

# 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.

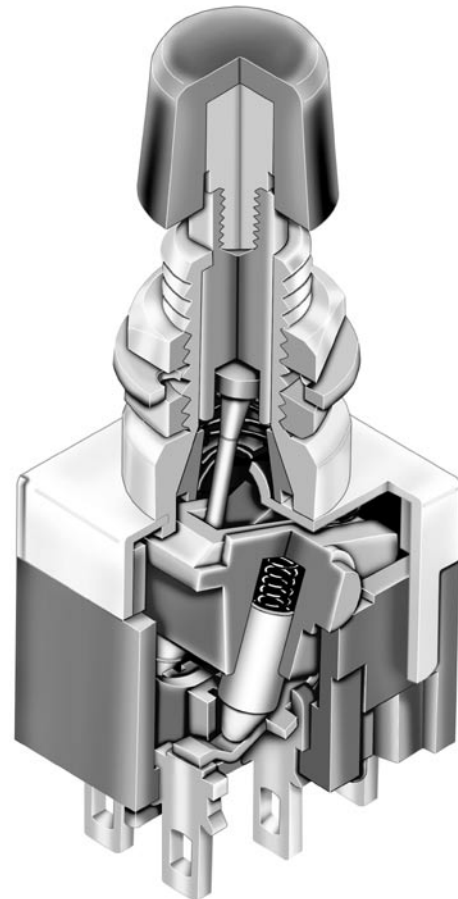
Splashproof option (D3 and B3 bushing codes) features an o-ring within the bushing and one under the face nut to protect from splashed, sprayed, or spilled liquids.

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

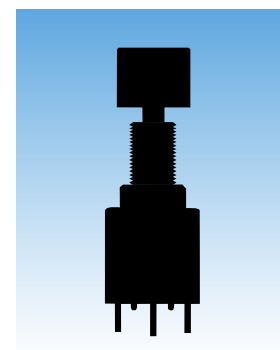
Prominent external insulating barriers increase insulation resistance and dielectric strength.

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)

<b>Power Level (code W):</b>	6A @ 125V AC & 3A @ 250V AC or 3A @ 30V DC	
<b>Logic Level (code G):</b>	0.4VA maximum @ 28V AC/DC maximum (Applicable Range 0.1mA ~ 0.1A @ 20mV ~ 28V)	
<b>Logic/Power Level (code A):</b>	Combines W & G ratings	

Note: Find additional explanation dual rating & operating range in Supplement section.

### Other Ratings

<b>Contact Resistance:</b>	10 milliohms maximum for silver; 20 milliohms maximum for gold		
<b>Insulation Resistance:</b>	1,000 megohms minimum @ 500V DC		
<b>Dielectric Strength:</b>	1,000V AC minimum between contacts for 1 minute minimum; 1,500V AC minimum between contacts & case for 1 minute minimum		
<b>Mechanical Life:</b>	50,000 operations minimum for splashproof models; 100,000 for all other models		
<b>Electrical Life:</b>	25,000 operations minimum for silver; 50,000 operations minimum for gold 50,000 operations minimum for silver at 3A @ 125V AC		
<b>Nominal Operating Force:</b>	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		
<b>Contact Timing:</b>	Slow make, slow break		
<b>Plunger Travel:</b>	Screw-on Cap (Mom.)	Screw-on Cap (Alt.)	Snap-on Cap (Mom. & Alt.)
<b>Pretravel:</b>	.028" (0.71mm)	.110" (2.80mm)	.125" (3.19mm)
<b>Overtravel:</b>	.043" (1.09mm)	.043" (1.10mm)	.050" (1.26mm)
<b>Total Travel:</b>	.071" (1.80mm)	.153" (3.90mm)	.175" (4.45mm)

### Materials & Finishes

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

### Environmental Data

<b>Operating Temp Range:</b>	-30°C through +85°C (-22°F through +185°F)
<b>Humidity:</b>	90 ~ 95% humidity for 96 hours @ 40°C (104°F)
<b>Vibration:</b>	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
<b>Shock:</b>	50G (490m/s <sup>2</sup> ) acceleration (tested in 6 right angled directions, with 5 shocks in each direction)
<b>Sealing:</b>	B3 & D3 bushing options equivalent to IP67

