

## General Specifications

### FB Series

### SB Series

#### Electrical Capacity (Resistive Load)

**Power Level:** 500mA @ 125V AC for silver  
**Logic Level:** 0.4VA max. @ 28V AC/DC max. for gold  
 (Applicable Range 0.1mA ~ 0.1A @ 20mV ~ 28V)  
 Note: Find additional explanation in Supplement section.

3A @ 125V AC or 2A @ 250V AC or  
 2A @ 30V DC for silver  
 0.4VA max. @ 28V AC/DC max. for gold  
 (Applicable Range 0.1mA ~ 0.1A @ 20mV ~ 28V)  
 Note: Find explanation of operating range in Supplement section.

#### Other Ratings

**Contact Resistance:** 30 milliohms maximum for silver;  
 30 milliohms maximum for gold  
**Insulation Resistance:** 100 megohms minimum @ 500V DC  
**Dielectric Strength:** 1,000V AC minimum between contacts &  
 between contacts & case for 1 minute minimum  
**Mechanical Life:** 50,000 operations minimum  
**Electrical Life:** 50,000 operations minimum  
**Nominal Operating Force:** 2.16N  
**Travel:** Pretravel .043" (1.1mm)  
 Overtravel .022" (0.57mm)  
 Total Travel .065" (1.67mm)

10 milliohms maximum for silver;  
 20 milliohms maximum for gold  
 200 megohms minimum @ 500V DC  
 1,000V AC minimum between contacts  
 & between contacts & case for 1 minute minimum  
 30,000 operations minimum  
 10,000 operations minimum  
 4.90N  
 Normally Open  
 Total Travel .088" (2.24mm)  
 Normally Closed  
 Total Travel .088" (2.24mm)

#### Materials & Finishes

**Plunger:** Polyacetal  
**Bushing:** Brass with nickel plating  
**Case:** Phenolic resin  
**Movable Contactor:** Copper with silver or gold plating  
**Stationary Contacts:** Phosphor bronze with silver or gold plating  
**Terminals:** Phosphor bronze with silver or gold plating

Black: Phenolic resin  
 Red: Urea formaldehyde resin  
 Brass with nickel plating  
 Phenolic resin  
 Copper with silver or gold plating  
 Copper with silver or gold plating  
 Copper with silver or gold plating

#### Environmental & Installation Data

**Operating Temp Range:** -10°C through +70°C (+14°F through +158°F)  
**Soldering Time & Temperature:** Manual Soldering:  
 See Profile A in Supplement section.

-10°C through +70°C (+14°F through +158°F)  
 Manual Soldering:  
 See Profile A in Supplement section.

#### Standards & Certifications

**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.  
 Models rated 0.5A @ 125V AC Single pole;  
 Momentary action circuit with solder lug terminations.

**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.  
 Models rated 3A @ 125V AC & 2A @ 250V AC.  
 Single pole: Momentary action circuit with solder lug terminations.

**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.  
 SB series rated 3A @ 125V AC & 2A @ 250V AC.  
 Single pole: Momentary action circuit with solder lug terminations.

# Distinctive Characteristics

Optional caps in different colors to vary appearance as needed.

Low operating force for ease of actuation.

Rear panel bushing mount with compact behind panel dimension.

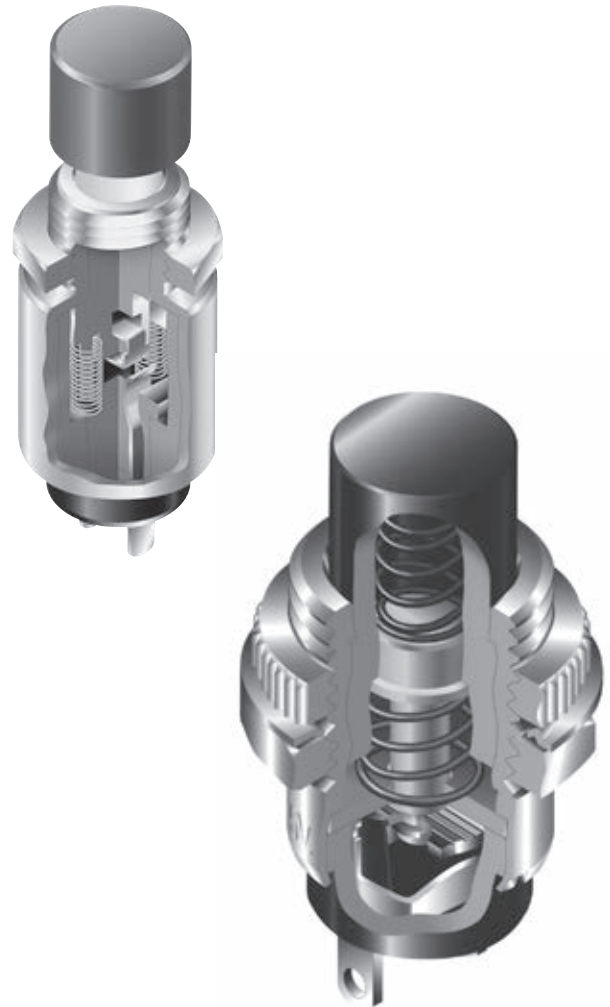
Internal antijamming feature to protect the contacts from damage due to excessive force on the plunger.

