


SPECIFICATIONS
CONTACT RATING: Dependent upon contact material See page 11.

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: 1,000 MΩ min.

DIELECTRIC STRENGTH: 1,000 Vrms min. @sea level.

OPERATING TEMPERATURE: -40°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.







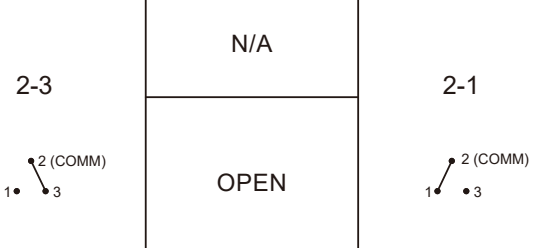
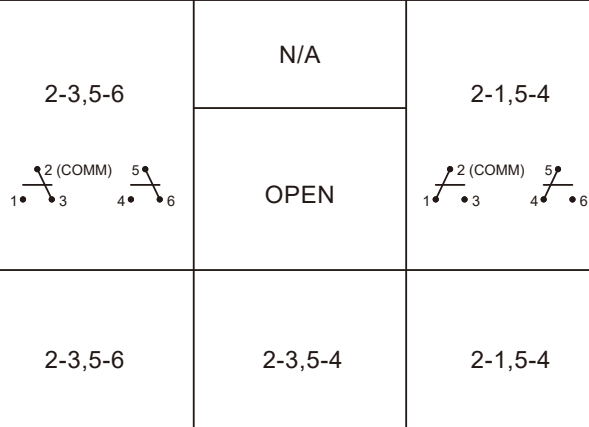
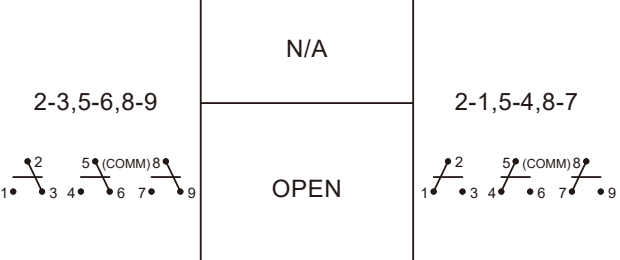
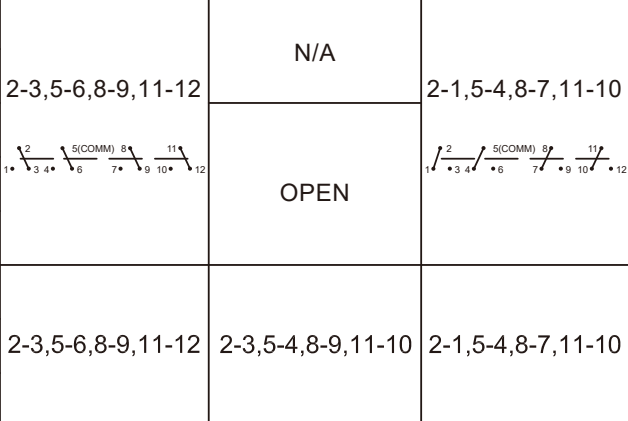
CONTACT / TERMINALS: Copper alloy, Silver or gold plated.

(See Page 11)


HOW TO ORDER

MODEL NO.	ACTUATOR	BUSHING	TERMINATIONS	TERMINAL PLATING	SEAL	RoHS SOLDERING
Model NO. 1MS1 SP ON-NONE-ON 1MS2 SP ON-NONE-(ON) 1MS3 SP ON-OFF-ON 1MS4 SP (ON)-OFF-(ON) 1MS5 SP ON-OFF-(ON) 1MD1 DP ON-NONE-ON 1MD2 DP ON-NONE-(ON) 1MD3 DP ON-OFF-ON 1MD4 DP (ON)-OFF-(ON) 1MD5 DP ON-OFF-(ON) 1MD6 DP ON-ON-ON 1MD7 DP (ON)-ON-(ON) 1MD8 DP ON-ON-(ON) 1M31 3P ON-NONE-ON 1M32 3P ON-NONE-(ON) 1M33 3P ON-OFF-ON 1M34 3P (ON)-OFF-(ON) 1M35 3P ON-OFF-(ON) 1M41 4P ON-NONE-ON 1M42 4P ON-NONE-(ON) 1M43 4P ON-OFF-ON 1M44 4P (ON)-OFF-(ON) 1M45 4P ON-OFF-(ON) 1M46 4P ON-ON-ON 1M47 4P (ON)-ON-(ON) 1M48 4P ON-ON-(ON)	Actuator T1 10.41 high T2 5.08 high T3 13.97 high T4 16.26 high T5 21.34 high T6 Flatted,anti-rotation T61 Flatted,anti-rotation 21.0 high T62 Lever handle with cap 13.49 high T63 Flatted,anti-rotation 6.35 high T7 12.37 high, 15/32 bushing T8 17.56 high, 15/32 bushing T88 17.5 high, 15/32 bushing T9 Plastic, 21.3 high TL1 Locking lever 16.00 high TL2 Locking lever 16.26 high TL3 Locking lever 17.28 high	Bushing B1 8.89 high, keyway (thd std) B2 8.89 high, keyway (non-thd) B3 7.10 high, keyway (thd) B4 7.10 high, keyway (non-thd) B5 7.52 high, flat (torque) B6 8.00 high, keyway (torque) B7 8.89 high, flat (thd std) B8 8.89 high, keyway (metric thd) B9 7.52 high, flat (splash proof) B11 7.55 high, keyway (thd std) B12 7.55 high, keyway (non-thd) B13 11.38 high, keyway (15/32 bushing) B14 11.90 high, flat (splash proof) B15 7.55 high, flat (thd std) B16 7.55 high, flat (non-thd) B17 3.50 high, keyway B18 11.38 high, keyway (15/32 bushing) B20 11.38 high, keyway (15/32 bushing) B25 8.00 high, keyway, locking lever (thd) B26 8.00 high, keyway, locking lever (non-thd) B32 11.70 high, flat (15/32 bushing)	Terminations M1 Solder lug M2 PC thru-hole M3 Quick connect M51 18.70 high, wire wrap M52 24.20 high, wire wrap M53 10.55 high, wire wrap M54 26.97 high, wire wrap M6 Right angle, PC thru-hole M6N Right angle, Snap-in, PC thru-hole M7 Vertical right angle, PC thru-hole VS2 11.68 high, V-bracket V2N 11.68 high, Snap-in. V-bracket VS3 16.00 high, V-bracket VS4 11.68 high, V-bracket VS5 16.00 high, V-bracket	Terminal plating Q Silver R Gold C Gold over silver	Seal E EPOXY (std) N NO EPOXY	RoHS soldering S RoHS & Lead Free