### Installation

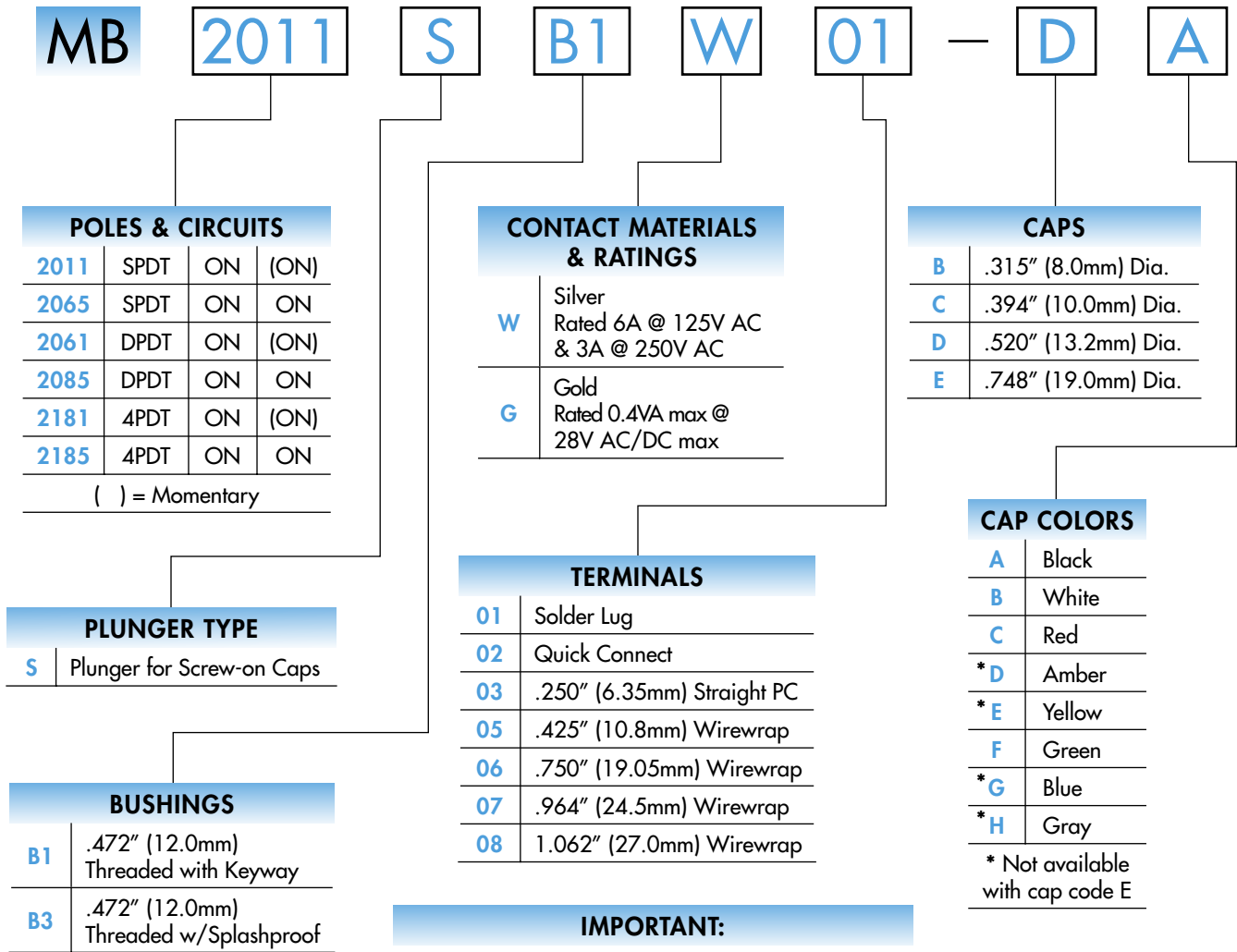
<b>Mounting Torque:</b>	1.5Nm (13.0 lb•in) for double nut; .7Nm (6.0 lb•in) for single nut
<b>Cap Installation Force:</b>	80.0N (18.0 lbf) maximum downward force on actuator
<b>Soldering Time &amp; Temp:</b>	Wave Soldering (PC version): See Profile A in Supplement section. Manual Soldering: See Profile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

