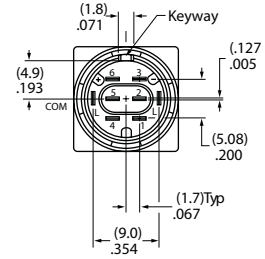
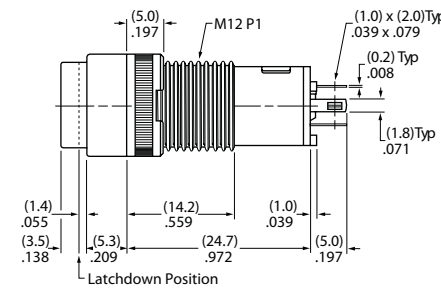
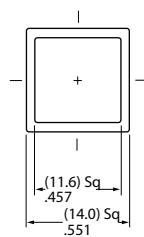


Miniature Pushbuttons

KB Series

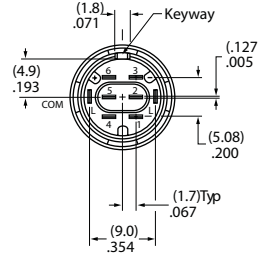
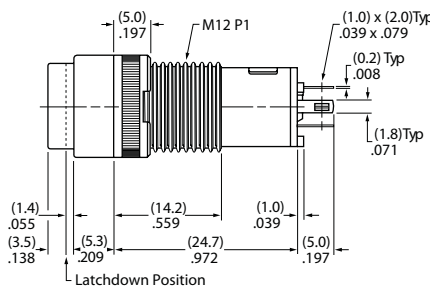
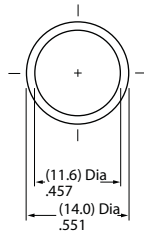
Square • Bushing Mount



KB15SKW01-05-GG Single & Double Pole

Single pole models do not have terminals 4, 5, & 6.

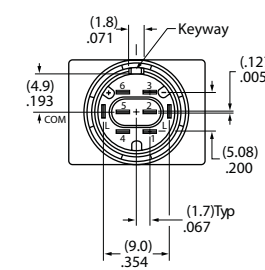
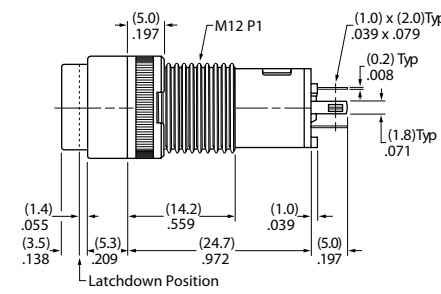
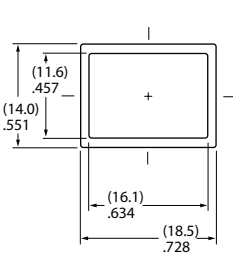
Round • Bushing Mount



KB25CKW01-05-GG Single & Double Pole

Single pole models do not have terminals 4, 5, & 6.

Rectangular • Bushing Mount



KB15RKW01-05-GG Single & Double Pole

Single pole models do not have terminals 4, 5, & 6.

How to order:

KB - -

- 1 POLES:**
1 SPDT
2 DPDT
- 2 CIRCUITS:**
5 ON-(ON)
6 ON-(ON (Alternate Action with Latchdown))

- 3 SHAPES:**
 Bushing Mounting
S Square
C Round
R Rectangular

- Snap-in Mounting
K Square
M Round
N Rectangular

- 4 HOUSING:**
K Black only

- 5 CONTACTS & TERMINALS:**
W01 Silver Contacts and Solder Lug Terminals 1A @ 125/250V AC
G01 Gold Contacts and Solder Lug Terminals 0.4VA @ 28V AC/DC

- 6 BARRIER TYPE:**
Blank No Barrier
B With Barrier

- 7 LAMPS:**
 Type1: Incandescent Lamp used with Solid Cap
05 5-volt
12 12-volt
 Type2: Incandescent or Neon used w / Insert Cap
01 110-volt Neon
05 5-volt Incandescent
12 12-volt Incandescent

Type 3: Bright LED used with LED Cap

	No Resistor	5-volt	12-volt	24-volt
Red	5C	5C05	5C12	5C24
Amber	5D	5D05	5D12	5D24
Green	5F	5F05	5F12	5F24

- Type 4: Super Bright LED used with LED Cap
6B White
6F Green
6G Blue

- 8 CAPS TYPES & COLORS:**
 Solid Cap: Lens/Filter Colors (for type 1 lamp)
BB White/White **FB** Green/White
CB Red/White **FF** Green/Green
CC Red/Red **GB** Blue/White
EB Yellow/White **GG** Blue/Blue

- Insert Cap: Lens/Filter Colors (for type 2 lamp)
JB Clear/White
JC Clear/Red
JE Clear/Yellow
***JF** Clear/Green
***JG** Clear/Blue
 * JF & JG not suitable with neon.

