

# General Specifications

## Electrical Capacity (Resistive Load)

|                              |                                                                                                                                                                                    |
|------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Power Level (silver):</b> | 3A @ 125V AC for silver contacts                                                                                                                                                   |
| <b>Logic Level (gold):</b>   | 0.4VA maximum @ 28V AC/DC maximum for gold contacts<br>(Applicable Range 0.1mA ~ 0.1A @ 20mV ~ 28V)<br>Note: Find additional explanation of 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;<br>1,500V AC minimum between contacts and case for 1 minute minimum                                                         |
| <b>Mechanical Life:</b>         | 100,000 operations minimum                                                                                                                                                           |
| <b>Electrical Life:</b>         | 25,000 operations minimum for silver;<br>50,000 operations minimum for gold                                                                                                          |
| <b>Nominal Operating Force:</b> | Single Pole: 2.35N for Momentary and 2.65N for Alternate Action<br>Double Pole: 2.94N for Momentary and 3.63N for Alternate Action                                                   |
| <b>Travel:</b>                  | Momentary: Pretravel .047" (1.2mm); Overtravel .016" (0.4mm); Total Travel .063" (1.6mm)<br>Alternate: Pretravel .071" (1.8mm); Overtravel .016" (0.4mm); Total Travel .087" (2.2mm) |

## Materials & Finishes

|                             |                                                                                  |
|-----------------------------|----------------------------------------------------------------------------------|
| <b>Plunger:</b>             | Brass with chrome plating for Momentary; brass with nickel plating for Alternate |
| <b>Bushing:</b>             | Brass with nickel plating                                                        |
| <b>Frame:</b>               | Stainless steel                                                                  |
| <b>Case:</b>                | Melamine phenolic resin (UL94V-0)                                                |
| <b>Movable Contacts:</b>    | Copper with silver or gold plating                                               |
| <b>Stationary Contacts:</b> | Silver with silver or gold plating                                               |
| <b>Terminals:</b>           | Copper with silver or gold plating                                               |

## Environmental Data

|                              |                                                                                                                                              |
|------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Operating Temp Range:</b> | -10°C through +70°C (+14°F through +158°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)                               |

## Installation

|                                   |                                                                                                                           |
|-----------------------------------|---------------------------------------------------------------------------------------------------------------------------|
| <b>Mounting Torque:</b>           | 1.47Nm (13.0 lb•in) for double nut; 0.68Nm (6.0 lb•in) for single nut                                                     |
| <b>Cap Installation Force:</b>    | 78.5N (17.65 lbf) maximum downward force on actuator                                                                      |
| <b>Soldering Time &amp; Temp:</b> | Wave Solder (Straight PC): See Profile B in Supplement section.<br>Manual Soldering: See Profile B in Supplement section. |
| <b>Cleaning:</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:</b>                     | <b>File No. E44145 - Recognized only when ordered with marking on switch.</b><br>Add "/U" or "/CUL" before first dash in part number to order UL recognized switch.<br>All single and double pole models recognized at 3A @ 125V AC.                                               |
| <b>CSA:</b>                    | <b>File No. 023535_0_000 - Certified only when ordered with marking on switch.</b><br>Add "/C" before first dash in part number to order CSA certified switch.<br>Single pole solder lug and PC models certified at 3A @ 125V AC; double pole PC models certified at 3A @ 125V AC. |

# Distinctive Characteristics

Power and logic level capabilities available to suit varying applications.

Bushing and snap-in mount versions available; snap-in models offer many style and color choices to enhance front panel appearance.

Light touch actuation.

High torque bushing prevents rotation and separation from metal frame during installation.

