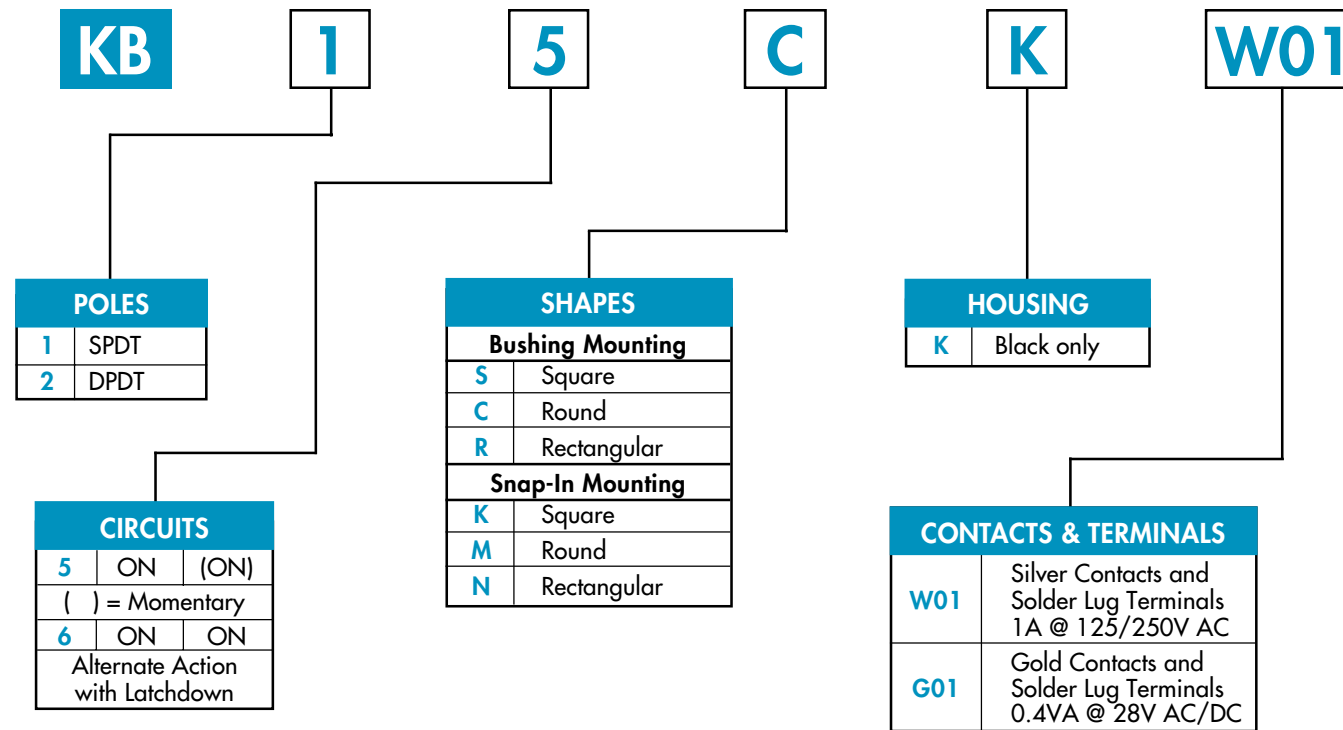


TYPICAL SWITCH ORDERING EXAMPLE



POLES	
1	SPDT
2	DPDT

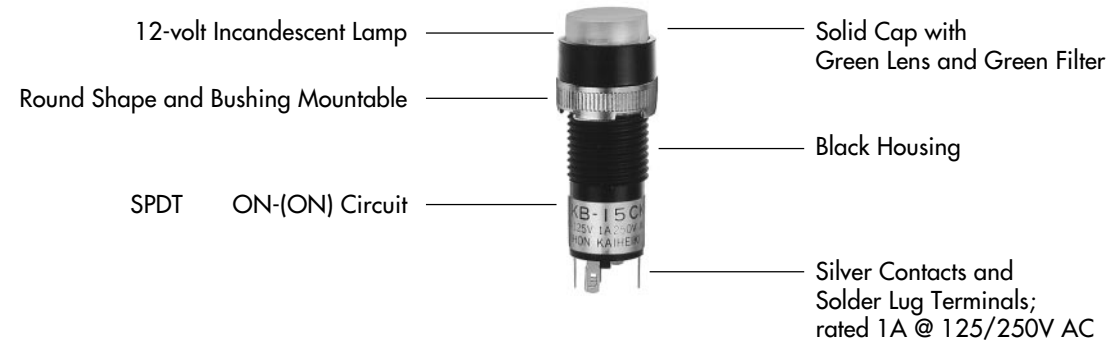
SHAPES	
Bushing Mounting	
S	Square
C	Round
R	Rectangular
Snap-In Mounting	
K	Square
M	Round
N	Rectangular

HOUSING	
K	Black only

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

CIRCUITS		
5	ON	(ON)
() = Momentary		
6	ON	ON
Alternate Action with Latchdown		

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.