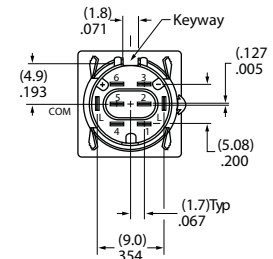
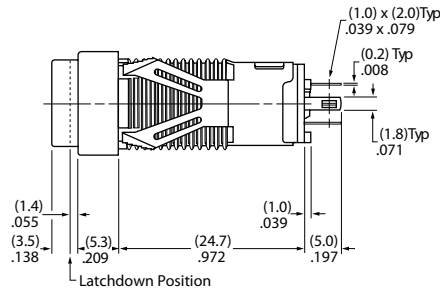
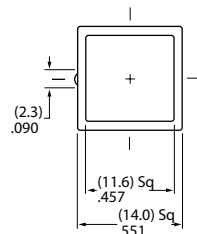
- LED Cap: Lens/Diffuser Colors (for type 3 lamp)
JB Clear/White
JC Clear/Red
JD Clear/Amber
JF Clear/Green
AB Square Spot Illuminated Black Cap/White Window

- LED Cap: Lens/Diffuser Colors (for type 4 lamp)
JB Clear/White

TYPICAL SWITCH DIMENSIONS

Square • Snap-in Mount

Single & Double Pole

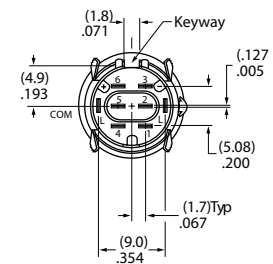
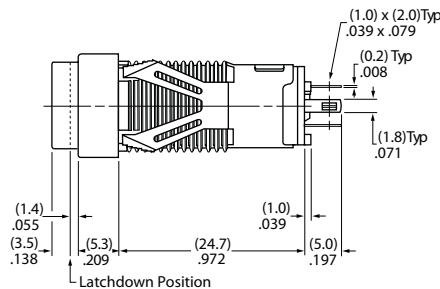
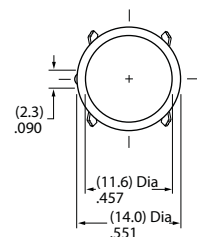


KB16KKW01-05-CB

Single pole models do not have terminals 4, 5, & 6.

Round • Snap-in Mount

Single & Double Pole

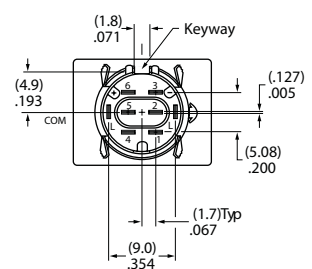
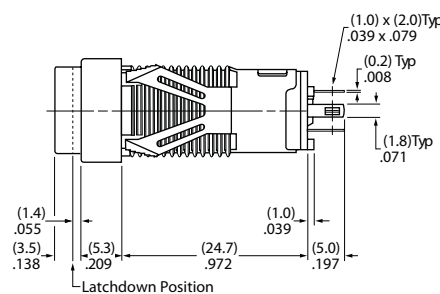
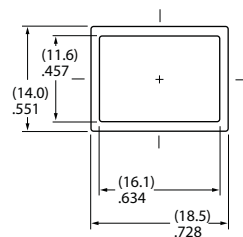


KB26MKW01-05-CB

Single pole models do not have terminals 4, 5, & 6.

Rectangular • Snap-in Mount

Single & Double Pole



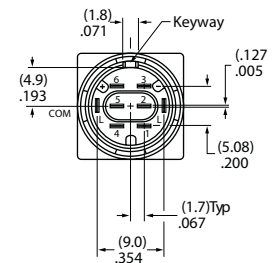
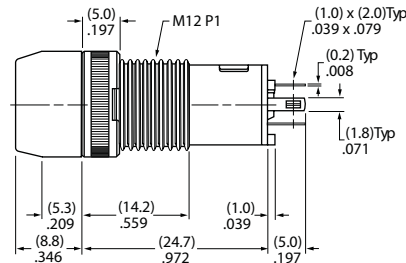
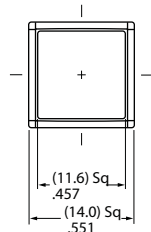
KB16NKW01-05-CB

Single pole models do not have terminals 4, 5, & 6.

