

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.

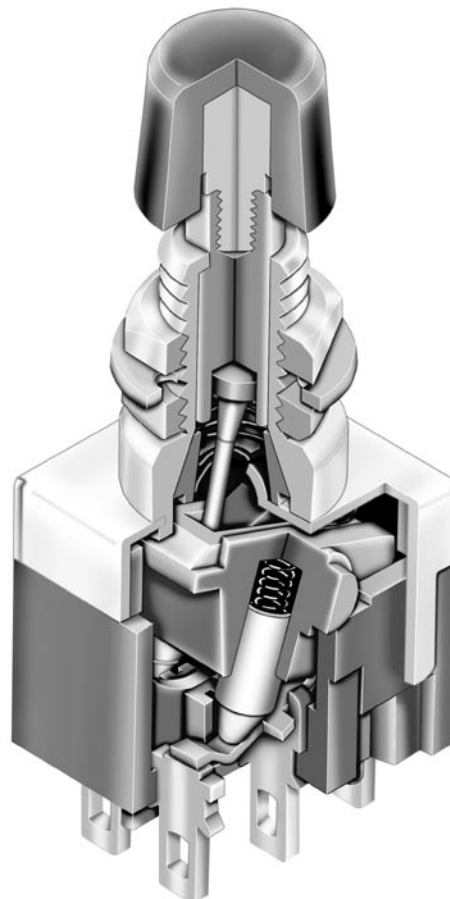
Splashproof option (D3 and B3 bushing codes) features an o-ring within the bushing and one under the face nut to protect from splashed, sprayed, or spilled liquids.

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

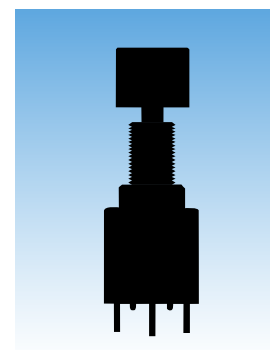
Prominent external insulating barriers increase insulation resistance and dielectric strength.

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	Bushing:	Brass with nickel plating
Frame:	Stainless steel	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

IMPORTANT:



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

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

DESCRIPTION FOR TYPICAL ORDERING EXAMPLE

MB2011SS1W01-CA

Black .394" (10.0mm) Diameter Cap

Plunger for Screw-on Caps

.335" (8.5mm) Threaded Bushing with Keyway

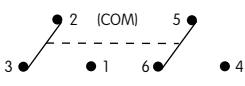
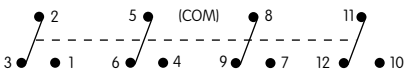
SPDT ON-(ON) Circuit

Silver Contacts with 6-Amp Rating

Solder Lug Terminals



POLES & CIRCUITS

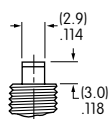
Pole	Model	Plunger Position () = Momentary		Connected Terminals		Throw & Switch Schematics
		Normal  Keyway	Down 	Normal  Keyway	Down 	
SP	MB2011	ON	(ON)	2-3	2-1	SPDT 
	MB2065	ON	ON			
DP	MB2061	ON	(ON)	2-3 5-6	2-1 5-4	DPDT 
	MB2085	ON	ON			
4P	MB2181	ON	(ON)	2-3 5-6 8-9 11-12	2-1 5-4 8-7 11-10	4PDT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

PLUNGER TYPES

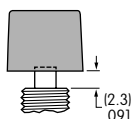
On alternate action models, after transferring circuit, the plunger returns to its original position and does not latch down.

S

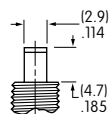
Plunger for Screw-on Caps



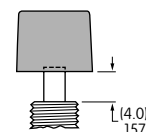
Momentary
Plunger Length



Momentary
Cap Location



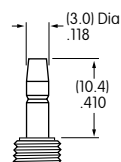
Alternate
Plunger Length



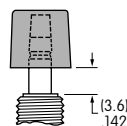
Alternate
Cap Location

L

Plunger for Snap-on Caps



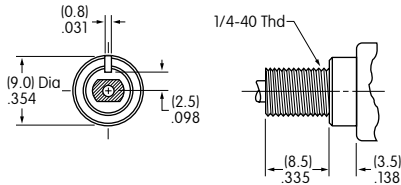
Momentary & Alternate
Plunger Length



Momentary & Alternate
Cap Location

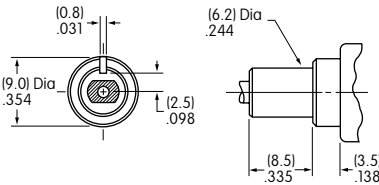
BUSHINGS

S1 .335" (8.5mm) Threaded with Keyway

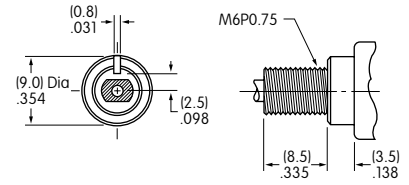


Maximum Panel Thickness with
Standard Hardware: .154" (3.9mm)