### Standards & Certifications

<b>Flammability Standards:</b>	UL94V-0 case
<b>UL &amp; C-UL Recognized:</b>	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
<b>CSA Certified:</b>	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



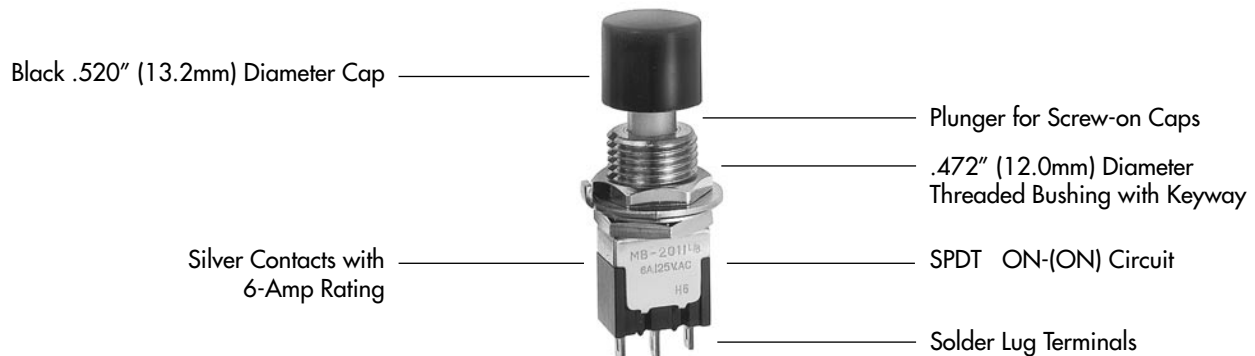
#### IMPORTANT:








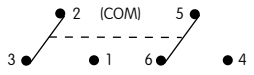
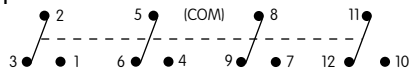
Switches are supplied without UL, C-UL, & CSA markings unless specified. Specific models & ratings noted on General Specifications page.

#### DESCRIPTION FOR TYPICAL ORDERING EXAMPLE

#### MB2011SB1W01-DA



### POLES & CIRCUITS

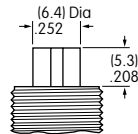
Pole	Model	Plunger Position ( ) = Momentary		Connected Terminals		Throw & Switch Schematics
		Normal  Keyway	Down 	Normal  Keyway	Down 	
SP	MB2011 MB2065	ON ON	(ON) ON	2-3	2-1	SPDT 
DP	MB2061 MB2085	ON ON	(ON) ON	2-3 5-6	2-1 5-4	DPDT 
4P	MB2181 MB2185	ON ON	(ON) ON	2-3 5-6 8-9 11-12	2-1 5-4 8-7 11-10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

Note: Terminal numbers are not actually on the switch.

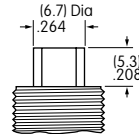
### PLUNGER TYPE

**S**

**Plunger for Screw-on Caps**  
Plunger is plastic for B1 bushing.



Plunger is metal for B3 bushing.



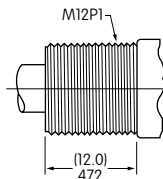
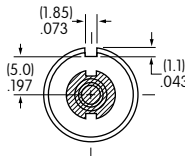
On alternate action models, after transferring circuit, the plunger returns to its original position, and does not latch down.