TYPICAL SWITCH DIMENSIONS

Square • Barrier • Bushing Mount

Single & Double Pole

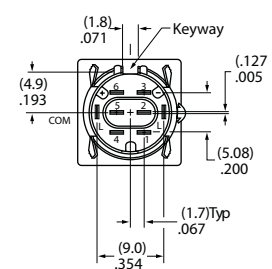
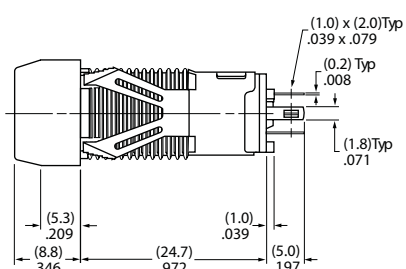
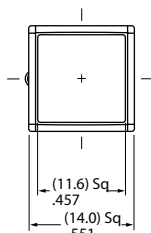


KB15SKW01B-6G-JB

Single pole models do not have terminals 4, 5, & 6.

Square • Barrier • Snap-in Mount

Single & Double Pole

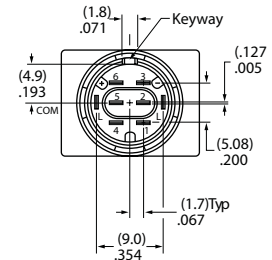
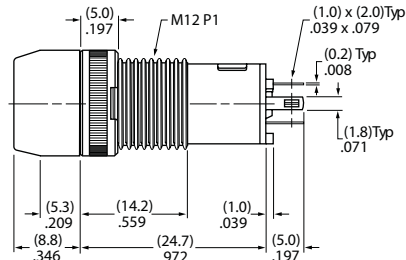
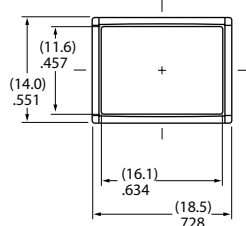


KB15KKW01B-5C-JC

Single pole models do not have terminals 4, 5, & 6.

Rectangular • Barrier • Bushing Mount

Single & Double Pole

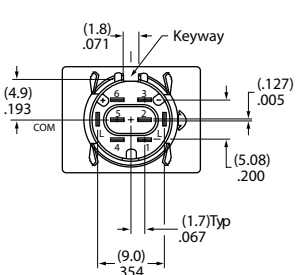
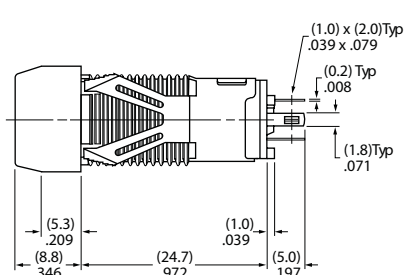
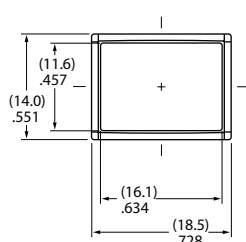


KB15RKW01B-5F-JF

Single pole models do not have terminals 4, 5, & 6.

Rectangular • Barrier • Snap-in Mount

Single & Double Pole



KB15NKKW01B-5D-JD

Single pole models do not have terminals 4, 5, & 6.

General Specifications

Electrical Capacity (Resistive Load)

Power Level (silver): 1A @ 125/250V AC or 1A @ 30V DC
 Logic Level (gold): 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: 1,000 megohms minimum @ 500V DC
 Dielectric Strength: For Silver: 1,000V AC minimum between contacts for 1 minute minimum & 1,500V AC minimum between contacts & case for 1 minute minimum
 For Gold: 750V AC minimum between contacts for 1 minute minimum & 1,500V AC minimum between contacts & case for 1 minute minimum
 Mechanical Life: 100,000 operations minimum
 Electrical Life: 50,000 operations minimum for silver; 100,000 operations minimum for gold
 Nominal Operating Force: Single pole 0.98 ~ 2.45N for maintained & 0.98 ~ 1.96N for momentary;
 Double pole 1.47 ~ 3.43N for maintained & 1.47 ~ 2.94N for momentary
 Contact Timing: Nonshorting (break-before-make)
 Travel: Pretravel .087" (2.2mm); Overtravel .031" (0.8mm); Total Travel .118" (3.0mm)