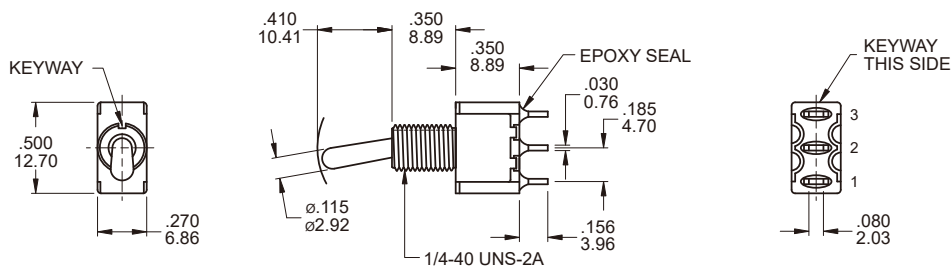
SWITCH FUNCTION

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		N/A	2-1
	Q1112	1MS2	ON	NONE	(ON)			
	Q1113	1MS3	ON	OFF	ON			
	Q1114	1MS4	(ON)	OFF	(ON)			
	Q1115	1MS5	ON	OFF	(ON)			
DP	Q1121	1MD1	ON	NONE	ON		N/A	2-1,5-4
	Q1122	1MD2	ON	NONE	(ON)			
	Q1123	1MD3	ON	OFF	ON			
	Q1124	1MD4	(ON)	OFF	(ON)			
	Q1125	1MD5	ON	OFF	(ON)			
	Q1126	1MD6	ON	ON	ON			
	▲ Q1127	1MD7	(ON)	ON	(ON)			
	▲ Q1128	1MD8	ON	ON	(ON)			
3P	Q1131	1M31	ON	NONE	ON		N/A	2-1,5-4,8-7
	Q1132	1M32	ON	NONE	(ON)			
	Q1133	1M33	ON	OFF	ON			
	Q1134	1M34	(ON)	OFF	(ON)			
	Q1135	1M35	ON	OFF	(ON)			
4P	Q1141	1M41	ON	NONE	ON		N/A	2-1,5-4,8-7,11-10
	Q1142	1M42	ON	NONE	(ON)			
	Q1143	1M43	ON	OFF	ON			
	Q1144	1M44	(ON)	OFF	(ON)			
	Q1145	1M45	ON	OFF	(ON)			
	Q1146	1M46	ON	ON	ON			
	▲ Q1147	1M47	(ON)	ON	(ON)			
	▲ Q1148	1M48	ON	ON	(ON)			

()= MOMENTARY

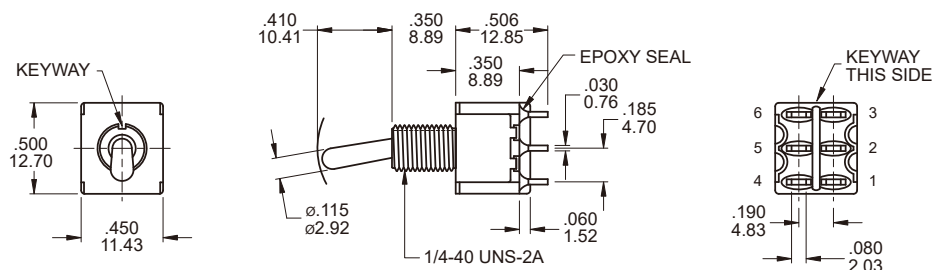
▲ Please check the availability in advance before order