Self-cleaning contacts make FB models highly reliable.

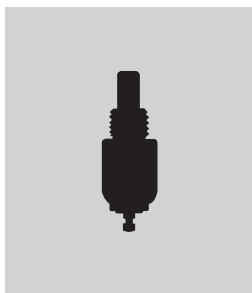
Low cost device of rugged one-piece bushing and housing construction.

Reliability of construction with an internal guide to maintain contact alignment.

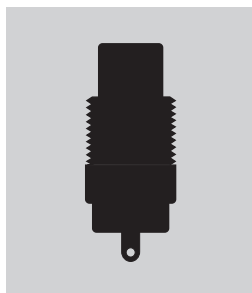
FB15ANEP and SB4011NO models have epoxy sealed terminals.



Actual Size FB



Actual Size SB



FB Bushing Mount

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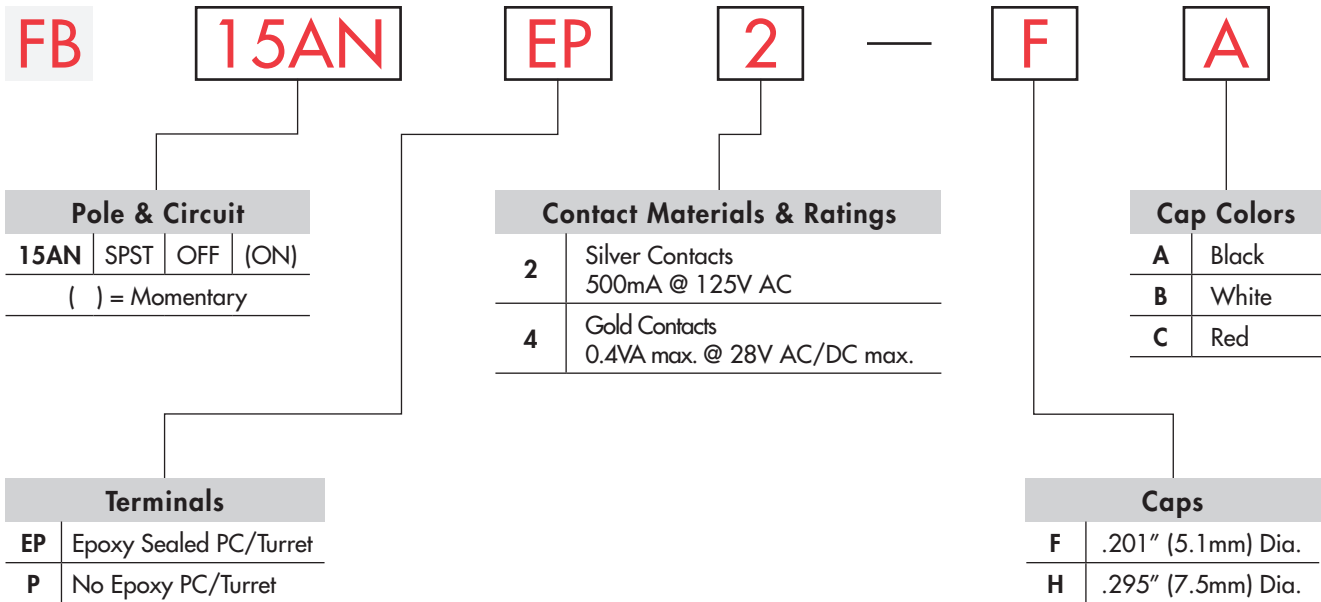