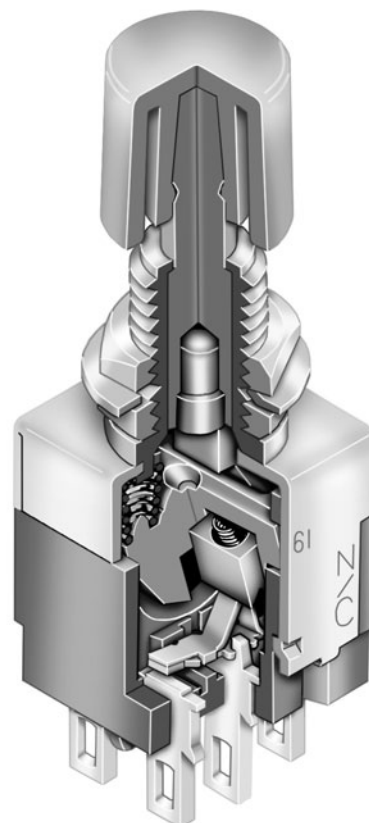
Stainless steel frame resists corrosion.

Case of heat resistant resin meets UL 94V-0 flammability rating.

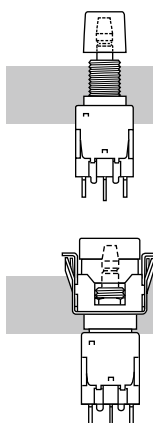
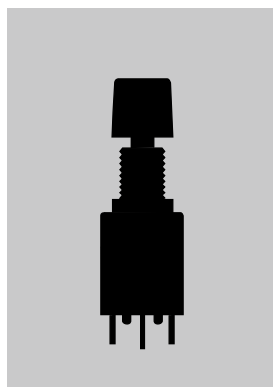
Higher insulating barriers protect against crossover in double pole devices.

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

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



Actual Size



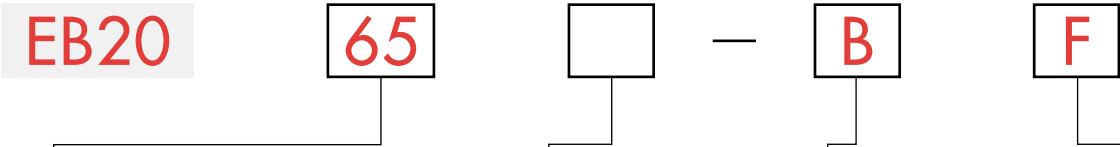
Bushing Mount

Page C26

Snap-in Mount

Page C30

TYPICAL SWITCH ORDERING EXAMPLE



| Poles & Circuits |      |    |      |
|------------------|------|----|------|
| 11               | SPDT | ON | (ON) |
| 65               | SPDT | ON | ON   |
| 61               | DPDT | ON | (ON) |
| 85               | DPDT | ON | ON   |
| ( ) = Momentary  |      |    |      |

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

| Contacts, Ratings, & Terminals |                                                                   |
|--------------------------------|-------------------------------------------------------------------|
| No Code                        | Silver Contacts; Solder Lug Terminals*<br>3A @ 125V AC            |
| G                              | Gold Contacts; Solder Lug Terminals*<br>0.4VA max @ 28V AC/DC max |
| P                              | Silver Contacts; Straight PC Terminals;<br>3A @ 125V AC           |
| PG                             | Gold Contacts; Straight PC Terminals<br>0.4VA max @ 28V AC/DC max |

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

IMPORTANT:

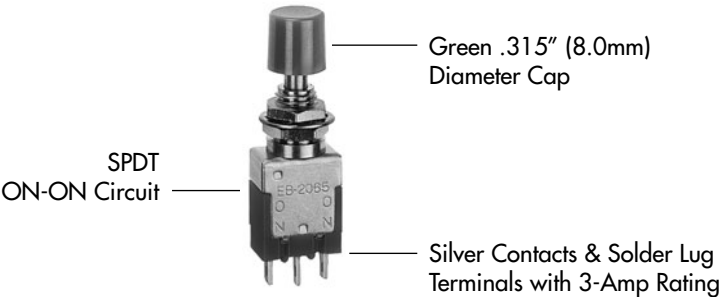


Switches are supplied without UL, cULus & CSA marking unless specified.  
**UL, cULus & CSA recognized only when ordered with marking on the switch.**  
Specific models, ratings, & ordering instructions are noted on General Specifications page.

