General Specifications

Electrical Capacity (Resistive Load)

Logic Level: 0.4VA maximum @ 28V AC/DC maximum
(Applicable Range 0.1mA ~ 0.1A @ 20mV ~ 28V)
Note: Find additional explanation of operating range in Supplement section.

Other Ratings

Contact Resistance: 50 milliohms maximum
Insulation Resistance: 500 megohms minimum @ 500V DC
Dielectric Strength: 500V AC minimum for 1 minute minimum
Mechanical Life: 100,000 operations minimum for On-None-On & On-Off-On
50,000 operations minimum for other circuits
50,000 operations minimum for locking lever models
Electrical Life: 50,000 operations minimum
Nominal Operating Force: Toggles A, A1 & E: 1.47N (momentary); 1.18N (maintained)
Toggles J & H: 2.72N (momentary); 1.84N (maintained)
Toggle L: 0.59N
Contact Timing: Nonshorting (break-before-make)
Angle of Throw: 26°

Materials & Finishes

Toggle: Nickel plated brass
Bushing: Carbon blended polyamide; nickel plated zinc alloy for locking levers & threaded bushing
Gasket: Nitrile butadiene rubber
Case Housing: Glass fiber reinforced polyamide
Support Bracket: Tin plated phosphor bronze
Movable Contact: Phosphor bronze with gold plating
Stationary Contacts: Copper alloy with gold plating
Terminals: Copper alloy with gold plating

Environmental Data

Operating Temperature 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/s^2) acceleration (tested in 6 right angled directions, with 5 shocks in each direction)

Installation

Mounting Torque: .30 ~ .45Nm (2.65 ~ 3.98 lb•in) for A1 actuator with threaded bushing only

PCB Processing

Soldering: Wave Soldering Recommended: See Profile A in Supplement section.
Manual Soldering: See Profile A in Supplement section.
Cleaning: Automated cleaning. See Cleaning specifications in Supplement section.

Standards & Certifications

Flammability Standards: UL94V-0 available
The B Series toggles have not been tested for UL recognition or CSA certification.
These switches are designed for use in a low-voltage, low-current, logic-level circuit.
When used as intended in a logic-level circuit, the results do not produce hazardous energy.

Distinctive Characteristics

Subminiature size saves space on PC boards.

Specifically developed for logic-level applications.

Antistatic superstructure, consisting of the carbon impregnated bushing and the support bracket, prevents static discharge to the contacts. Static electricity from an operator's touch travels from actuator through the bushing and bracket to the PC board.

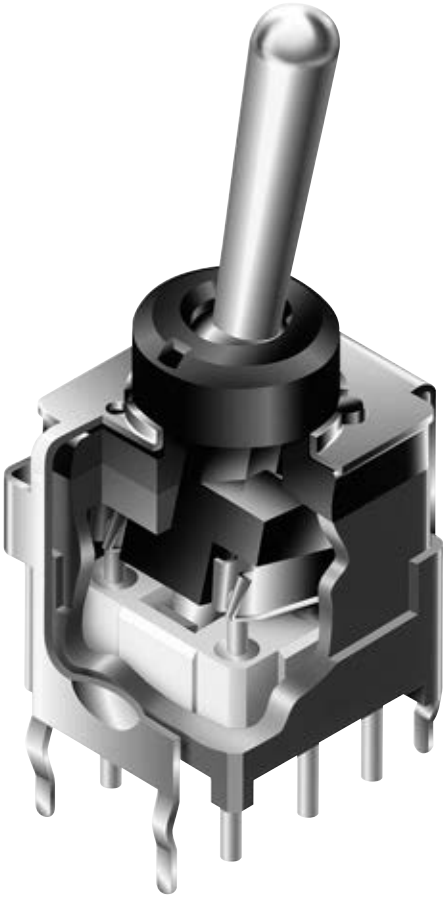
Locking lever mechanism offered as a toggle option.

Optional threaded, 6mm diameter bushing for panel seal mounting meets IP65 of IEC 60529 specifications (similar to NEMA 4 and 13).

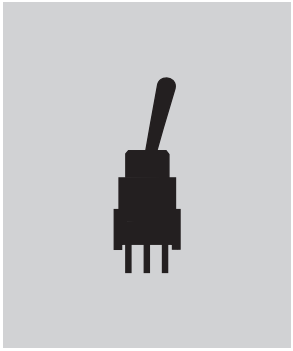
Totally sealed body construction prevents contact contamination and allows time- and money-saving soldering and cleaning. Epoxy sealed terminals lock out flux and other contaminants.

