

# NKK® SERIES M PUSHBUTTON SWITCHES

MOMENTARY & ALTERNATE/1-4 POLE/LARGE BUSHING

## TYPICAL LARGE BUSHING SWITCH ORDERING EXAMPLE

Pushbuttons

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

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	
<b>W</b>	Silver Rated 6A @ 125V AC & 3A @ 250V AC
<b>G</b>	Gold Rated 0.4VA maximum @ 28V AC/DC maximum

CAPS	
<b>B</b>	.315" Dia.
<b>C</b>	.394" Dia.
<b>D</b>	.520" Dia.
<b>E</b>	.748" Dia.

PLUNGER TYPES	
<b>S</b>	Plunger for Screw-on Caps

TERMINALS	
<b>01</b>	Solder Lug
<b>02</b>	Quick Connect
<b>03</b>	.250" Straight PC
<b>05</b>	.425" Wirewrap
<b>06</b>	.750" Wirewrap
<b>07</b>	.964" Wirewrap
<b>08</b>	1.062" Wirewrap

CAP COLORS	
<b>A</b>	Black
<b>B</b>	White
<b>C</b>	Red
<b>D</b>	Orange Used with cap code D only
<b>E*</b>	Yellow
<b>F</b>	Green
<b>G*</b>	Blue
<b>H*</b>	Gray

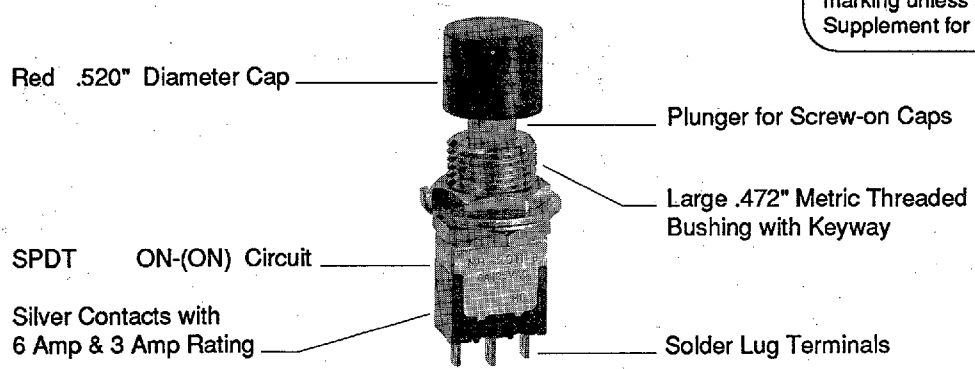
\*Not available with cap code E

BUSHINGS	
<b>B1</b>	Large .472" Metric Threaded with Keyway
<b>B3</b>	Large .472" Threaded Splashproof w/D Flat

### DESCRIPTION FOR TYPICAL ORDERING EXAMPLE (MB2011SB1W01-DC):

#### SERIES M PUSHBUTTON

**IMPORTANT:** Switches are supplied without UL & CSA marking unless specified. See Supplement for instructions.





# SERIES M PUSHBUTTON SWITCHES

## MOMENTARY & ALTERNATE/1-4 POLE/LARGE BUSHING

### POLES & CIRCUITS

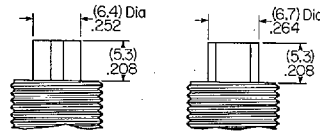
For poles and circuit information, refer to the details contained in the Poles & Circuits Chart appearing in the previous bushing mount section.

### PLUNGER TYPES

#### S Plunger for Screw-on Caps

Plastic for B1 Bushing  
Metal for B3 Bushing

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



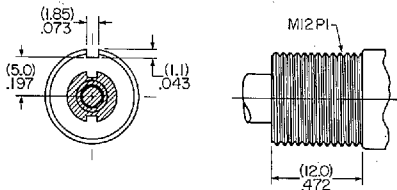
For B1

For B3

### BUSHING

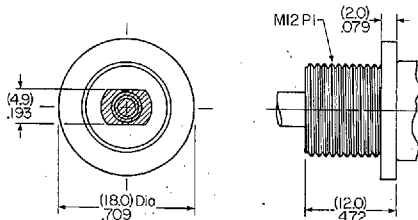
#### B1

Large .472" Metric Threaded with Keyway



#### B3

Large .472" Threaded Splashproof



### CONTACT MATERIALS & RATINGS

#### W

Silver over Silver  
Rated 6A @ 125V AC  
& 3A @ 250V AC

#### G

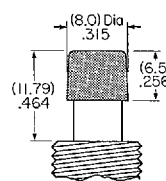
Gold over Brass or Copper  
Rated 0.4VA max @  
28V AC/DC max

