Distinctive Characteristics

Guide interlocked with actuator block prevents window locking and maintains correct plunger alignment to assure contact stability.

Employs an over-center actuator mechanism, which diminishes sparking and increases operating life in AC circuits.

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

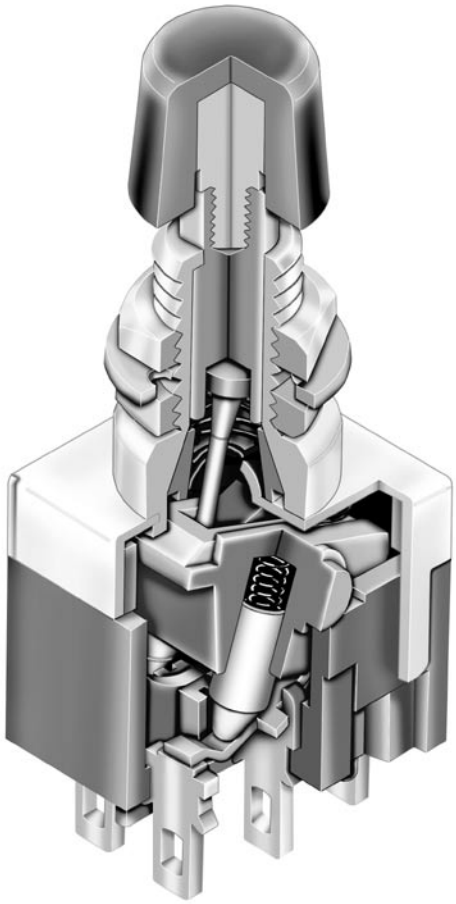
Splashproof option (D3 and B3 bushing codes) features an o-ring within the bushing and one under the face nut to protect from splashed, sprayed, or spilled liquids.

High insulating barriers, formed in the molded diallyl phthalate case, increase isolation of circuits in multipole devices.

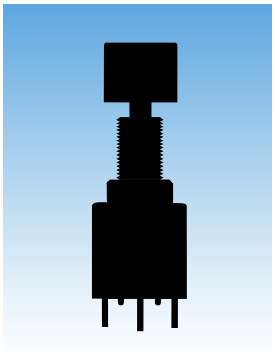
Prominent external insulating barriers increase insulation resistance and dielectric strength.

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

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



Actual Size



General Specifications

Electrical Capacity (Resistive Load)

Power Level (code W): 6A @ 125V AC & 3A @ 250V AC or 3A @ 30V DC
Logic Level (code G): 0.4VA maximum @ 28V AC/DC maximum (Applicable Range 0.1mA ~ 0.1A @ 20mV ~ 28V)
Logic/Power Level (code A): Combines W & G ratings
Note: Find additional explanation dual rating & 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 for splashproof models; 100,000 for all other models
Electrical Life: 25,000 operations minimum for silver; 50,000 operations minimum for gold
50,000 operations minimum for silver at 3A @ 125V AC
Nominal Operating Force: Momentary Action: 1-pole 9.32N; 2-pole 16.18N; 4-pole 25.54N;
Alternate Action: 1-pole 4.41N; 2-pole 7.06N; 4-pole 11.77N
Contact Timing: Slow make, slow break

Plunger Travel:	Screw-on Cap (Mom.)	Screw-on Cap (Alt.)	Snap-on Cap (Mom. & Alt.)
Pretravel:	.028" (0.71mm)	.110" (2.80mm)	.125" (3.19mm)
Overtravel:	.043" (1.09mm)	.043" (1.10mm)	.050" (1.26mm)
Total Travel	.071" (1.80mm)	.153" (3.90mm)	.175" (4.45mm)

Materials & Finishes

Plunger: Brass w/nickel plating; polyacetal w/B1 bushing
Frame: Stainless steel
Bushing: Brass with nickel plating
Case: Diallyl phthalate resin (UL94V-0)
Movable Contactor: Phosphor bronze with silver or gold plating
Movable Contacts: Silver alloy (code W); copper with gold plating (code G); or silver alloy with gold plating (code A)
Stationary Contacts: Silver with silver plating (code W); copper or brass with gold plating (code G); or
silver with gold plating (code A)
Terminals: Copper or brass with silver plating; copper or brass with gold plating