SB Bushing Mount

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- Toggles
- Rockers
- Pushbuttons**
- Illuminated PB
- Programmable
- Keylocks
- Rotaries
- Slides
- Tactiles
- Tilt
- Touch
- Indicators
- Accessories
- Supplement

### TYPICAL SWITCH ORDERING EXAMPLE



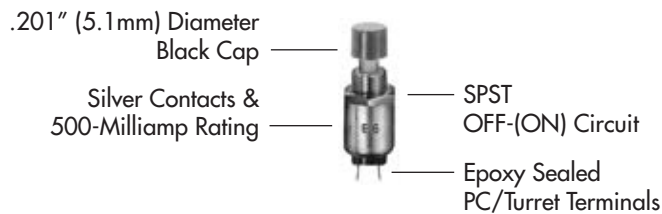
#### IMPORTANT:



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

#### DESCRIPTION FOR TYPICAL ORDERING EXAMPLE

#### FB15ANEP2-FA



#### POLE & CIRCUIT

		Plunger Position ( ) = Momentary		Connected Terminals		Throw & Switch Schematics
Pole	Model	Normal	Down	Normal	Down	
SP	FB15AN	OFF	(ON)	OPEN	1-2	SPST

Note: Terminal numbers are not actually on the switch.

## TERMINALS

**EP** Epoxy Sealed  
PC/Turret Terminals

**P** No Epoxy  
PC/Turret Terminals

## CONTACT MATERIALS & RATINGS

**2** Silver Contacts

Power Level

500mA @ 125V AC

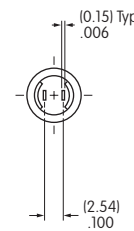
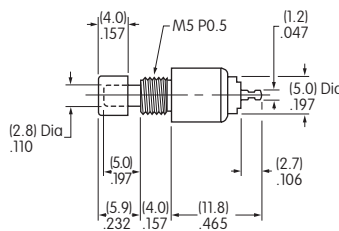
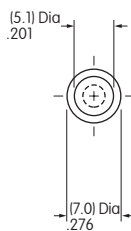
**4** Gold Contacts

Logic Level

0.4VA maximum @ 28V AC/DC maximum

Complete explanation of operating range in Supplement section.

## TYPICAL SWITCH DIMENSIONS



PC/Turret



Plunger is white polyacetal.

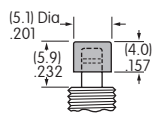
**FB15ANEP2-FA**

## SLIP-ON CAPS & COLORS

**F** AT475  
.201" (5.1mm) Diameter

Material: Polyamide

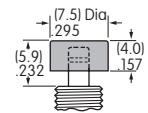
Finish: Glossy



**H** AT496  
.295" (7.5mm) Diameter

Material: Polyamide

Finish: Glossy



Colors Available:

**A** Black

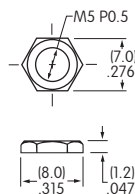
**B** White

**C** Red

## STANDARD HARDWARE & PANEL CUTOUT

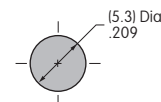
AT536 Hex Nut

Material:  
Brass with nickel plating



Panel Thickness:

.110" (2.8mm) maximum



### TYPICAL SWITCH ORDERING EXAMPLE

**SB40**

**11NO**

**M**



Pole & Circuits			
Normally Open			
* 11NO	SPST	OFF	(ON)
Normally Closed			
11NC	SPST	ON	(OFF)
( ) = Momentary			
* SB4011NO models have epoxy sealed terminals			

Plunger Colors	
No Code	Black
C	Red

Contact Materials & Ratings	
No Code	Silver Contacts 3A @ 125V AC or 2A @ 250V AC
G	Gold Contacts 0.4VA max. @ 28V AC/DC max.