### CAPS

#### B

AT078  
.315" Dia. Cap

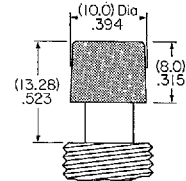
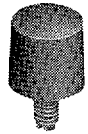
Polystyrene



#### C

AT079  
.394" Dia. Cap

Polystyrene

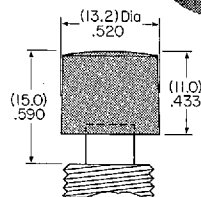
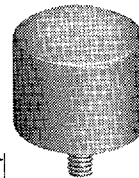


Colors Available: A B C E F G H

#### D

AT414  
.520" Dia. Cap

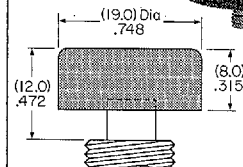
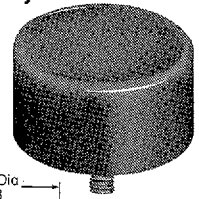
Polystyrene



#### E

AT412  
.748" Dia. Cap

Polystyrene



Colors Available:

A B C D E F G H

Colors Available:

A B C F

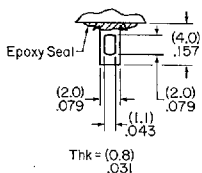
### Color Codes:

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

### TERMINALS

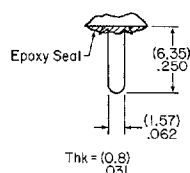
#### 01

Solder Lug



#### 02

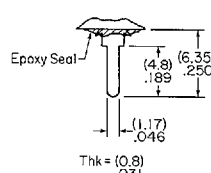
.062" Wide Quick Connect



Corresponds to AMP #60900-1 receptacle

#### 03

.250" Straight PC



Wirewrap

#### 05

.425" (10.8mm)

#### 06

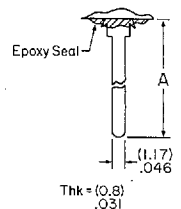
.750" (19.05mm)

#### 07

.964" (24.5mm)

#### 08

1.062" (27.0mm)



Dimension A = wirewrap terminal lengths as shown beside code boxes.

# NKK® SERIES M PUSHBUTTON SWITCHES

## MOMENTARY & ALTERNATE/1-4 POLE/LARGE BUSHING

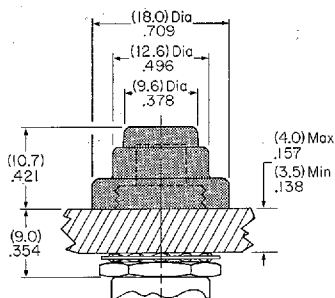
### OPTIONAL SPLASHPROOF BOOT

**AT4043**  
Splashproof Boot

Silicone Rubber

Operating Life:  
100,000 for momentary  
30,000 for alternate action

When using a splashproof boot, no cap is required.



### SOLDERING & WIRING

#### Soldering:

3 seconds @ 350°C  
5 seconds @ 270°C

#### Wiring:

Solder lug terminals have .043" X .079" oblong holes which accommodate 1 solid 18-gauge wire or 2 solid or stranded 20-gauge wires.

### OPTIONAL MOUNTER

**AT528**  
Snap-in Mounter

Fiberglass reinforced nylon

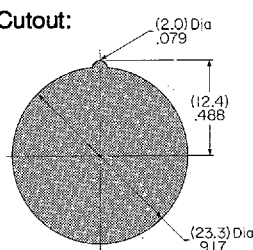
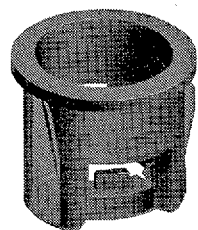
Black only available

Used with .748" diameter cap only

Panel Thickness:

1.0mm - 4.0mm  
(.039" - .157")

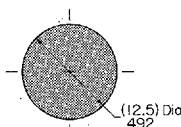
Panel Cutout:



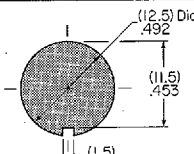
The mounter may be ordered assembled to the switch by entering "AT528" immediately after the switch part number. Mounters may also be ordered separately.