Environmental Data

Operating Temp Range: –30°C through +85°C (–22°F through +185°F)
Humidity: 90 ~ 95% humidity for 96 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: 50G (490m/s^2) acceleration (tested in 6 right angled directions, with 5 shocks in each direction)
Sealing: B3 & D3 bushing options equivalent to IP67

Installation

Mounting Torque: 1.5Nm (13.0 lb•in) for double nut; .7Nm (6.0 lb•in) for single nut
Cap Installation Force: 80.0N (18.0 lbf) maximum downward force on actuator
Soldering Time & Temp: Wave Soldering (PC version): See Profile A in Supplement section.
Manual Soldering: See Profile A in Supplement section.
Process Seal: These devices are not process sealed. Hand clean locally using alcohol based solution.

Standards & Certifications

Flammability Standards: UL94V-0 case
UL & C-UL Recognized: All models recognized at 6A @ 125V AC or 3A @ 250V AC or 0.4VA max. @ 28V DC max;
UL File No. WOYR2.E44145; add "/U" to end of part number to order UL mark on switch
C-UL File No. WOYR8.E44145; add "/C-UL" to end of part number to order C-UL mark on switch
CSA Certified: All models certified at 6A @ 125V AC or 3A @ 250V AC or 0.4VA max. @ 28V max;
CSA File No. 023535-0-000; add "/C" to end of part number to order CSA mark on switch.

TYPICAL SWITCH ORDERING EXAMPLE

MB | 2011 | S | S1 | W | 01 | – | C | A

POLES & CIRCUITS

2011	SPDT	ON	(ON)
2065	SPDT	ON	ON
2061	DPDT	ON	(ON)
2085	DPDT	ON	ON
2181	4PDT	ON	(ON)
2185	4PDT	ON	ON

( ) = Momentary

PLUNGER TYPES

S	Plunger for Screw-on Caps
L	Plunger for Snap-on Caps

CONTACT MATERIALS & RATINGS

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

BUSHINGS

S1	.335" (8.5mm) Threaded with Keyway
S2	.335" (8.5mm) Smooth with Keyway
S4	.335" (8.5mm) Metric Threaded with Keyway
D1	.335" (8.5mm) Threaded with D-Flat
D3	.335" (8.5mm) Threaded Splashproof without Keyway

CAPS

B	.315" (8.0mm) Dia.
C	.394" (10.0mm) Dia.

CAP COLORS

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

TERMINALS

01	Solder Lug
02	Quick Connect
03	.250" (6.35mm) Straight PC
05	.425" (10.8mm) Wirewrap
06	.750" (19.05mm) Wirewrap
07	.964" (24.5mm) Wirewrap
08	1.062" (27.0mm) Wirewrap

IMPORTANT:

Switches are supplied without UL, C-UL, & CSA markings unless specified. Specific models & ratings noted on General Specifications page.

DESCRIPTION FOR TYPICAL ORDERING EXAMPLE

MB2011SS1W01-CA

Black .394" (10.0mm) Diameter Cap

SPDT ON-(ON) Circuit

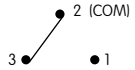
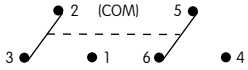
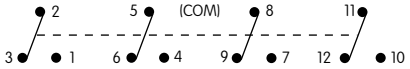
Silver Contacts with 6-Amp Rating

Plunger for Screw-on Caps

.335" (8.5mm) Threaded Bushing with Keyway

Solder Lug Terminals

POLES & CIRCUITS

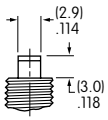
Pole	Model	Plunger Position ( ) = Momentary: Normal (Keyway)	Plunger Position ( ) = Momentary: Down	Connected Terminals: Normal (Keyway)	Connected Terminals: Down	Throw & Switch Schematics
SP	MB2011	ON	(ON)	2-3	2-1	SPDT 
	MB2065	ON	ON			
DP	MB2061	ON	(ON)	2-3 5-6	2-1 5-4	DPDT 
	MB2085	ON	ON			
4P	MB2181	ON	(ON)	2-3 5-6 8-9 11-12	2-1 5-4 8-7 11-10	4PDT 
	MB2185	ON	ON			

Note: Terminal numbers are not actually on the switch.

