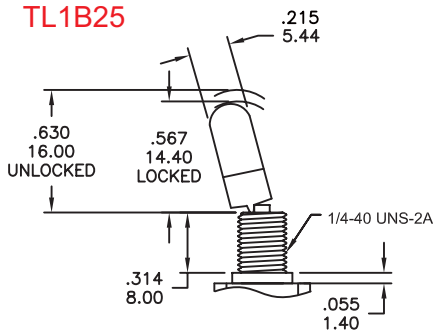
T11 Actuator shown with standard B1 Bushing ;
Add .070(1.78) for B3 Bushing ;
Subtract .020(0.51) for B6 Bushing.
Std for M1.M2 Terminal sub .016(0.40) for M6.M7.VSX

PLASTIC
No. COLOR :

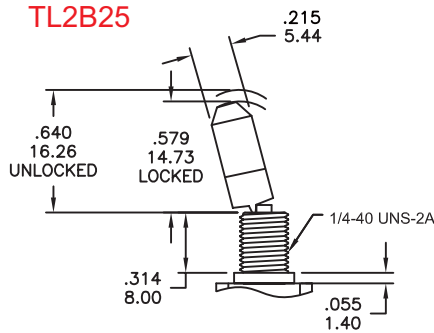
ITEM NO	COLOR
1	White
2	Black (Std)
3	Red
4	Orange
5	Yellow
6	Green
7	Blue
8	Brown
9	Gray

T6-2 , TA , T9 , T11
ACTUATOR ONLY

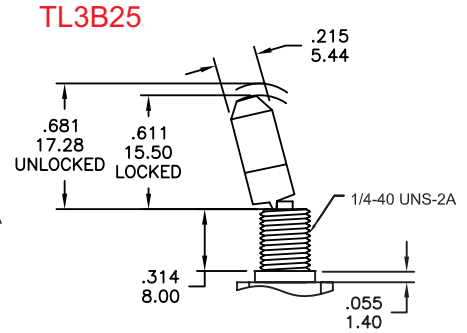
TL1B25



TL2B25



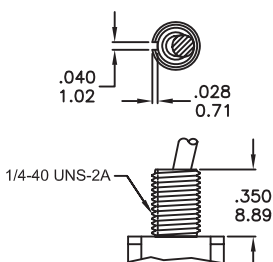
TL3B25



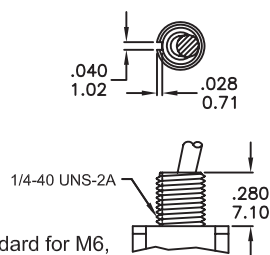
1. 2 positions lock
2. 3 positions lock

BUSHING OPTIONS

B1 THD STD
B2 NON-THD

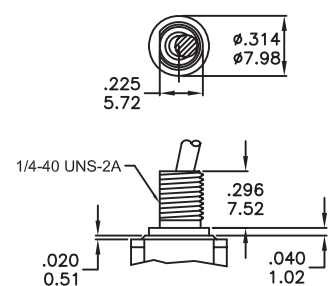


B3 THD
B4 NON-THD



B4 is standard for M6, M7 and VS2~5 termination options.

