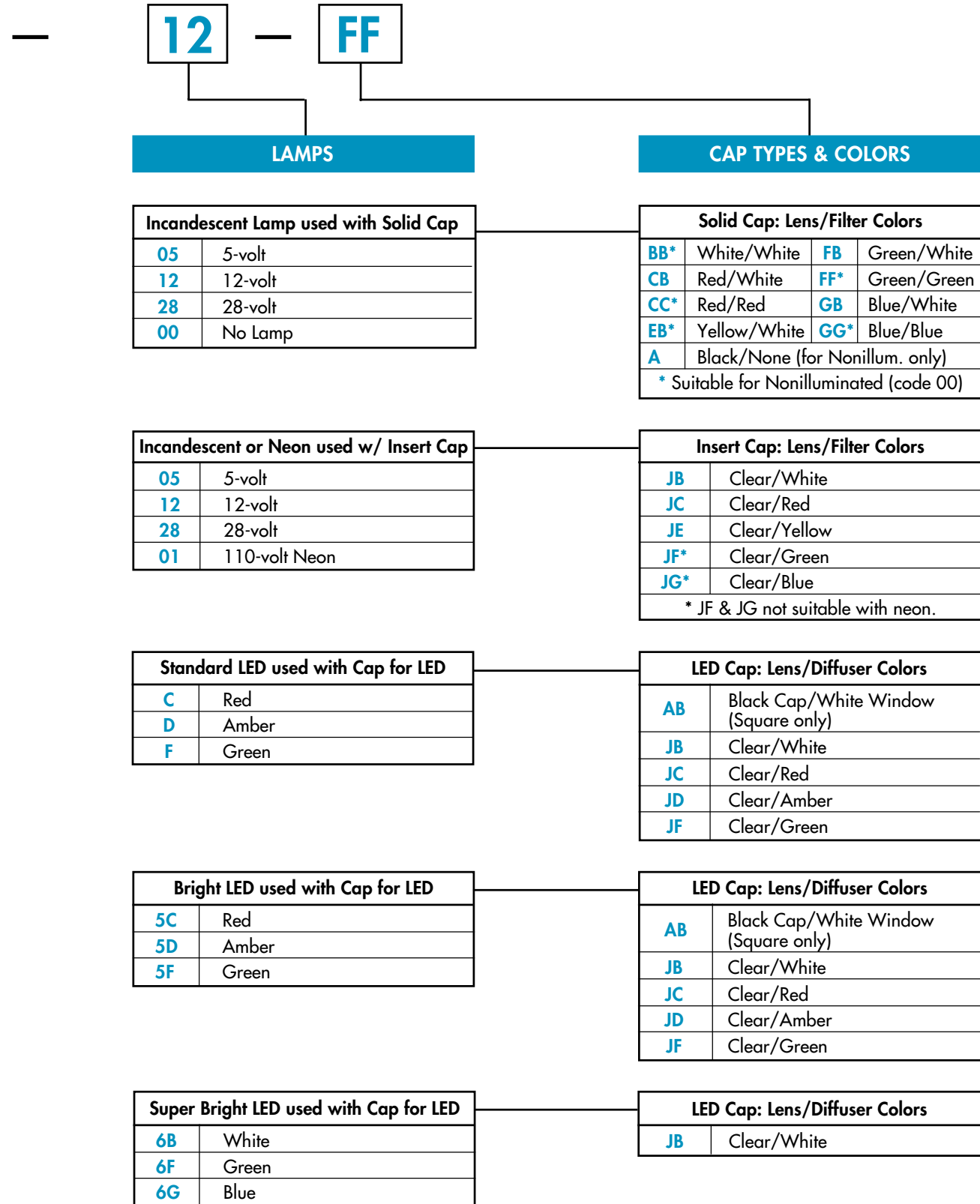
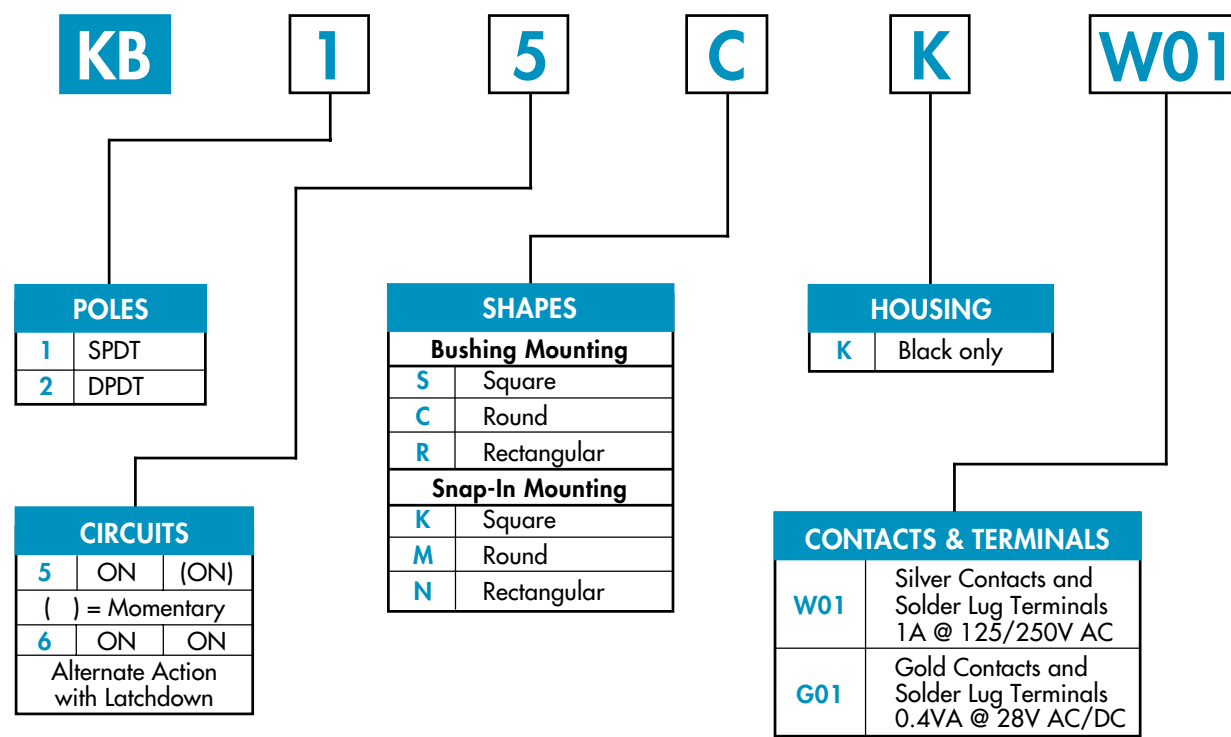