Materials & Finishes

Housing: Polyamide (UL94V-0)
 Movable Contactor: Silver for power circuit; copper with gold plating for logic level circuit
 Stationary Contacts: Silver for power circuit; copper with gold plating for logic level circuit
 Housing Base: Polyamide (UL94V-0)
 Terminal Base: Polyester
 Common Terminals: Phosphor bronze with silver flash plating for power circuit;
 Phosphor bronze with gold flash plating for logic level circuit
 End Terminals: Brass with silver flash plating for power circuit;
 Brass with gold flash plating for logic level circuit
 Lamp Terminals: Phosphor bronze with nickel flash plating

Environmental Data

Operating Temp Range: -25°C through +50°C (-13°F through +122°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 3 shocks in each direction)

Installation

Mounting Torque: 0.78Nm (6.9 lb · in) maximum
 Cap Installation Force: 4.51N (1.0 lbf) maximum downward force on cap
 Soldering Time & Temperature: Manual Soldering: See Profile A in Supplement section

Standards & Certifications



Flammability Standards: UL94V-0 housing & housing base
 UL & C-UL Recognized: Single & double pole models recognized at 1A @ 125/250V AC, 1A @ 30V DC, & 0.4A @ 28V DC;
 UL File No. WOYR2.E44145: add "/U" to end of part number to order UL mark on switch.
 UL File No. WOYR8.E44145: add "/C-UL" to end of part number to order C-UL mark on switch.
 CSA Certified: Single & double pole models recognized at 1A @ 125/250V AC, 1A @ 30V DC, & 0.4VA @ 28V maximum; CSA File No. 023535-0-000;
 add "/C" to end of part number to order CSA mark on switch.

POLE & CIRCUIT

Pole	Model	Plunger Position () = Momentary		Connected Terminals		Throw & Switch/Lamp Schematics
		Normal	Down	Normal	Down	
SP	KB15 *KB16	ON ON	(ON) ON	2-3	2-1	SPDT 
DP	KB25 *KB26	ON ON	(ON) ON	1-3 4-6	2-1 5-4	DPDT 

* When in latchdown position for the alternate circuit, cap position is .055" (1.4mm) above the built-in bezel.

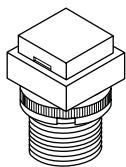
CUTAWAY



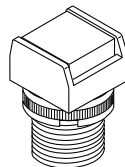
MOUNTING TYPES & SHAPES

Bushing Mounting

S .551" (14.0mm)
Square

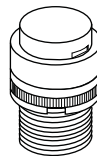


No barrier

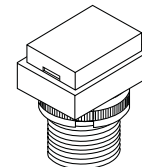


With barrier

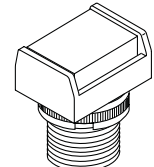
C .551" (14.0mm)
Round



R .551" x .728" (14.0mm x 18.5mm)
Rectangular



No barrier

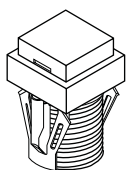


With barrier

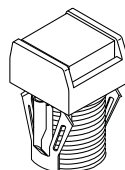
Bezel or barrier is an integral part of the switch body. One mounting nut AT057 supplied with each switch.

Snap-in Mounting

K .551" (14.0mm)
Square

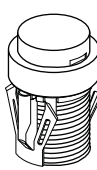


No barrier

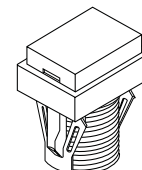


With barrier

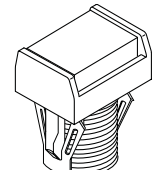
M .551" (14.0mm)
Round



N .551" x .728" (14.0mm x 18.5mm)
Rectangular



No barrier



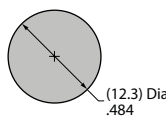
With barrier

Bezel or barrier is an integral part of the switch body.

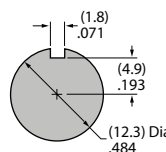
Panel Cutouts

Bushing Mounting

Without
Keyway



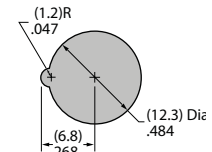
Panel Thickness:
.020" ~ .315"
(0.5 ~ 8.0mm)



With
Keyway

Snap-in Mounting

Panel Thickness:
.039" ~ .138"
(1.0 ~ 3.5mm)



Panel thicknesses, when using optional accessories, are shown with the accessories at the end of this KB section.

CONTACT MATERIALS, RATINGS & TERMINALS



Silver Contacts

Power Level
1A @ 125V AC & 250V AC

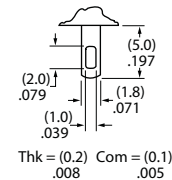


Solder Lug



Gold Contacts

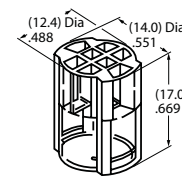
Logic Level
0.4VA maximum @ 28V AC/DC



Complete explanation of operating range in Supplement section.