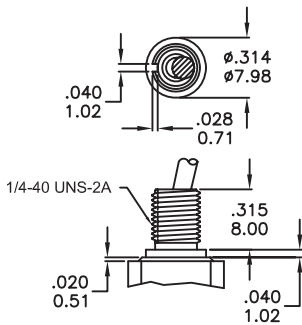
B5 HIGH TORQUE



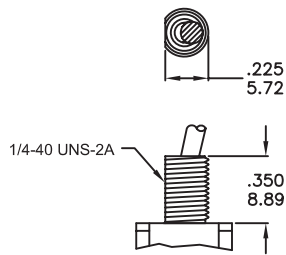
1M Series

Miniature Toggle Switches

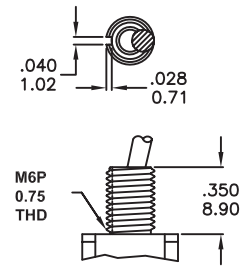
B6 HIGH TORQUE



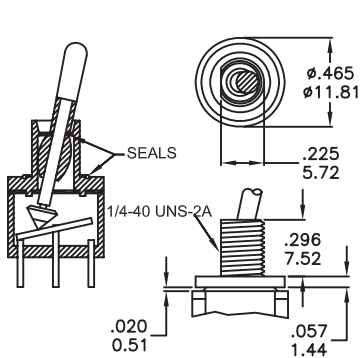
B7 THD STD



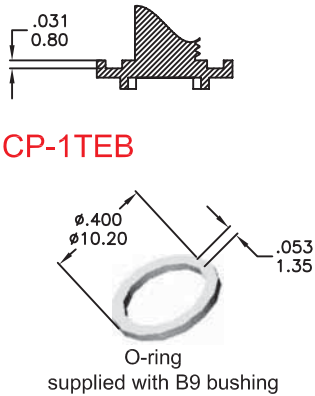
B8 METRIC THD



B9 SPLASH PROOF

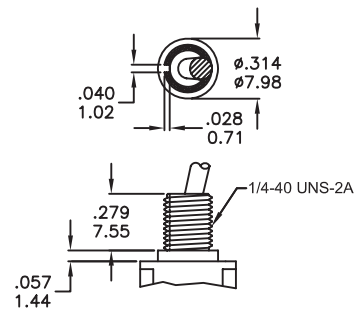


CP-1TEB



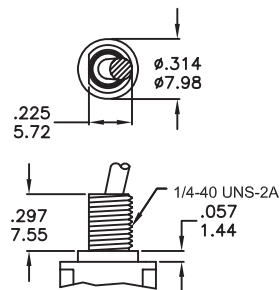
B11 THD STD

B12 NON-THD



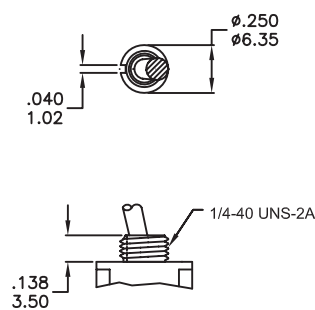
Use with T6 actuator only

B15 THD STD
B16 NON-THD

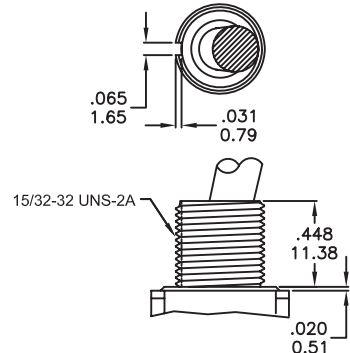


Use with T6 actuator only

B17



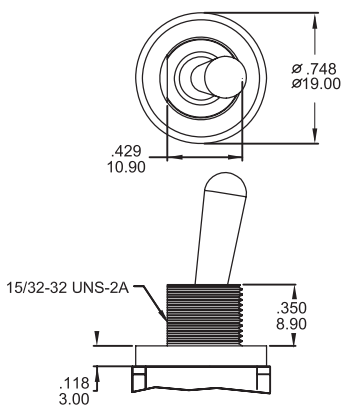
B13



Use with T7,T8 actuators only

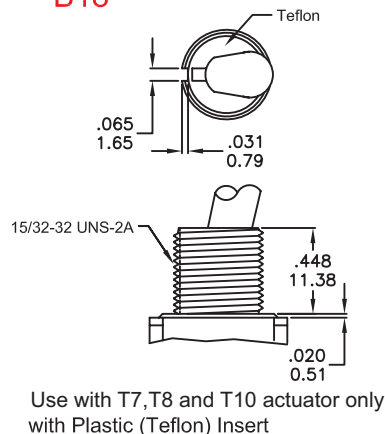
B13 Bear Strength from top of actuator up to 10kg
aside up to 15kg