### PANEL CUTOUT & PANEL THICKNESS

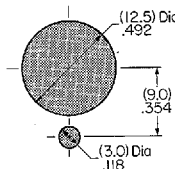
Without Keyway



With Keyway



With Locking Ring

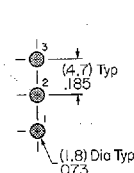


Effective Panel Thickness

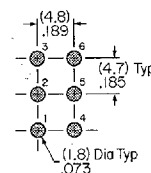
with Standard Hardware: 5.5mm (.217") maximum

### PC BOARD MOUNTING

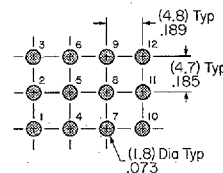
Single Pole



Double Pole



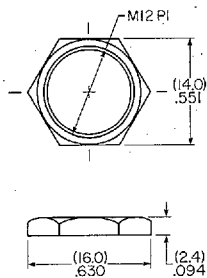
Four Pole



### STANDARD MOUNTING HARDWARE PROVIDED WITH SWITCHES

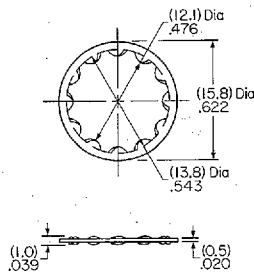
**AT503**  
Hex Nut

Brass with chrome plating



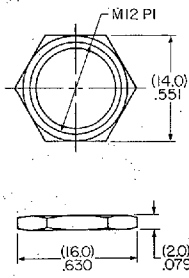
**AT508**  
Lockwasher

Steel with zinc plating



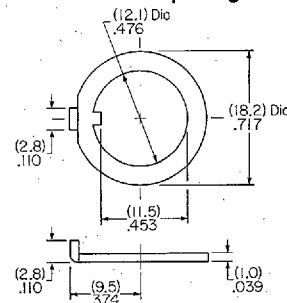
**AT527M for Metric**  
Hex Nut

Steel with nickel plating



**AT506**  
Locking Ring

Steel with zinc plating

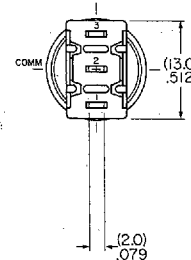
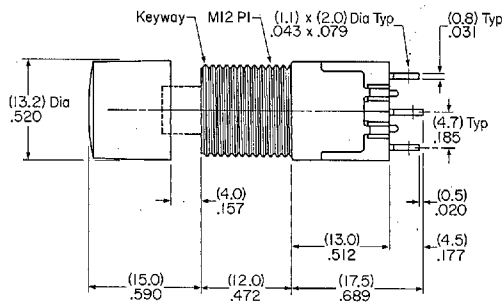
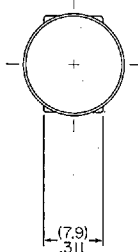
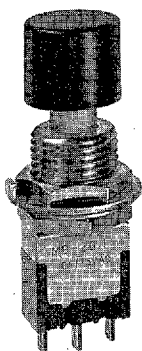




# SERIES M PUSHBUTTON SWITCHES

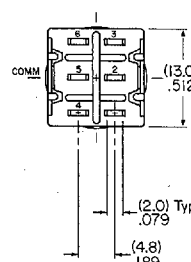
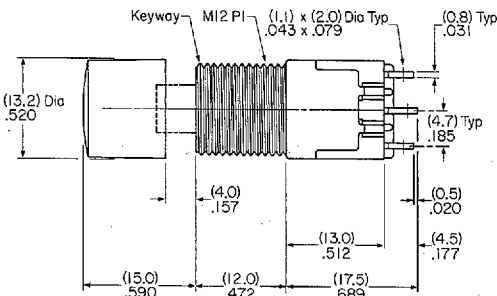
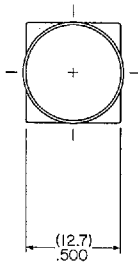
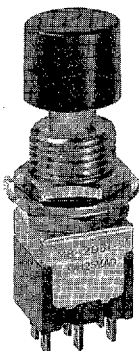
## MOMENTARY & ALTERNATE/1-4 POLE/LARGE BUSHING