S2 .335" (8.5mm) Smooth with Keyway

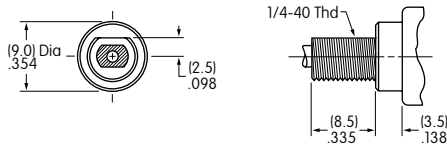


S4 .335" (8.5mm) Metric Threaded with Keyway



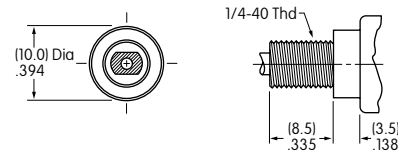
Maximum Panel Thickness with
Standard Hardware: .154" (3.9mm)

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



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

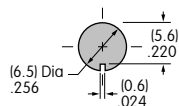
D3 .335" (8.5mm) Threaded Splashproof without Keyway



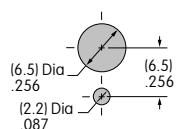
Maximum Panel Thickness with
Standard Hardware: .240" (6.1mm)

Panel Cutouts

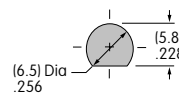
For S1, S2, or S4 Bushing with Keyway



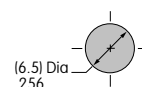
For S1 or S4 Bushing with Optional Locking Ring



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
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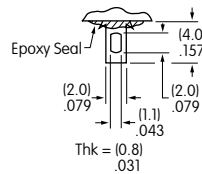
G	Gold over Brass or Copper	Logic Level	0.4VA maximum @ 28V AC/DC maximum
Note: Complete explanation of operating range in Supplement section.			

A	Gold over Silver	Power Level or Logic Level	6A @ 125V AC & 3A @ 250V AC or 0.4VA maximum @ 28V AC/DC maximum
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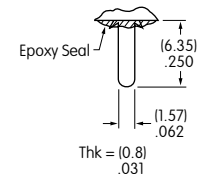
Note: This dual rated option is suitable when two or more identical switches are used in logic and in power circuits within the same application. See Supplement section for complete explanation of dual rating and operating range.

TERMINALS

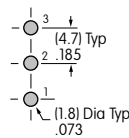
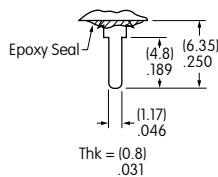
01 Solder Lug



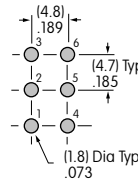
02 .062" (1.57mm) Wide Quick Connect



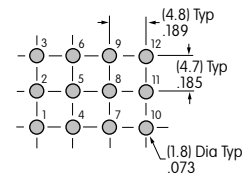
03 .250" (6.35mm) Straight PC



Single Pole



Double Pole



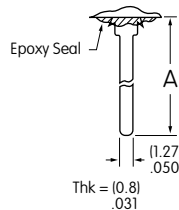
Four Pole

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.

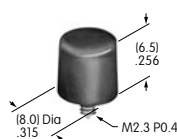
Dimension A = terminal lengths as shown beside the terminal codes at the left.

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

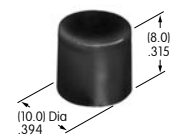
Cap Material: PBT
Finish: Glossy



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

For use with Plunger Code L

Cap Material: Polycarbonate
Finish: Glossy



Cap Colors Available:



Black



White



Red



Yellow



Green



Blue

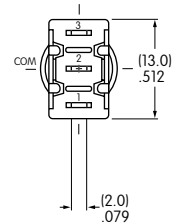
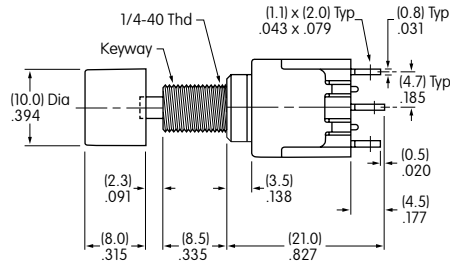
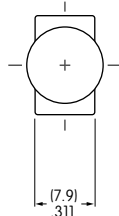