B14 SPLASH PROOF



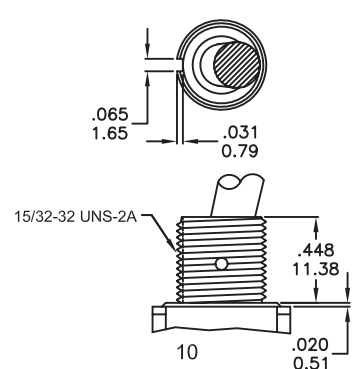
Use with T7,T8 actuators only

B18



Use with T7,T8 and T10 actuator only
with Plastic (Teflon) Insert

B20

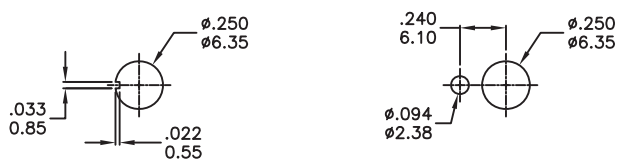


Use with T7,T8 and T10 actuator only

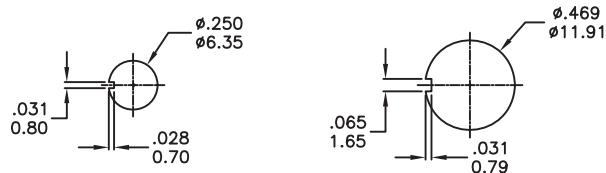
B18 B20 Bear Strength from top of actuator up to 20kg
aside up to 15kg

PANEL MOUNTING

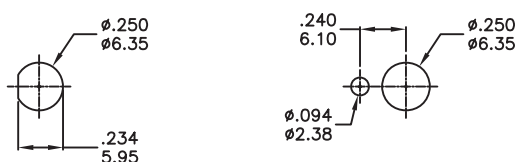
1/4 IN BUSHING



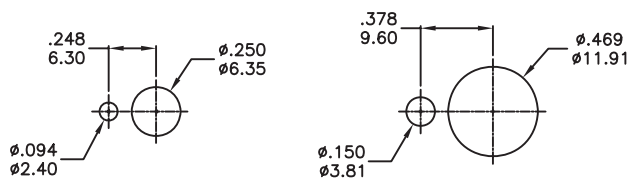
METRIC BUSHING 15/32IN BUSHING



1/4 IN BUSHING

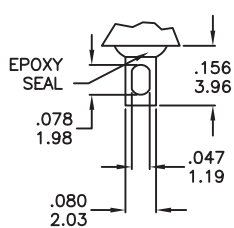


METRIC BUSHING 15/32IN BUSHING

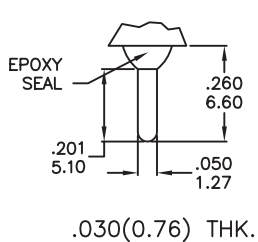


TERMINATION OPTIONS

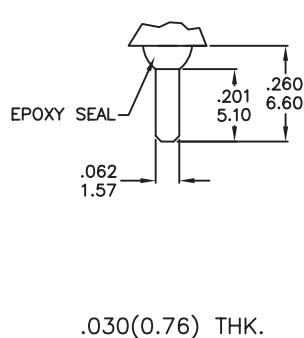
M1 SOLDER LUG



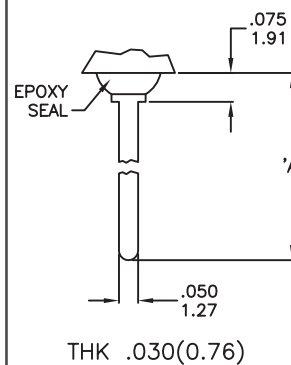
M2 PC THRU-HOLE



M3 QUICK CONNECT



M5 WIRE WRAP



OTHER TERMINATION OPTIONS

- M6 RIGHT ANGLE P.C. MOUNT
- M7 RIGHT ANGLE P.C. MOUNT
- VS2 VERTICAL BRACKET P.C. MOUNT
- VS3 VERTICAL BRACKET P.C. MOUNT
- VS5 VERTICAL BRACKET P.C. MOUNT