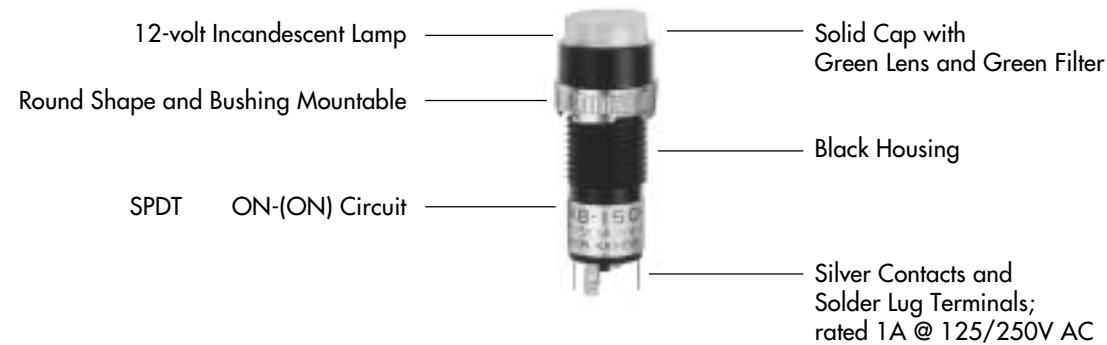