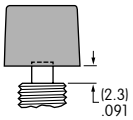
PLUNGER TYPES

On alternate action models, after transferring circuit, the plunger returns to its original position and does not latch down.

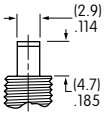
S **Plunger for Screw-on Caps**



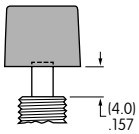
Momentary Plunger Length



Momentary Cap Location

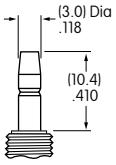


Alternate Plunger Length

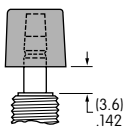


Alternate Cap Location

L **Plunger for Snap-on Caps**



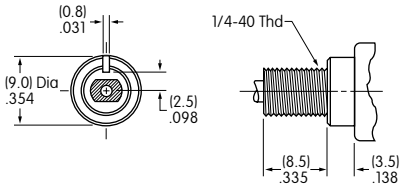
Momentary & Alternate Plunger Length



Momentary & Alternate Cap Location

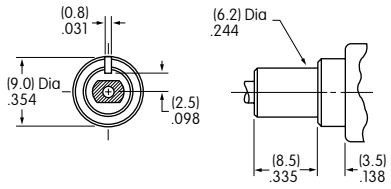
BUSHINGS

S1 **.335" (8.5mm) Threaded with Keyway**

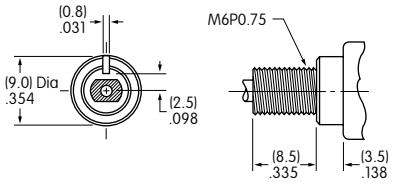


Maximum Panel Thickness with Standard Hardware: .154" (3.9mm)

S2 **.335" (8.5mm) Smooth with Keyway**

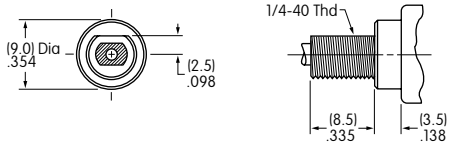


S4 **.335" (8.5mm) Metric Threaded with Keyway**



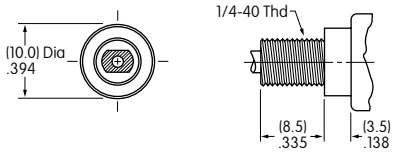
Maximum Panel Thickness with Standard Hardware: .154" (3.9mm)

D1 **.335" (8.5mm) Threaded with D Flat**



Maximum Panel Thickness with Standard Hardware: .154" (3.9mm)

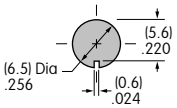
D3 **.335" (8.5mm) Threaded Splashproof without Keyway**



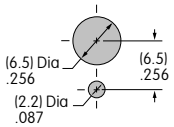
Maximum Panel Thickness with Standard Hardware: .240" (6.1mm)

Panel Cutouts

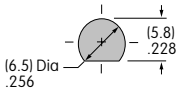
For S1, S2, or S4 Bushing with Keyway



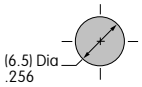
For S1 or S4 Bushing with Optional Locking Ring



For D1 Bushing with D Flat



For D3 Bushing without Keyway



Standard hardware for bushings S1, S4, & D1 includes 2 hex nuts & 1 lockwasher; D3 bushing has 1 hex nut & 1 o-ring. Standard & optional hardware are illustrated following the Typical Switch Dimension drawings.

CONTACT MATERIALS & RATINGS

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

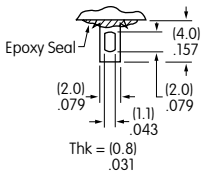
Note: Complete explanation of operating range in Supplement section.

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

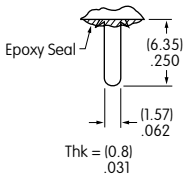
Note: This dual rated option is suitable when two or more identical switches are used in logic and in power circuits within the same application. See Supplement section for complete explanation of dual rating and operating range.