A partitioned plastic guard is supplied with each switch to provide insulation between terminals.
Installation steps:

1. Identify wire-to-terminal connections.
2. Thread wires through the guard.
3. Solder the connections.
4. Push the guard fully onto the switch body.



LAMP COLORS & SPECIFICATIONS

The electrical specifications shown are determined at a basic temperature of 25°C
LED circuit is isolated and requires external power source. Polarity marks are on the bottom of the switch.
If the source voltage exceeds the rated voltage, a ballast resistor is required.
The resistor value can be calculated by using the formula in the Supplement section.
Ambient Temperature Range for lamps below: -25°C ~ +50°C.

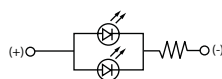
Incandescent & Neon Lamps

AT611 Incandescent  T-1 Bi-pin	AT615 Neon 		05	12	01	Recommended Resistors for Neon: 33K ohms for 110V AC; 100K ohms for 220V AC	
		Voltage	V	5V AC	12V AC		110V AC
		Current	I	115mA	60mA		1.5mA
		Endurance	Hours	7,000 average			10,000

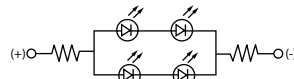
Bright LED with Resistor

AT634 LEDs are colored in OFF state.  T-1¼ Bi-pin	Color Codes:			Resistor Codes			
	Red	Amber	Green				
	5C	5D	5F	05	12	24	
	Forward Peak Current			I_{FM}	—	—	—
	Continuous Forward Current			I_F	25mA	20mA	10mA
	Forward Voltage			V_F	5V	12V	24V
	Reverse Peak Voltage			V_{RM}	4V	8V	16V
	Current Reduction Rate Above 25°C			ΔI_F	—	—	—

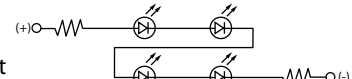
AT634
5-volt
2-element
with 1 Resistor



AT634
12-volt
4-element
with 2 Resistors



AT634
24-volt
4-element
with 2 Resistors



LAMP COLORS & SPECIFICATIONS

Bright LED without Resistor

AT635 LEDs are colored in OFF state.   T-1 1/2 Bi-pin	Red Amber Green	No Code No Resistor					
	Color Codes	5C	5D	5F	Red	Amber	Green
	Forward Peak Current	I _{FM}			30mA	30mA	30mA
	Continuous Forward Current	I _F			20mA	20mA	20mA
	Forward Voltage	V _F			1.9V	2.0V	2.1V
	Reverse Peak Voltage	V _{RM}			5V	5V	5V
	Current Reduction Rate Above 25°C	ΔI _F			0.42mA/°C		
	Ambient Temperature Range				-25° ~ +50°C		

Super Bright Single Element LED

AT625G Blue			Color	6B	6F	6G		
AT631B White				White	Green	Blue		
AT632F Green				Forward Peak Current	I_{FM}	30mA	30mA	30mA
				Continuous Forward Current	I_F	20mA	20mA	20mA
				Forward Voltage	V_F	3.6V	3.5V	3.6V
				Reverse Peak Voltage	V_{RM}	5V	5V	5V
				Current Reduction Rate Above 25°C	ΔI_F	0.50mA/°C	0.50mA/°C	0.50mA/°C
				Ambient Temperature Range		-25° ~ +50°C		

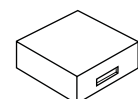
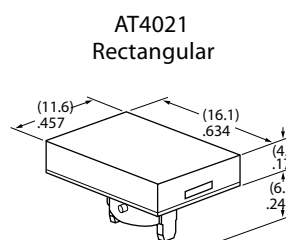
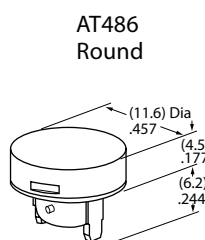
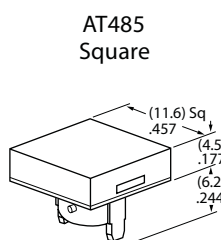
CAP TYPES & COLOR COMBINATIONS

Color Codes: A Black B White C Red E Yellow F Green G Blue J Clear

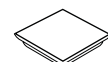
Solid Cap for Incandescent Lamp

Lens/Filter Colors Available:

BB	FB
CB	FF
CC	GB
EB	GG



Translucent Colored Lens



Translucent Colored Filter



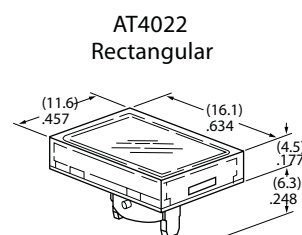
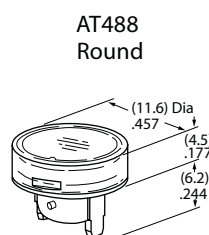
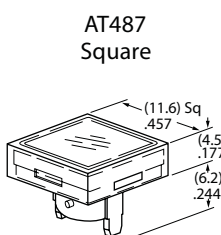
Lamp AT611

Material: Polycarbonate Finish: Glossy

Insert Cap for Incandescent or Neon Lamp

Lens/Filter Colors Available:

JB	JF
JC	JG
JE	



Transparent Clear Lens



Translucent Colored Filter



Lamp AT611 Lamp AT615

Material: Polycarbonate Finish: Glossy

JF and JG not suitable with neon lamp.

OPTIONAL ACCESSORIES

Color Codes: A Black B White C Red D Amber E Yellow F Green G Blue J Clear

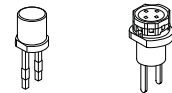
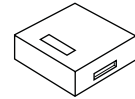
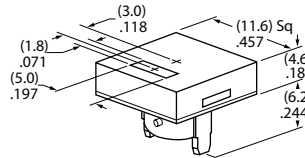
Spot Illuminated Cap for Bright LED without Resistor or with Resistor

Cap/Window Colors Available:

AB

Opaque Black Cap with
Translucent White Window
for Spot Illumination

AT4051
Square



Bright LED AT635 Bright LED AT634

Material: Polycarbonate Finish: Matte

Cap for Bright LED without Resistor or LED with Resistor

Lens/Diffuser Colors Available: (AT4133, 4132, 4134 white diffusers; AT4158, 4160, 4159 colored diffusers)

JB

AT4133

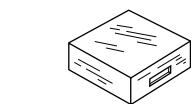
AT4132

AT4134

Square

Round

Rectangular



Transparent Clear Lens

JC

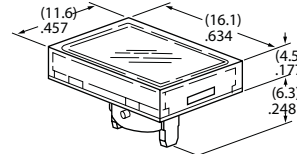
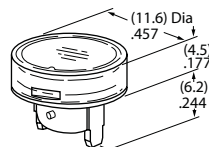
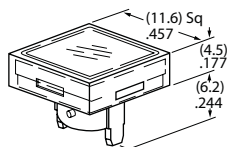
AT4158

AT4160

AT4159

JD

JF



Translucent Diffuser



Bright LED AT635 Bright LED AT634

Material: Polycarbonate Finish: Glossy

Cap for Super Bright LED

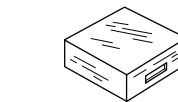
Lens/Diffuser Colors Available:

JB

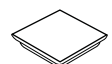
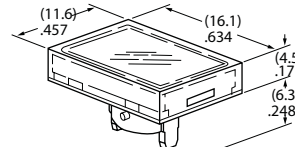
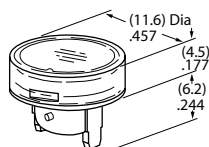
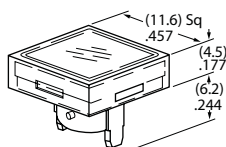
AT4133
Square

AT4132
Round

AT4134
Rectangular



Translucent Clear Lens



Translucent White Diffuser



Super Bright LEDs
AT625
AT631 AT632

Material: Polycarbonate Finish: Glossy

OPTIONAL ACCESSORIES

PCB Adaptors

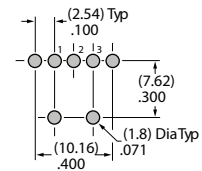
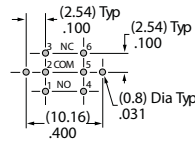
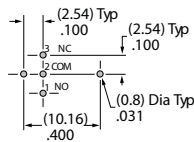
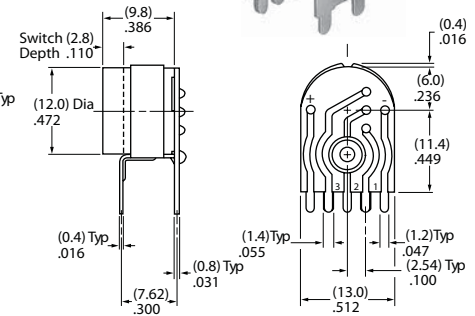
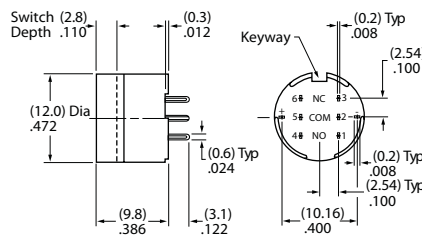
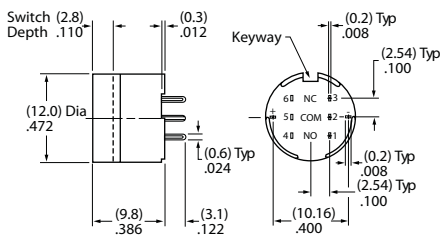
AT701
Single Pole
Straight PC
Terminals