**TYPICAL SWITCH ORDERING EXAMPLE**



**DESCRIPTION FOR TYPICAL ORDERING EXAMPLE**

**KB15CKW01-12-FF**



**IMPORTANT:**  
 Switches are supplied without UL & CSA marking unless specified. Specific models & ratings noted on General Specifications page.

### GENERAL SPECIFICATIONS

#### Electrical Capacity (Resistive Load)

- Power Level (code W):** 1A @ 125/250V AC or 1A @ 30V DC  
**Logic Level (code G):** 0.4VA maximum @ 28V AC/DC maximum  
 Note: See Supplement Index (page Z1) to find explanation of operating range.

#### Other Ratings

- Contact Resistance:** 50 milliohms maximum  
**Insulation Resistance:** 1,000 megohms minimum @ 500V DC  
**Dielectric Strength:** 1,000V AC minimum between contacts & 1,500 minimum between contacts & case (silver); 750V AC minimum between contacts & 1,500 minimum between contacts & case (gold);  
**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 100 ~ 250 grams for maintained & 100 ~ 200 grams for momentary; Double pole 150 ~ 350 grams for maintained & 150 ~ 300 grams for momentary  
**Contact Timing:** Nonshorting (break-before-make)  
**Travel:** 2.2mm (.087") pretravel; 0.80mm (.031") overtravel; 3.0mm (.118") total travel

#### Materials & Finishes

- Housing:** Polyamide  
**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  
**Terminal Base:** Polyester  
**Common Terminal:** 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) for Illuminated  
 -25°C through +70°C (-13°F through +158°F) for Nonilluminated  
**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 acceleration (tested in 6 right angled directions, with 3 shocks in each direction)


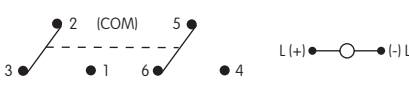
#### Installation

- Mounting Torque:** 8.0 kgf/cm (6.9 lb/in) downward force on actuator  
**Cap Installation Force:** 0.46 kg (1.0 lb)  
**Soldering Time & Temperature:** 3 seconds @ 350°C or 5 seconds @ 270°C  
**Process Seal:** Not available

#### Standards & Certifications

- Flammability Standards:** UL94V-0 housing and base  
**UL Recognized:** Single & double pole models recognized at 1A @ 125/250V AC, 1A @ 30V DC, & 0.4A @ 28V DC; UL File No. E44145  
**CSA Certified:** Single & double pole models recognized at 1A @ 125/250V AC, 1A @ 30V DC, & 0.4VA @ 28V maximum; CSA File No. LR23535

### POLES & CIRCUITS

		Plunger Position ( ) = Momentary		Connected Terminals		Throw & Power/Lamp Schematics
Pole	Model	Normal	Down	Normal	Down	
SP	KB15 KB16*	ON ON	(ON) ON	2-3	2-1	Notes: Switch is marked with "+" and "-". Lamp circuit is isolated and requires external power source. SPDT 
DP	KB25 KB26*	ON ON	(ON) ON	2-3 5-6	2-1 5-4	DPDT 

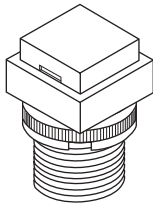
\* When in latched position for the alternate circuit, cap position is 1.4mm (.055") above the built-in bezel.

### SHAPES & MOUNTING TYPES

#### Bushing Mounting

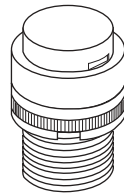
**S**

.551" Square



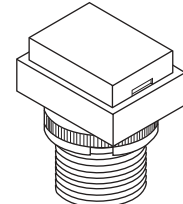
**C**

.551" Round



**R**

.551" x .728" Rectangular

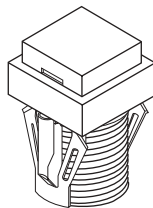


The bezel is an integral part of the switch body.

#### Snap-In Mounting

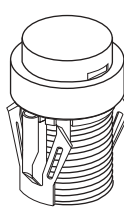
**K**

.551" Square



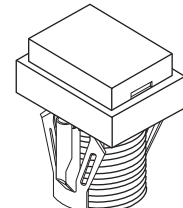
**M**

.551" Round



**N**

.551" x .728" Rectangular

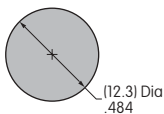


The bezel is an integral part of the switch body.

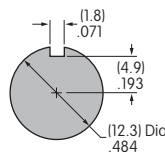
#### Panel Cutouts

##### Bushing Mounting

Without Keyway



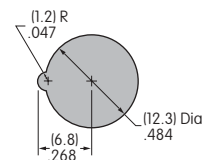
Panel Thickness:  
0.5 ~ 8mm  
(.020 ~ .315")



With Keyway

##### Snap-In Mounting

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



Panel thicknesses for optional accessories on pages L38 & L39.

### HOUSING

**K**

Housing available in black only. Shroud is an integral part of the switch body.

### CONTACT MATERIALS, RATINGS, & TERMINALS

**W** Silver Contacts

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

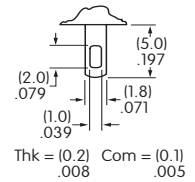
**G** Gold Contacts

**Logic Level**  
0.4VA maximum @ 28V AC/DC

See Supplement Index (page Z1) for complete explanation of operating range.

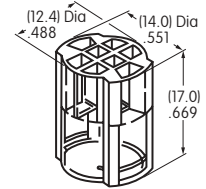
**01** Solder Lug

The .039" x .079" oblong hole accommodates one solid 20-gauge wire or two solid or stranded 22-gauge wires.



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 CODES & SPECIFICATIONS


Electrical specifications are determined at a basic temperature of 25°C. Lamp circuit is independent of switch operation. For dimension drawings of lamps see the Accessories & Hardware Index (page Y1).