POLE OPTIONS



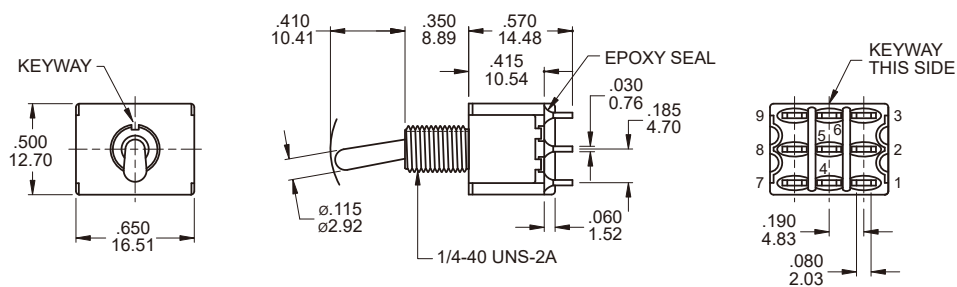
SPDT

Part No. Shown : 1MS1T1B1M1QES



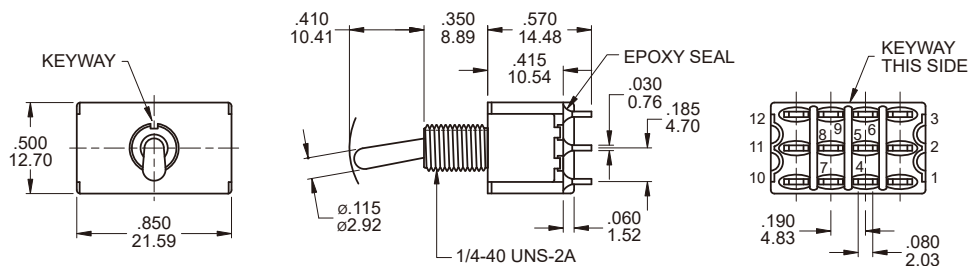
DPDT

Part No. Shown : 1MD1T1B1M1QES



3PDT

Part No. Shown : 1M31T1B1M1QES

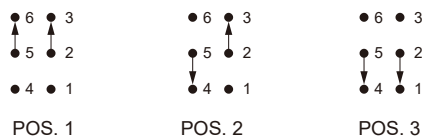
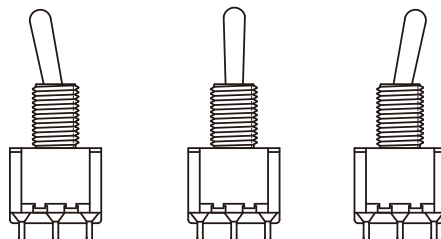
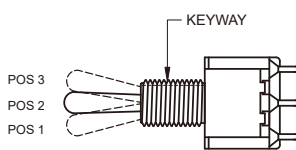


4PDT

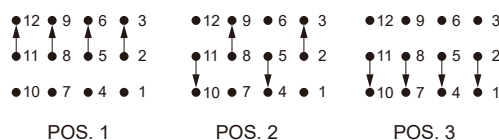
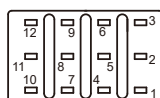
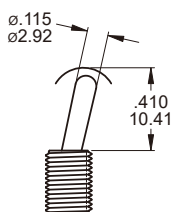
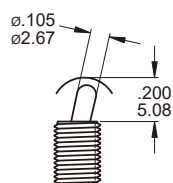
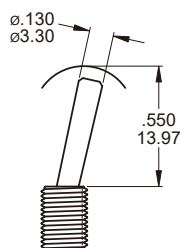
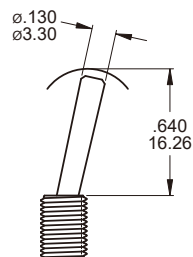
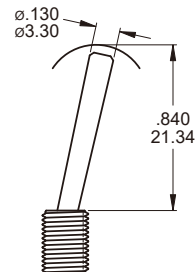
Part No. Shown : 1M41T1B1M1QES

3-WAY SWITCH
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


DOUBLE POLE, 3 POSITION

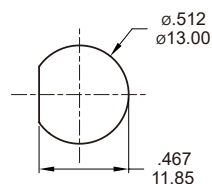
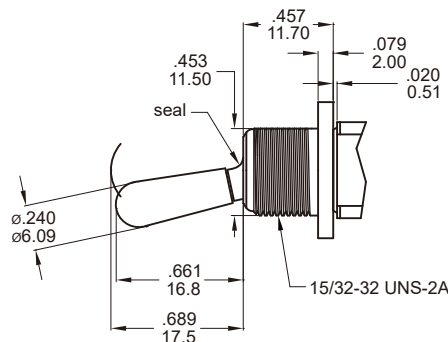
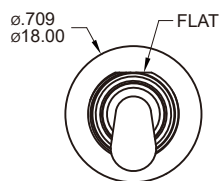
Model No.	POS 1	POS 2	POS 3
1M46	ON	ON	ON
Term. Comm.	2-3,5-6 8-9,11-12	2-3,5-4 8-9,11-10	2-1,5-4 8-7,11-10

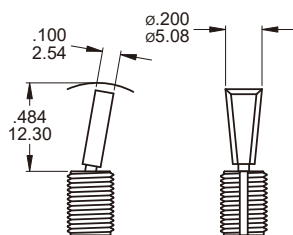
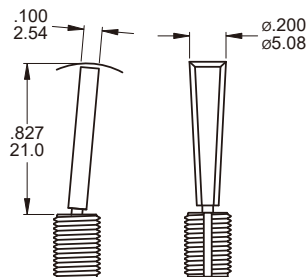
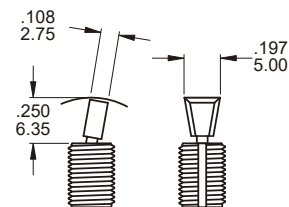
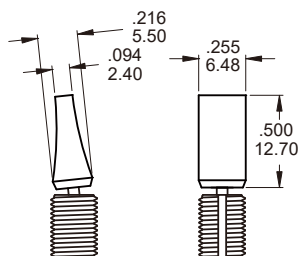

ACTUATOR OPTIONS
T1 STD

T2

T3

T4

T5


NOTE : T1 ~ T5 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 (Exclude B1/B2 bushing)

T88B52
SPLASH PROOF

Std SPDT for M1.M2 Terminal

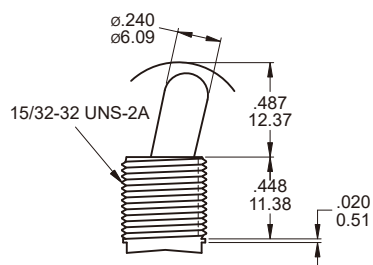

PANEL MOUNTING
 Without locking ring (Flat)

T6 FLATTED WITH ANTIROTATION

T61

T63

T62

Plastic No.Color :

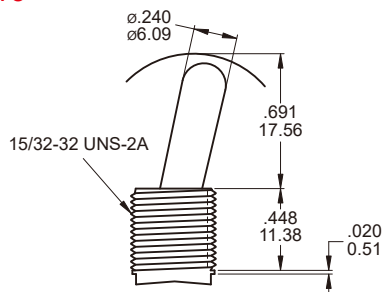
ITEM NO	COLOR
1	White
2	Black (Std)
3	Red
4	Orange
5	Yellow
6	Green
7	Blue
8	Brown
9	Gray

NOTE: T6,T61,T62 ,T63 use with B11, B12, B15, B16 bushing only.