TERMINALS

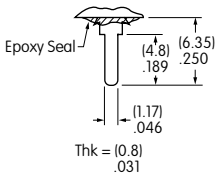
01 **Solder Lug**

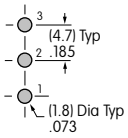


02 **.062" (1.57mm) Wide Quick Connect**

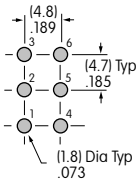


03 **.250" (6.35mm) Straight PC**

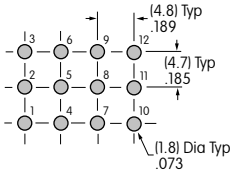




Single Pole



Double Pole



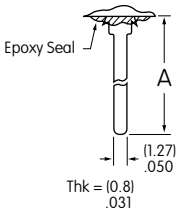
Four Pole

05 **.425" (10.8mm) Wirewrap or Extended PC**

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

07 **.964" (24.5mm) Wirewrap or Extended PC**

08 **1.062" (27.0mm) Wirewrap or Extended PC**



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

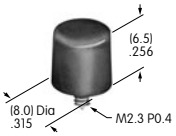
Dimension A = terminal lengths as shown beside the terminal codes at the left.

CAPS & CAP COLORS

B **AT413**
.315" (8.0mm) Dia.
Screw-on Cap

For use with Plunger Code S

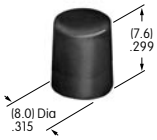
Cap Material: PBT
Finish: Glossy



AT443
.315" (8.0mm) Dia.
Snap-on Cap

For use with Plunger Code L

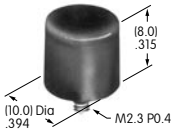
Cap Material: Polycarbonate
Finish: Glossy



C **AT407**
.394" (10.0mm) Dia.
Screw-on Cap

For use with Plunger Code S

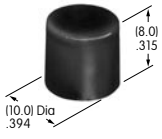
Cap Material: PBT
Finish: Glossy



AT442
.394" (10.0mm) Dia.
Snap-on Cap

For use with Plunger Code L

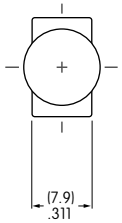
Cap Material: Polycarbonate
Finish: Glossy

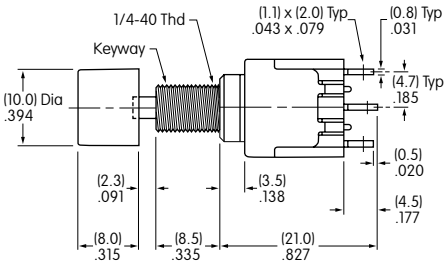


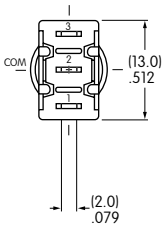
Cap Colors Available: **A** Black **B** White **C** Red **E** Yellow **F** Green **G** Blue **H** Gray

TYPICAL SWITCH DIMENSIONS

Solder Lug — Single Pole







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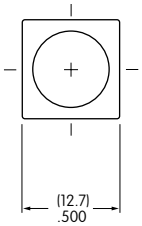
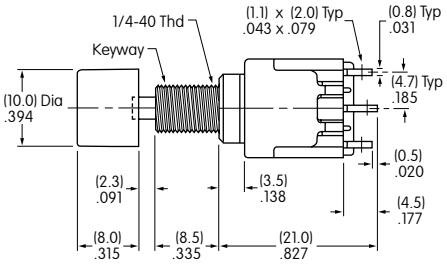
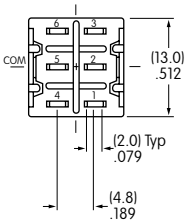
Solder Lug — Double Pole