LAMPS		CAP TYPES & COLORS	
Incandescent Lamp used with Solid Cap		Solid Cap: Lens/Filter Colors	
05	5-volt	BB	White/White
12	12-volt	CB	Red/White
28	28-volt	CC	Red/Red
		EB	Yellow/White
		FB	Green/White
		FF	Green/Green
		GB	Blue/White
		GG	Blue/Blue
Incandescent or Neon used w/ Insert Cap		Insert Cap: Lens/Filter Colors	
05	5-volt	JB	Clear/White
12	12-volt	JC	Clear/Red
28	28-volt	JE	Clear/Yellow
01	110-volt Neon	JF*	Clear/Green
		JG*	Clear/Blue
		* JF & JG not suitable with neon.	
Standard LED used with Cap for LED		LED Cap: Lens/Diffuser Colors	
C	Red	AB	Black Cap/White Window (Square only)
D	Amber	JB	Clear/White
F	Green	JC	Clear/Red
		JD	Clear/Amber
		JF	Clear/Green
Bright LED used with Cap for LED		LED Cap: Lens/Diffuser Colors	
5C	Red	AB	Black Cap/White Window (Square only)
5D	Amber	JB	Clear/White
5F	Green	JC	Clear/Red
		JD	Clear/Amber
		JF	Clear/Green
Super Bright LED used with Cap for LED		LED Cap: Lens/Diffuser Colors	
6B	White	JB	Clear/White
6F	Green		
6G	Blue		
Nonilluminated Cap		Nonilluminated Cap: Lens/Filter Colors	
00	No Lamp	A	Black/None
		BB	White/White
		CC	Red/Red
		EB	Yellow/White
		FF	Green/Green
		GG	Blue/Blue

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](#) 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)





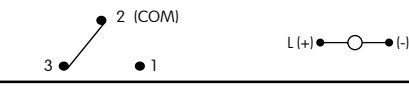
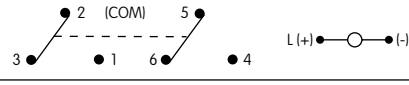
Installation

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, & 0.4VA @ 28V AC/DC; UL File No. E44145
CSA Certified: Single & double pole models recognized at 1A @ 125/250V AC, 1A @ 30V DC, & 0.4VA @ 28V AC/DC; CSA File No. LR23535

POLES & CIRCUITS

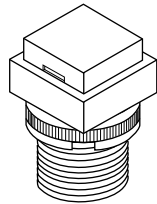
		Plunger Position () = Momentary		Connected Terminals		Throw & Power/Lamp Schematics
Pole	Model	Normal 	Down 	Normal 	Down 	
SP	KB15 KB16*	ON ON	(ON) ON	2-3	2-1	Notes: Switch is marked with "+" and "-". Lamp circuit is isolated and requires external power source. SPDT 
DP	KB25 KB26*	ON ON	(ON) ON	2-3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

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

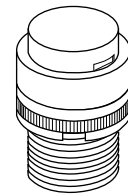
SHAPES & MOUNTING TYPES

Bushing Mounting

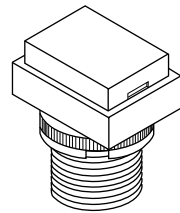
S .551" Square Shroud



C .551" Diameter Round Shroud

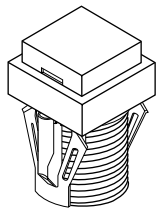


R .551" x .728" Rectangular Shroud

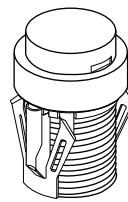


Snap-In Mounting

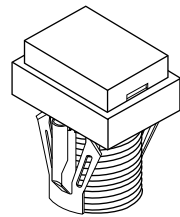
K .551" Square Shroud



M .551" Diameter Round Shroud



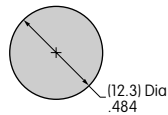
N .551" x .728" Rectangular Shroud



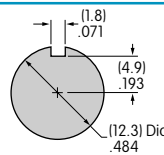
Panel Cutouts

Bushing Mounting

Without Keyway



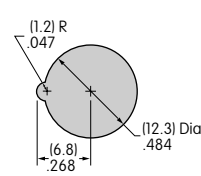
Panel Thickness:
0.5 ~ 8mm
(.020 ~ .315")