If the source voltage is greater than rated voltage, a ballast resistor is required. The ballast resistor calculation and more lamp detail are shown in the Supplement; see Supplement Index (page Z1).


#### Incandescent & Neon Lamps

			<b>05</b>	<b>12</b>	<b>28</b> *	<b>01</b>	* Lamp life is significantly reduced in applications with DC current, high shock, vibration, or continuous illumination. Recommended Resistors for Neon: 33K ohms for 110V AC; 100K ohms for 220V AC
<b>AT611</b> Incandescent	<b>AT615</b> Neon	Voltage	5V AC	12V AC	28V AC	110V AC	
		Current	115mA	60mA	22mA	1.5mA	
T-1 Bi-pin		Endurance	7,000 average			10,000	

#### Standard Single Element LED

<b>AT614</b>			<b>C</b>	<b>D</b>	<b>F</b>
		LEDs are colored in OFF state.	Red	Amber	Green
		Forward Peak Current	50mA	50mA	50mA
		Continuous Forward Current	40mA	40mA	40mA
		Forward Voltage	1.75V	2.35V	2.35V
		Reverse Peak Voltage	4V	4V	4V
		Current Reduction Rate Above 25°C	0.67mA/°C	0.67mA/°C	0.67mA/°C

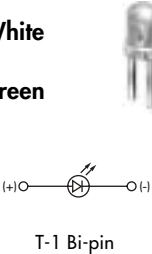

#### Bright Dual Element LED

<b>AT628</b>			<b>5C</b>	<b>5D</b>	<b>5F</b>
		LEDs are colored in OFF state.	Red	Amber	Green
		Forward Peak Current	40mA	40mA	40mA
		Continuous Forward Current	26mA	26mA	26mA
		Forward Voltage	1.9V	2.0V	2.2V
		Reverse Peak Voltage	4V	4V	4V
		Current Reduction Rate Above 25°C	0.50mA/°C	0.50mA/°C	0.50mA/°C

**00** **No Lamp** Code 00 indicates that no lamp is used with the solid cap.

## LAMP CODES & SPECIFICATIONS

### Super Bright Single Element LED

<b>AT625G Blue</b> <b>AT631B White</b> <b>AT632F Green</b> 		Color	<b>6B</b> White	<b>6F</b> Green	<b>6G</b> Blue	
		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	$\Delta I_F$	0.50mA/°C	0.50mA/°C	0.50mA/°C

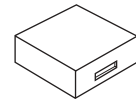
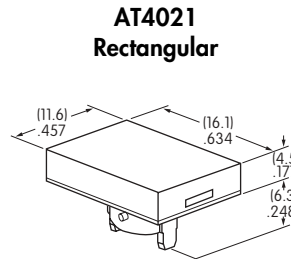
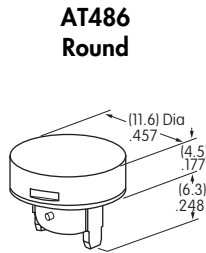
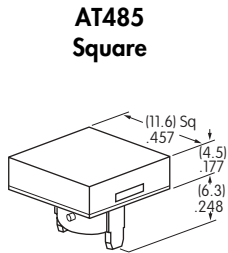
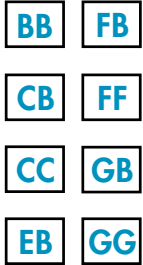
**00** **No Lamp** Code 00 indicates that no lamp is used with the solid cap.

## CAP TYPES & COLOR COMBINATIONS

### Solid Cap for Incandescent Lamp & for Nonilluminated

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

#### Lens/Filter Colors Available:



Translucent Colored Lens



Translucent Colored Filter



Lamp AT611 or No Lamp

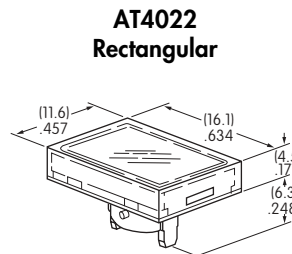
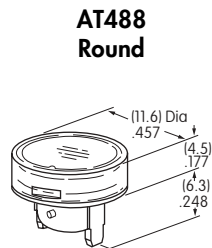
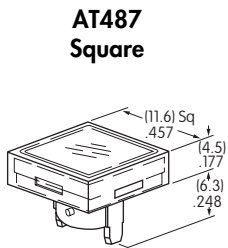
**A** For Nonilluminated Only (Not available in Rectangular)

BB CC EB FF and GG suitable for nonilluminated.