Gray

TYPICAL SWITCH DIMENSIONS

Solder Lug

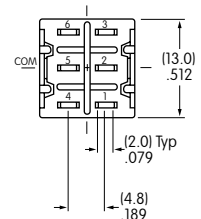
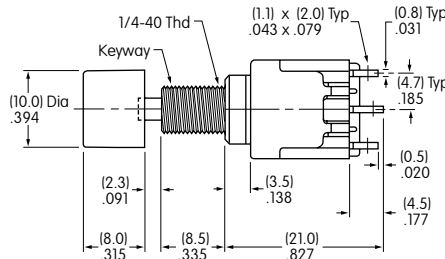
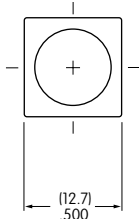
Single Pole



MB2011SS1W01-CA

Solder Lug

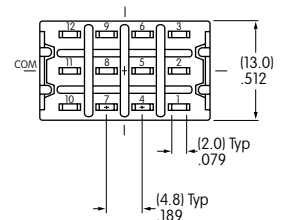
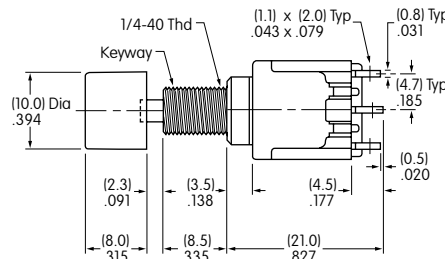
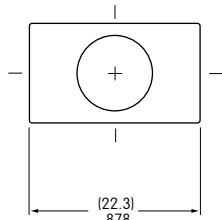
Double Pole



MB2061SS1W01-CA

Solder Lug

Four Pole



MB2181SS1W01-CA

HARDWARE

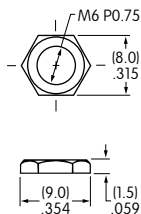
Standard Hardware

Optional Hardware

AT513H for Inch AT513M for Metric Hexagon Nut

2 included with each switch
(1 with splashproof models)

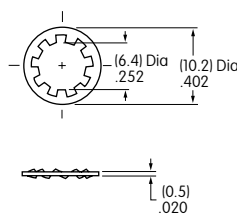
Material:
Brass with Nickel plating



AT509 Lockwasher

1 included with each switch
(not with splashproof models)

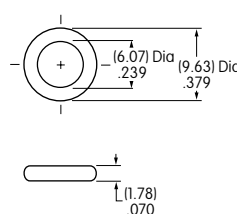
Material:
Steel with Zinc/Chromate



AT516 O-ring for Splashproof Bushing

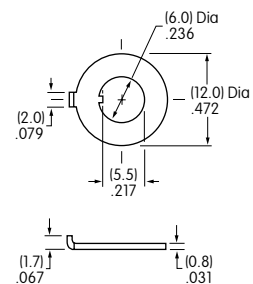
1 included with
each splashproof model

Material:
Nitrile butadiene rubber



AT507H for Inch AT507M for Metric Locking Ring

Material:
Steel with Zinc/Chromate

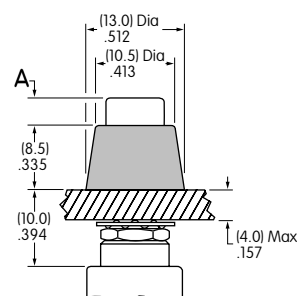


Optional Mounting Collars/Conical Nuts

Optional Splashproof Boots for S Plunger

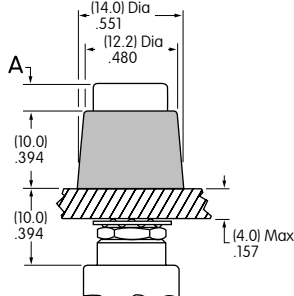
AT512H for Inch AT512M for Metric Conical Nut

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



AT4041H for Inch AT4041M for Metric Boot for Momentary

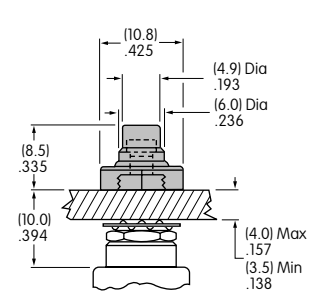
Material:
Silicone rubber



Operating Life 100,000

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

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