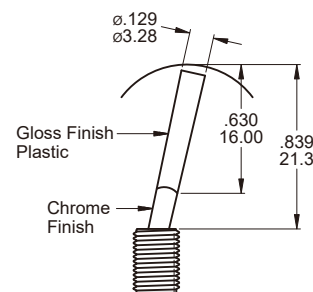
* Besides standard color, other colors need to check stocks available.

T7


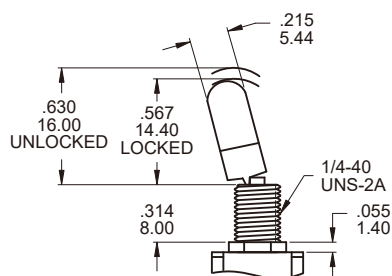
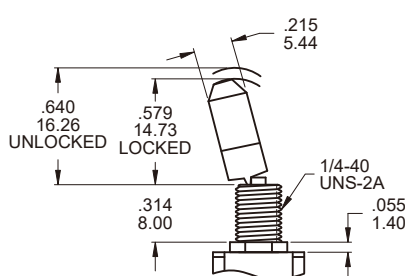
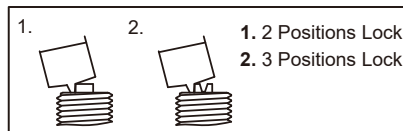
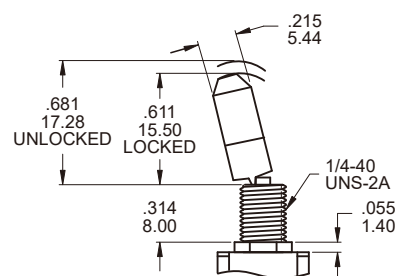
Use with B13 bushing
Use with B18,B20 the lever is antirotation and the size of lever is 13.00mm

T8


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

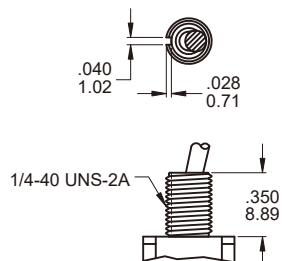
T9


B1 / B2 bushing std with black(T92) and red(T93) color only(std.)

TL1B25 THD STD
B26 NON-THD

TL2B25 THD STD
B26 NON-THD

TL3B25 THD STD
B26 NON-THD


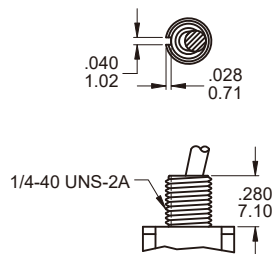
BUSHING OPTIONS

B1 THD STD
B2 NON-THD



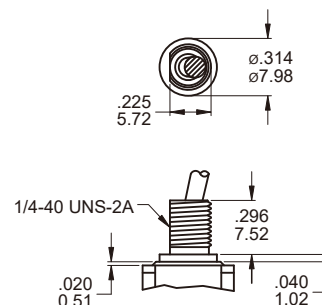
Subtract .016 (0.40) for M6, M7 and VS2-5 termination options.

B3 THD
B4 NON-THD

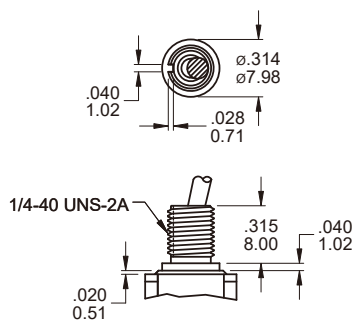


B4 is standard for M6, M7 and VS2-5 termination options.

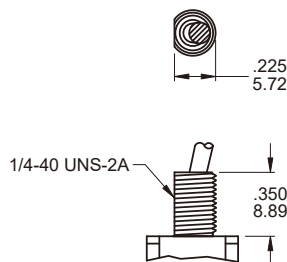
B5 HIGH TORQUE



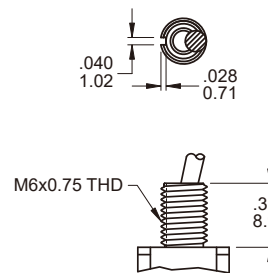
B6 HIGH TORQUE



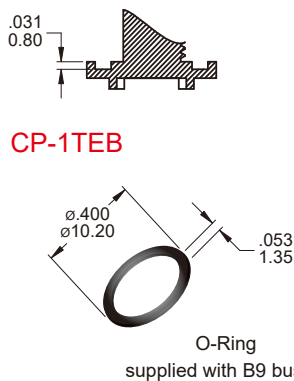
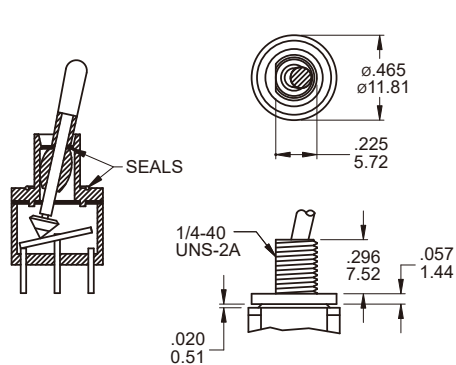
B7 THD STD