Material: Polycarbonate Finish: Glossy

### Insert Cap for Incandescent or Neon Lamp

#### Lens/Filter Colors Available:



Transparent Clear Lens



Translucent Colored Filter



Lamp AT611 Lamp AT615

JF and JG not suitable with neon lamp.

Material: Polycarbonate Finish: Glossy

## CAP TYPES & COLOR COMBINATIONS

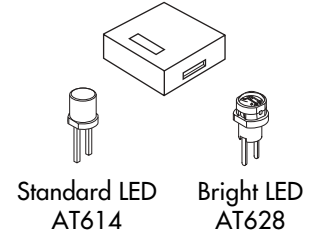
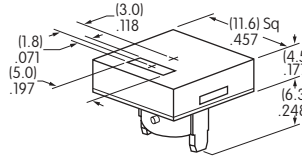
Color Codes: A Black B White C Red D Amber E Yellow F Green G Blue J Clear

### Spot Illuminated Cap for Standard & Bright LEDs

Cap/Window Colors Available:

**AB** Opaque Black Cap with Translucent White Window for Spot Illumination

**AT4051**  
Square



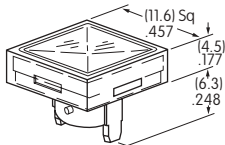
Material: Polycarbonate    Finish: Matte

### Cap for Standard LED

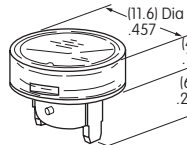
Lens/Diffuser Colors Available:

**JB**

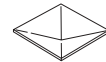
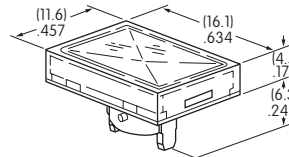
**AT489**  
Square



**AT490**  
Round



**AT4023**  
Rectangular



Standard LED AT614



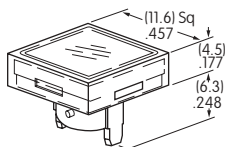
Material: Polycarbonate    Finish: Glossy

### Cap for Bright LED

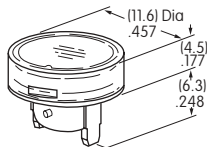
Lens/Diffuser Colors Available: (AT4133, 4132, 4134 white diffusers; AT4158, 4160, 4159 colored diffusers)

**JB**

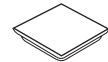
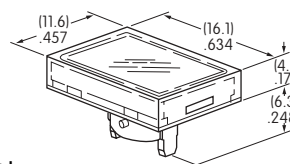
**AT4133**  
Square



**AT4132**  
Round



**AT4134**  
Rectangular



Bright LED AT628



**AT4158**

**AT4160**

**AT4159**

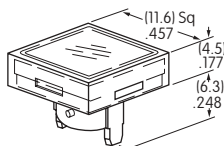
Material: Polycarbonate    Finish: Glossy

### Cap for Super Bright LED

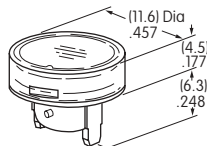
Lens/Diffuser Colors Available:

**JB**

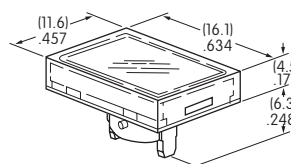
**AT4133**  
Square



**AT4132**  
Round



**AT4134**  
Rectangular



Super Bright LEDs AT625 AT631 AT632

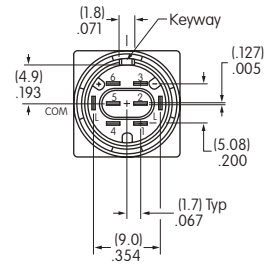
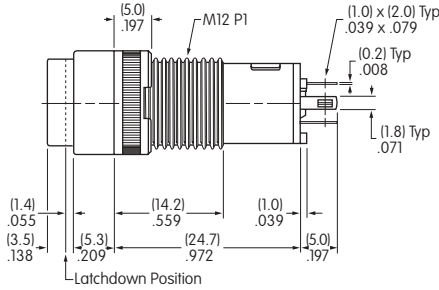
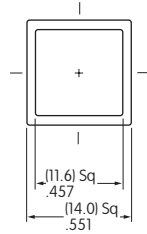


Material: Polycarbonate    Finish: Glossy

### TYPICAL SWITCH DIMENSIONS

#### Square • Bushing Mounting

#### Single & Double Pole

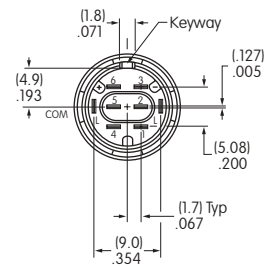
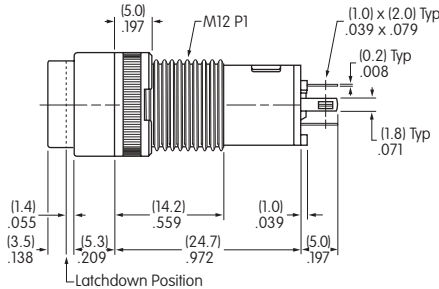
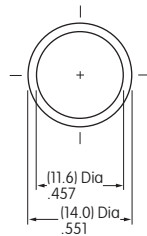


KB15KW01-05-GG

Terminals 4, 5, & 6 are not on single pole models.

