General Specifications

Electrical Capacity (Resistive Load)

Power Level (silver): Maximum rating varies by model number
MN12, MN22: 6A @ 125V AC, 3A @ 250V AC, 4 A @ 30V DC
MN13, MN18, MN23: 6A @ 125V AC, 3A @ 250V AC, 3A @ 30V DC
MN28: 4A @ 125V AC, 3A @ 250V AC, 3A @ 30V DC

Logic Level (gold): 0.4VA maximum @ 28V AC/DC maximum (Applicable Range 0.1mA ~ 0.1A @ 20mV ~ 28V)

Other Ratings

Contact Resistance: 10 milliohms maximum for silver; 20 milliohms maximum for gold
Insulation Resistance: 1,000 megohms minimum @ 500V DC
Dielectric Strength: 1,000V AC minimum between contacts for 1 minute minimum;
1,500V AC minimum between contacts and case for 1 minute minimum
Mechanical Life: 50,000 operations minimum
Electrical Life: 25,000 operations minimum for silver at 6A @ 125V AC; 50,000 operations minimum for gold
Angle of Throw: 25°

Environmental Data

Operating Temp Range: –30°C through +85°C (–22°F through +185°F)
Sealing: Waterproofing, achieved with boot at base of lever plus o-rings inside and outside of bushing, meets IP68 of IEC 60529 Standards (dust tight and protection against effects of temporary immersion). See further explanation on page A51.

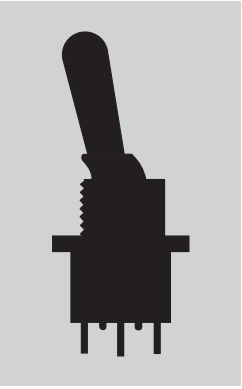
Processing

Soldering: Manual Soldering for SIlver: ON-NONE-ON: See Profile B in Supplement section.
ON-OFF-ON and (ON)-OFF-(ON): See Profile A in Supplement section.
Manual Soldering for Gold, all circuits: See Profile A in Supplement section.
Note: Lever must be in OFF (center) position while soldering.

Distinctive Characteristics

Inner o-ring and external rubber washer seal the switch to achieve IP68 of IEC 60529 Standards (dust tight and water protected for temporary immersion).

Actual Size

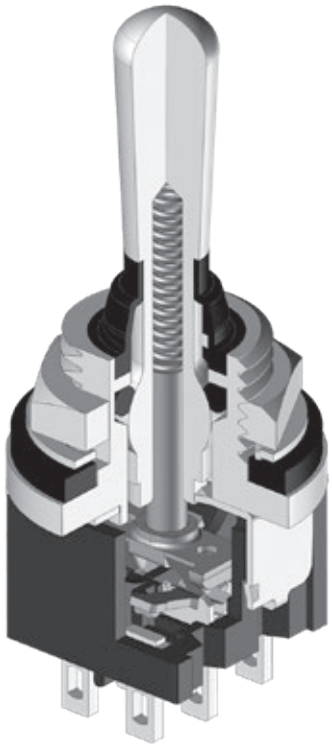


Waterproof boot at base of toggle further ensures protection against wet environments.

Actuation provides smooth, sturdy tactile feel.

Polished, chrome-plated actuator paired with the waterproof boot not only delivers in terms of sleek design, but also functionality and reliability.

Superb quality and construction design prohibit entry of harmful particles that may otherwise compromise lever operation.



TYPICAL SWITCH ORDERING EXAMPLE

M	N	1	2	WB	G	01

Poles

1	SPDT
2	DPDT

Circuits

2	ON	NONE	ON
3	ON	OFF	ON
8	(ON)	OFF	(ON)

NONE = No Position

( ) = Momentary

Toggle with Large Bushing

WB	.787″ (20.0mm) Bat with Large .472″ (12.0mm) Threaded Bushing with D Flat

Contact Material & Ratings

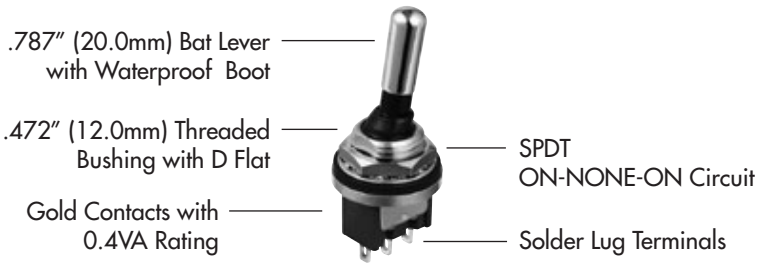
W	Silver; Rated 4 ~ 6A @ 125V AC, 3A @ 250V AC & 3 ~ 4A @ 30V DC
G	Gold; Rated 0.4VA max @ 28V AC/DC max

Terminals

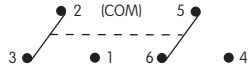
01	Solder Lug

DESCRIPTION FOR TYPICAL ORDERING EXAMPLE

MN12WBG01

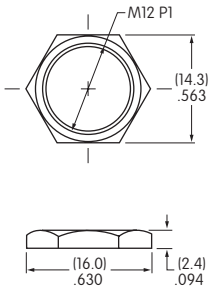


POLES & CIRCUITS

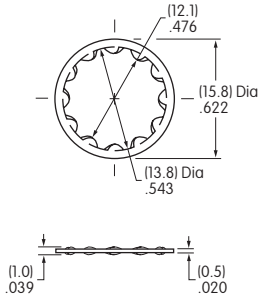
Pole	Model	Toggle Position NONE = No Position ( ) = Momentary: Up	Center	Down	Connected Terminals: Up	Center	Down	Throw & Schematics
								Note: Terminal numbers are not actually on the switch.
SP	**MN12** **MN13** **MN18**	ON ON (ON)	NONE OFF OFF	ON ON (ON)	2-3	OPEN	2-1	SPDT 
DP	**MN22** **MN23** **MN28**	ON ON (ON)	NONE OFF OFF	ON ON (ON)	2-3 5-6	OPEN	2-1 5-4	DPDT 

STANDARD HARDWARE

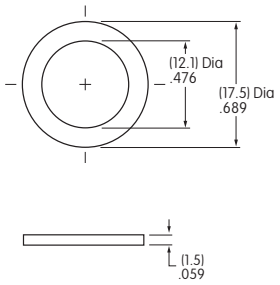
AT503M Hex Face Nut
Brass/Chrome



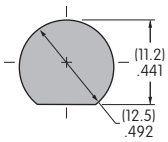
AT508 Lockwasher
Steel with Zinc/Chromate



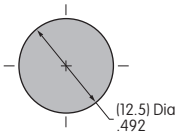
AT401P O-ring
Nitrile Butadiene Rubber



PANEL CUTOUTS & THICKNESS



Anti-rotation



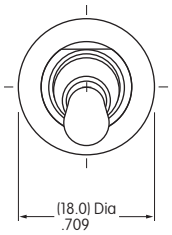
No
Anti-rotation

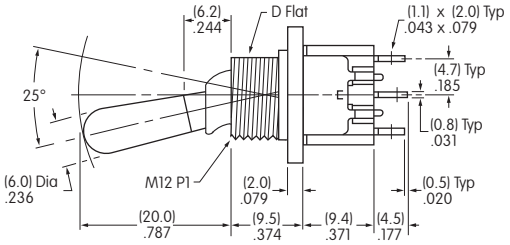
Maximum Effective Panel Thickness
.118" (3.0mm)

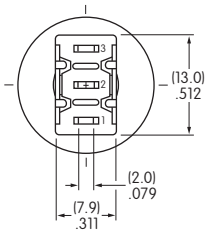
TYPICAL SWITCH DIMENSIONS

Solder Lug

Single Pole



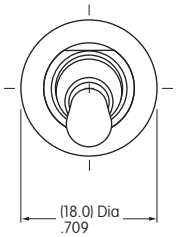


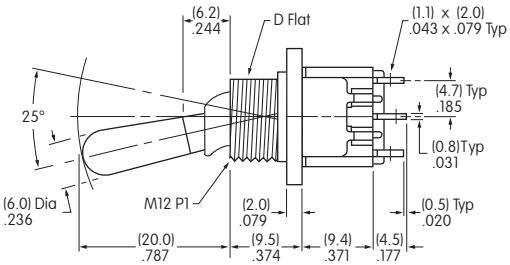


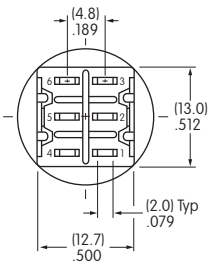
MN12WBG01

Solder Lug

Double Pole







MN22WBG01

APPLICATION CONSIDERATIONS

The Dual Seal Waterproof M Toggle is designed as a panel seal switch, and not to be used under water.

Material Properties

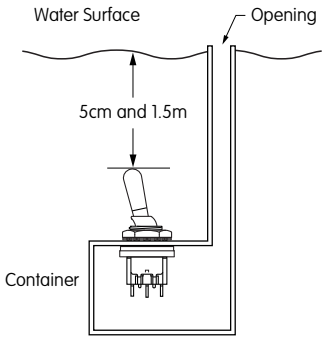
The material for the waterproof boot is silicone rubber. While silicone rubber has excellent heat, cold and weather resistant properties, it has less durability and oil resistance.

The o-rings are made of nitrile butadiene rubber, which excels in durability and oil and chemical resistance. Its performance is less durable with lower weather and ozone resistant characteristics.

Evaluate the products in reguard to your application and intended environment with these properties in mind.

Waterproof Test Conditions

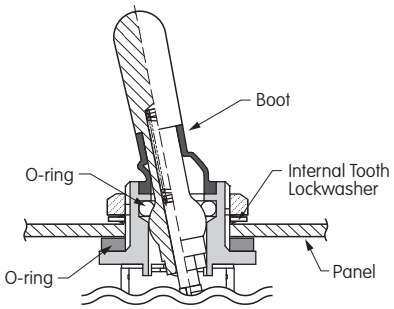
Waterproofing is measured by submersing the switch 5 centimeters from the water surface (see illustration), and opening and closing 50 times at a frequency of 50 – 60 times per minute. The switch is then submersed 1.5 meters from the surface and left in this position for 30 minutes.



Repeat opening and closing same as previous test. The resulting insulation resistance and voltage capacity are both within the rated values, and water has not entered inside the switch or installation panel.

Panel Installation

For panel installation, the internal tooth lockwasher is installed above the panel. The external o-ring mounts below the panel.



Applications

- Construction Equipment
- Hospitality and Restaurant
- Transportation
- Medical Equipment
- Machine Tooling
- Marine Equipment *

* Salt spray tested as per Mil-STD-810G section 509.5.