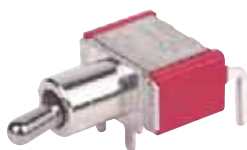
RE Mating Quick Connector
Amp P/N 60900-1

OPTION CODE	DIM. 'A'
M5-1	.736(18.70)
M5-2	.953(24.20)
M5-3	.415(10.55)
M5-4	1.062(26.97)

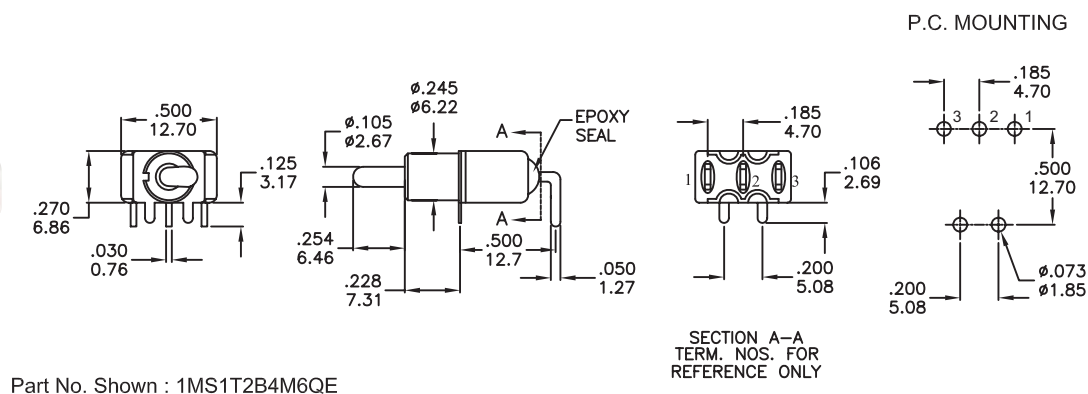
1M Series

Miniature Toggle Switches

M6



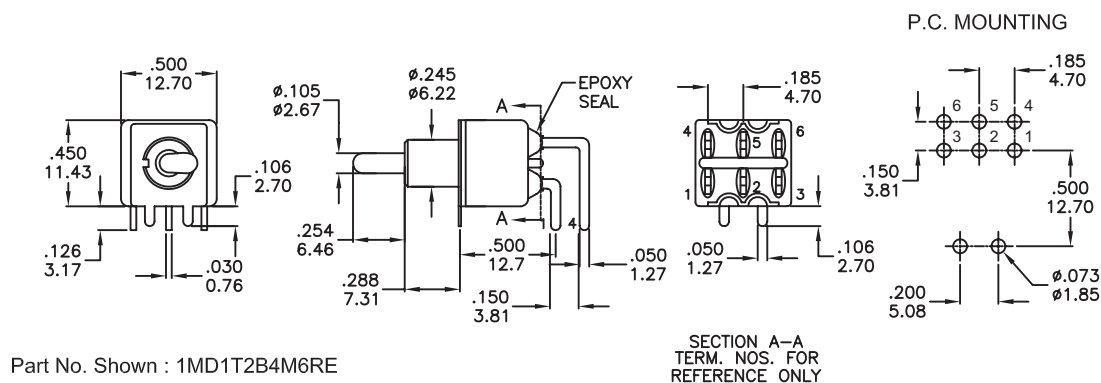
SPDT



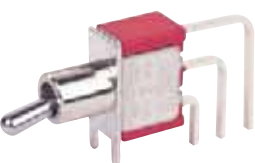