AT702
Double Pole
Straight PC
Terminals



AT077
Single Pole
Right Angle
PC
Terminals

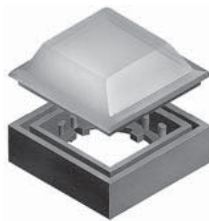


Material: Glass fiber reinforced polyamide Note: Order adaptors separately

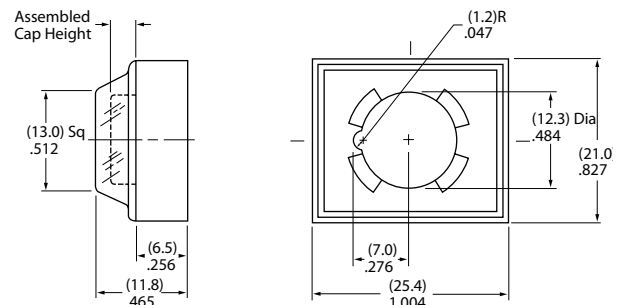
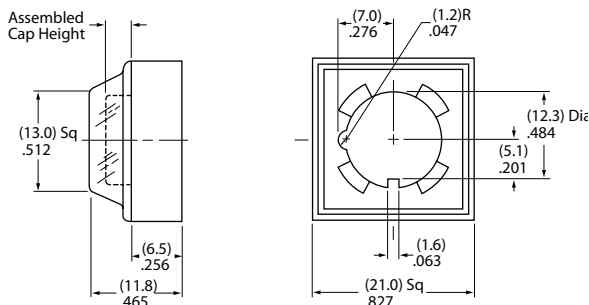
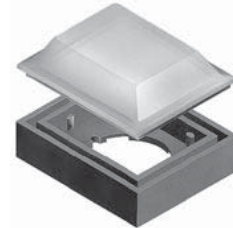
Dust Covers

Panel Thickness Range: .020 ~ .268" (0.5 ~ 6.8mm) for Bushing Mounting; .020 ~ .079" (0.5 ~ 2.0mm) for Snap-in Mounting
Dust Covers reduce the depth of switch behind panel by .047" (1.2mm).

AT495
For Square & Round
(not for Barrier type)



AT4025
For Rectangular
(not for Barrier type)



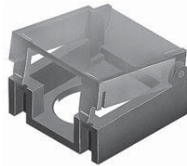
Material: Lid: PVC PVC loses pliability below 0°C (32°F).

Base: Polyamide

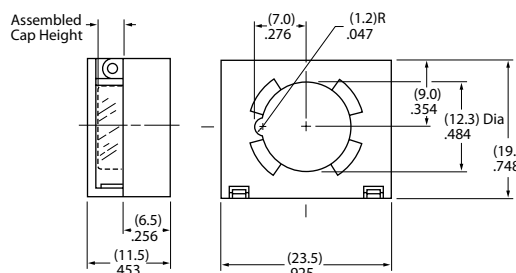
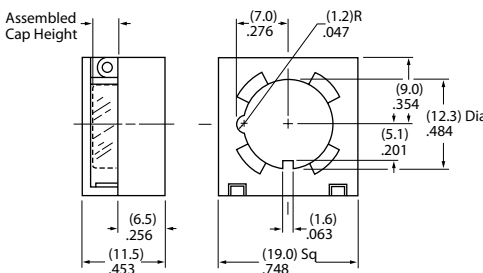
OPTIONAL ACCESSORIES

Protective Guards

AT494
For Square & Round
(not for Barrier type)



AT4024
For Rectangular
(not for Barrier type)



Material: Cover: Polycarbonate

Base: Polyamide

Panel Thickness
Range:

.020" ~ .268"
(0.5 ~ 6.8mm)
for Bushing Mounting

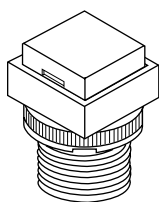
.020" ~ .091"
(0.5 ~ 2.3mm)
for Snap-in Mounting

Protective Guards reduce
the depth of switch
behind panel by
.047" (1.2mm).