General Specifications

Electrical Capacity (Resistive Load)

Power Level (silver): Maximum rating varies by model number
MN11, MN12, MN21, MN22: 6A @ 125V AC, 3A @ 250V AC, 4A @ 30V DC
MN13, MN15, MN18, MN19, MN23, MN25: 6A @ 125V AC, 3A @ 250V AC, 3A @ 30V DC
MN28, MN29: 4A @ 125V AC, 3A @ 250V AC, 3A @ 30V DC
MN32, MN42: 4A @ 125V AC, 2A @ 250V AC, 3A @ 30V DC
MN33, MN35, MN38, MN39: 4A @ 125V AC, 2A @ 250V AC, 2A @ 30V DC
MN43, MN45, MN48, MN49: 4A @ 125V AC, 2A @ 250V AC, 2A @ 30V DC
MN24, MN26, MN27, MN44, MN46, MN47: 3A @ 125V AC, 2A @ 250V AC, 2A @ 30V DC
Recommended minimum voltage/current: 0.1A @ 2V AC/DC

Logic Level (gold): 0.4VA maximum @ 28V AC/DC maximum (Applicable Range 0.1mA ~ 0.1A @ 20mV ~ 28V)

Other Ratings

Contact Resistance: 10 milliohms maximum for silver; 20 milliohms maximum for gold
Insulation Resistance: 1,000 megohms minimum @ 500V DC
Dielectric Strength: 1,000V AC minimum between contacts for 1 minute minimum;
1,500V AC minimum between contacts and case for 1 minute minimum
Mechanical Life: 50,000 operations minimum
Electrical Life: 25,000 operations minimum for silver; 50,000 operations minimum for gold
Angle of Throw: 25°

Materials & Finishes

Toggle: Brass with chrome plating
Bushing: Brass with nickel plating
Case: Diallyl phthalate resin (UL94V–0)
Frame: Stainless steel
Support Bracket: Brass with tin plating
Movable Contactor: Phosphor bronze with silver plating or silver/silver alloy with no plating (code W) or phosphor bronze or copper with gold plating (code G)
Movable Contacts: Silver alloy (code W); copper with gold plating (code G)
Stationary Contacts: Silver alloy with silver plating (code W); copper or brass with gold plating (code G)
Terminals: Copper or brass with silver plating; or copper or brass with gold plating

Environmental Data

Operating Temperature Range: –30°C through +85°C (–22°F through +185°F)
Humidity: 90 ~ 95% humidity for 240 hours @ 40°C (104°F)
Vibration: 10 ~ 55Hz with peak-to-peak amplitude of 1.5mm traversing the frequency range & returning in 1 minute; 3 right angled directions for 2 hours
Shock: 500m/s² acceleration (tested in 6 right angled directions, with 5 shocks in each direction)
Sealing: Splashproof bushing options B3, D3, D8, L3, & L8, which have o-rings inside & outside the bushing, meet IP67 of IEC60529 Standards.

Installation

Mounting Torque: 3.0Nm (26.55 lb•in) double nut for large bushing;
1.5Nm (13 lb•in) double nut & 0.7Nm (6 lb•in) single nut for all other bushings

Processing

Soldering: Wave Soldering (PC version) for Gold: See Profile A in Supplement section.
Manual Soldering for Gold: See Profile A in Supplement section.
Wave Soldering (PC version) for Silver: See Profile B in Supplement section.
Manual Soldering for Silver: See Profile B in Supplement section.
Note: Lever must be in OFF (center) position while soldering.
Cleaning: These devices are not process sealed. Hand clean locally using alcohol based solution.

Standards & Certifications

Flammability Standards: UL94V–0 for case
UL: Contact NKK Switches for UL or CUL marking option requirements.

Distinctive Characteristics

Antirotation design, standard on noncylindrical levers, mates toggle and bushing; bottom of toggle has two flatted sides which fit into a complementary opening inside bushing.

Antijamming design protects contacts from damage due to excessive downward force on actuator.

High torque bushing construction prevents rotation or separation from frame during installation.

High insulating barriers increase isolation of circuits in multipole devices and provide added protection to contact points.

Molded diallyl phthalate case has a UL flammability rating of 94V-0.

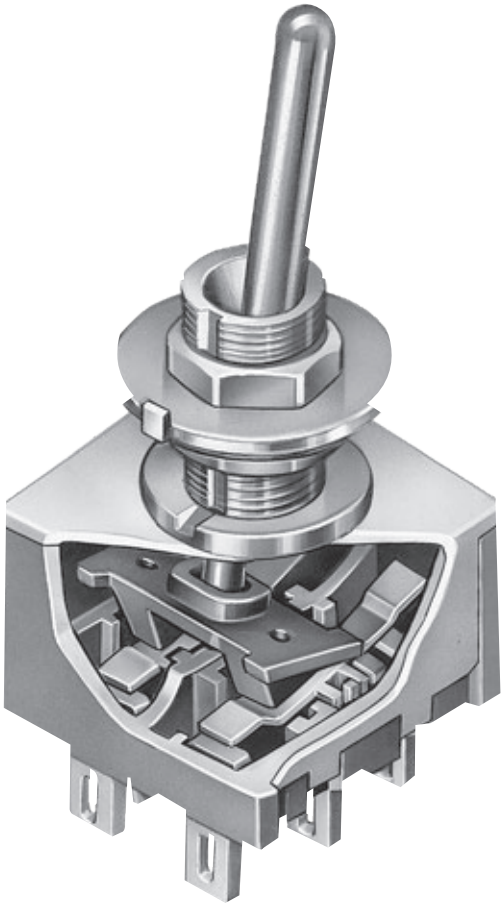
Epoxy sealed terminals prevent entry of solder flux and other contaminants.

Prominent external insulating barriers increase insulation resistance and dielectric strength.

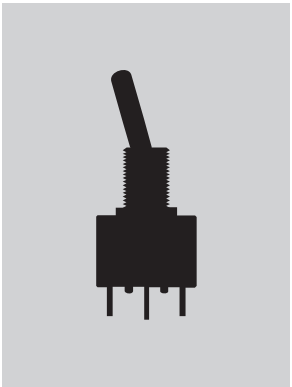
Interlocked actuator block, lever, and interior guide prevent switch failure due to biased lever movement.

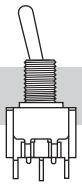
Clinching of frame to case well above base and terminals provides 1,500V dielectric strength.

Special silver alloy contacts with excellent wear resistance and arc resistance maintain high contact stability and long life.

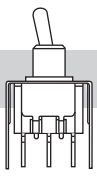


Actual Size

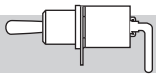




Bushing Mount Page A52



Bracket PC Mount Page A64



Angle PC Mount Page A70

Series M

Bushing Mount Miniature Toggles

TYPICAL SWITCH

M N 1 3 S S1

Poles

1	SPST SPDT
2	DPST DPDT SP3T
3	3PDT
4	4PDT DP3T

Circuits

*1	ON	NONE	OFF
2	ON	NONE	ON
3	ON	OFF	ON
5	ON	NONE	(ON)
8	(ON)	OFF	(ON)
9	ON	OFF	(ON)
**4	ON	ON	ON
**6	(ON)	ON	(ON)
**7	ON	ON	(ON)

NONE = No Position

( ) = Momentary

* ON-NONE-OFF circuit available in 1- and 2-pole only.

** 3-ON circuits

Small Toggles

S	.413" (10.5mm) Bat
S2	.200" (5.08mm) Bat
S3	.256" (6.5mm) Bat
E	.450" (11.4mm) Flatted
*E2	.256" (6.5mm) Flatted

*Available on 1- and 2-pole only

Large Toggles

B	.453" (11.5mm) Large Bat
B2	.689" (17.5mm) Large Bat

Locking Lever

L	.201" (5.1mm) Dia. Locking Lever

Small Bushings

*S1	.350" (8.9mm) Threaded with Keyway
**S4	6mm .350" (8.9mm) Threaded with Keyway
***S2	.350" (8.9mm) Smooth with Keyway
****D3	.350" (8.9mm) Threaded Splashproof with D Flat (combines only with S, S2 & S3)
**D8	6mm .350" (8.9mm) Threaded Splashproof with D Flat (combines only with S, S2 & S3)

* 01 & 06 Terminals Only
** 01 & 03 Terminals Only
*** 03 Terminal Only
**** 01 Terminal Only

Large Bushings

**B1	Large .472" (12.0mm) Threaded with Keyway
****B3	Large .472" (12.0mm) Threaded Splashproof with D Flat

** 01 & 03 Terminals Only
**** 01 Terminal Only

Bushings For Locking Levers

*L1	.291" (7.4mm) Threaded with Keyway for Lever Lock
**L4	6mm .291" (7.4mm) Threaded with Keyway for Lever Lock
***L2	Smooth with Keyway for Lever Lock
****L3	.295" (7.5mm) Threaded Splashproof with D Flat for Lever Lock

* 01 & 06 Terminals Only
** 01 & 03 Terminals Only
*** 03 Terminal Only
**** 01 Terminal Only

ORDERING EXAMPLE

W 01 — □ □

Contact Materials & Ratings

W	Silver; Rated 2 ~ 6A @ 125V AC & 2 ~ 3A @ 250V AC
G	Gold; Rated 0.4VA max @ 28V AC/DC max

Terminals

***01**	Solder Lug
****03**	.250" (6.35mm) Straight PC
*****06**	.750" (19.05mm) Wirewrap

* Combines with Threaded Bushings Only
** Combines with S4, S2, D8, L4 & L2 Bushings Only
*** Combines with S1 Bushing Only

Optional Caps

For Small Bat Toggles	
B	For S Bat Toggle
C	Conical Cap for S Bat Toggle
For Large Bat Toggles	
R	For B Toggle
V	For B2 Toggle

Cap for Locking Lever

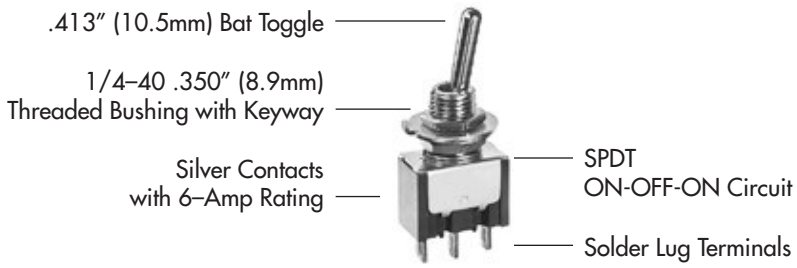
No Code	Nickel Plated Supplied with Switch
A	Black
C	Red
G	Blue

Cap Colors

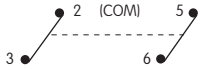
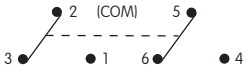
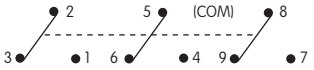
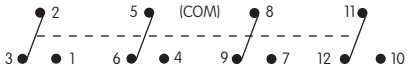
A	Black
B	White
C	Red
E	Yellow
F	Green
G	Blue