#### Round • Bushing Mounting

#### Single & Double Pole

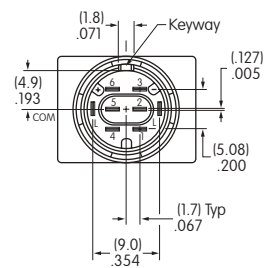
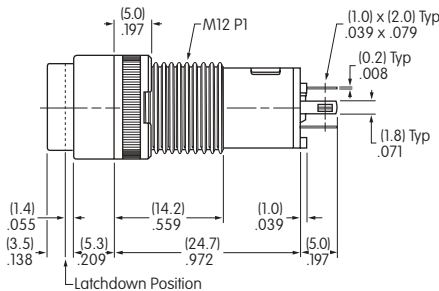
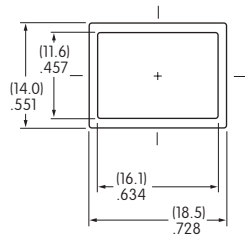


KB25CKW01-05-GG

Terminals 4, 5, & 6 are not on single pole models.

#### Rectangular • Bushing Mounting

#### Single & Double Pole



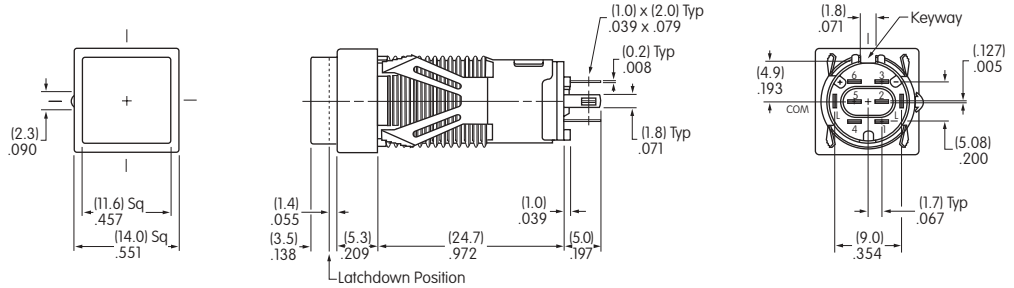
KB15RKW01-05-GG

Terminals 4, 5, & 6 are not on single pole models.

### TYPICAL SWITCH DIMENSIONS

#### Square • Snap-In Mounting

#### Single & Double Pole

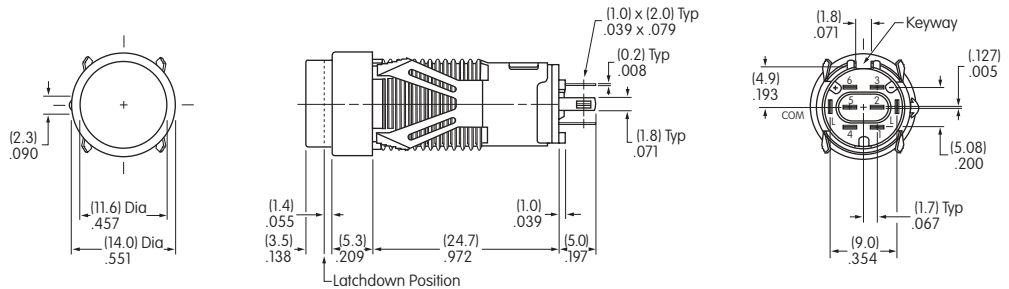


KB16KKW01-05-CB

Terminals 4, 5, & 6 are not on single pole models.