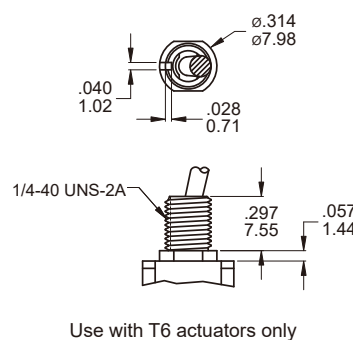
B8 METRIC THD



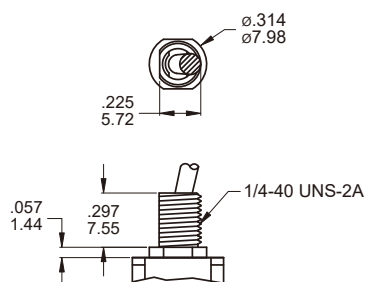
B9 SPLASH PROOF



B11 THD STD
B12 NON-THD

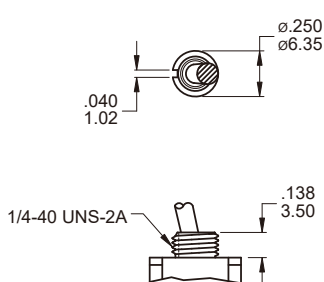


B15 THD STD
B16 NON-THD

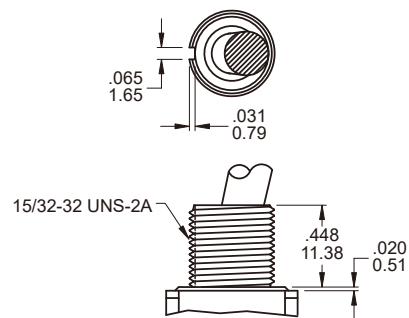


Use with T6 actuators only

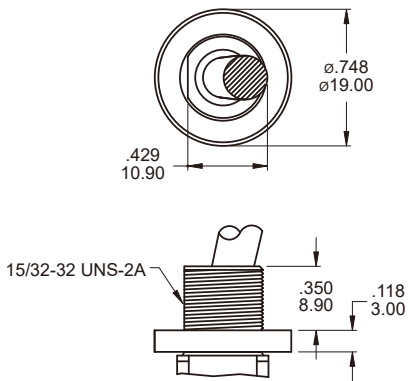
B17



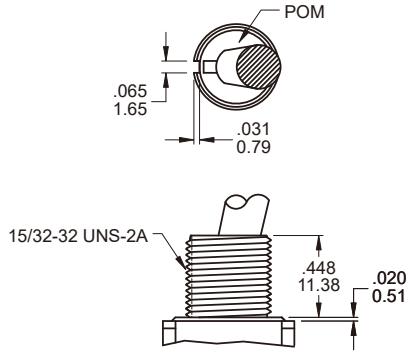
B13

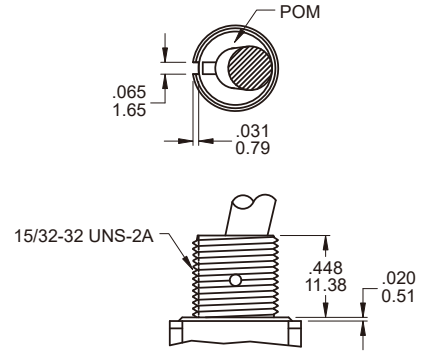


Use with T7, T8 actuators only
B13 Bear strength from top of actuator up to 10kg aside up to 15kg

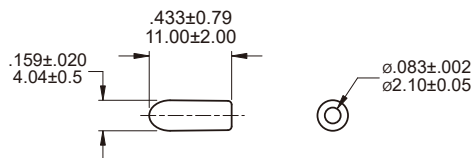
B14 SPLASH PROOF


Use with T7 , T8 actuators only

B18

 Use with T7,T8 and TA actuators only
with Plastic (POM) Insert

B20

 Use with T7,T8 and TA actuators only
with Plastic (POM) Insert

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

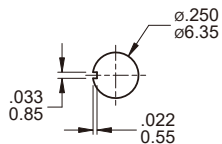
OPTIONAL TOGGLE CAP
CP-1T1X


Use with T1 actuator

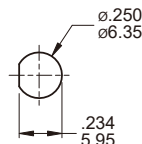
CAP Color :

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

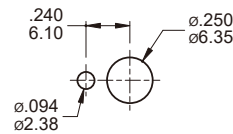
* Besides standard color, other colors need to check stocks available.

PANEL MOUNTING
1/4 IN BUSHING


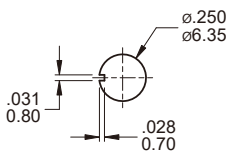
Without locking ring (Keyway)



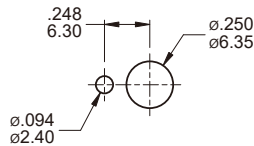
Without locking ring (Flat)



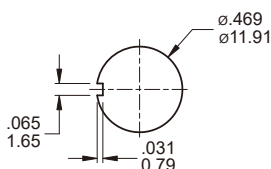
With standard locking ring.

METRIC BUSHING


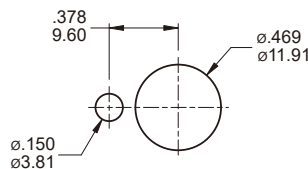
Without locking ring (Keyway)



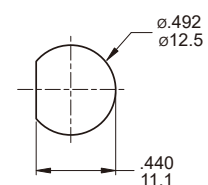
With standard locking ring.

15/32 IN BUSHING


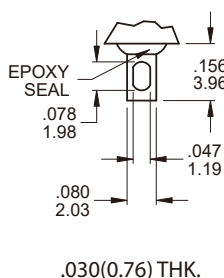
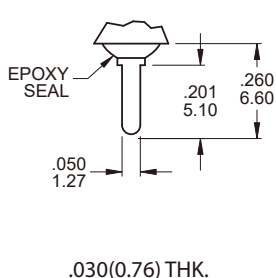
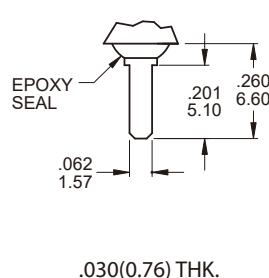
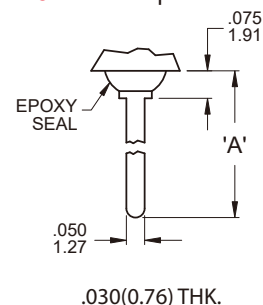
Without locking ring (Keyway)



With standard locking ring.