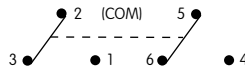
\* Wire harness & cable assemblies offered only in Americas

DESCRIPTION FOR TYPICAL ORDERING EXAMPLE

EB2065-BF



## POLES & CIRCUITS

|      |                  | Plunger Position<br>( ) = Momentary                                                                |                                                                                                  | Connected Terminals                                                                                |                                                                                                  | Throw & Switch Schematics                                                                   |
|------|------------------|----------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|
| Pole | Model            | Normal<br> Keyway | Down<br> Keyway | Normal<br> Keyway | Down<br> Keyway | Note: Terminal numbers are not actually on the switch.                                      |
| SP   | EB2011<br>EB2065 | ON<br>ON                                                                                           | (ON)<br>ON                                                                                       | 2-3                                                                                                | 2-1                                                                                              | SPDT<br> |
| DP   | EB2061<br>EB2085 | ON<br>ON                                                                                           | (ON)<br>ON                                                                                       | 2-3 5-6                                                                                            | 2-1 5-4                                                                                          | DPDT<br> |

## CONTACT MATERIALS, RATINGS, & TERMINALS



Solder Lug  
Silver Contacts

Power Level

3A @ 125V AC

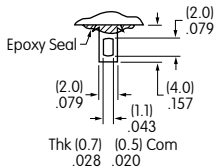


Solder Lug  
Gold Contacts

Logic Level

0.4VA max @ 28V AC/DC max

Complete explanation of operating range in Supplement section.



Straight PC  
Silver Contacts

Power Level

3A @ 125V AC

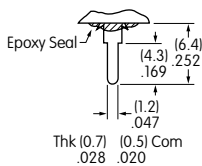


Straight PC  
Gold Contacts

Logic Level

0.4VA max @ 28V AC/DC max

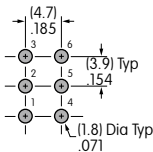
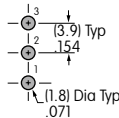
Complete explanation of operating range in Supplement section.



### PCB Footprints

Single Pole

Double Pole

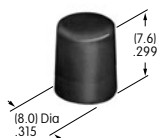


### CAPS & COLORS

**B** AT443  
.315" (8.0mm) Diameter Snap-on Cap

Cap Colors Available:

|                 |                |
|-----------------|----------------|
| <b>A</b> Black  | <b>F</b> Green |
| <b>B</b> White  | <b>G</b> Blue  |
| <b>C</b> Red    | <b>H</b> Gray  |
| <b>E</b> Yellow |                |

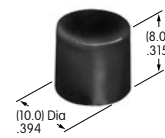


Cap Material: Polycarbonate Finish: Glossy

**C** AT442  
.394" (10.0mm) Diameter Snap-on Cap

Cap Colors Available:

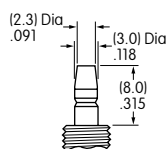
|                 |                |
|-----------------|----------------|
| <b>A</b> Black  | <b>F</b> Green |
| <b>B</b> White  | <b>G</b> Blue  |
| <b>C</b> Red    | <b>H</b> Gray  |
| <b>E</b> Yellow |                |



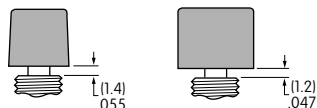
Cap Material: Polycarbonate Finish: Glossy

### Plunger Extension

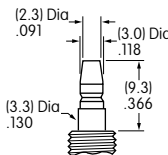
Due to a difference in plunger lengths on the momentary and alternate action models, cap distance from top of bushing varies.