DESCRIPTION FOR TYPICAL ORDERING EXAMPLE

MN13SS1W01

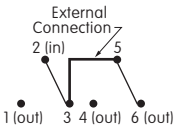
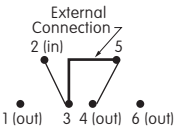
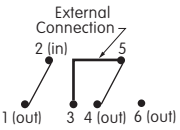
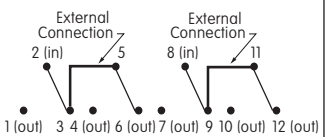
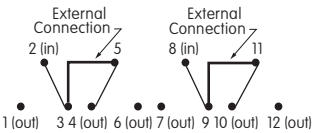
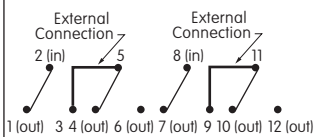


POLES & CIRCUITS

Pole	Model	Toggle Position (NONE = No Position ( ) = Momentary) Down (Keyway)	Center	Up	Connected Terminals Down (Keyway)	Center	Up	Throw & Schematics
								Note: Terminal numbers are not actually on the switch.
SP	**MN11**	ON	NONE	OFF	2-3	OPEN	OPEN	SPST 
SP	**MN12** ON **MN13** ON **MN15** ON **MN18** (ON) **MN19** ON	NONE OFF NONE OFF OFF	ON ON (ON) (ON) (ON)	2-3	OPEN	2-1	SPDT 
DP	**MN21**	ON	NONE	OFF	2-3 5-6	OPEN	OPEN	DPST 
DP	**MN22** ON **MN23** ON **MN25** ON **MN28** (ON) **MN29** ON	NONE OFF NONE OFF OFF	ON ON (ON) (ON) (ON)	2-3 5-6	OPEN	2-1 5-4	DPDT 
3P	**MN32** ON **MN33** ON **MN35** ON **MN38** (ON) **MN39** ON	NONE OFF NONE OFF OFF	ON ON (ON) (ON) (ON)	2-3 5-6 8-9	OPEN	2-1 5-4 8-7	3PDT 
4P	**MN42** ON **MN43** ON **MN45** ON **MN48** (ON) **MN49** ON	NONE OFF NONE OFF OFF	ON ON (ON) (ON) (ON)	2-3 5-6 8-9 11-12	OPEN	2-1 5-4 8-7 11-10	4PDT 

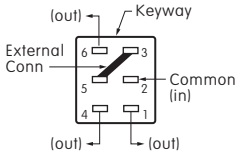
For 3 Throw (3-On)

Connected Terminals & Schematic

Pole	Model	Down	Center	Up	Down	Center	Up
SP	**MN24** **MN26** **MN27**	ON (ON) ON	ON ON ON	ON (ON) (ON)	 2-3 5-6	 2-3 5-4	 2-1 5-4
DP	**MN44** **MN46** **MN47**	ON (ON) ON	ON ON ON	ON (ON) (ON)	 2-3 5-6 8-9 11-12	 2-3 5-4 8-9 11-10	 2-1 5-4 8-7 11-10

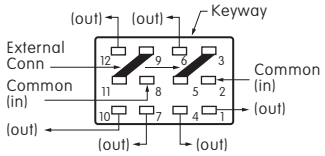
The SP3T model utilizes a double pole base.

External connection must be made during field installation.



The DP3T model utilizes a four pole base.

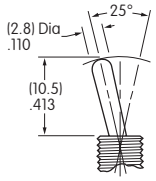
External connection must be made during field installation.



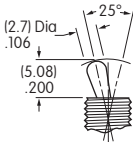
SMALL TOGGLES

Important:
Toggle length changes based on bushing selected. All illustrations are shown with .350" long bushing. When using a .280" long bushing, toggle length increases .070".

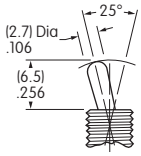
S **.413" (10.5mm) Bat**



S2 **.200" (5.08mm) Bat**

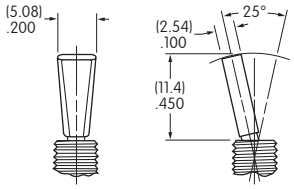


S3 **.256" (6.5mm) Bat**

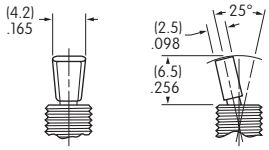


Standard Material & Finish: Brass with Bright Chrome
Contact factory for optional finishes.

E **.450" (11.4mm) Flatted**

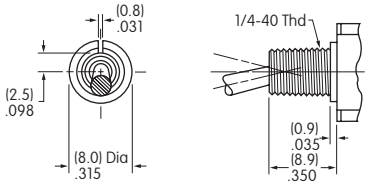


E2 **.256" (6.5mm) Flatted**



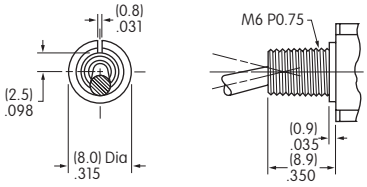
SMALL BUSHINGS

S1 **1/4-40 .350" (8.9mm) Threaded with Keyway**



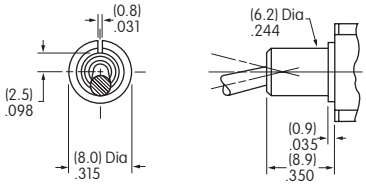
Maximum Panel Thickness with Standard Hardware: .102" (2.6mm)

S4 **6mm/.350" (8.9mm) Threaded with Keyway**

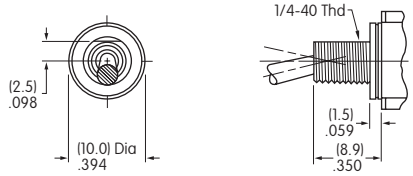


Maximum Panel Thickness with Standard Hardware: .102" (2.6mm)

S2 **.350" (8.9mm) Smooth with Keyway**

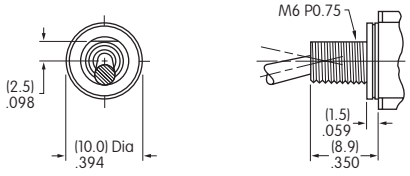


D3 **1/4-40 .350" (8.9mm) Threaded Splashproof with D Flat**



D3 combines only with S, S2 & S3 toggles. Maximum Panel Thickness with Standard Hardware: .193" (4.9mm)

D8 **6mm/.350" (8.9mm) Threaded Splashproof with D Flat**

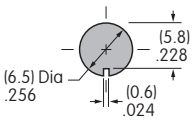


D8 combines only with S, S2 & S3 toggles. Maximum Panel Thickness with Standard Hardware: .193" (4.9mm)

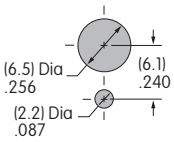
Standard Hardware Supplied for Small Bushings

	Bushing Codes	S1/S4	D3/D8	L1/L4	L3
Hardware and Quantity	Hex Nut	2	1	2	1
	Locking Ring	1	0	1	0
	Lockwasher	1	0	1	0
	O-ring	0	1	0	1

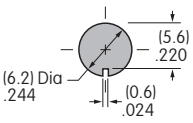
For S1, S2 Bushing with Keyway & for L1 Bushing



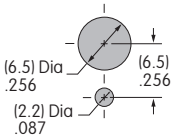
For S1 Bushing with Locking Ring & for L1 Bushing



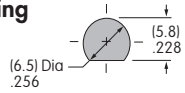
For S4 Bushing with Keyway & for L4 Bushing



For S4 Bushing with Locking Ring & for L4 Bushing



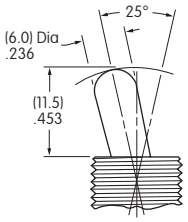
For D3 or D8 Bushing with D Flat & for L3 Bushing



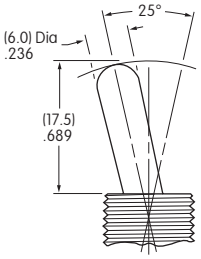
LARGE TOGGLES

Toggle & Bushing Combinations: These toggles combine with the 12mm bushings B1 & B3.

B **.453" (11.5mm) Large Bat**



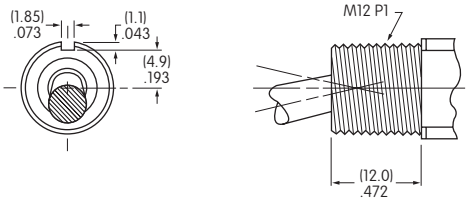
B2 **.689" (17.5mm) Large Bat**



Standard Material & Finish: Brass with Bright Chrome
Optional Finishes: Contact factory for satin chrome or black.

LARGE BUSHINGS

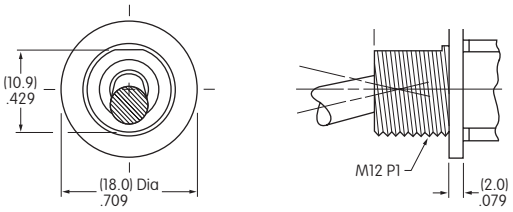
B1 **Large .472" (12.0mm) Threaded with Keyway**



Maximum Panel Thickness with Standard Hardware: .216" (5.5mm)

Standard Hardware for B1:
1 hex face nut AT503M, 1 locking ring AT506M, 1 lockwasher AT508, and 1 hex backup nut AT527M

B3 **Large .472" (12.0mm) Threaded Splashproof with D Flat**

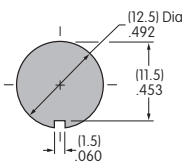


Maximum Panel Thickness with Standard Hardware: .256" (6.5mm)

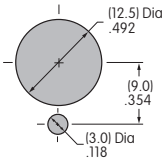
Standard Hardware for B3:
1 hex face nut AT503M and 1 o-ring AT401P