### BUSHINGS

**B1**

**.472" (12.0mm) Diameter Threaded with Keyway**

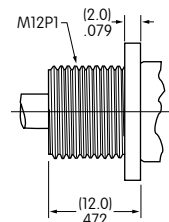
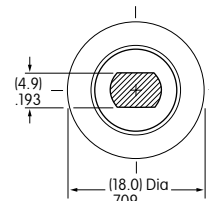
Maximum Panel Thickness with Standard Hardware: .217" (5.5mm)



**B3**

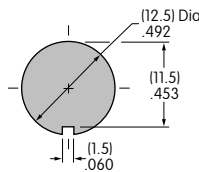
**.472" (12.0mm) Diameter Threaded Splashproof**

Maximum Panel Thickness with Standard Hardware: .217" (5.5mm)

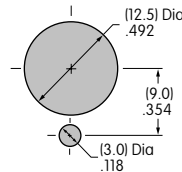


### Panel Cutouts

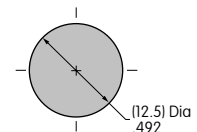
For B1 Bushing with Keyway



For B1 Bushing with Optional Locking Ring



For B3 Bushing without Keyway



### CONTACT MATERIALS & RATINGS

**W**

Silver over Silver

Power Level

6A @ 125V AC & 3A @ 250V AC

**G**

Gold over Brass or Copper

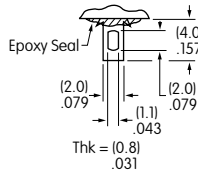
Logic Level

0.4VA maximum @ 28V AC/DC maximum

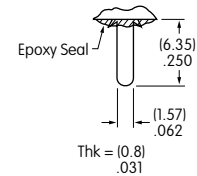
Note: Complete explanation of operating range in Supplement section.

### TERMINALS

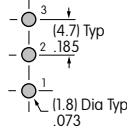
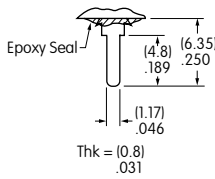
#### 01 Solder Lug



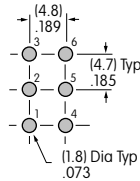
#### 02 .062" (1.57mm) Wide Quick Connect



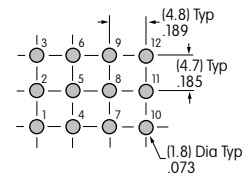
#### 03 .250" (6.35mm) Straight PC



Single Pole



Double Pole



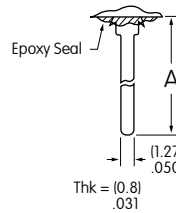
Four Pole

#### 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.

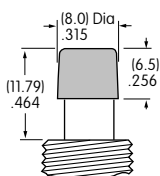
Dimension A = terminal lengths as shown beside the terminal codes at the left.

### CAPS & CAP COLORS

#### B AT078 .315" (8.0mm) Dia. Screw-on Cap

Material: Polystyrene  
Finish: Glossy

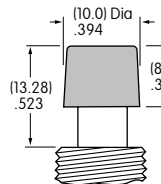
Colors Available: A B C E F G H



#### C AT079 .394" (10.0mm) Dia. Screw-on Cap

Material: Polystyrene  
Finish: Glossy

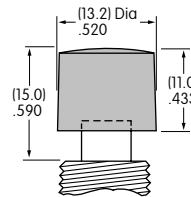
Colors Available: A B C E F G H



#### D AT414 .520" (13.2mm) Dia. Screw-on Cap

Material: PBT  
Finish: Glossy

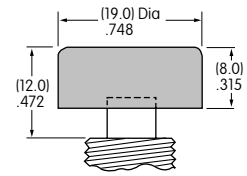
Colors Available: A B C D E F G H



#### E AT412 .748" (19.0mm) Dia. Screw-on Cap

Material: Polystyrene  
Finish: Glossy

Colors Available: A B C F



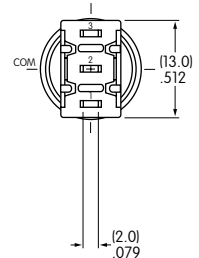
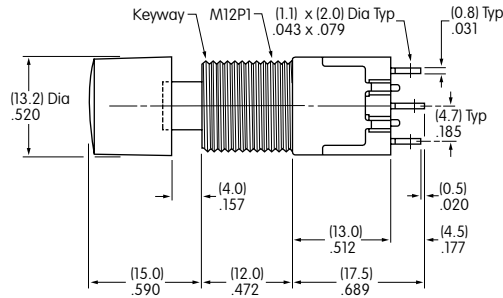
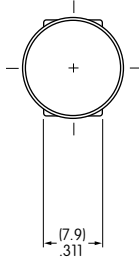
Cap Color Codes:

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

### TYPICAL SWITCH DIMENSIONS

#### Solder Lug

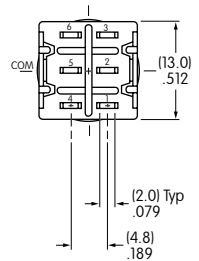
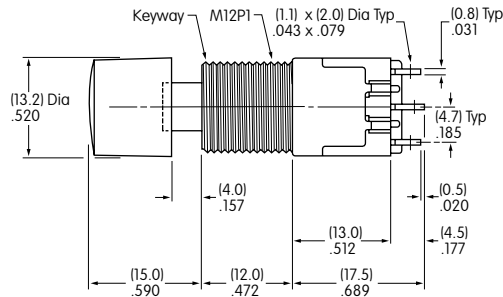
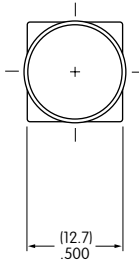
#### Single Pole



MB2011SB1W01-DA

#### Solder Lug

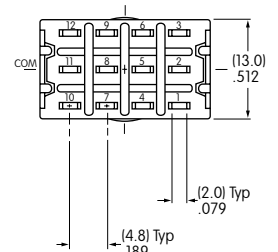
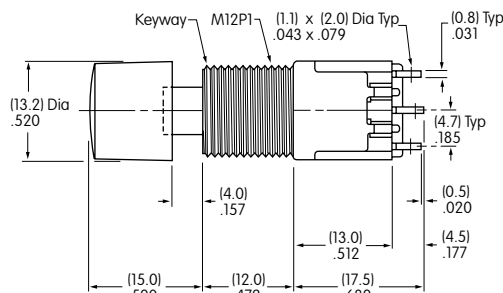
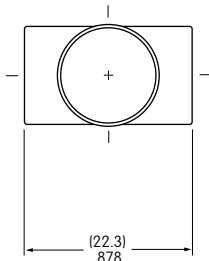
#### Double Pole