### Large Bushing/Solder Lug/Single Pole



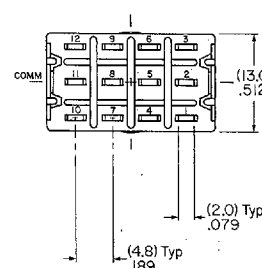
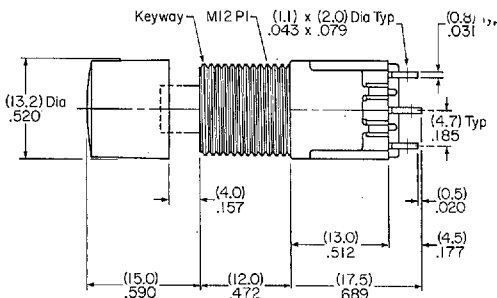
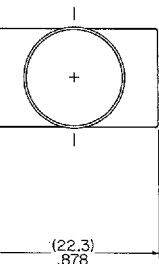
MB2011SB1WO1-DC Model Shown

### Large Bushing/Solder Lug/Double Pole



MB2061SB1WO1-DC Model Shown

### Large Bushing/Solder Lug/Four Pole



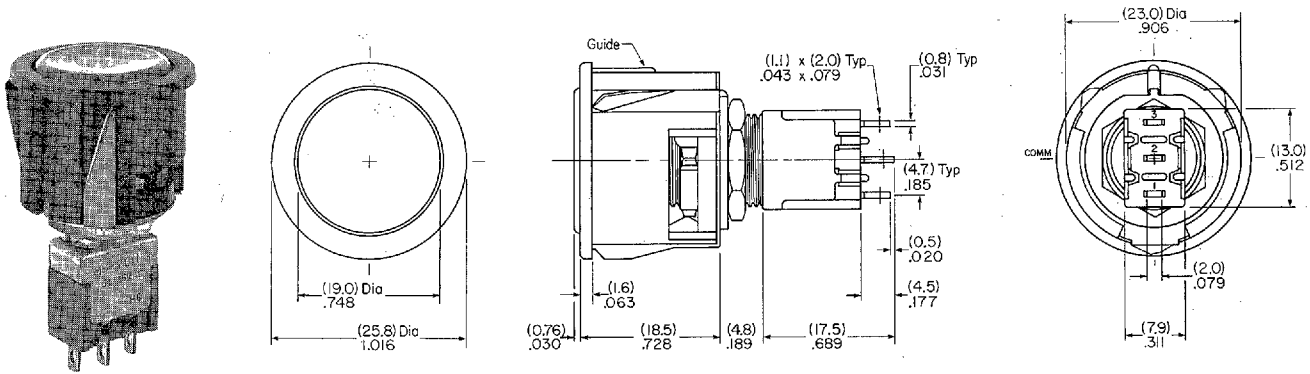
MB2181SB1WO1-DC Model Shown

Pushbuttons

# NKK® SERIES M PUSHBUTTON SWITCHES

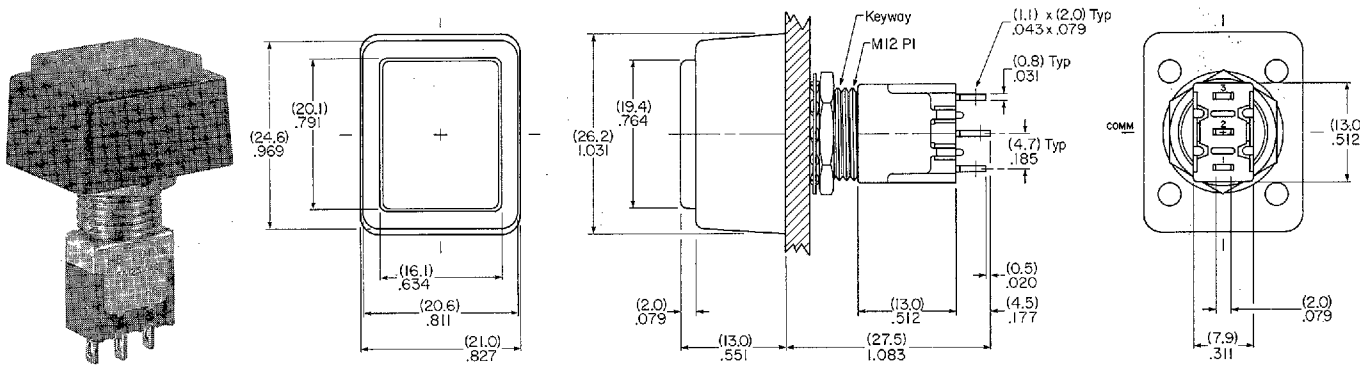
## MOMENTARY & ALTERNATE/1-4 POLE/LARGE BUSHING