Award-winning STC contact mechanism with benefits unavailable in conventional mechanisms: smoother, positive detent actuation, increased contact stability and unparalleled logic-level reliability. (Additional STC details in Terms & Acronyms; see Supplement section.)

.100" x .100" (2.54mm x 2.54mm) terminal spacing conforms to standard PC board grid spacing.



Actual Size



TYPICAL SWITCH ORDERING EXAMPLE

B 1 2 A B — ☐ ☐

Poles

1	SPDT
2	DPDT

Toggles

A	.394" (10.0mm) Bat
A1	.315" (8.0mm) Bat with Panel Seal Threaded Bushing (Straight PC only)
J	.248" (6.3mm) Bat
E	.394" (10.0mm) Flatted
H	.248" (6.3mm) Flatted
L	Locking Lever (with Circuits 2 & 3 only)

Optional Caps

G	.394" (10.0mm) Bat Lever Cap
J	.248" (6.3mm) Bat Lever Cap

Circuits

2	ON	NONE	ON
3	ON	OFF	ON
5	ON	NONE	(ON)
*R	(ON)	NONE	ON
8	(ON)	OFF	(ON)
9	ON	OFF	(ON)
*S	(ON)	OFF	ON

( ) = Momentary

* Reverse circuits R & S available with right angle & vertical only

PC Terminals

P	Straight
*B	Straight with Bracket
*H	Right Angle with Bracket
*V	Vertical with Bracket

* Bracketed models are ESD protected

Cap Colors

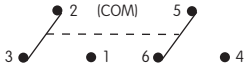
A	Black
B	White
C	Red

DESCRIPTION FOR TYPICAL ORDERING EXAMPLE

B12AB



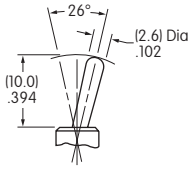
POLES & CIRCUITS

Pole	Model	Toggle Position ( ) = Momentary — Up	Center	Down	Connected Terminals — Up	Center	Down	Throw & Schematics
		Slot			Slot			Note: Terminal numbers are not actually on the switch.
SP	**B12**	ON	NONE	ON	2-3	OPEN	2-1	SPDT 
	B13	ON	OFF	ON				
	B15	ON	NONE	(ON)				
	B1R	(ON)	NONE	ON				
	B18	(ON)	OFF	(ON)				
	B19	ON	OFF	(ON)				
	B1S	(ON)	OFF	ON				
DP	**B22**	ON	NONE	ON	2-3 5-6	OPEN	2-1 5-4	DPDT 
	B23	ON	OFF	ON				
	B25	ON	NONE	(ON)				
	B2R	(ON)	NONE	ON				
	B28	(ON)	OFF	(ON)				
	B29	ON	OFF	(ON)				
	B2S	(ON)	OFF	ON				

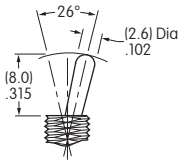
TOGGLES

Standard Material & Finish: Brass with Bright Nickel

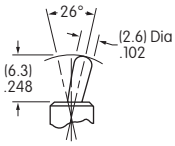
A **.394" (10.0mm) Bat**



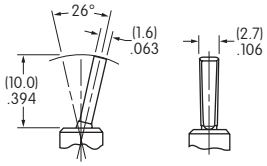
A1 **.315" (8.0mm) Bat with Panel Seal Threaded Bushing**



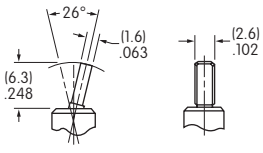
J **.248" (6.3mm) Bat**



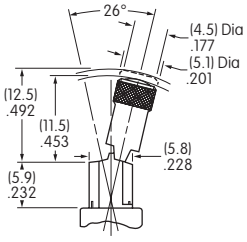
E **.394" (10.0mm) Flatted**



H **.248" (6.3mm) Flatted**



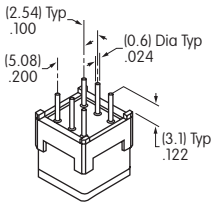
L **Locking Lever**



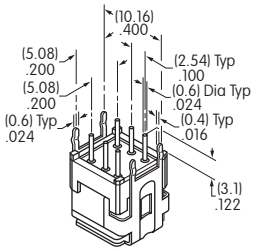
PC TERMINALS

Use of a support bracket is recommended to increase PCB mounting strength and stability.