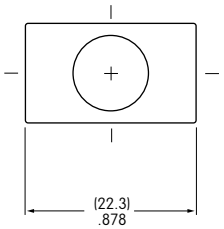


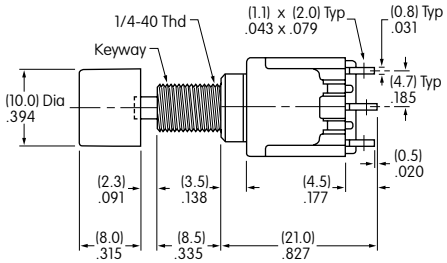


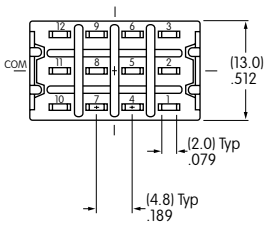


MB2061SS1W01-CA

Solder Lug — Four Pole







MB2181SS1W01-CA

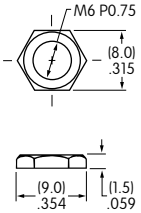
HARDWARE

Standard Hardware

AT513H for Inch
AT513M for Metric
Hexagon Nut

2 included with each switch
(1 with splashproof models)

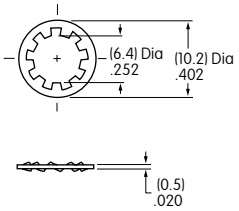
Material:
Brass with Nickel plating



AT509
Lockwasher

1 included with each switch
(not with splashproof models)

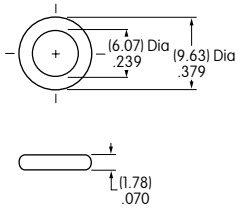
Material:
Steel with Zinc/Chromate



AT516
O-ring for
Splashproof Bushing

1 included with
each splashproof model

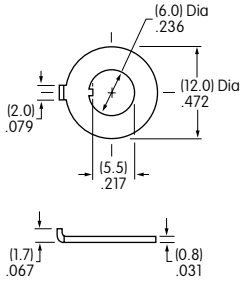
Material:
Nitrile butadiene rubber



Optional Hardware

AT507H for Inch
AT507M for Metric
Locking Ring

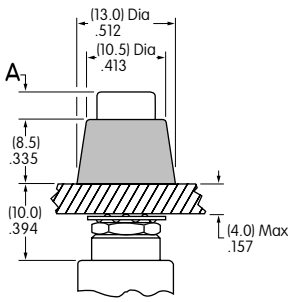
Material:
Steel with Zinc/Chromate



Optional Mounting Collars/Conical Nuts

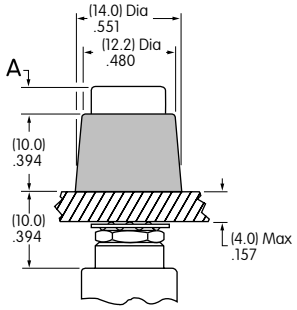
AT512H for Inch
AT512M for Metric
Conical Nut

Used with .315" (8.0mm) Dia. Cap (cap code B)
Material:
Brass with chrome plating



AT512CH for Inch
AT512CM for Metric
Conical nut

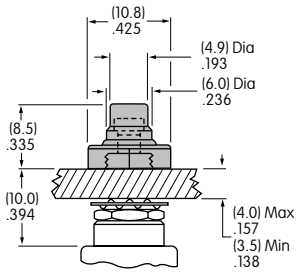
Used with .394" (10.0mm) Dia. Cap (cap code C)
Material:
Brass with chrome plating



Optional Splashproof Boots for S Plunger

AT4041H for Inch
AT4041M for Metric
Boot for Momentary

Material:
Silicone rubber

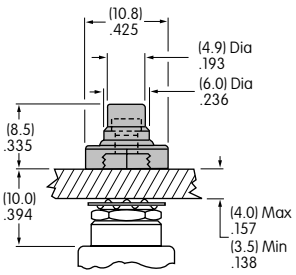


Operating Life 100,000

Boots for momentary devices are accompanied by a threaded adaptor which extends the length of the plunger.

AT4042H for Inch
AT4042M for Metric
Boot for Alternate

Material:
Silicone rubber



Operating Life 30,000

Dimension A = Cap Height

.091" (2.3mm) for Momentary with Plunger Code S
.157" (4.0mm) for Alternate with Plunger Code S
.142" (3.6mm) for Momentary & Alternate with Plunger Code L