Panel Cutouts

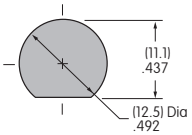
For B1 Bushing with Keyway



For B1 Bushing with Locking Ring

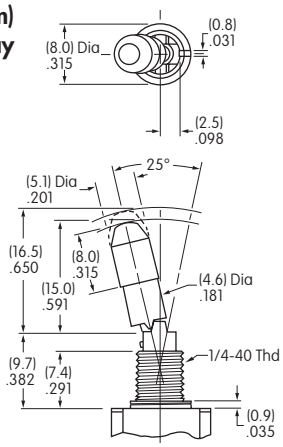


For B3 Bushing with D Flat

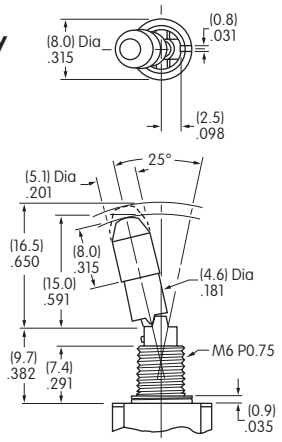


LOCKING LEVER & BUSHINGS

LL1 **1/4-40 .291" (7.4mm) Threaded with Keyway**

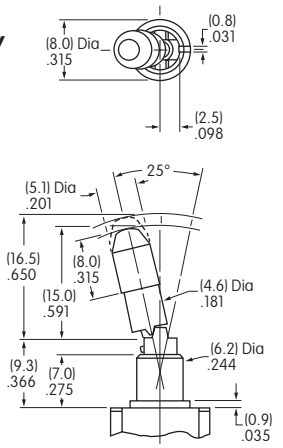


LL4 **6mm/.291" (7.4mm) Threaded with Keyway**

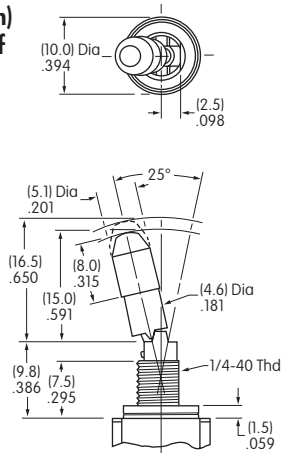


Maximum Panel Thickness with Standard Hardware: .047" (1.2mm)
Standard Hardware for L1 & L4: 2 hex nuts AT513H or AT513M,
1 locking ring AT507H or AT507M, and 1 lockwasher AT509

LL2 **Smooth with Keyway**



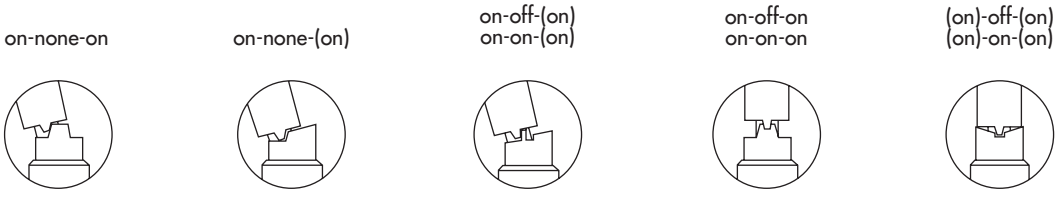
LL3 **1/4-40 .295" (7.5mm) Threaded Splashproof with D Flat**



Maximum Panel Thickness with Standard Hardware: .047" (1.2mm)
Standard Hardware**:** 1 hex nut AT513H and 1 o-ring AT516

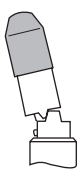
Lever Material & Finish: Brass with Chrome Plating

Locking Mechanism



No Code **Supplied with Cap AT427**

Cap Material:
Brass with Nickel Plating



Color Codes for Optional Anodized Aluminum Caps

A Black **C** Red **G** Blue

CONTACT MATERIALS & RATINGS

W **Silver**
Power Levels

MN11, MN12, MN21, MN22: 6A @ 125V AC, 3A @ 250V AC, 4A @ 30V DC
MN13, MN15, MN18, MN19, MN23, MN25: 6A @ 125V AC, 3A @ 250V AC, 3A @ 30V DC
MN28, MN29: 4A @ 125V AC, 3A @ 250V AC, 3A @ 30V DC
MN32, MN42: 4A @ 125V AC, 2A @ 250V AC, 3A @ 30V DC
MN33, MN35, MN38, MN39: 4A @ 125V AC, 2A @ 250V AC, 2A @ 30V DC
MN43, MN45, MN48, MN49: 4A @ 125V AC, 2A @ 250V AC, 2A @ 30V DC
MN24, MN26, MN27, MN44, MN46, MN47: 3A @ 125V AC, 2A @ 250V AC, 2A @ 30V DC

G **Gold** **Logic Level** **0.4VA maximum @ 28V AC/DC maximum**

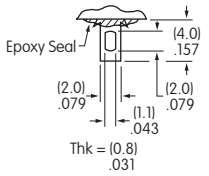
Note: See Supplement section to find complete explanation of operating range.

Gold over Silver **Power Level or Logic Level** **See above for ratings**

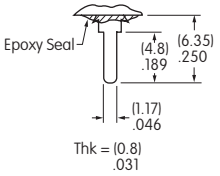
Note: Gold over silver is available as a custom option. This dual rated option is suitable when two or more identical switches are used in logic and in power circuits within the same application. See Supplement section to find complete explanation of dual rating and operating range.

TERMINALS

01 **Solder Lug**

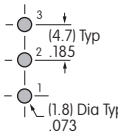


03 **.250" (6.35mm) Straight PC**

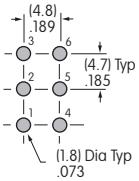


Footprints for Straight PC Terminals

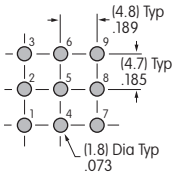
Single Pole



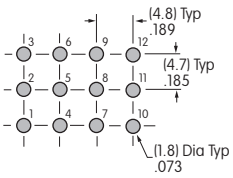
Double Pole



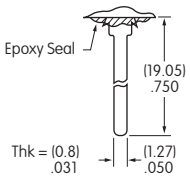
Three Pole



Four Pole



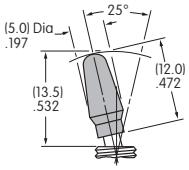
06 **.750" (19.05mm) Wirewrap or Extended PC**



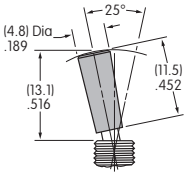
If using as extended PC terminal, refer to the footprints above.

OPTIONAL CAPS & CAP COLORS

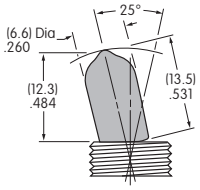
B *** AT415 Lever Cap for S Bat Toggle**
Material: Polyethylene



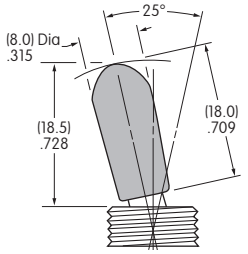
C *** AT444 Conical Cap for S Bat Toggle**
Material: Polyethylene



R **AT434 Lever Cap for B Toggle**
Material: Polyvinyl Chloride



V **AT406 Lever Cap for B2 Toggle**
Material: Polyvinyl Chloride

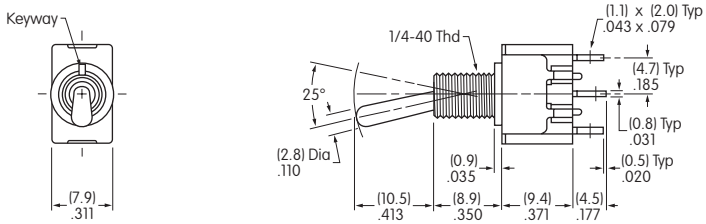


* AT415 and AT444 for use with S toggles only, not S2 or S3 toggles.

Cap Colors Available:
A Black **B** White **C** Red **E** Yellow **F** Green **G** Blue

TYPICAL SWITCH DIMENSIONS

Single Pole

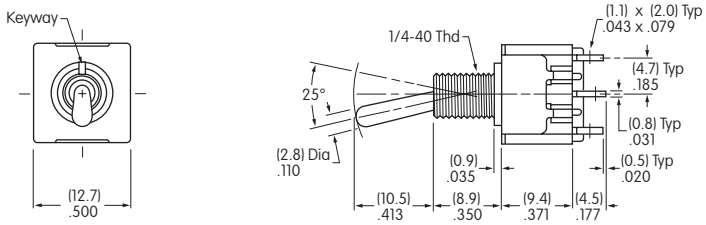


Solder Lug

MN11 model does not have terminal 1.

MN12SS1W01

Double Pole

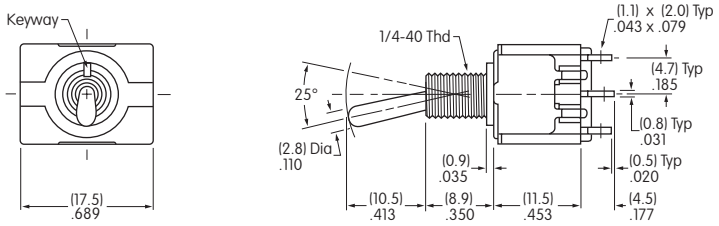


Solder Lug

MN21 model does not have terminals 1 & 4.

MN22SS1W01

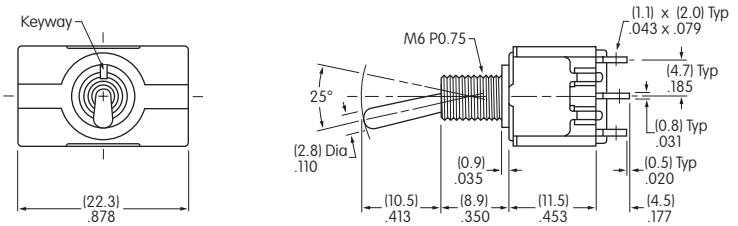
Three Pole



Solder Lug

MN32SS1W01

Four Pole

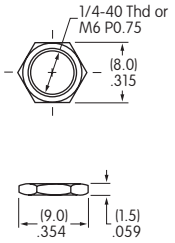


Solder Lug

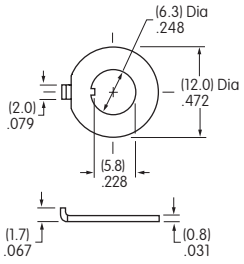
MN42SS4W01

STANDARD HARDWARE FOR SMALL & LARGE BUSHINGS

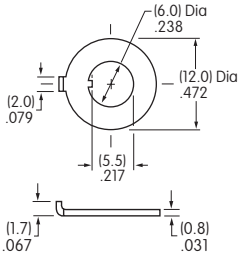
AT513H for Inch
AT513M for Metric
Hex Nut
Brass/Nickel



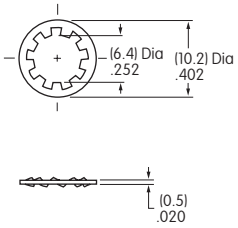
AT507H for Inch
Locking Ring
Steel with Zinc/Chromate



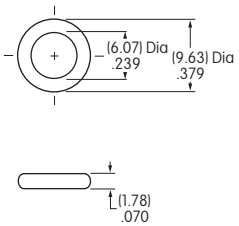
AT507M for Metric
Locking Ring
Steel with Zinc/Chromate



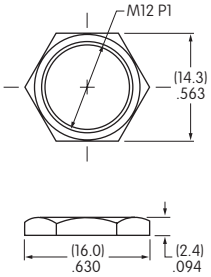
AT509
Lockwasher
Steel with Zinc/Chromate
(not supplied with splashproof models)