M6



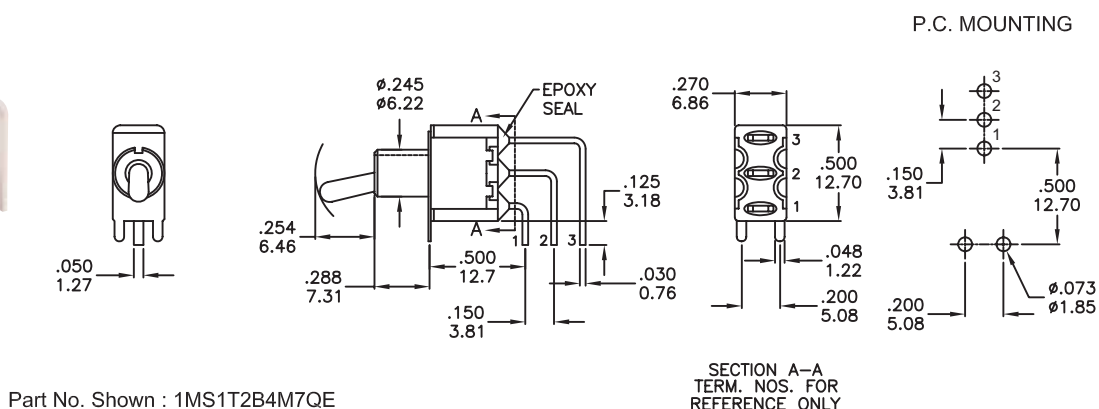
DPDT



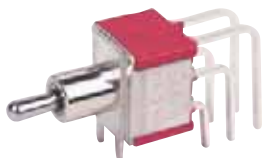
M7



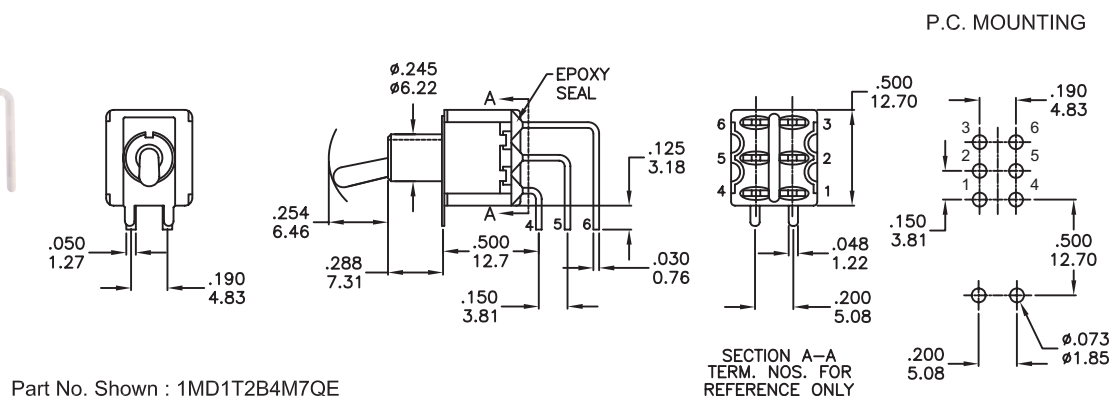
SPDT



M7

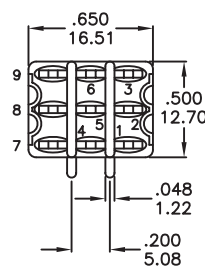
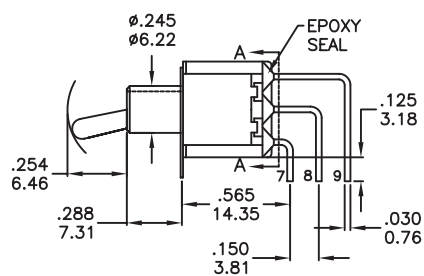
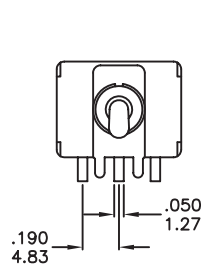
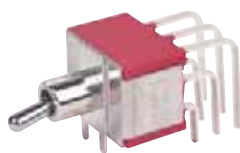