#### Round • Snap-In Mounting

#### Single & Double Pole

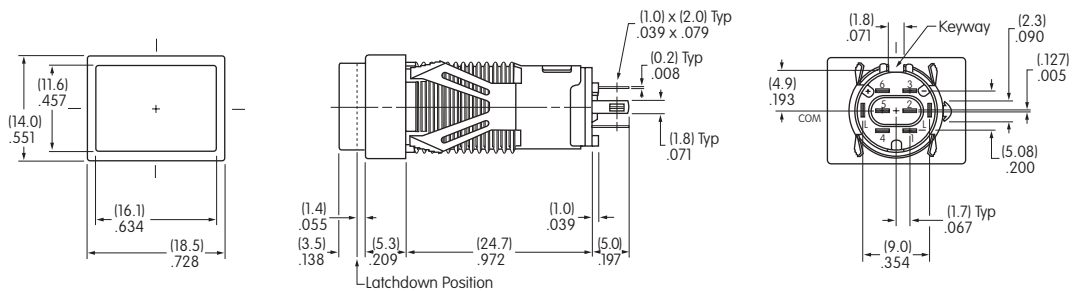


KB26MKW01-05-CB

Terminals 4, 5, & 6 are not on single pole models.

#### Rectangular • Snap-In Mounting

#### Single & Double Pole



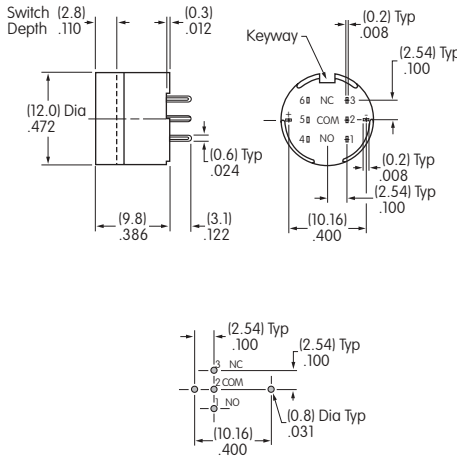
KB16NKW01-05-CB

Terminals 4, 5, & 6 are not on single pole models.

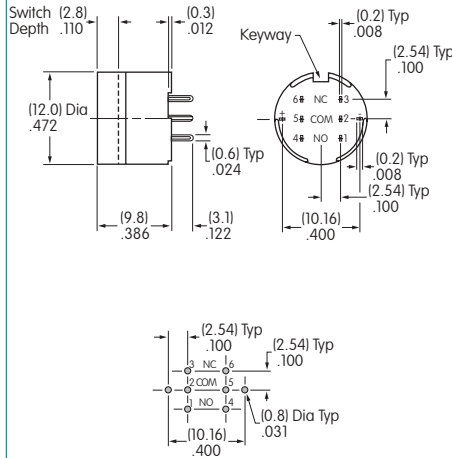
## OPTIONAL ACCESSORIES

### PCB Adaptors

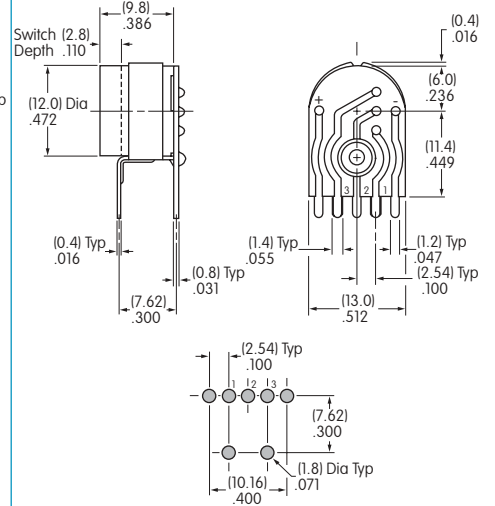
**AT701**  
Single Pole  
Straight PC  
Terminals



**AT702**  
Double Pole  
Straight PC  
Terminals



**AT077**  
Single Pole  
Right Angle PC  
Terminals

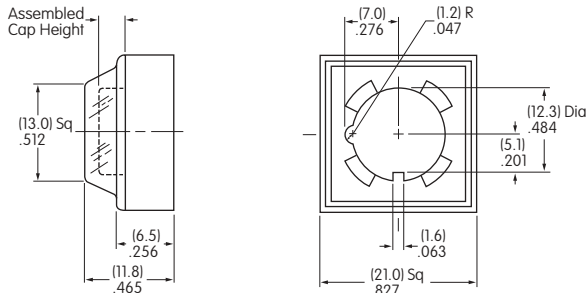
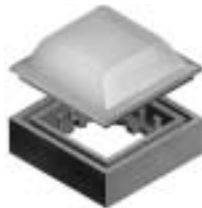


Material: Glass reinforced polyamide  
Note: Order adaptors separately.