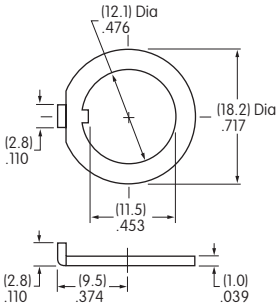
AT516
O-ring for
Splashproof Models
Nitrile Butadiene Rubber



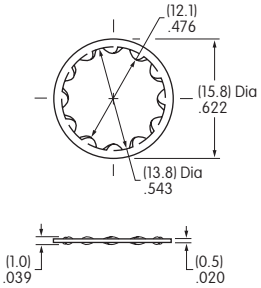
AT503M
Hex Face Nut
Brass/Chrome



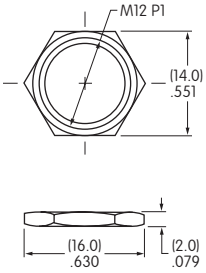
AT506M
Locking Ring
Steel with Zinc/Chromate



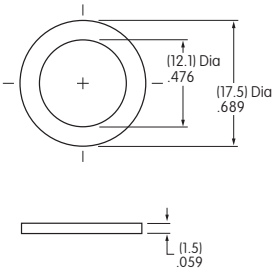
AT508
Lockwasher
Steel with Zinc/Chromate
(not supplied with splashproof models)



AT527M
Hex Nut
Steel with
Nickel Plating



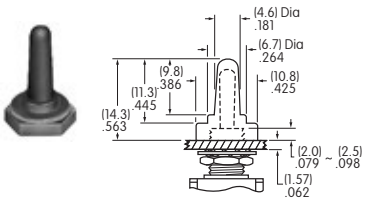
AT401P
O-ring for Splashproof Models
Nitrile butadiene rubber



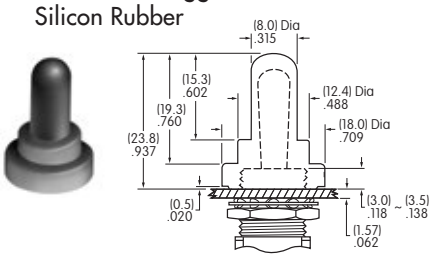
OPTIONAL SPLASHPROOF BOOTS

Various optional nuts and ON-OFF plates are available; dimensions are shown in the Accessories & Hardware section.

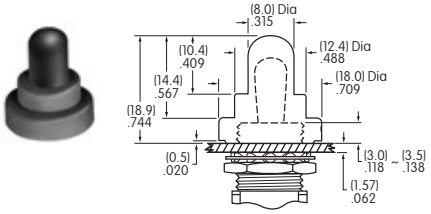
AT428 (M-metric H-Inch)
.445" (11.3mm)
Boot for S Toggle
Silicon Rubber



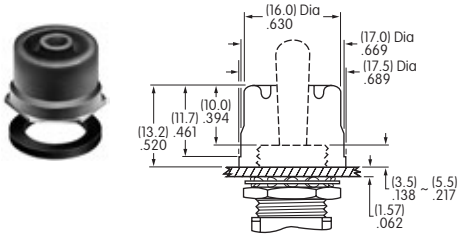
AT402
.760" (19.3mm)
Boot for B2 Toggle
Silicon Rubber



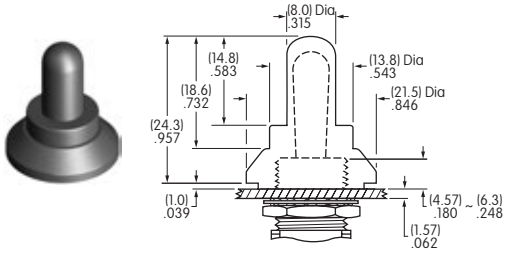
AT402S
.567" (14.4mm)
Boot for B Toggle
Silicon Rubber



AT401A/H/S
.461" (11.7mm)
Boot, Nut and O-ring for B2 Toggle
More details in Accessories section



AT4181
.732" (18.6mm)
Boot, Nut and O-ring for B2 Toggle
More details in Accessories section



Series M

Bracket PC Mount Miniature Toggles

TYPICAL SWITCH

M N 2 2 S S2

Poles

1	SPDT
2	DPDT

Small Toggles

S	.415″ (10.5mm) Bat
S3	.256″ (6.5mm) Bat
E	.450″ (11.4mm) Flatted

Toggle dimensions are based on use with a .350″ (8.9mm) bushing; add .070″ (1.78mm) to toggle length when combining with a .280″ (7.1mm) bushing

Small Bushings

A2	.280" (7.1mm) Smooth with Keyway
S2	.350″ (8.9mm) Smooth with Keyway

Circuits

2	ON	NONE	ON
3	ON	OFF	ON
5	ON	NONE	(ON)
8	(ON)	OFF	(ON)
*4	ON	ON	ON

NONE = No Position

( ) = Momentary

*3-ON Circuit Combines with S2 & L2 Bushings Only

Locking Lever

L	.201″ (5.1mm) Dia. Locking Lever

Bushing For Locking Levers

L2	.275″ (7.0mm) Smooth with Keyway

ORDERING EXAMPLE

G — 13 — B — C

Contact Materials & Ratings

W	Silver; Rated 2 ~ 6A @ 125V AC & 2 ~ 3A @ 250V AC
G	Gold; Rated 0.4VA max @ 28V AC/DC max

Terminals

13	.250″ (6.35mm) Straight PC with .465″ (11.8mm) Bracket

Optional Caps

B	For S Bat Toggle
C	Conical Cap for S Bat Toggle

Cap for Locking Lever

No Code	Nickel Plated Supplied with Switch
A	Black
C	Red
G	Blue

Cap Colors

A	Black
B	White
C	Red
E	Yellow
F	Green
G	Blue

DESCRIPTION FOR TYPICAL ORDERING EXAMPLE

MN22SS2G13-BC

Red Cap on .413″ (10.5mm) Bat Toggle

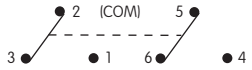
.350″ (8.9mm) Smooth Bushing with Keyway

DPDT ON-NONE-ON Circuit

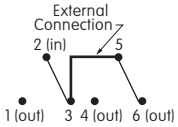
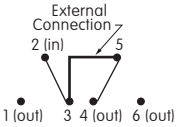
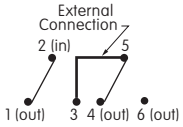
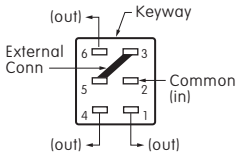
Gold Contacts with 0.4VA Rating

.250″ (6.35mm) Straight PC Terminals with Bracket .465″ (11.8mm) Long

POLES & CIRCUITS

Pole	Model	Toggle Position (NONE = No Position ( ) = Momentary) Down	Center	Up	Connected Terminals Down	Center	Up	Throw & Schematics
		Keyway			Keyway			Note: Terminal numbers are not actually on the switch.
SP	**MN12** **MN13** **MN15** **MN18**	ON ON ON (ON)	NONE OFF NONE OFF	ON ON (ON) (ON)	2-3	OPEN	2-1	SPDT 
DP	**MN22** **MN23** **MN25** **MN28**	ON ON ON (ON)	NONE OFF NONE OFF	ON ON (ON) (ON)	2-3 5-6	OPEN	2-1 5-4	DPDT 

For 3 Throw (3-On)

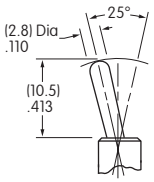
Pole	Model	Connected Terminals & Schematics Down	Center	Up	External Connection
SP	**MN24**	ON  2-3 5-6	ON  2-3 5-4	ON  2-1 5-4	**The SP3T model utilizes a double pole base.** External connection must be made during field installation. 

SMALL TOGGLES

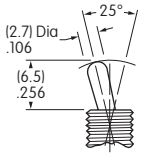
Important:
Toggle length changes based on bushing selected. All illustrations are shown with .350" (8.9mm) long bushing. When using a .280" (7.1mm) long bushing, toggle length increases .070" (1.78mm).

Standard Material & Finish:
Brass with Bright Chrome
Contact factory for optional finishes.

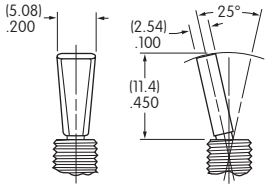
S **.413" (10.5mm) Bat**



S3 **.256" (6.5mm) Bat**

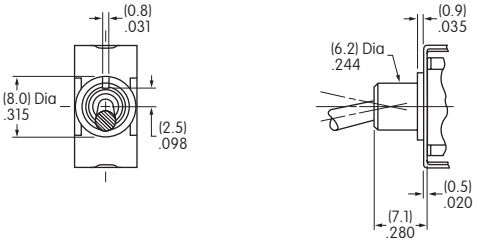


E **.450" (11.4mm) Flatted**



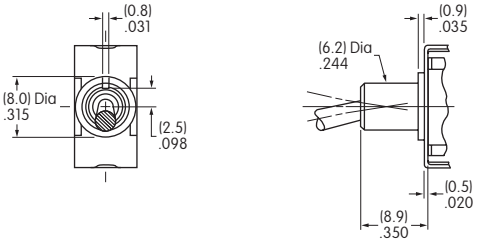
SMALL BUSHINGS

A2 **.280" (7.1mm) Smooth with Keyway**



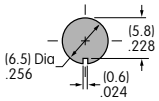
When using this bushing, toggle length is increased by .070" (1.78mm).

S2 **.350" (8.9mm) Smooth with Keyway**



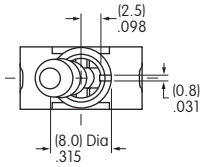
For A2 and S2 Bushings with Keyway

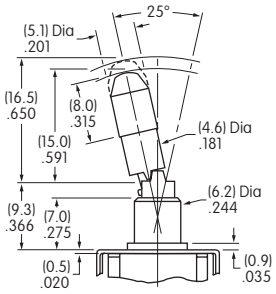
Panel Cutout



LOCKING LEVER & BUSHING

LL2 **Smooth with Keyway**

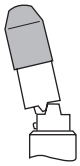




Locking Mechanism

2 positions lock | 1 position locks | 3 positions lock | 1 position locks

No Code **Cap for Locking Lever**



Supplied with Cap AT427
Material & Finish:
Brass with Nickel Plating

Lever Material & Finish:
Brass with Chrome Plating

Color Codes for Optional Anodized Aluminum Caps

A Black **C** Red

G Blue

CONTACT MATERIALS & RATINGS

W **Silver**
Power Levels

MN12, MN22: 6A @ 125V AC, 3A @ 250V AC, 4A @ 30V DC
MN13, MN15, MN18, MN23, MN25: 6A @ 125V AC, 3A @ 250V AC, 3A @ 30V DC
MN28: 4A @ 125V AC, 3A @ 250V AC, 3A @ 30V DC
MN24: 2A @ 125V AC, 2A @ 250V AC, 2A @ 30V DC

G **Gold** **Logic Level** **0.4VA maximum @ 28V AC/DC maximum**

Note: See Supplement section to find complete explanation of operating range.