### Large Bushing/Solder Lug/Single Pole with Snap-in Mounter



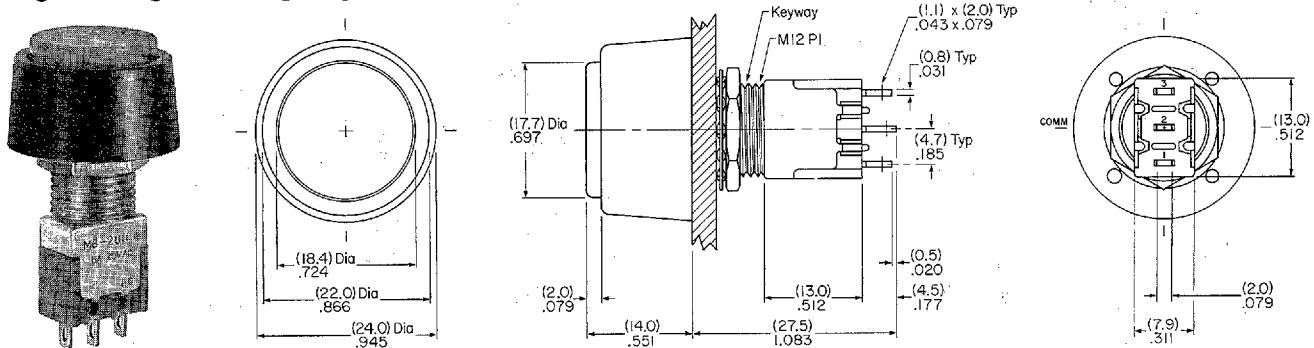
Model shown is MB2011SB1W01 with optional Snap-in Mounter AT528 and .748" Diameter Cap AT412.

### Large Bushing/Solder Lug/Single Pole with Rectangular Shroud



Model shown is MB2011SB1W01 with optional Rectangular Shroud AT453, Shroud Insert AT452 and Screw Adaptor for Insert AT080. When assembling, use only AT508 and AT527M of the standard hardware provided. For material, color availability and dimensions of these accessories, see the Accessories Section at the end of this catalog.

### Large Bushing/Solder Lug/Single Pole with Round Shroud



Model shown is MB2011SB1W01 with optional Round Shroud AT455, Shroud Insert AT454 and Screw Adaptor for Insert AT080. When assembling, use only AT508 and AT527M of the standard hardware provided. For material, color availability and dimensions of these accessories, see the Accessories Section at the end of this catalog.

Pushbuttons



# SERIES M PUSHBUTTON SWITCHES

## SUBMINIATURE/MOMENTARY & ALTERNATE/1-4 POLE

### GENERAL SPECIFICATIONS

<b>Electrical Capacity:</b> (Resistive Load)	6A @ 125V AC or 3A @ 250V AC 6A @ 30V DC 0.4VA maximum @ 28V maximum AC/DC (Applicable Range 0.1mA ~ 0.1A @ 20mV ~ 28V)		
<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 1,500V AC minimum between contacts and case		
<b>Mechanical Life:</b>	100,000 operations minimum 50,000 operations minimum for splashproof devices		
<b>Electrical Life:</b>	25,000 operations minimum for silver 50,000 operations minimum for gold		
<b>Nominal Operating Force:</b>		<u>Momentary</u>	<u>Alternate Action</u>
	Single Pole	950 grams	450 grams
	Double Pole	1,650 grams	720 grams
	Four Pole	2,400 grams	1,200 grams
<b>Ambient Temp Range:</b>	-15°C through +85°C (+5°F through +185°F) Optional low temperature lubricant available		