SPLASH PROOF BUSHING


Without locking ring (Flat)

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 Vertical right angle P.C. Mount

VS2 Vertical bracket P.C. Mount

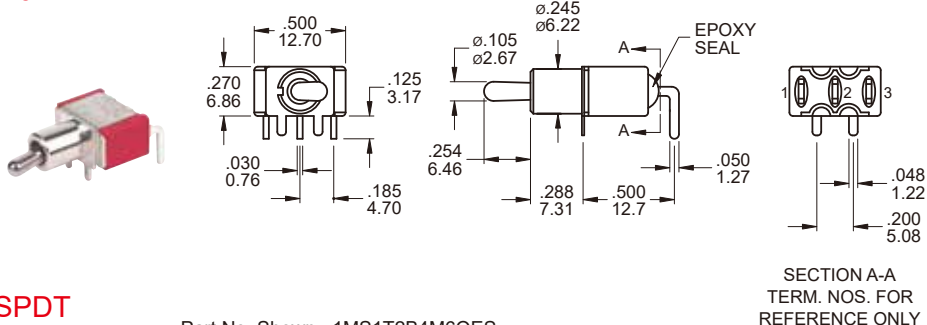
VS3 Vertical bracket P.C. Mount

VS5 Vertical bracket P.C. Mount

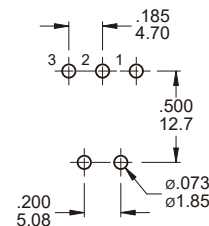
M6N Right angle P.C. Mount with snap-in bracket

V2N Vertical bracket P.C. Mount with snap-in bracket

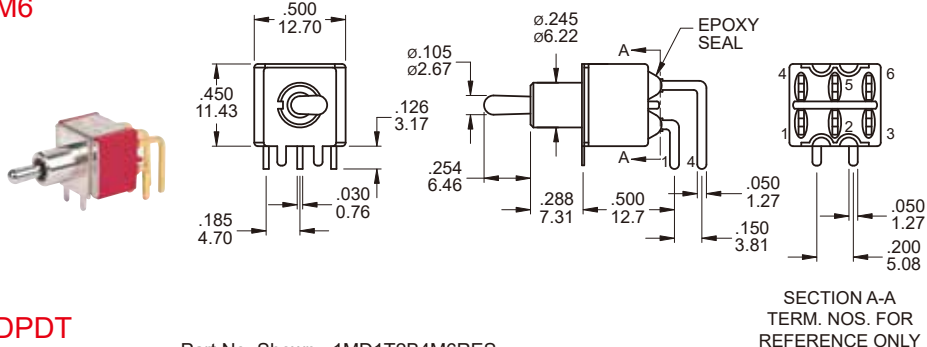
OPTION CODE	DIM. 'A'
M51	.736 (18.70)
M52	.953 (24.20)
M53	.415 (10.55)
M54	1.062 (26.97)

M6


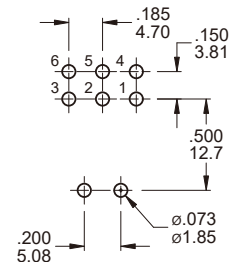
P.C. MOUNTING


SPDT

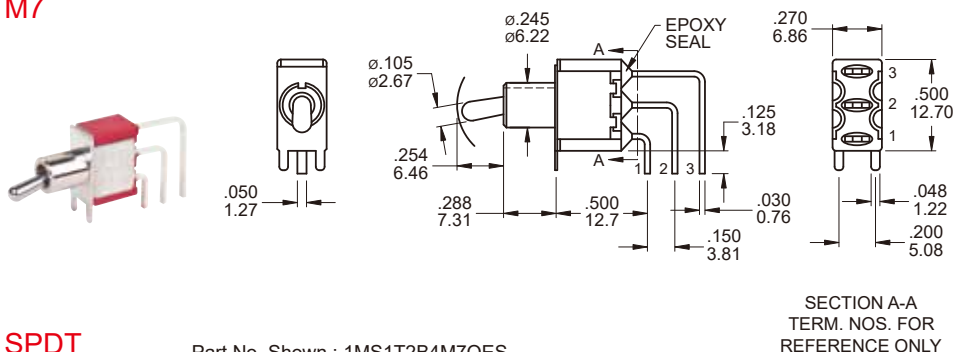
Part No. Shown : 1MS1T2B4M6QES

M6


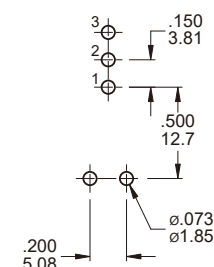
P.C. MOUNTING


DPDT

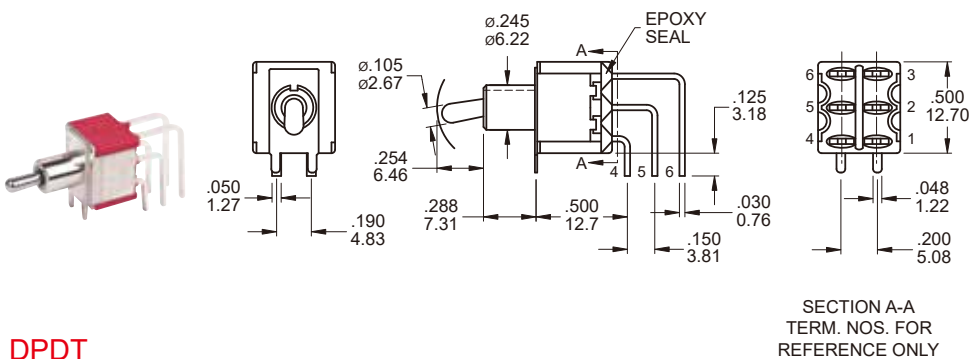
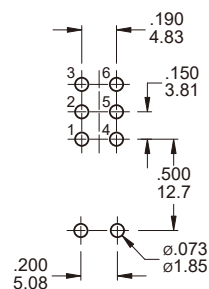
Part No. Shown : 1MD1T2B4M6RES