DPDT



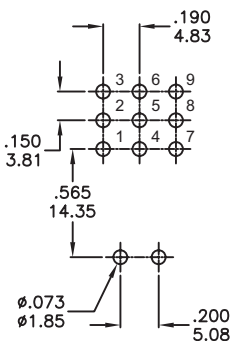
M7

3PDT



SECTION A-A
TERM. NOS. FOR
REFERENCE ONLY

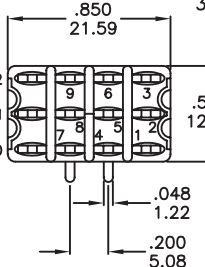
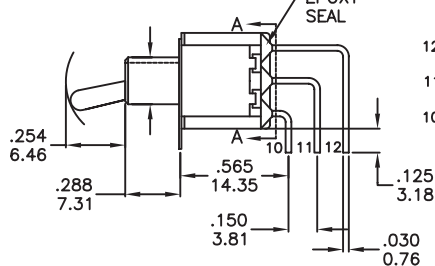
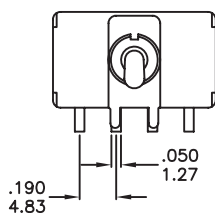
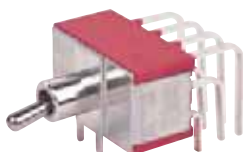
P.C. MOUNTING



Part No. Shown : 1M31T2B4M7QE

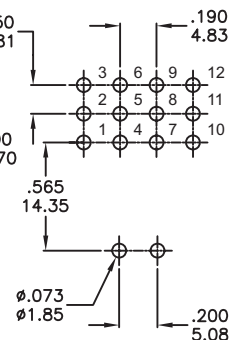
M7

4PDT



SECTION A-A
TERM. NOS. FOR
REFERENCE ONLY

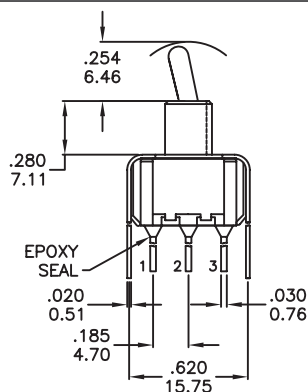
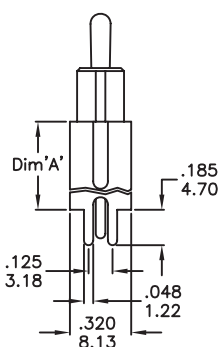
P.C. MOUNTING



Part No. Shown : 1M41T2B4M7QE

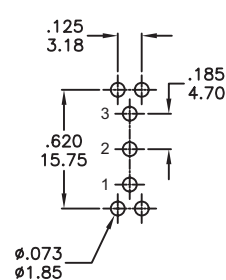
VS2-VS3

SPDT



OPTION CODE	DIM. 'A'
VS2	.460 11.68
VS3	.630 16.00

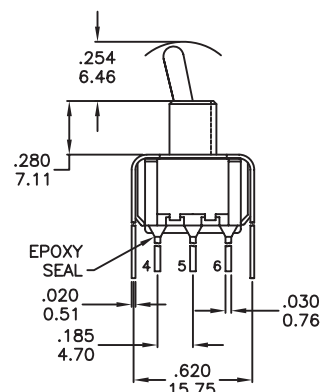
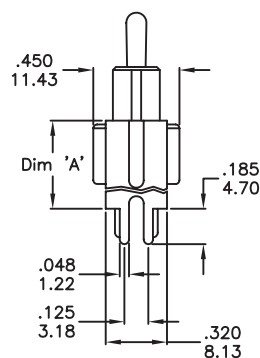
P.C. MOUNTING