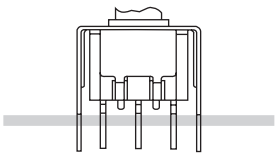
Gold over Silver **Power Level or Logic Level** **See above for each rating**

Note: This dual rated toggle is available as a custom option and suitable when two or more identical switches are used in logic and in power circuits within the same application. See Supplement section to find complete explanation of dual rating and operating range.

TERMINALS

Straight PC Mount with Bracket

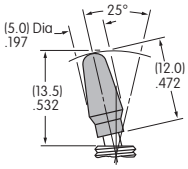
13 **.250" (6.35mm) Terminal with .465" (11.8mm) Bracket**



PCB footprints are on the following Typical Switch Dimension page.

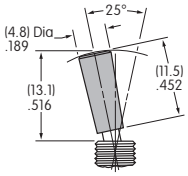
OPTIONAL CAPS & CAP COLORS

B *** AT415 for S Bat Toggle**



Material:
Polyethylene

C *** AT444 Conical Cap for S Bat Toggle**



Material:
Polyethylene

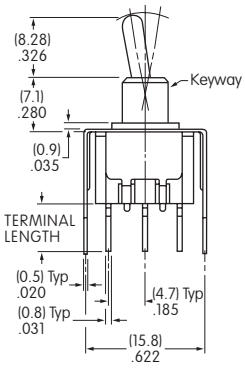
* AT415 and AT444 for use with S toggles only, not S3 toggles.

Cap Colors Available: **A** Black **B** White **C** Red **E** Yellow **F** Green **G** Blue

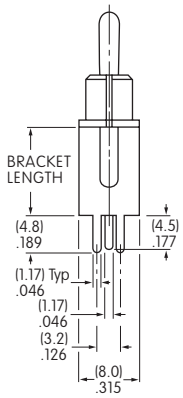
TYPICAL SWITCH DIMENSIONS

Straight PC • Bracket

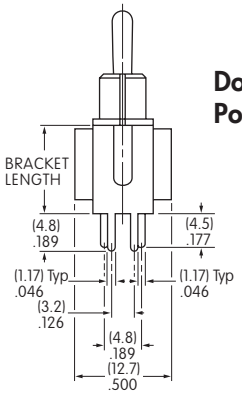
MN12S3A2G13



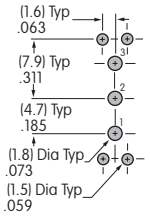
Single Pole

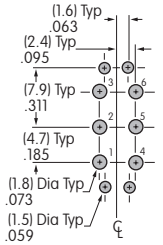


Double Pole



Terminal Code:	Terminal Length:	Bracket Length:
13	.250" (6.35mm)	.465" (11.8mm)

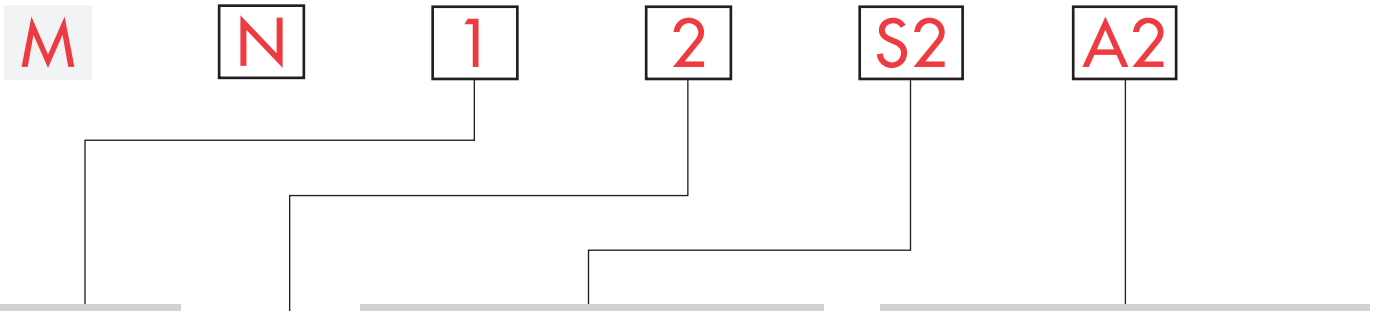




Series M

Angle PC Mount Miniature Toggles

TYPICAL SWITCH



Poles	
1	SPDT
2	DPDT

Small Toggles	
S	.413″ (10.5mm) Bat
S2	.200″ (5.08mm) Bat
S3	.256″ (6.5mm) Bat

Toggle dimensions are based on use with a .350″ (8.9mm) bushing; add .070″ (1.78mm) to toggle length when combining with a .280″ (7.1mm) bushing.

Small Bushings	
A2	.280″ (7.1mm) Smooth with Keyway
S2	.350″ (8.9mm) Smooth with Keyway

Circuits			
2	ON	NONE	ON
3	ON	OFF	ON
5	ON	NONE	(ON)
8	(ON)	OFF	(ON)
*4	ON	ON	ON

NONE = No Position

( ) = Momentary

*3-ON Circuit Combines with S2 & L2 Bushings Only

Locking Lever	
L	.201″ (5.1mm) Dia. Locking Lever

Bushing For Locking Levers	
L2	Smooth with Keyway for Lever Lock

ORDERING EXAMPLE

G 40 — □ □

Contact Materials & Ratings

W	Silver; Rated 2 ~ 6A @ 125V AC & 2 ~ 3A @ 250V AC
G	Gold; Rated 0.4VA max @ 28V AC/DC max

Terminals

30	.150″(3.81mm) Right Angle PC (1-2Pole)
40	.150″(3.81mm) Vertical PC (1-2Pole)
45	.100″(2.54mm) Vertical PC (1-2Pole)

Optional Caps

B	For S Bat Toggle
C	Conical Cap for S Bat Toggle

Cap for Locking Lever

No Code	Nickel Plated Supplied with Switch
A	Black
C	Red
G	Blue

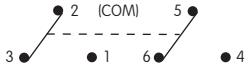
Cap Colors

A	Black
B	White
C	Red
E	Yellow
F	Green
G	Blue

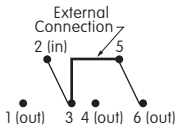
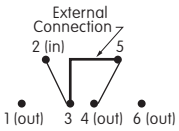
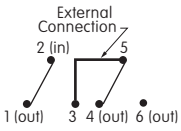
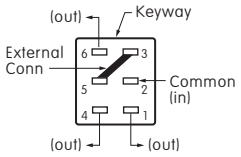
DESCRIPTION FOR TYPICAL ORDERING EXAMPLE

MN12S2A2G40

POLES & CIRCUITS

Pole	Model	Toggle Position (NONE = No Postion ( ) = Momentary) Down	Center	Up	Connected Terminals Down	Center	Up	Throw & Schematics
		Keyway			Keyway			Note: Terminal numbers are not actually on the switch. * Reverse circuits available for vertical mount SP & DP upon request.
SP	**MN12** *** MN13** **MN15** *** MN18**	ON ON ON (ON)	NONE OFF NONE OFF	ON ON (ON) (ON)	2-3	OPEN	2-1	SPDT 
DP	**MN22** *** MN23** **MN25** *** MN28**	ON ON ON (ON)	NONE OFF NONE OFF	ON ON (ON) (ON)	2-3 5-6	OPEN	2-1 5-4	DPDT 

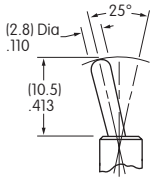
For 3 Throw (3-On)

Pole	Model	Connected Terminals & Schematics Down	Center	Up	External Connection
SP	**MN24**	ON  2-3 5-6	ON  2-3 5-4	ON  2-1 5-4	**The SP3T model utilizes a double pole base.** External connection must be made during field installation. 

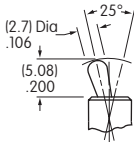
SMALL TOGGLES

Important:
Toggle length changes based on bushing selected. All illustrations are shown with.350" (8.9mm) long bushing. When using a .280" (7.1mm) long bushing, toggle length increases .070" (1.78mm).

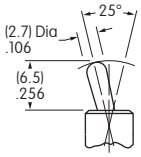
S **.413" (10.5mm) Bat**



S2 **.200" (5.08mm) Bat**



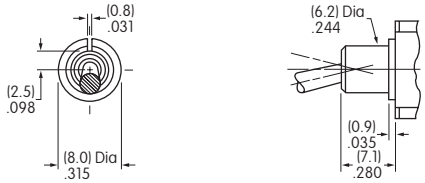
S3 **.256" (6.5mm) Bat**



Standard Material & Finish: Brass with Bright Chrome
Contact factory for optional finishes.

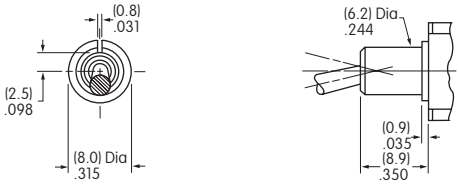
SMALL BUSHINGS

A2 **.280" (7.1mm) Smooth with Keyway**



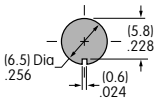
When using this bushing, toggle length is increased by .070" (1.78mm).

S2 **.350" (8.9mm) Smooth with Keyway**



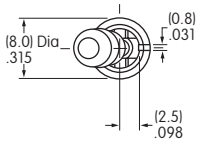
For A2 or S2 Bushing with Keyway

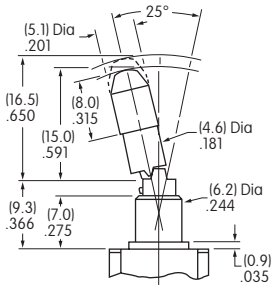
Panel Cutout



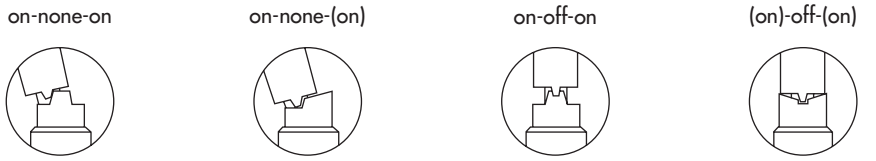
LOCKING LEVER & BUSHING

LL2 **Smooth with Keyway**

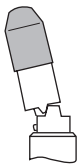




Locking Mechanism



No Code **Cap for Locking Lever**



Supplied with Cap AT427
Material & Finish:
Brass with Nickel Plating

Lever Material & Finish:
Brass with Chrome Plating

Color Codes for Optional Anodized Aluminum Caps

A Black
C Red
G Blue

CONTACT MATERIALS & RATINGS

W **Silver**
Power Levels

MN12, MN22: 6A @ 125V AC, 3A @ 250V AC, 4A @ 30V DC
MN13, MN15, MN18, MN23, MN25: 6A @ 125V AC, 3A @ 250V AC, 3A @ 30V DC
MN28: 4A @ 125V AC, 3A @ 250V AC, 3A @ 30V DC
MN24: 2A @ 125V AC, 2A @ 250V AC, 2A @ 30V DC

G **Gold** **Logic Level** **0.4VA maximum @ 28V AC/DC maximum**

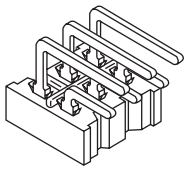
Note: See Supplement section to find complete explanation of operating range.