MB2061SB1W01-DA

#### Solder Lug

#### Four Pole



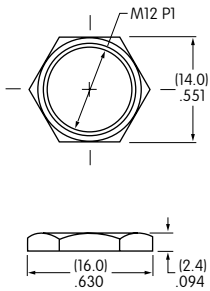
MB2181SB1W01-DA

### HARDWARE

#### Standard Hardware for B1 Bushing

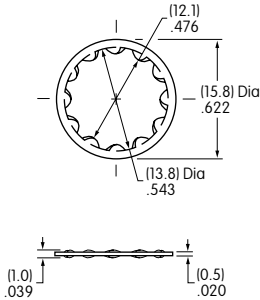
##### AT503M Hex Face Nut

Material:  
Brass with Chrome plating



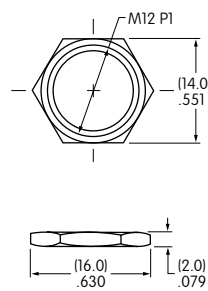
##### AT508 Lockwasher

Material:  
Steel with Zinc/Chromate



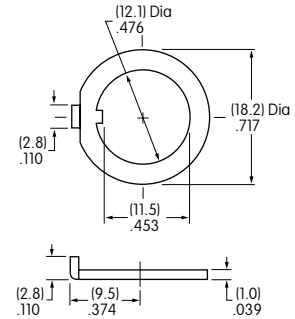
##### AT527M Hex Nut

Material:  
Steel with Nickel plating



##### AT506M Locking Ring

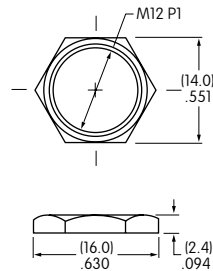
Material:  
Steel with Zinc/Chromate



#### Standard Hardware for B3 Bushing

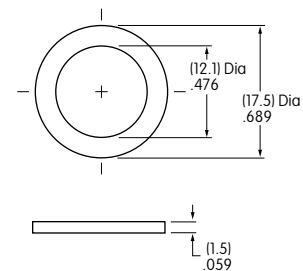
##### AT503M Hex Face Nut

Material:  
Brass with Chrome plating



##### AT401P O-ring

Material:  
Natural rubber

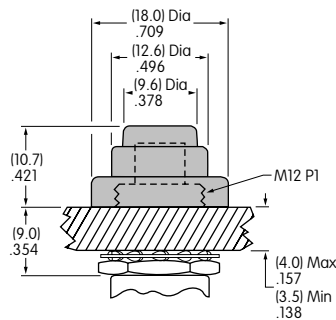


#### Optional Splashproof Boot for B1 Bushing

##### AT4043 Splashproof Boot

Material: Silicone Rubber  
Operating Life: 10,000 for momentary  
30,000 for alternate action

When using a splashproof boot, no cap is required.