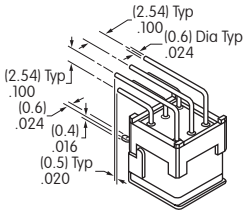
P **Straight**



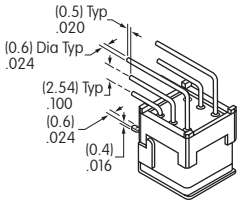
B **Straight with Bracket**



H **Right Angle with Bracket**



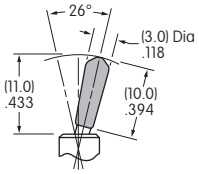
V **Vertical with Bracket**



OPTIONAL CAPS

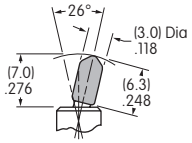
G **AT4003**
.394" (10.0mm) Bat Lever Cap

Material: PVC
Colors Available:
A, B, C



J **AT4064**
.248" (6.3mm) Bat Lever Cap

Material: PVC
Colors Available:
A, B, C

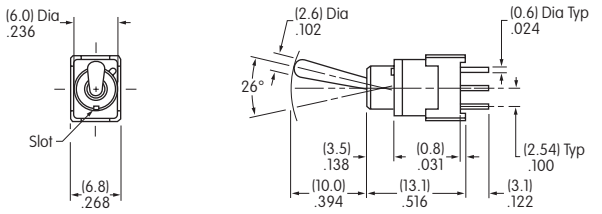


Color Codes:

A Black **B** White **C** Red

TYPICAL SWITCH DIMENSIONS

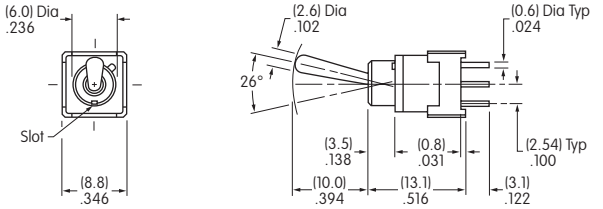
Single Pole — Straight PC





B12AP

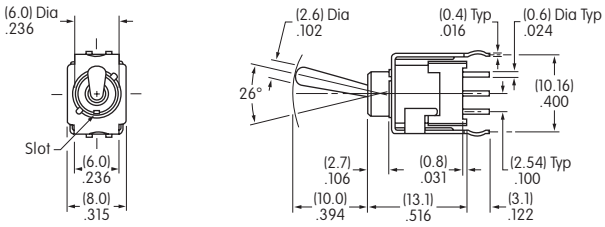
Double Pole — Straight PC





B22AP

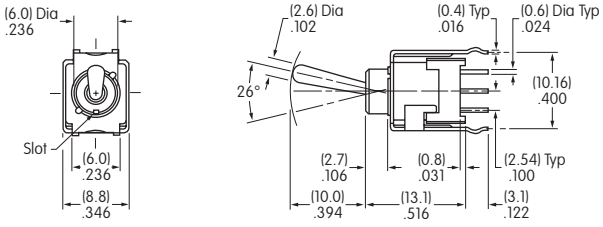
Single Pole — Straight PC • Bracket





B12AB

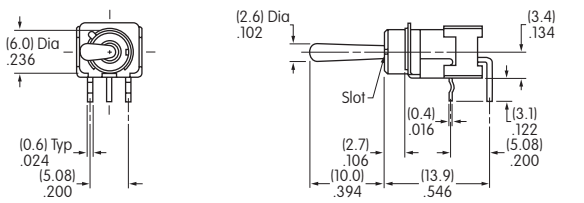
Double Pole — Straight PC • Bracket





B22AB

Single Pole — Right Angle PC





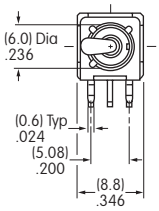
B12AH

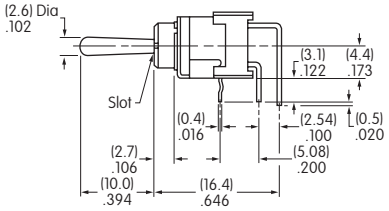
TYPICAL SWITCH DIMENSIONS

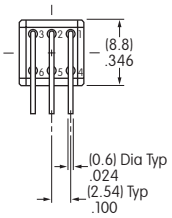
Right Angle PC — Double Pole

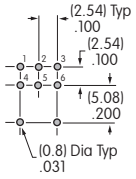


B22AH





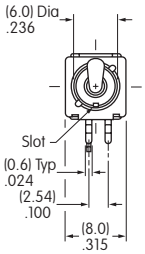


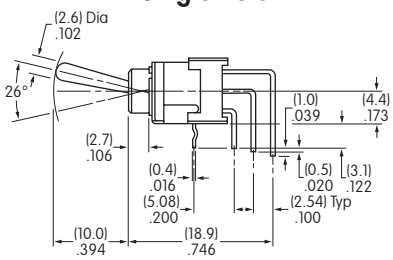


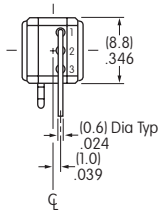
Vertical PC — Single Pole

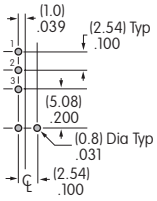


B12AV





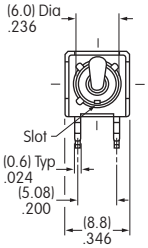


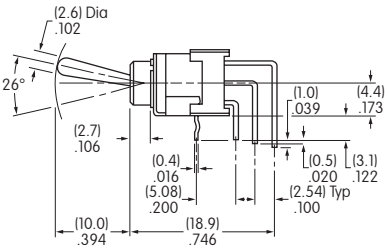


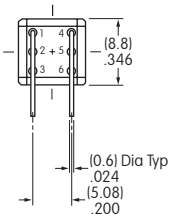
Vertical PC — Double Pole

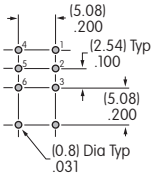


B22AV





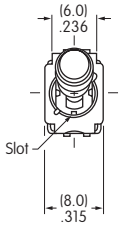


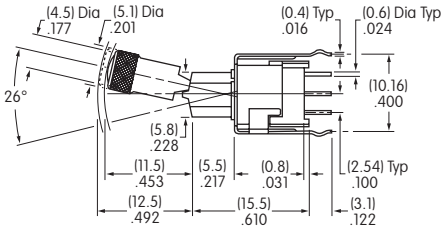


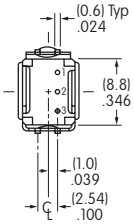
Locking Lever • Straight PC • Bracket — Single Pole

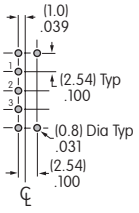


B12LB





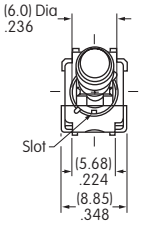


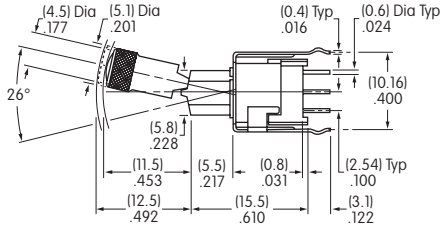


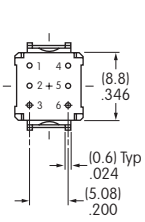
Locking Lever • Straight PC • Bracket — Double Pole

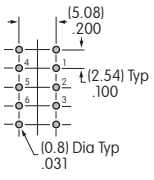


B22LB



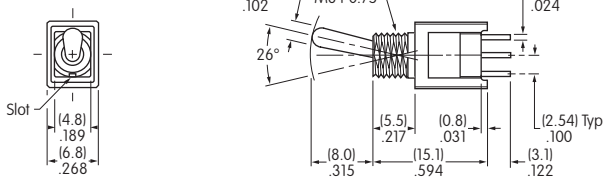




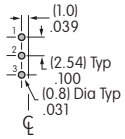


TYPICAL SWITCH DIMENSIONS

Panel Seal • Single Pole



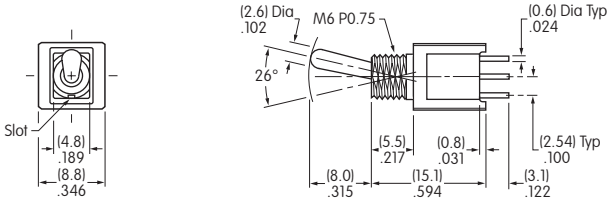
Threaded Bushing • Straight PC



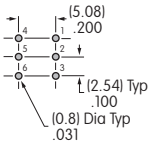


B12A1P

Panel Seal • Double Pole



Threaded Bushing • Straight PC



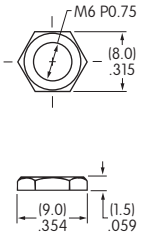


B22A1P

STANDARD HARDWARE & PANEL CUTOUT

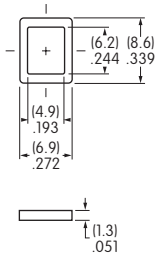
AT513M
Metric Hex Nut

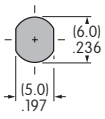
Material:
Brass,
Nickel plated



AT063
Gasket

Material:
Nitrile butadiene rubber





Maximum Panel Thickness with Standard Hardware: .087" (2.2mm)