Bushings	
M	Metric Threaded M12 P1
H	Inch Threaded 15/32-32 NS

Slip-On Cap & Colors	
No Code	Without Cap
2A	Black
2B	White
2C	Red
2E	Yellow
2F	Green
2G	Blue

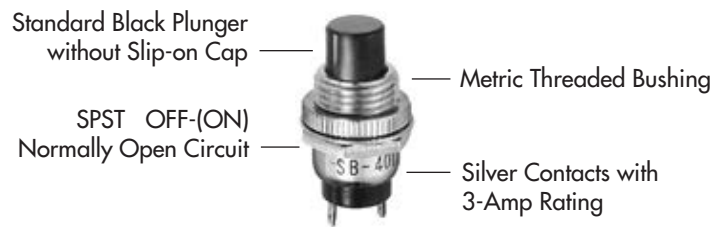
#### IMPORTANT:



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#### DESCRIPTION FOR TYPICAL ORDERING EXAMPLE

**SB4011NOM**

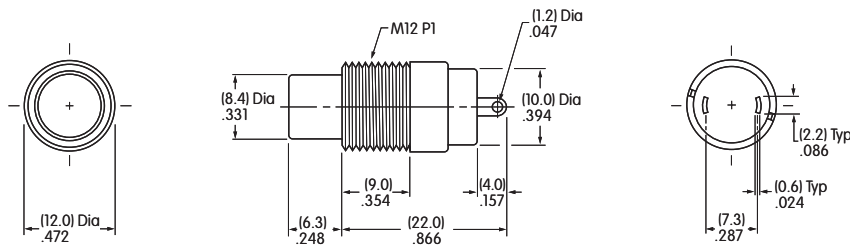


#### POLE & CIRCUITS

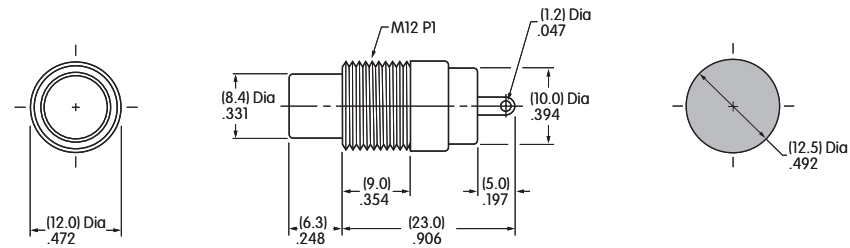
		Plunger Position ( ) = Momentary		Connected Terminals		Throw & Switch Schematics
Pole	Model	Normal	Down	Normal	Down	
SP	SB4011NO	OFF	(ON)	OPEN	1-2	Note: Terminal numbers are not actually on the switch. SPST NO  NC
	SB4011NC	ON	(OFF)	1-2	OPEN	

Toggles  
 Rockers  
 Pushbuttons  
 Illuminated PB  
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 Keylocks  
 Rotaries  
 Slides  
 Tactiles  
 Tilt  
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 Accessories  
 Supplement

## TYPICAL SWITCH DIMENSIONS



**SB4011NOM**



**SB4011NCM**

Panel Thickness:  
.157" (4.0mm)

Hardware provided:  
1 AT504 Knurled Face Nut  
1 AT508 Lockwasher  
1 AT527M Hex Mounting Nut

Details in Hardware & Accessories section.

### Metric Bushing



**SB4011NOM**

### Inch Bushing



**SB4011NCH**

Hardware provided:  
2 AT503H Hex Mounting Nuts  
1 AT508 Lockwasher

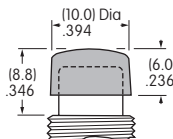
Details in Hardware & Accessories section.

Panel Thickness:  
.157" (4.0mm)

## SLIP-ON CAP & COLORS

**AT422**  
.394" (10.0mm) Diameter Cap

Material: Polyethylene  
Finish: Matte



<b>2A</b>	Black	<b>2C</b>	Red	<b>2F</b>	Green
<b>2B</b>	White	<b>2E</b>	Yellow	<b>2G</b>	Blue

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## NKK Switches:

[FB15ANEP2-HA](#) [FB15ANEP2](#) [FB15ANEP4-HC](#) [FB15ANEP2-HB](#) [FB15ANEP2/U](#) [FB15ANEP4-FC](#) [FB15ANEP2-FA](#)  
[FB15ANEP4-FA](#) [FB15ANEP4-HA](#) [FB15ANEP2-FB](#) [FB15ANEP4-FB](#) [FB15ANEP4-HB](#) [FB15ANEP2-FC](#)  
[FB15ANEP2-HC](#) [SB4011NOH-2A-RO](#) [SB4011NOHCG-2A](#) [SB4011NCHC-2B](#) [FB15ANEP4](#)