M7


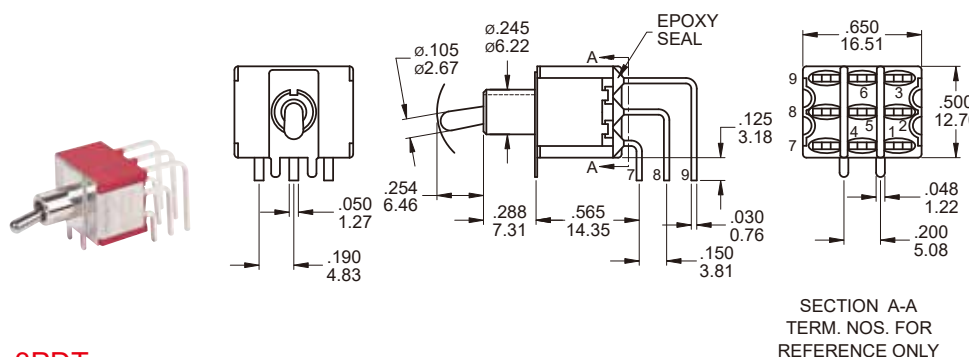
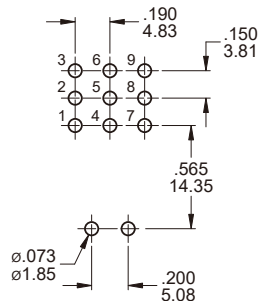
P.C. MOUNTING


SPDT

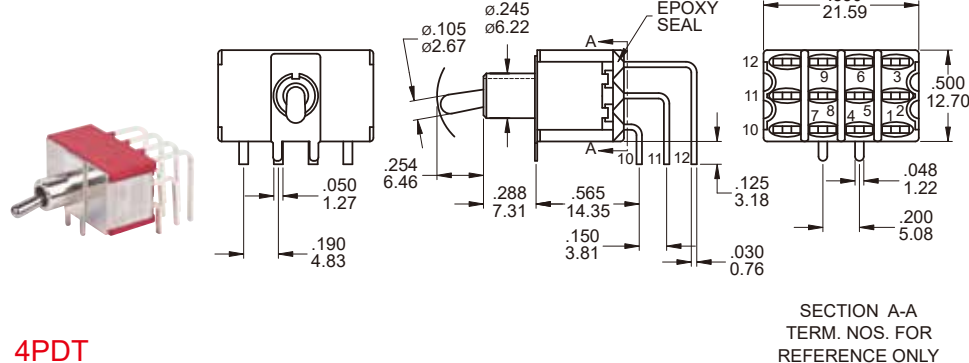
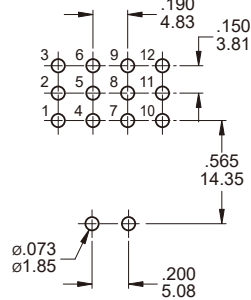
Part No. Shown : 1MS1T2B4M7QES

M7

P.C. MOUNTING

DPDT

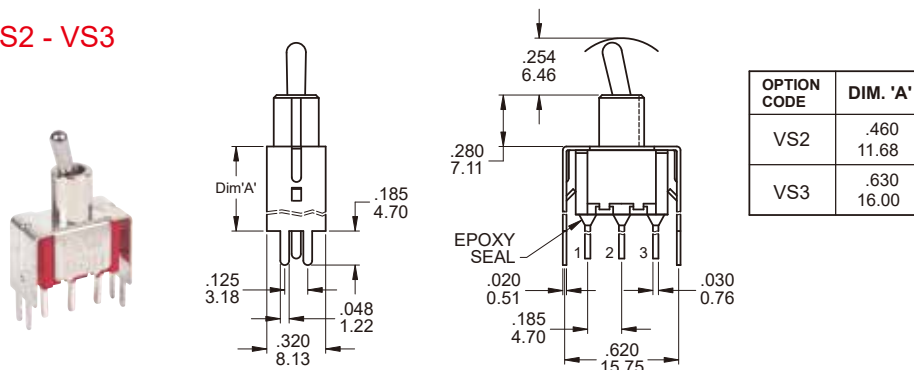
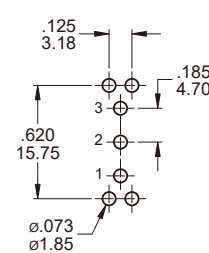
Part No. Shown : 1MD1T2B4M7QES

M7

P.C. MOUNTING

3PDT

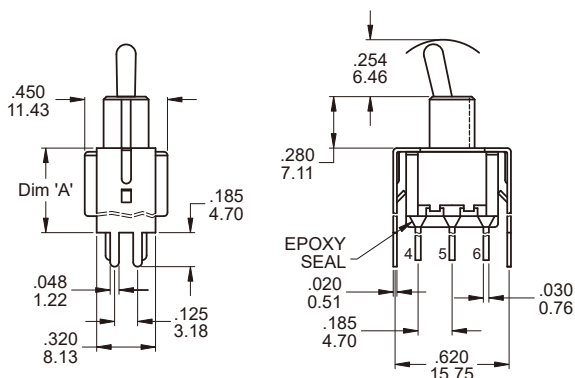
Part No. Shown : 1M31T2B4M7QES

M7

P.C. MOUNTING

4PDT

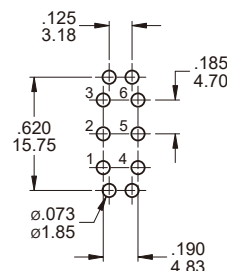
Part No. Shown : 1M41T2B4M7QES

VS2 - VS3

P.C. MOUNTING

SPDT

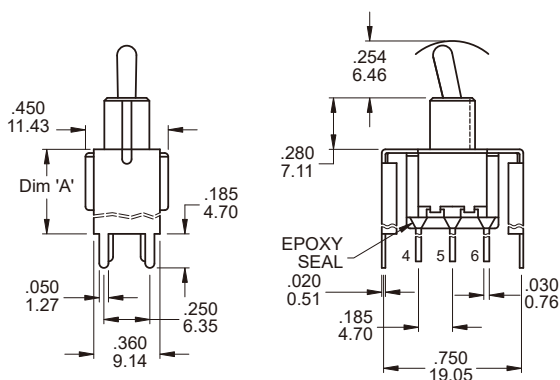
Part No. Shown : 1MS1T2B4VS2QES

VS2 - VS3


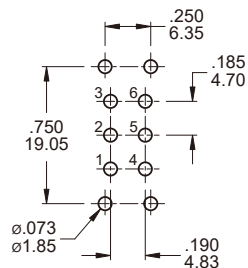
OPTION CODE	DIM. 'A'
VS2	.460 11.68
VS3	.630 16.00