With Keyway

Snap-In Mounting

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



Panel thicknesses for optional accessories.

HOUSING

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

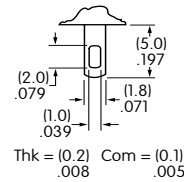
CONTACT MATERIALS, RATINGS, & TERMINALS

W Silver Contacts **Power Level**
1A @ 125V AC & 250V AC

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

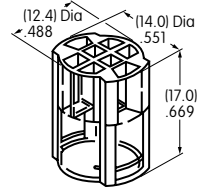
See [Supplement Index](#) for complete explanation of operating range.

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](#).

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](#).


Incandescent & Neon Lamps

AT611	AT615		05	12	28 *	01	* 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
		Voltage	5V AC	12V AC	28V AC	110V AC	
		Current	115mA	60mA	22mA	1.5mA	
		Endurance	7,000 average			10,000	

Standard Single Element LED

AT614		C	D	F
	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

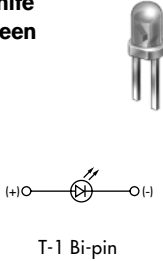

Bright Dual Element LED

AT628		5C	5D	5F
	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

<p>AT625 Blue AT631 White AT632 Green</p>  <p>T-1 Bi-pin</p>		Color	6B White	6F Green	6G 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	ΔI_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.

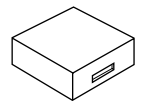
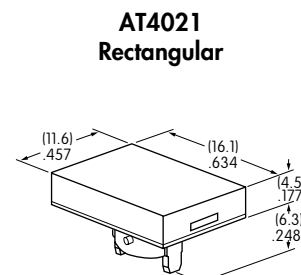
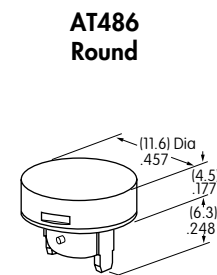
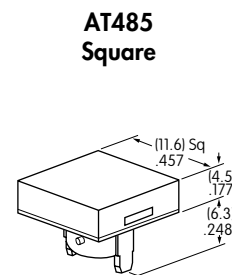
CAP TYPES & COLOR COMBINATIONS

Solid Cap for Incandescent Lamp

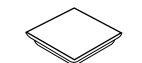
Color Codes: **A** Black **B** White **C** Red **E** Yellow **F** Green **G** Blue **J** Clear

Lens/Filter
Colors Available:

- BB** **FB**
- CB** **FF**
- CC** **GB**
- EB** **GG**



Translucent Colored Lens



Translucent Colored Filter



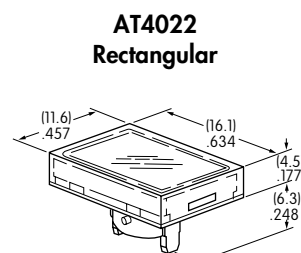
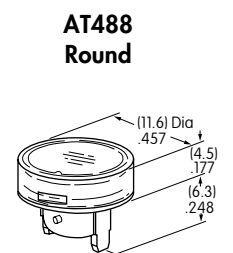
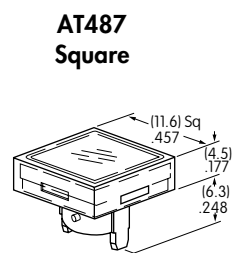
Lamp AT611

Material: Polycarbonate Finish: Glossy

Insert Cap for Incandescent or Neon Lamp

Lens/Filter
Colors Available:

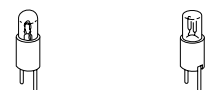
- JB**
- JC**
- JE**
- JF**
- JG**



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

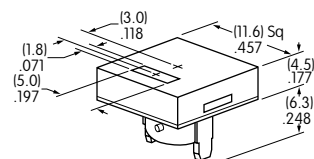
Cap for Standard & Bright LEDs

Cap/Window

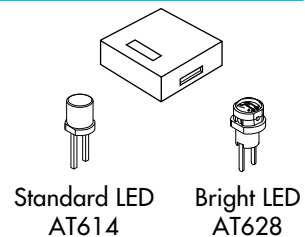
Colors Available:

AB Opaque Black Cap with Translucent White Window for Spot Illumination

AT4051 Square



Material: Polycarbonate Finish: Matte

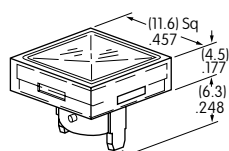


Lens/Diffuser

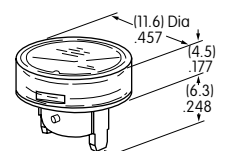
Colors Available:

JC

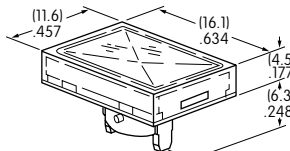
AT489 for Standard AT4158 for Bright Square



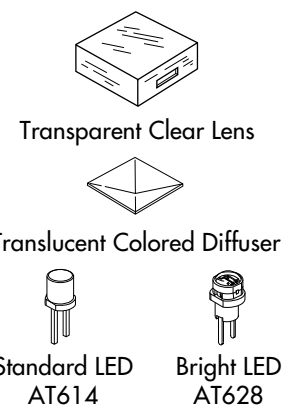
AT490 for Standard AT4160 for Bright Round



AT4023 for Standard AT4159 for Bright Rectangular



Material: Polycarbonate Finish: Glossy



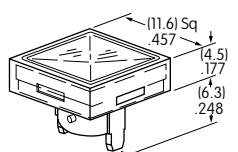
Cap for Bright & Super Bright LEDs

Lens/Diffuser

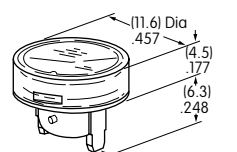
Colors Available:

JB

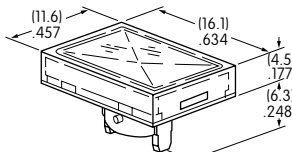
AT4133 Square



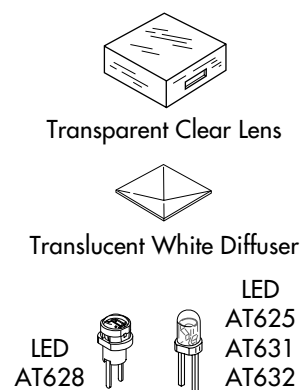
AT4132 Round



AT4134 Rectangular



Material: Polycarbonate Finish: Glossy



Nonilluminated Cap

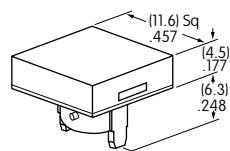
Lens/Filter

Colors Available:

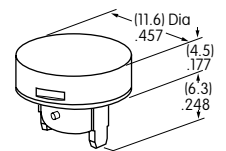
A

EB

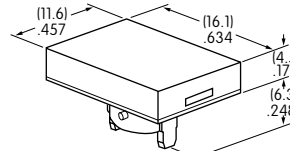
AT485 Square



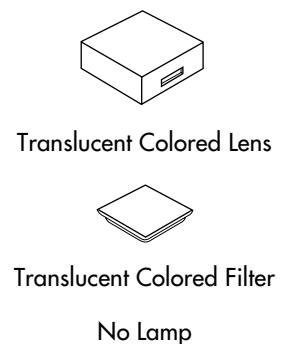
AT486 Round



AT4021 Rectangular



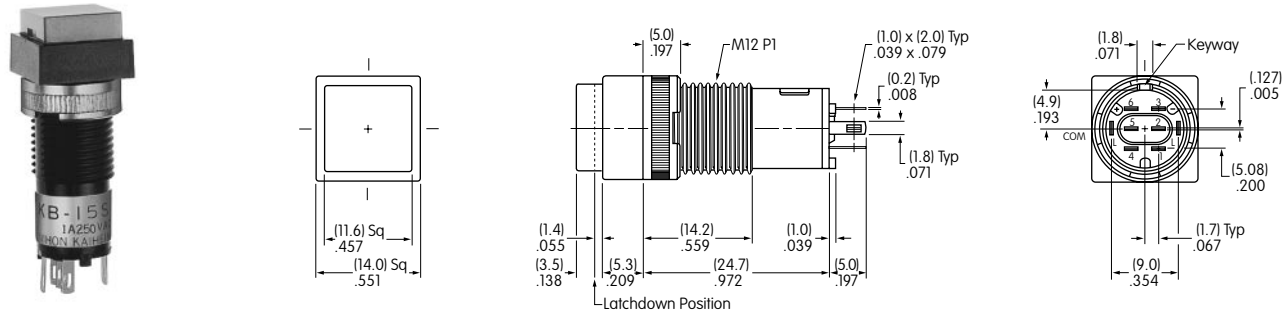
Material: Polycarbonate Finish: Glossy; black is matte
Rectangular not available in black.