ASSEMBLY INSTRUCTIONS

Cap Removal & Installation

For alternate action models cap must be in UP position for cap removal. Indentations on opposite sides of the cap provide an easy way to lift the cap out of the holder, using either the finger nails, or cap extractor AT109.



LED Polarity & Orientation in Lamp Socket

Super Bright LEDs AT625, AT631, & AT632 are electrostatic sensitive.



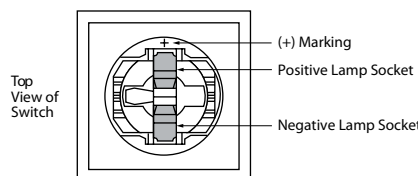
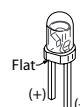
LED
AT635



LED
AT634

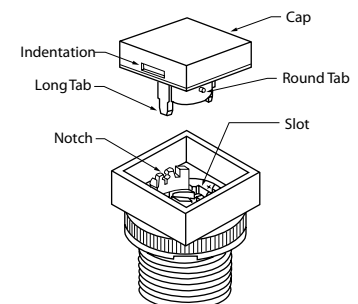


LEDs
AT625
AT631
AT632



Cap Replacement

Note that the cap has a pair of round tabs and a pair of long tabs which should be used for correctly replacing the cap in its holder. Using the long tabs as guides, slide the cap with the long tabs moving into the slots on opposite sides of the cap holder. Then, the round tabs will snap into notches on the other two sides of the holder.



AT108 Socket Wrench for Bushing Mounting

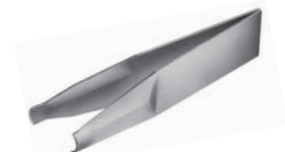
Overtightening the
mounting nut
may damage the
switch housing.



AT109 Cap Extractor



AT111 Lamping Tool

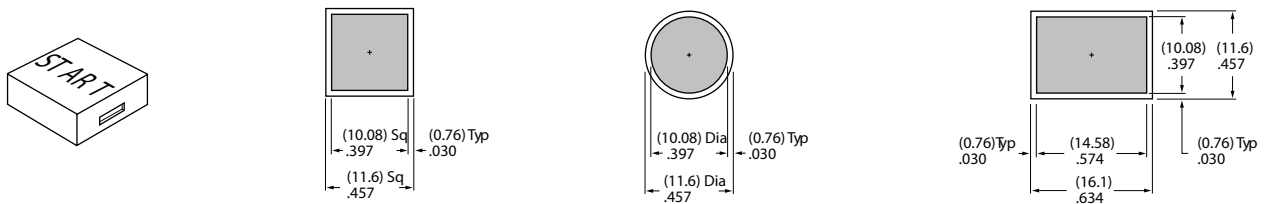


LEGENDS

General information and basic specifications are presented here for customers who want to do their own legends.

Suggested Printable Area for KB Lens

Recommended Methods: Laser Etch on clear lens, Screen Print, or Pad Print on Lens.
Epoxy based ink is recommended.

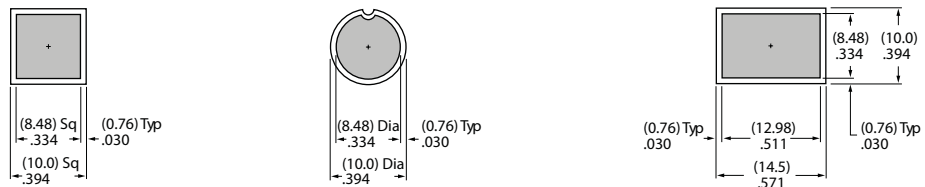
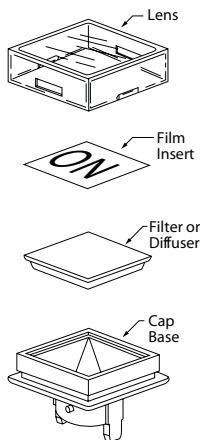


Shaded areas are printable areas.

Suggested Printable Area for Film Insert

Recommended Print Method: Screen Print with Epoxy based ink

Film Insert: Clear Polyester, 4 mil max. thickness



Shaded areas are printable areas.

Additional Methods

Additional methods for legends are engraving the lens and laser printing on film inserts.
Maximum depth for engraving is .012" (0.3mm) on the cap lens.
Enamel paint is recommended to fill the engraved area.