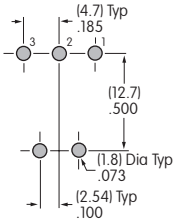
Gold over Silver **Power Level or Logic Level** **See above for each ratings**

Note: This dual rated toggle is available as a custom option and suitable when two or more identical switches are used in logic and in power circuits within the same application. See Supplement section to find complete explanation of dual rating and operating range.

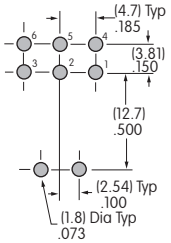
TERMINALS

30 .150" (3.81mm) Right Angle PC (1-2 Pole)



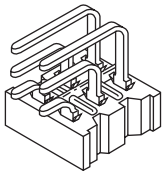


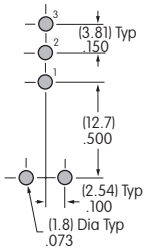
Single Pole



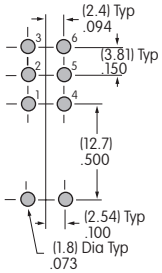
Double Pole

40 .150" (3.81mm) Vertical PC (1-2 Pole)



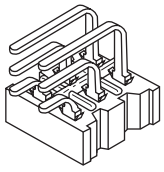


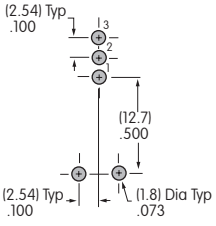
Single Pole



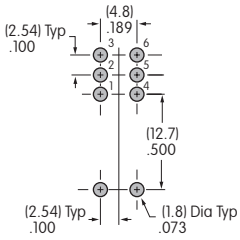
Double Pole

45 .100" (2.54mm) Vertical PC (1-2 Pole)





Single Pole



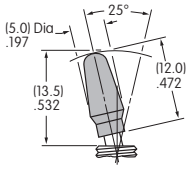
Double Pole

Terminal dimensions are shown on the Typical Switch Dimensions pages which follow.

OPTIONAL CAPS & CAP COLORS

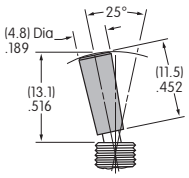
B * AT415 for S Bat Toggle

Material: Polyethylene



C * AT444 Conical Cap for S Bat Toggle

Material: Polyethylene



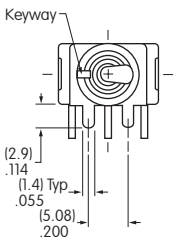
Colors Available

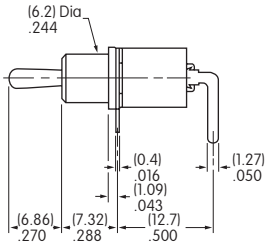
- A Black
- B White
- C Red
- E Yellow
- F Green
- G Blue

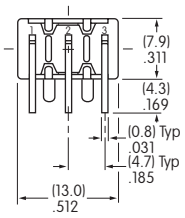
* AT415 and AT444 for use with S toggles only, not S2 or S3 toggles.

TYPICAL SWITCH DIMENSIONS

Single Pole — .150" (3.81mm) Right Angle PC

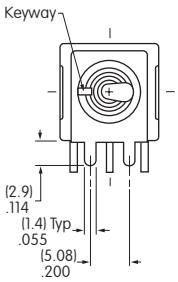


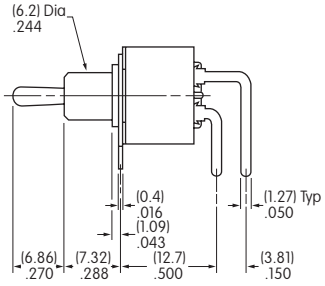


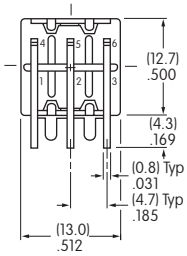


MN12S2A2W30

Double Pole — .150" (3.81mm) Right Angle PC

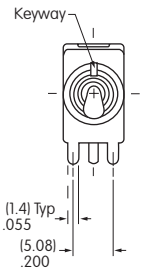


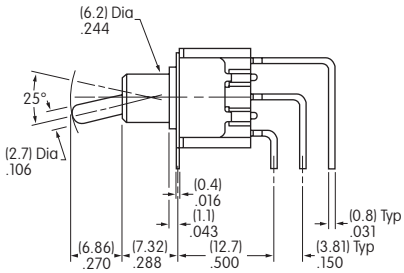


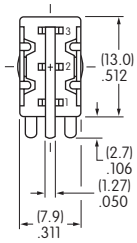


MN22S2A2G30

Single Pole — .150" (3.81mm) Verticsl PC



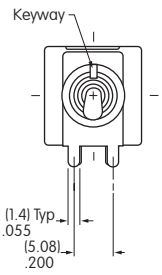


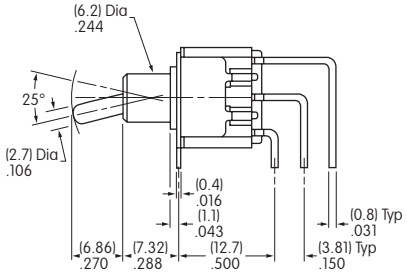


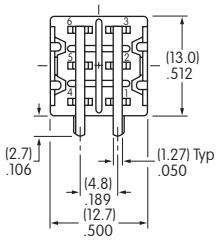
MN12S2A2G40

TYPICAL SWITCH DIMENSIONS

.150" (3.81mm) Vertical PC — Double Pole

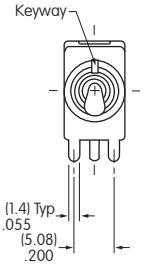


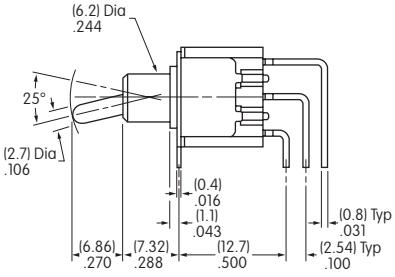


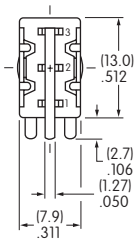


MN22S2A2G40

.100" (2.54mm) Vertical PC — Single Pole

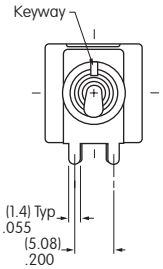


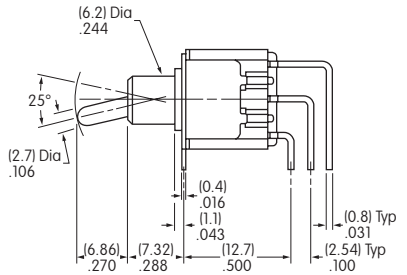


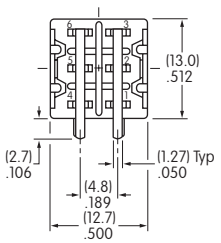


MN12S2A2G45

.100" (2.54mm) Vertical PC — Double Pole







MN22S2A2G45

General Specifications

Electrical Capacity (Resistive Load)

Power Level (silver): 6A @ 125V AC or 3A @ 250V AC or 3A @ 30V DC
Logic Level (gold): 0.4VA maximum @ 28V AC/DC maximum
(Applicable Range 0.1mA ~ 0.1A @ 20mV ~ 28V)
Note: Find additional explanation of operating range in Supplement section.

Other Ratings

Contact Resistance: 10 milliohms maximum for silver; 20 milliohms maximum for gold
Insulation Resistance: 1,000 megohms minimum @ 500V DC
Dielectric Strength: 1,000V AC minimum between contacts for 1 minute minimum;
1,500V AC minimum between contacts & case for 1 minute minimum
Mechanical Life: 50,000 operations minimum
Electrical Life: 25,000 operations minimum
Nominal Operating Force:

	On-to-On Position	Off-to-On Position
Single Pole	3.19N	3.92N
Double Pole	4.41N	7.06N

Angle of Throw: 20°

Materials & Finishes

Bushing: Brass with nickel plating
Housing: Stainless steel
Mounting Bracket: Steel with tin plating
Movable Contacts: Silver alloy or copper alloy with gold plating
Stationary Contacts: Silver alloy with silver plating or copper or brass with gold plating
Lamp Contacts: Phosphor bronze
Base: Diallyl phthalate resin (UL94V-0)
Switch Terminals: Brass or copper with silver or gold plating
Lamp Terminals: Brass or copper with silver or gold plating

Environmental Data

Operating Temp Range: –10°C through +55°C (+14°F through +131°F)
Humidity: 90 ~ 95% humidity for 240 hours @ 40°C (104°F)
Vibration: 10 ~ 55Hz with peak-to-peak amplitude of 1.5mm traversing the frequency range & returning in 1 minute; 3 right angled directions for 2 hours
Shock: 500 m/s^2 acceleration (tested in 6 right angled directions, with 5 shocks in each direction)

Installation

Mounting Torque: 1.47Nm (13 lb•in) for double nut; .67Nm (6 lb•in) for single nut
Soldering Time & Temp: Wave Soldering (PC version): See Profile B in Supplement section.
Manual Soldering: See Profile B in Supplement section.
Note: Lever must be in center position while soldering.
Cleaning: These devices are not process sealed. Hand clean locally using alcohol based solution.

Standards & Certifications

Flammability Standards: UL94V-0 base

Distinctive Characteristics

Industry's first LED illumination at tip of toggle switches.

Single color LEDs of red, yellow, and green, plus bicolor red/green, to meet varied design requirements.

LEDs can operate independently from or synchronously with switching operation.

Antijamming feature to protect contacts from damage due to excessive downward force on the toggle.

High torque bushing prevents the bushing from rotating or separating from the metal frame during installation.