Part No. Shown : 1MS1T2B4VS2QE

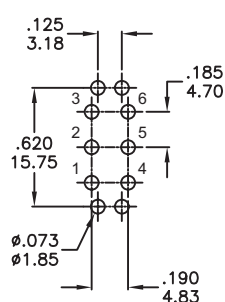
VS2-VS3

DPDT



OPTION CODE	DIM. 'A'
VS2	.460 11.68
VS3	.630 16.00

P.C. MOUNTING



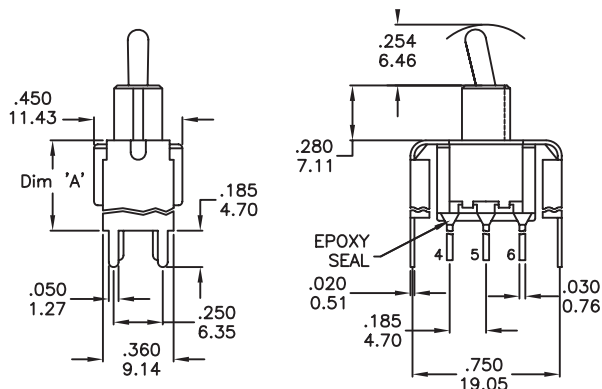
Part No. Shown : 1MD1T2B4VS3QE

1M Series

Miniature Toggle Switches

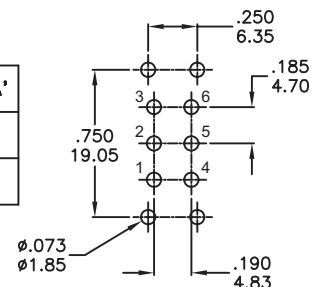
VS5

DPDT



OPTION CODE	DIM. 'A'
VS4	.460 11.68
VS5	.630 16.00

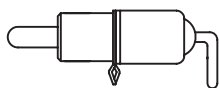
P.C. MOUNTING



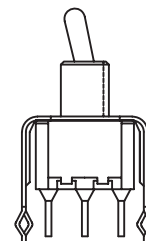
Part No. Shown : 1MD1T2B4VS5QE

SNAP-IN TERMINATION OPTIONS

M6N

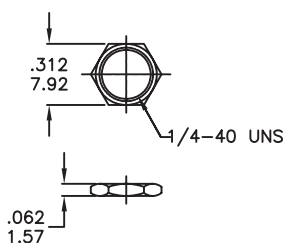


V2N



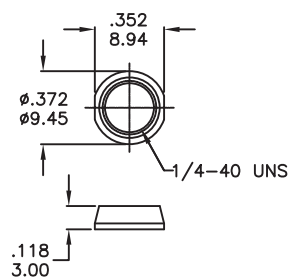
HARDWARE

1/4 NUTS HDW2

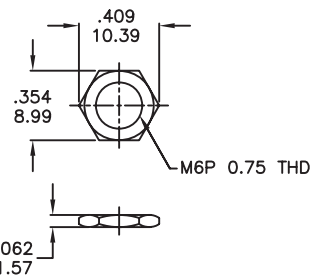


Supplied standard with B1, B3, B5, B6 and B9 options

DRESS NUT HDW3

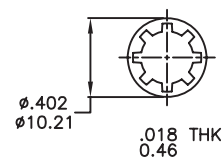


METRIC NUT HDW6



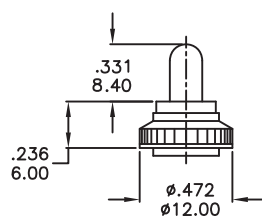
Supplied standard with B8 metric bushing

LOCK WASHER HDW11



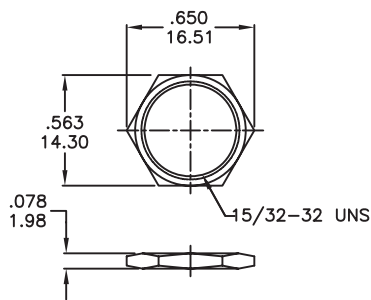
Supplied standard with B1/B3 bushing

OPTIONAL RUBBER HOOD SEALING



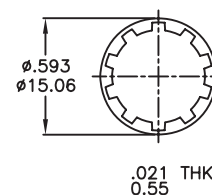
K1=Metric
E1=Inch(Std.)
for actuator T1, T2 and
B1, B3, B5, B6Bushing only

