### General Specifications

#### Electrical Capacity (Resistive Load)
- **Power Level (silver):** 6A @ 125V AC & 3A @ 250V AC or 3A @ 30V DC
- **Logic Level (gold):** 0.4V maximum @ 28V AC/DC maximum (Applicable Range 0.1mA ~ 0.1A @ 20mV ~ 28V)
- **Logic/Power Level:** (gold over silver)

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:** 1,000V AC minimum between contacts for 1 minute minimum;
  1,500V AC minimum between contacts & case for 1 minute minimum
- **Dielectric Strength:** 50,000 operations minimum for splashproof models; 100,000 for all other models
  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.) 0.28" (0.71mm)
  - Screw-on Cap (Alt.) 0.110" (2.80mm)
  - Snap-on Cap (Mom. & Alt.) 0.125" (3.19mm)
- **Pretravel:**
  - Screw-on Cap (Mom.) 0.043" (1.09mm)
  - Screw-on Cap (Alt.) 0.043" (1.10mm)
  - Snap-on Cap (Mom.) 0.050" (1.26mm)
- **Overtravel:**
  - Screw-on Cap (Mom.) 0.071" (1.80mm)
  - Screw-on Cap (Alt.) 0.153" (3.90mm)
  - Snap-on Cap (Mom. & Alt.) 0.175" (4.45mm)
- **Total Travel:**
  - Screw-on Cap (Mom.) 0.110" (2.80mm)
  - Screw-on Cap (Alt.) 0.153" (3.90mm)
  - Snap-on Cap (Mom. & Alt.) 0.175" (4.45mm)

#### Materials & Finishes
- **Plunger:** Brass w/nickel plating; polyacetal w/B1 bushing
- **Frame:** Stainless steel
- **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/s²) 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; 0.7Nm (6.0 lb-in) for single nut
- **Cap Installation Force:** 80.0N (18.0 lbf)
- **Soldering Time & Temp:**
  - Wave Soldering (PC version): 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:** File No. E44145 - Recognized only when ordered with marking on switch.
  Add “/U” or “/CUL” before dash in part number to order UL recognized switch.
  All models recognized at 6A @ 125V AC or 3A @ 250V AC or 0.4VA max. @ 28V DC max.
- **CSA:** File No. 023535 0_000 - Certified only when ordered with marking on switch.
  Add “/C” before dash in part number to order CSA certified switch.
  All models certified at 6A @ 125V AC or 3A @ 250V AC or 0.4VA max. @ 28V max.
**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.
### TYPICAL SWITCH ORDERING EXAMPLE

**MB** 2011 **S** B1 **W** 01 **D** 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

**Contact Materials & Ratings**
- **W**: Silver
  - Rated 6A @ 125V AC & 3A @ 250V AC
- **G**: Gold
  - Rated 0.4VA max @ 28V AC/DC max

**Caps**
- **B**: .315" (8.0mm) Diameter
- **C**: .394" (10.0mm) Diameter
- **D**: .520" (13.2mm) Diameter
- **E**: .748" (19.0mm) Diameter

**Caps**
- **A**: Black
- **B**: White
- **C**: Red
- **D**: Amber
- **E**: Yellow
- **F**: Green
- **G**: Blue
- **H**: Gray
- *Not available with cap code E

**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

**Plunger Type**
- **S**: Plunger for Screw-on Caps

**Bushings**
- **B1**: .472" (12.0mm) Threaded with Keyway
- **B3**: .472" (12.0mm) Threaded w/Splashproof

**IMPORTANT:**

Switches are supplied without UL, cULus & CSA marking unless specified. UL, cULus & CSA recognized only when ordered with marking on the switch. Specific models, ratings, & ordering instructions are noted on General Specifications page.