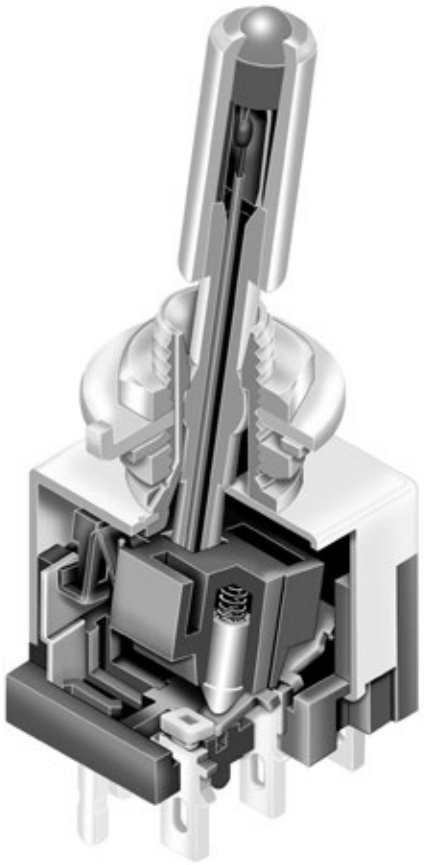
Stainless steel frame resists corrosion.

Silver contacts are of specially composed alloy for hardness.

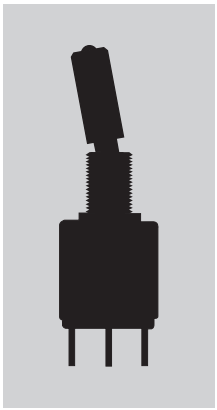
High insulating barriers protect against crossover in double pole devices.

Terminals are molded in and epoxy sealed to lock out flux, dust, and other contaminants.

1,500V dielectric strength between switch contacts and case is accomplished by clinching the frame away from the terminals.



Actual Size



TYPICAL SWITCH ORDERING EXAMPLE

M	NL	1	2	T	C	W	01	

Poles

1	SPDT
2	DPDT

Circuits

2	ON	NONE	ON
3	ON	OFF	ON

NONE = No Position

LED Circuits & Actuator Types

L	Isolated
T	Synchronous

LED Colors

Single Color	
C	Red
E	Yellow
F	Green
Bicolor	
CF	Red/Green

Contact Materials & Ratings

W	Silver; Rated 6A @ 125V AC
G	Gold; Rated 0.4VA max @ 28V AC/DC max

Terminals & Mounting Types

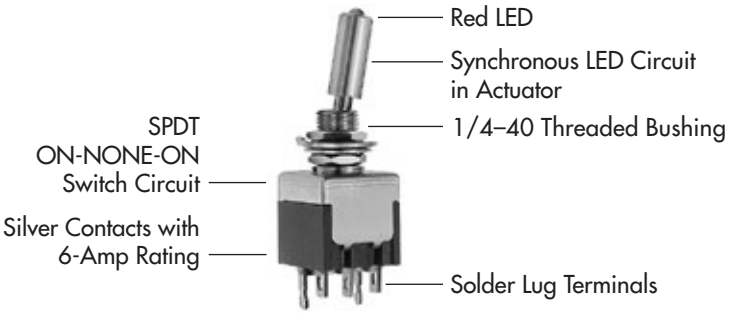
01	Solder Lug with Threaded Bushing

Threaded Bushings

No Code	1/4–40 Thread (Inch)
/M	6mm Thread (Metric)

DESCRIPTION FOR TYPICAL ORDERING EXAMPLE

MNL12TCW01



POLES & CIRCUITS & LED ILLUMINATION

Model	Pole & Throw	Toggle Position & Terminal Numbers (NONE = No Position) Down	Center	Up	Schematics
		Keyway			Notes: Terminal numbers are not actually on the switch. LEDs require an external power source.
MNL12	**SPDT**	ON	NONE	ON	Isolated Single Color LED
Connected Power Terminals		2-3	NONE	2-1	
LED Circuit	**Isolated LEDs** (see schematics) Connected LED Terminals	ON 4-6	NONE NONE	ON 4-6	
LED Circuit	**Synchronous Single Color LED** Connected LED Terminals	ON 4-6	NONE NONE	OFF OPEN	Isolated Bicolor LED
LED Circuit	**Synchronous Bicolor LED** Connected LED Terminals	Red 5-6	NONE NONE	Green 5-4	
MNL13	**SPDT**	ON	OFF	ON	Synchronous Single Color LED
Connected Power Terminals		2-3	OPEN	2-1	
LED Circuit	**Isolated LEDs** (see schematics) Connected LED Terminals	ON 4-6	ON 4-6	ON 4-6	
LED Circuit	**Synchronous Single Color LED** Connected LED Terminals	ON 4-6	OFF OPEN	ON 4-6	Synchronous Bicolor LED
LED Circuit	**Synchronous Bicolor LED** Connected LED Terminals	Red 5-6	OFF OPEN	Green 5-4	
MNL22	**DPDT**	ON	NONE	ON	Isolated Single Color LED
Connected Power Terminals		2-3 5-6	NONE	2-1 5-4	
LED Circuit	**Isolated LEDs** (see schematics) Connected LED Terminals	ON 7-9	NONE NONE	ON 7-9	
LED Circuit	**Synchronous Single Color LED** Connected LED Terminals	ON 7-9	NONE NONE	OFF OPEN	Isolated Bicolor LED
LED Circuit	**Synchronous Bicolor LED** Connected LED Terminals	Red 8-9	NONE NONE	Green 8-7	
MNL23	**DPDT**	ON	OFF	ON	Synchronous Single Color LED
Connected Power Terminals		2-3 5-6	OPEN	2-1 5-4	
LED Circuit	**Isolated LEDs** (see schematics) Connected LED Terminals	ON 7-9	ON 7-9	ON 7-9	
LED Circuit	**Synchronous Single Color LED** Connected LED Terminals	ON 7-9	OFF OPEN	ON 7-9	Synchronous Bicolor LED
LED Circuit	**Synchronous Bicolor LED** Connected LED Terminals	Red 8-9	OFF OPEN	Green 8-7	

LED COLORS & SPECIFICATIONS

The electrical specifications shown are determined at a basic temperature of 25°C. LED circuit is isolated and requires an external power source. If the source voltage exceeds the rated voltage, a ballast resistor is required. The resistor value can be calculated by using the formula in Supplement Section.

The LED is an integral part of the switch and not available separately. Bicolor LED is translucent white when unlit.	Color	Single Color			Bicolor	
		C	E	F	CF	
		Red	Yellow	Green	Red/Green	Units
Maximum Forward Current	I_{FM}	30	30	30	25	mA
Typical Forward Current	I_F	20	20	20	10	mA
Forward Voltage	V_F	2.2	2.1	2.2	1.7/2.0	V
Maximum Reverse Voltage	V_{RM}	4	4	4	—	V
Current Reduction Rate Above 25°C	ΔI_F	0.38	0.38	0.38	0.33/0.33	mA/°C
Ambient Temperature Range		–10° ~ +55°C				

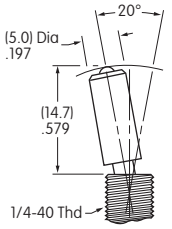
LED CIRCUIT, TOGGLE, & MOUNTING TYPE COMBINATIONS

L **Toggle with Isolated LED Circuit**

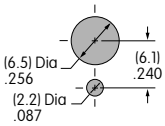
T **Toggle with Synchronous LED Circuit**

Finish: Brushed aluminum

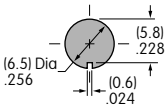
Standard Hardware: 2 AT513H Hex Nuts, 1 AT507H Locking Ring, 1 AT509 Lockwasher Standard & optional hardware details in Accessories & Hardware section.



Threaded Bushing combines with Terminal code 01.



Max. Panel Thickness with Standard Hardware .102" (2.6mm)

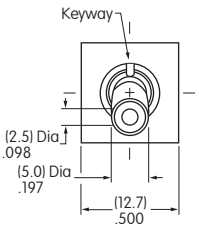


Max. Panel Thickness without Locking Ring .134" (3.4mm)

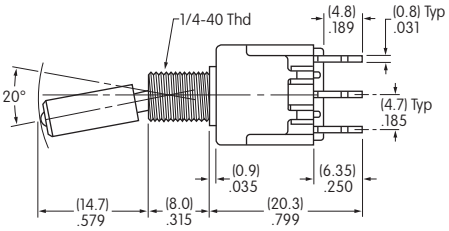
TYPICAL SWITCH DIMENSIONS

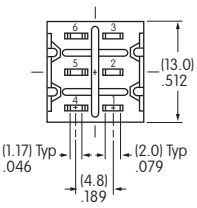
Solder Lug

MNL12TCFW01



Single Pole

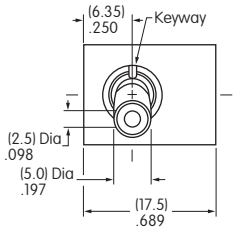


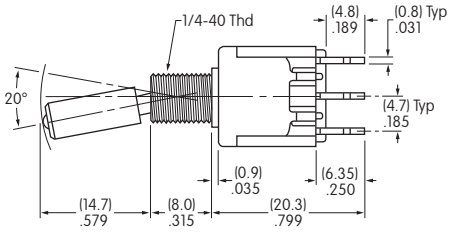


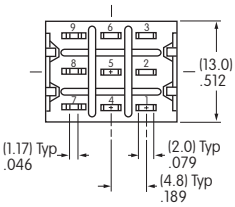
Single color LED switch does not have terminal 5.

TYPICAL SWITCH DIMENSIONS

Double Pole







Solder Lug

Single color LED switch does not have terminal 8.

MNL22TCFW01

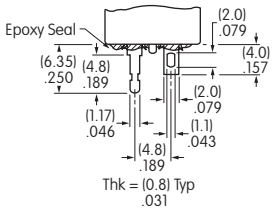
CONTACT MATERIALS & RATINGS

W	**Silver**	**Power Level**	**6A @ 125V AC & 3A @ 250V AC**
G	**Gold**	**Logic Level**	**0.4VA maximum @ 28V AC/DC maximum**

Complete explanation of operating range in Supplement section.

TERMINALS

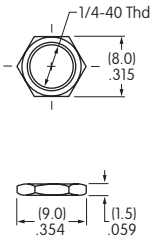
01 **Solder Lug with Turret LED Terminal**



STANDARD MOUNTING HARDWARE

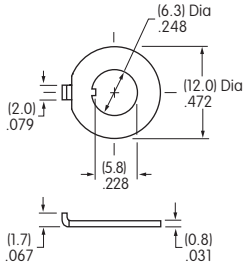
AT513H Hexagon Nut
(2 per switch)

Material:
Brass with nickel plating



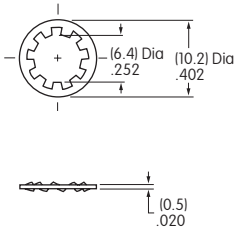
AT507H Locking Ring
(1 per switch)

Material:
Steel with chromate over zinc



AT509 Lockwasher
(1 per switch)

Material:
Steel with chromate over zinc



Optional Hardware: Knurled nuts, dress nuts, and ON-OFF plates are available; see details in Accessories & Hardware section.

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

NKK Switches:

MN22LL2W13 MN22S3S4W01 MN24SS4W01-BB MN28SS4G03 MN32SS1G03 MN33BB1W01 MN12SD8W01 MN18WBG01