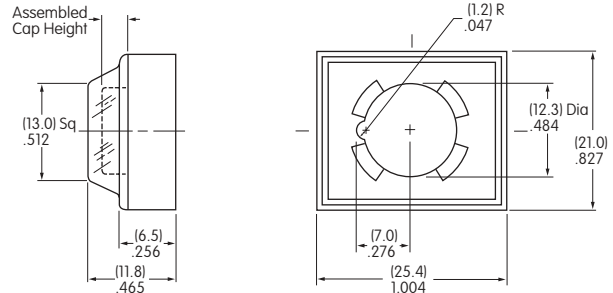
### Splash Covers

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

**AT495**  
For Square & Round



**AT4025**  
For Rectangular



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

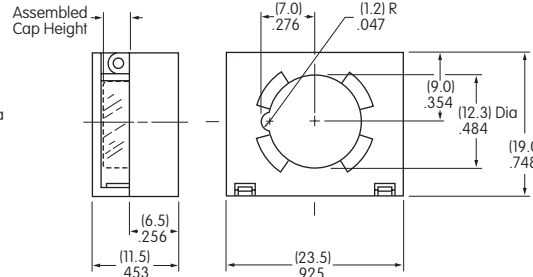
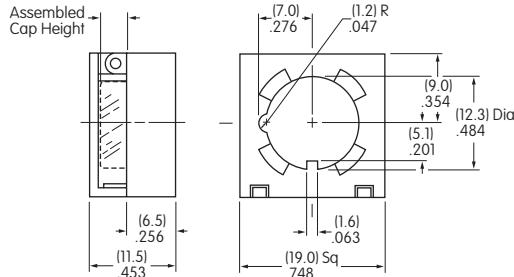
### OPTIONAL ACCESSORIES

#### Protective Guards

**AT494**  
For Square & Round



**AT4024**  
For Rectangular



Panel Thickness  
Range:

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

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

Protective Guards reduce  
the depth of switch  
behind panel by .047".

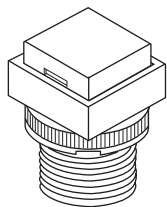
Material: Cover: Polycarbonate

Base: Polyamide

### 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.

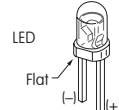
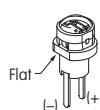


#### LED Polarity & Orientation in Lamp Socket

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

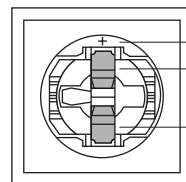


LED  
AT628



LEDs  
AT625  
AT631  
AT632

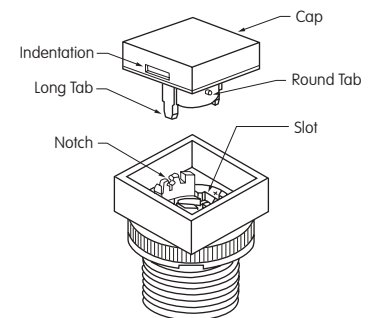
Top  
View of  
Switch



(+) Marking  
Positive Lamp Socket  
Negative Lamp Socket

#### 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.

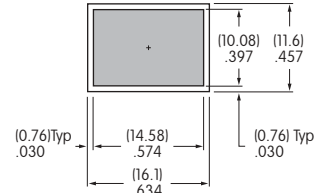
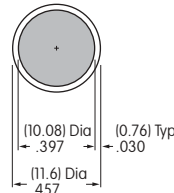
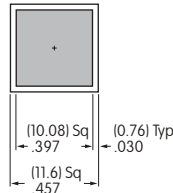
### Suggested Printable Area for Lens



**Recommended Print Method:**

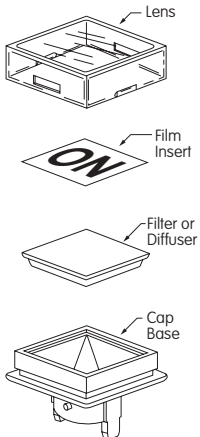
Screen Print or Pad Print

Epoxy based ink is recommended.



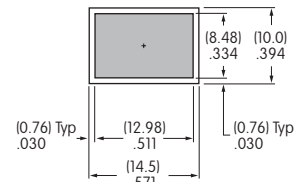
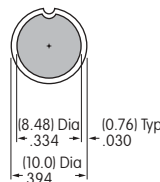
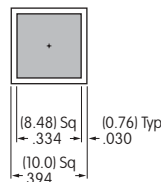
Shaded areas are printable areas.

### Suggested Printable Area for Film Insert



**Film Material and Thickness:**  
Clear Polyester, 4 mil max.

**Recommended Print Method:**  
Screen Print with Epoxy Based Ink



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 0.3 mm (.012") on the cap lens.  
Enamel paint is recommended to fill the engraved area.

## LEGEND PACKET FOR ORDERING CAPS WITH LEGENDS



1. To order caps with legends, contact the factory and request the KB Legend Packet.
2. Once you determine your desired legend, fill out the ordering work sheet included in the packet.
3. Return the completed work sheet to receive a quotation.