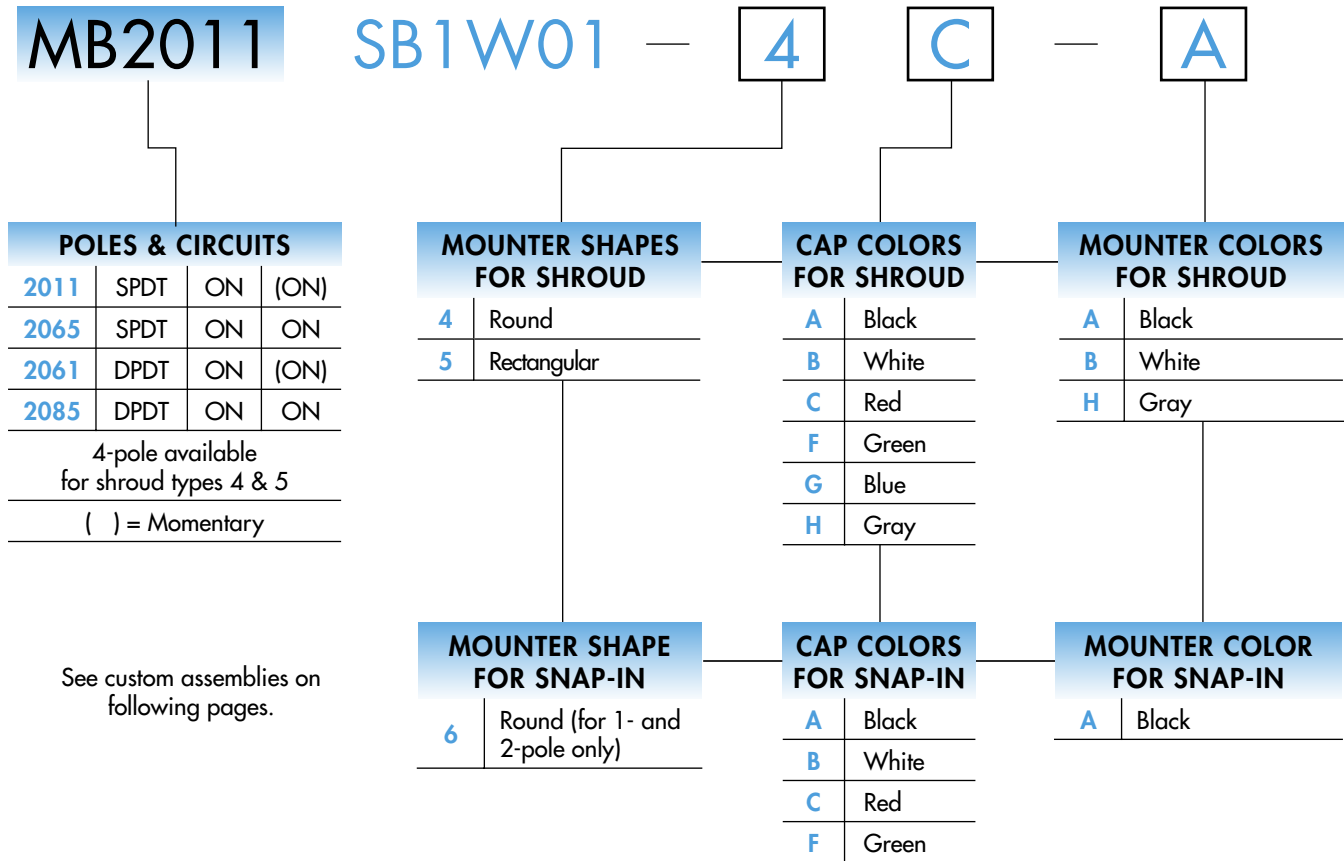


### CUSTOM ASSEMBLY ORDERING EXAMPLE

The MB2000 pushbutton series offers flexibility to accommodate a variety of applications. Using a basic large bushing model, different accessories can be assembled onto the switch to achieve the mounting variations shown on the following two pages.

- These switches have:
- 12mm diameter threaded bushing with keyway
  - Silver contacts
  - 6-Amp rating
  - Solder lug terminals

Other 12mm bushing options can be used; see details in preceding Large Bushing Ordering tables.



**Round Shroud**  
**MB2011SB1W01-4C-A**



**Rectangular Shroud**  
**MB2011SB1W01-5C-A**



**Snap-in Mounter**  
**MB2011SB1W01-6C-A**



### MOUNTER SHAPES FOR SHROUDS

**4** AT455 Round

Material: Polycarbonate  
Colors: A B H



**5** AT453 Rectangular

Material: Polycarbonate  
Colors: A B H



### CAPS & CAP COLORS FOR SHROUDS

**AT454 Round Insert Cap**

Material: Polycarbonate  
Colors: A B C F G H



**AT452 Rectangular Insert Cap**

Material: Polycarbonate  
Colors: A B C F G H



**AT080 Screw Adaptor for Insert Caps**

Material: Brass



### MOUNTER SHAPE FOR SNAP-IN

**6** AT528 Round

Material: Glass fiber reinforced polyamide  
Color: A



### CAP & CAP COLORS FOR SNAP-IN MOUNTER

**AT412 Screw-on Cap**

Material: Polystyrene  
Colors: A B C F



#### Color Codes:



Black



White



Red



Green



Blue

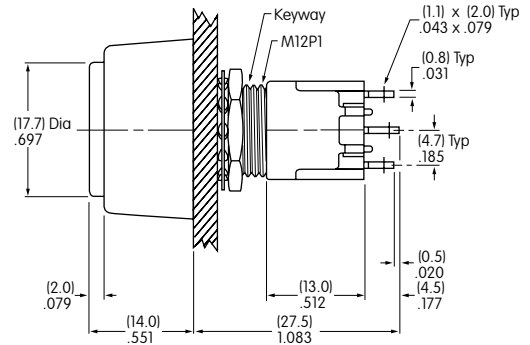
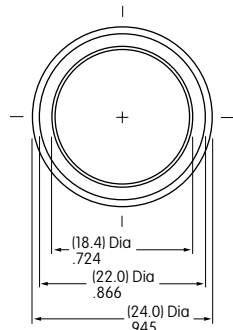


Gray

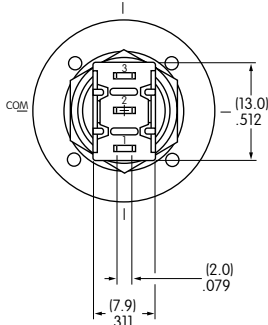
### CUSTOM ASSEMBLY WITH ROUND SHROUD



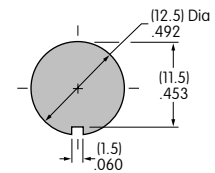
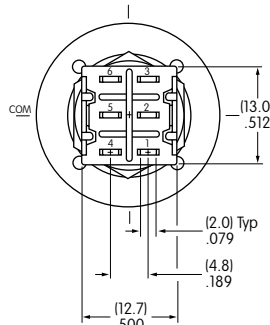
MB2011SB1W01-4C-A