15/32 NUTS HDW4



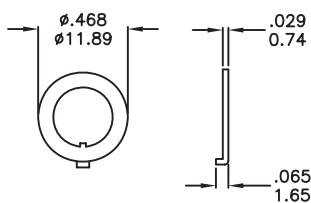
Supplied standard with B13 bushing

LOCK WASHER HDW12



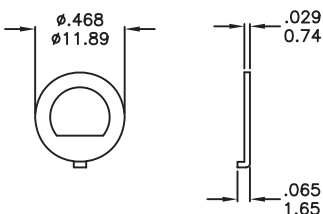
Supplied standard with B13 bushing

HDW15



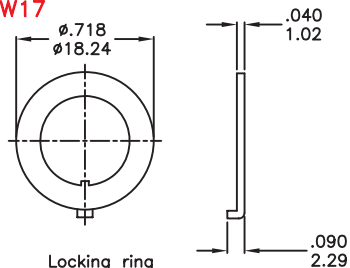
Locking ring
supplied standard

HDW16



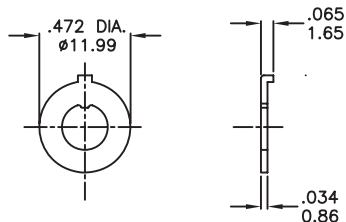
Locking ring
supplied with B5 bushing

HDW17



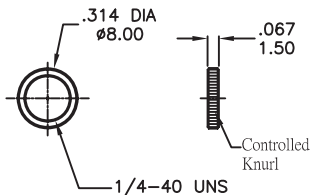
Locking ring
supplied with B13 18 20 bushing

HDW18



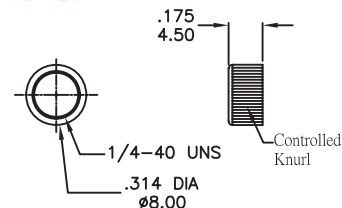
Locking ring
supplied with B8 bushing

HDW19



NU-1M18

HDW20

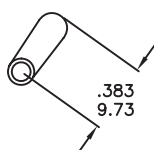


NU-1M24

OPTIONAL TOGGLE CAP

CP-1T1X

CAP Color :

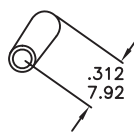


Use with T1

ITEM NO	COLOR
1	White
2	Black (Std)
3	Red
4	Orange
5	Yellow
6	Green
7	Blue
8	Brown
9	Gray

CP-1T2X

CAP Color :



Use with T2

ITEM NO	COLOR
1	White
2	Black (Std)
3	Red
4	Orange
5	Yellow
6	Green
7	Blue
8	Brown
9	Gray

CONTACT MATERIAL OPTIONS

	CONTACT MATERIAL	TERMINATION RATING	RATINGS
Q	Silver	Q = Silver	5 Amps with resistant load @ 120VAC or 28VDC 2 Amps with resistant load @ 250VAC
S		S = Silver,pure - tin	
C	Gold over Silver	C = Gold over silver	
K		K = Gold over silver,pure - tin	
R	Gold	R = Gold	0.4 Volt-Amps(VA)max. @ 20V max. (AC or DC)
G		G = Gold,pure - tin	



SOLDERING PROCESSES

MANUAL SOLDERING : Use soldering iron of 30 watts, controlled at 350°C approximately 5 seconds while applying solder.

WAVE SOLDERING : Recommended Soldering Temperature: 260±5°C
Duration of Solder Immersion: 5 ±1 seconds
(PCB is 1.6mm in thickness)

SOLDERING : Vapor phase

Temperature Profile

Zone	Room temperature	Time (Sec)
Pre-heat (A)	150°C	Min 120s
Soak (B)	180°C~200°C	Min 150s
Peak (C)	200°C~235°C	Min 30s
Peak (D)	235°C~260°C	Min 40s
Peak (E)	260°C	Max 10s