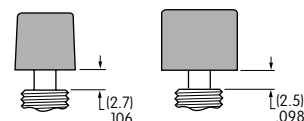
Momentary Plunger Length



Momentary Cap Location



Alternate Plunger Length



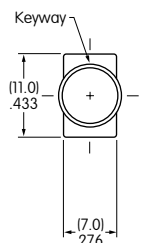
Alternate Cap Location

### TYPICAL SWITCH DIMENSIONS

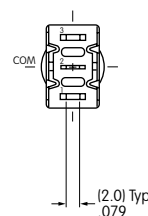
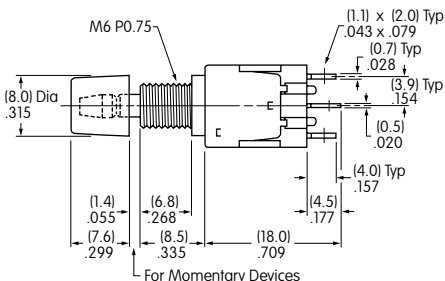
#### Solder Lug



EB2011-BA



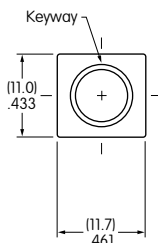
#### Single Pole



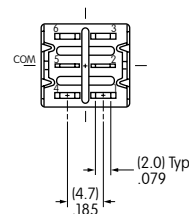
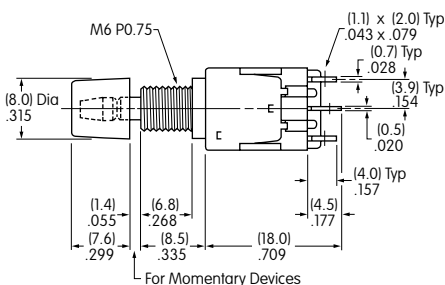
#### Solder Lug



EB2061-BA



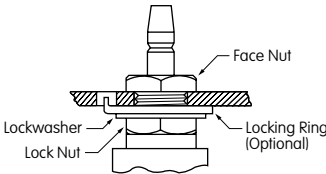
#### Double Pole



HARDWARE

Installation/Assembly

2 AT513M Metric Hexagon Nuts  
1 AT509 Internal Tooth Lockwasher



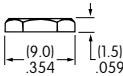
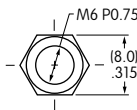
Optional Hardware:  
AT507M Metric Locking Ring

Note: Cap must be snapped on  
after the switch is mounted  
into the panel.

Standard Hardware

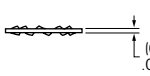
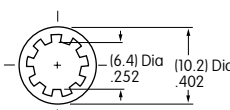
AT513M  
Metric Hexagon Nut

Material:  
Brass with  
Nickel Plating



AT509  
Lockwasher

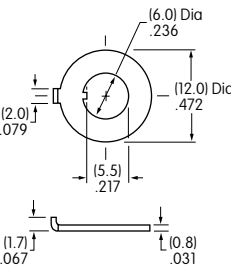
Material:  
Steel with  
Zinc/Chromate



Optional Hardware

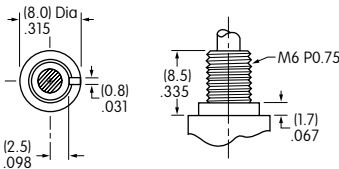
AT507M  
Metric Locking Ring

Material:  
Steel with  
Zinc/Chromate

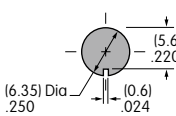


PANEL CUTOUTS & THICKNESSES

Metric Bushing

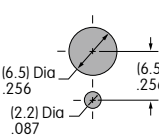


With  
Standard Hardware



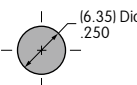
Maximum Effective  
Panel Thickness:  
.118" (3.0mm)

With Standard Hardware  
& Optional Locking Ring



Maximum Effective  
Panel Thickness:  
.055" (1.4mm)

Without  
Bottom Hex Nut



Maximum Effective  
Panel Thickness:  
.185" (4.7mm)

See Accessories & Hardware section for optional Conical Nuts:  
AT512M used with cap AT443 and AT512CM used with cap AT442.