### MATERIALS & FINISHES

Plunger	Brass w/nickel plating; polyacetal resin (B1 bushing)
Bushing	Brass with nickel plating
Frame	Stainless steel
Case	Diallyphthalate resin (UL 94V-0 flammability rating)
Movable Contactor	Phosphor bronze with silver or gold plating*
Movable Contacts	Silver alloy (code W); silver alloy with gold plating* over nickel (code A); or copper with gold plating* over nickel (code G)
Stationary Contacts	Silver with silver plating (code W); silver with gold plating* over nickel (code A); or copper or brass with gold plating* over nickel (code G)
Terminals	Copper or brass with silver plating; copper or brass with gold plating over nickel

\* Gold plating on contacts is 1 micron minimum.

### UL & CSA

#### UL File No. E44145

All models with ratings of 6A @ 125V AC, 3A @ 250V AC, and 0.4VA @ 28V AC/DC are recognized by Underwriters Laboratories Inc.

#### CSA File Nos.

#### LR 23535 and LR56017

Models rated 6A @ 125V AC, 3A @ 250V AC, and 0.4VA @ 28V AC/DC certified by Canadian Standards Association: 1-pole with PC, solder lug, and wirewrap; 2- and 4-pole with PC, solder lug, wirewrap, and quick connect.

### PLUNGER TRAVEL

	With Screw-on Cap		With Snap-on Caps Momentary & Alternate Action
	Momentary	Alternate Action	
Pretravel	0.71mm (.028")	2.80mm (.110")	3.19mm (.125")
Overtravel	1.09mm (.043")	1.10mm (.043")	1.26mm (.050")
Total Travel	1.80mm (.071")	3.90mm (.153")	4.45mm (.175")

Pushbuttons

A-25-13

### DISTINCTIVE FEATURES

Antirotation feature is standard on noncylindrical levers.

Antijamming design on toggle switches protects contacts from damage due to excessive downward force on the actuator.

High torque bushing construction prevents rotation or separation from frame during installation.

Stainless steel frame resists corrosion.

Patented silver contacts of specially composed alloy for hardness.

High insulating barriers, formed in the molded diallyphthalate case, increase isolation of circuits in multipole devices and provide added protection to contact points.

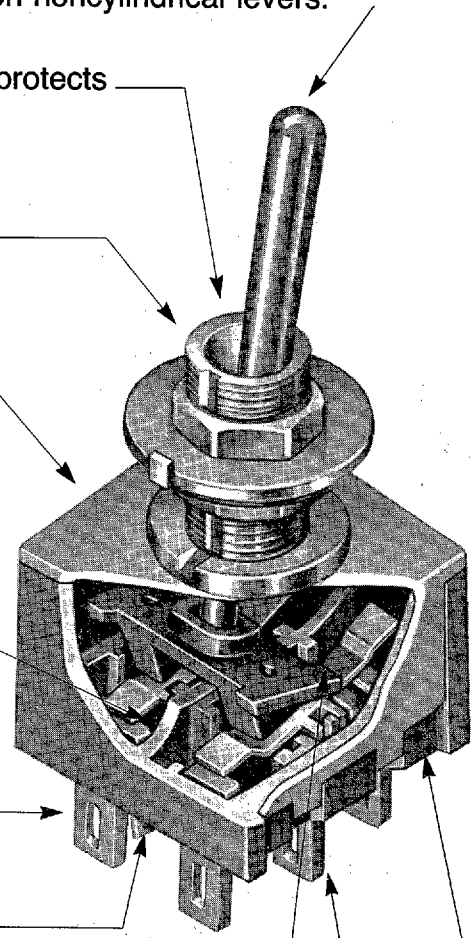
Epoxy sealed terminals prevent entry of solder flux and other contaminants.

Prominent external insulating barriers increase insulation resistance and dielectric strength.

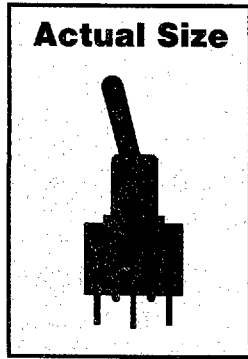
Interlocked actuator block prevents switch failure due to biased lever movement.

Longer center solder lug terminal simplifies wiring and soldering.

Clinching of the frame to the case well above the base and terminals provides 1500V dielectric strength.



**Actual Size**



Toggle

Rocker

Pushbutton

Slide

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