#### Single Pole



#### Double Pole

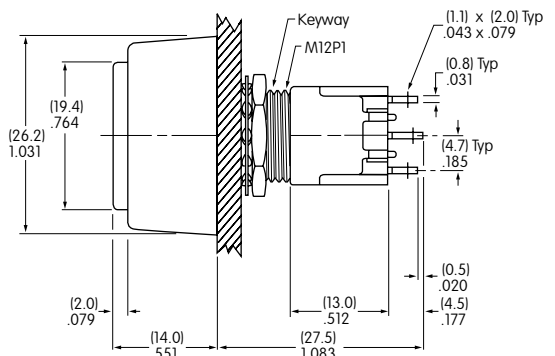
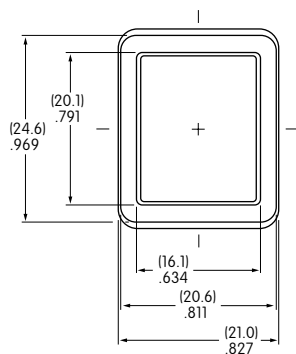


Effective Panel Thickness:  
.217" (5.5mm) maximum

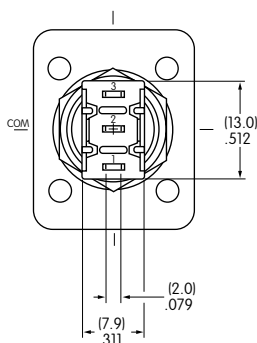
### CUSTOM ASSEMBLY WITH RECTANGULAR SHROUD



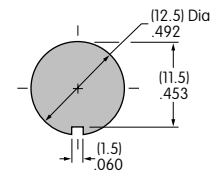
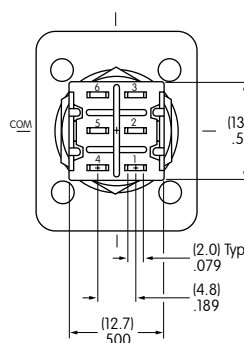
MB2011SB1W01-5C-A



#### Single Pole



#### Double Pole

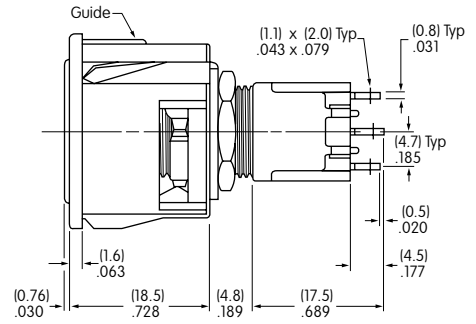
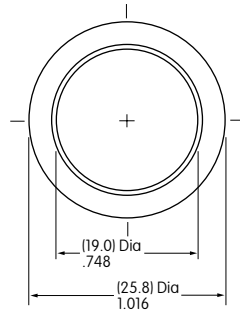


Effective Panel Thickness:  
.217" (5.5mm) maximum

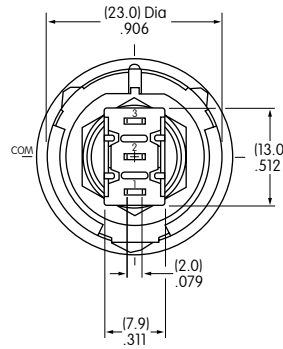
### CUSTOM ASSEMBLY WITH SNAP-IN MOUNTER



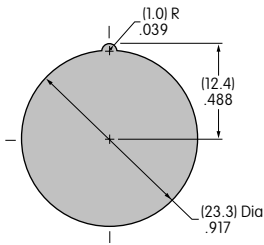
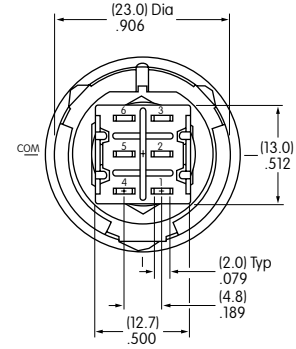
MB2011SB1W01-6C-A



#### Single Pole



#### Double Pole



Panel Thickness Range:  
.039" ~ .157" (1.0 ~ 4.0mm)