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**DESCRIPTION FOR TYPICAL ORDERING EXAMPLE**

**MB2011SB1W01-DA**

- Black .520" (13.2mm) Diameter Cap
- Plunger for Screw-on Caps
- .472" (12.0mm) Diameter Threaded Bushing with Keyway
- Silver Contacts with 6-Amp Rating
- SPDT ON-(ON) Circuit
- Solder Lug Terminals

* Wire harness & cable assemblies offered only in Americas
# Series MB2000

## Large Bushing Miniature Pushbuttons

### POLES & CIRCUITS

<table>
<thead>
<tr>
<th>Pole</th>
<th>Model</th>
<th>Normal</th>
<th>Down</th>
<th>Connected Terminals</th>
<th>Throw &amp; Switch Schematics</th>
</tr>
</thead>
<tbody>
<tr>
<td>SP</td>
<td>MB2011</td>
<td>ON</td>
<td>(ON)</td>
<td>2-3</td>
<td>SPDT</td>
</tr>
<tr>
<td></td>
<td>MB2065</td>
<td>ON</td>
<td>ON</td>
<td>2-1</td>
<td></td>
</tr>
<tr>
<td>DP</td>
<td>MB2061</td>
<td>ON</td>
<td>(ON)</td>
<td>2-3 5-6</td>
<td>DPDT</td>
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<tr>
<td></td>
<td>MB2085</td>
<td>ON</td>
<td>ON</td>
<td>2-1 5-4</td>
<td></td>
</tr>
<tr>
<td>4P</td>
<td>MB2181</td>
<td>ON</td>
<td>(ON)</td>
<td>2-3 5-6 8-9 11-12</td>
<td>4PDT</td>
</tr>
<tr>
<td></td>
<td>MB2185</td>
<td>ON</td>
<td>ON</td>
<td>2-1 5-4 8-7 11-10</td>
<td></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>W</th>
<th>Silver over Silver</th>
<th>Power Level</th>
<th>6A @ 125V AC &amp; 3A @ 250V AC</th>
</tr>
</thead>
<tbody>
<tr>
<td>G</td>
<td>Gold over Brass or Copper</td>
<td>Logic Level</td>
<td>0.4VA maximum @ 28V AC/DC maximum</td>
</tr>
</tbody>
</table>

Note: Complete explanation of operating range in Supplement section.
Large Bushing Miniature Pushbuttons

Series MB2000

TERMINALS

01 Solder Lug

02 .062” (1.57mm) Wide Quick Connect

03 .250” (6.35mm) Straight PC

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

CAPS & CAP COLORS

B AT078 .315” (8.0mm) Diameter Screw-on Cap

C AT079 .394” (10.0mm) Diameter Screw-on Cap

D AT414 .520” (13.2mm) Diameter Screw-on Cap

E AT412 .748” (19.0mm) Diameter Screw-on Cap

Material: Polystyrene
Finish: Glossy
Colors Available: A B C E F G H

Material: Polystyrene
Finish: Glossy
Colors Available: A B C E F G H

Material: PBT
Finish: Glossy
Colors Available: A B C D E F G H

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

Downloaded from Arrow.com.
Series MB2000
Large Bushing Miniature Pushbuttons

TYPICAL SWITCH DIMENSIONS

Solder Lug

Single Pole

Double Pole

Four Pole

MB2011SB1W01-DA

MB2061SB1W01-DA

MB2181SB1W01-DA

Downloaded from Arrow.com.
Large Bushing Miniature Pushbuttons

Series MB2000

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.

Downloaded from Arrow.com.
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

### CUSTOM ASSEMBLY ORDERING EXAMPLE

<table>
<thead>
<tr>
<th>Poles &amp; Circuits</th>
<th>Mounter Shapes For Shroud</th>
<th>Cap Colors For Snap-In</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>SPDT</td>
<td>ON</td>
</tr>
<tr>
<td>2065</td>
<td>SPDT</td>
<td>ON</td>
</tr>
<tr>
<td>2061</td>
<td>DPDT</td>
<td>ON</td>
</tr>
<tr>
<td>2085</td>
<td>DPDT</td>
<td>ON</td>
</tr>
</tbody>
</table>

( ) = Momentary

<table>
<thead>
<tr>
<th>Mounter Colors For Shroud</th>
<th>Cap Colors For Shroud</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
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<tr>
<td>G</td>
<td>Blue</td>
</tr>
<tr>
<td>H</td>
<td>Gray</td>
</tr>
</tbody>
</table>

See custom assemblies on following pages.
Large Bushing Miniature Pushbuttons

Series MB2000

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

Color Codes:

A Black  B White  C Red  F Green  G Blue  H Gray
Series MB2000
Large Bushing Miniature Pushbuttons

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