P.C. MOUNTING

DPDT

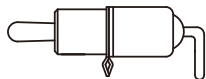
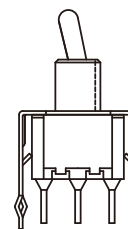
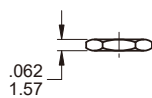
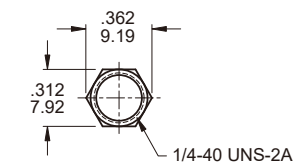
Part No. Shown : 1MD1T2B4VS3QES

VS5


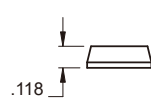
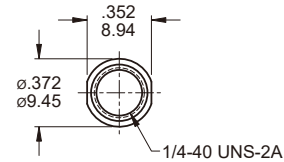
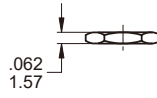
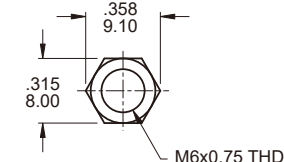
OPTION CODE	DIM. 'A'
VS4	.460 11.68
VS5	.630 16.00

P.C. MOUNTING

DPDT

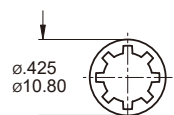
Part No. Shown : 1MD1T2B4VS5QES

SNAP-IN TERMINATION OPTIONS
M6N

V2N

HARDWARE
1/4 NUT

MNU-1M01A

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

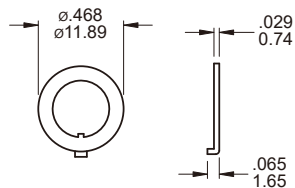
DRESS NUT

MNU-1M29
METRIC NUT

MNU-1M04

Supplied standard with B8 metric bushing

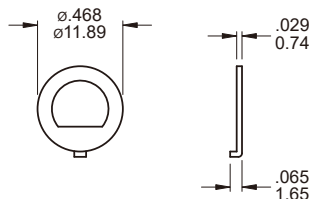
LOCKWASHER

 .018 THK
0.46

MNU-1M03

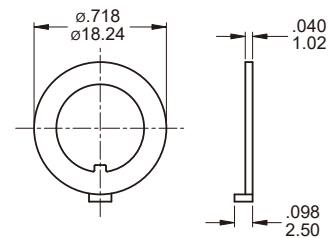
Supplied standard with B1 / B3 bushing

LOCKING RING

MNU-1M02

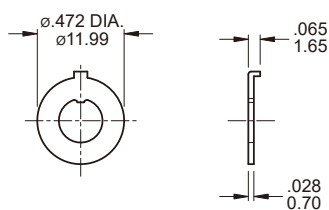
Locking ring supplied standard

LOCKING RING

MNU-1M11

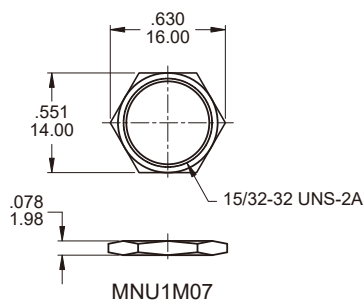
Locking ring supplied with B5 bushing

LOCKING RING

MNU-1M08

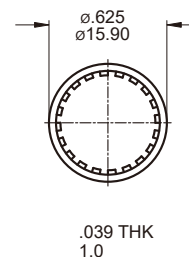
Locking ring supplied with B13, B18, B20 bushing

LOCKING RING

MNU-1M05

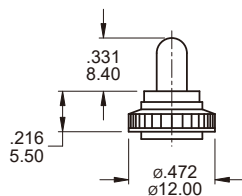
Locking ring supplied with B8 bushing

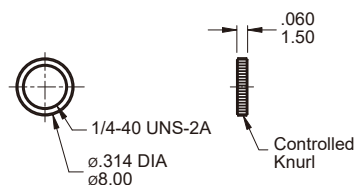
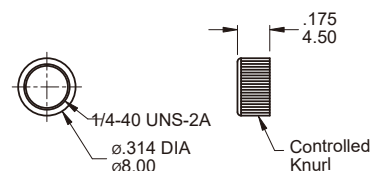
15/32 NUT

MNU1M07

Supplied standard with B13 bushing

LOCKWASHER

MNU-1M09

Supplied standard with B13 bushing

OPTIONAL RUBBER HOOD SEALING

 K1=Metric
 E1=Inch (Std.)
 for actuator T1, T2 and
 B1, B3, B5, B6 Bushing only

DRESS NUT

MNU-1M18
DRESS NUT

MNU-1M24
CONTACT MATERIAL OPTIONS

	CONTACT PLATING	TERMINAL PLATING	RATINGS
Q	Silver	Silver	5 Amps with resistant load @ 120VAC or 28VDC
C	Gold over Silver	Gold over silver	2 Amps with resistant load @ 250VAC
R	Gold	Gold	0.4 Volt - Amps (VA) max. @ 20V max. (AC or DC)

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: 270 ± 5°C

Duration of Solder Immersion: Max 5 sec. (PCB is 1.6mm in thickness)