TYPICAL SWITCH DIMENSIONS

Square • Bushing Mounting

Single & Double Pole

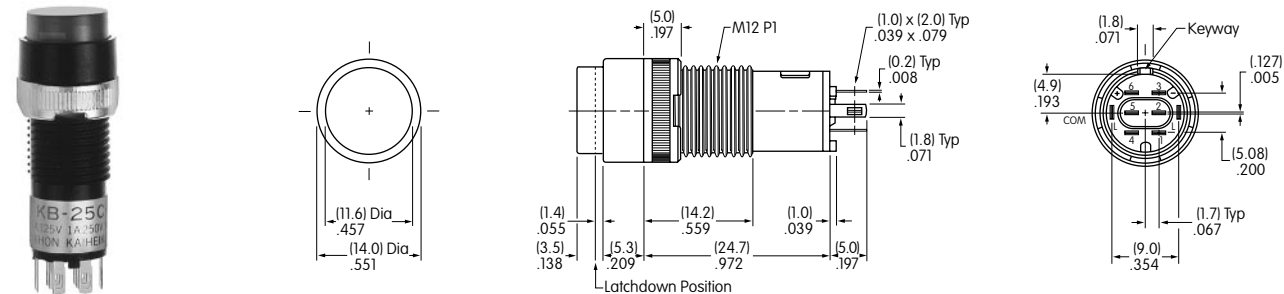


KB15SKW01-05-GG

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

Round • Bushing Mounting

Single & Double Pole

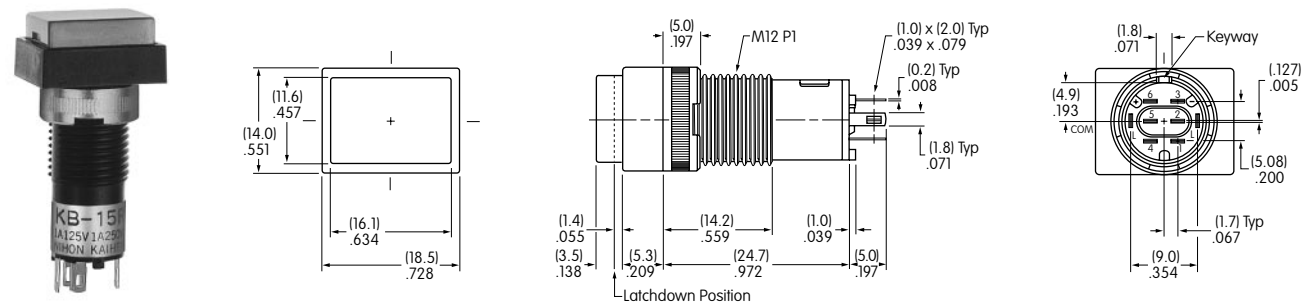


KB25CKW01-05-GG

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

Rectangular • Bushing Mounting

Single & Double Pole



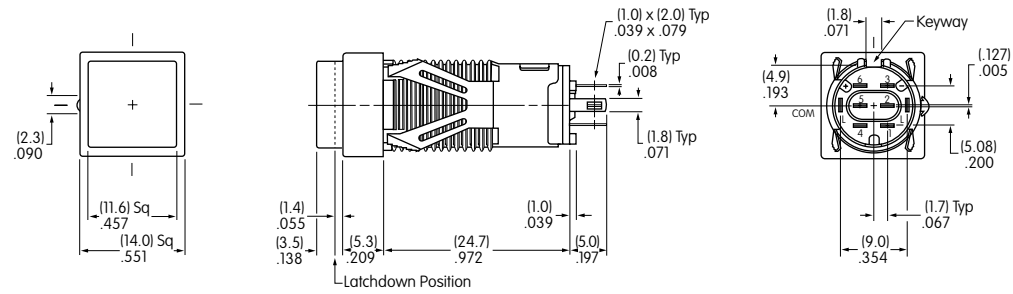
KB15RKW01-05-GG

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

TYPICAL SWITCH DIMENSIONS

Square • Snap-In Mounting

Single & Double Pole

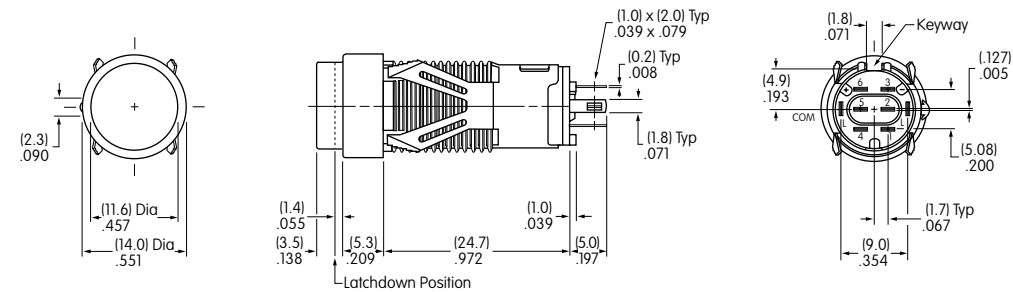


KB16KKW01-05-CB

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

Round • Snap-In Mounting

Single & Double Pole

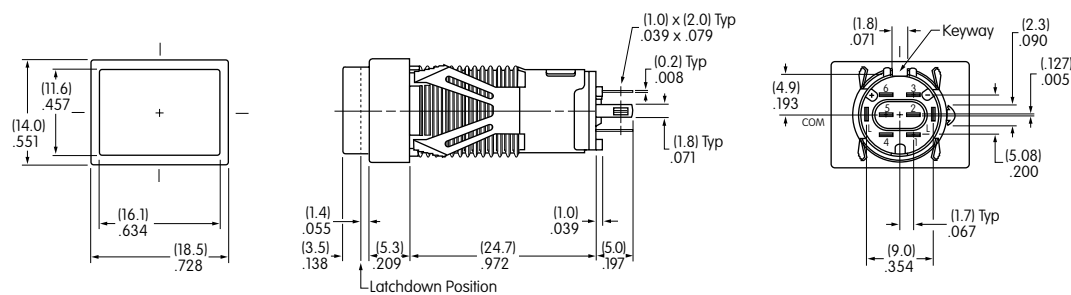


KB26MKW01-05-CB

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

Rectangular • Snap-In Mounting

Single & Double Pole



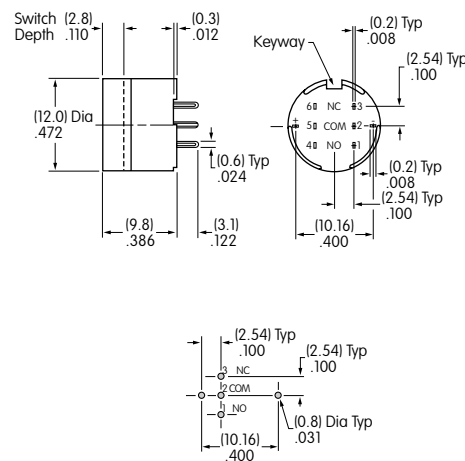
KB16NKW01-05-CB

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

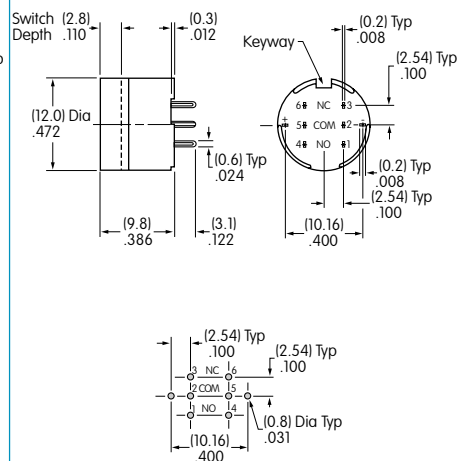
OPTIONAL ACCESSORIES

PCB Adaptors

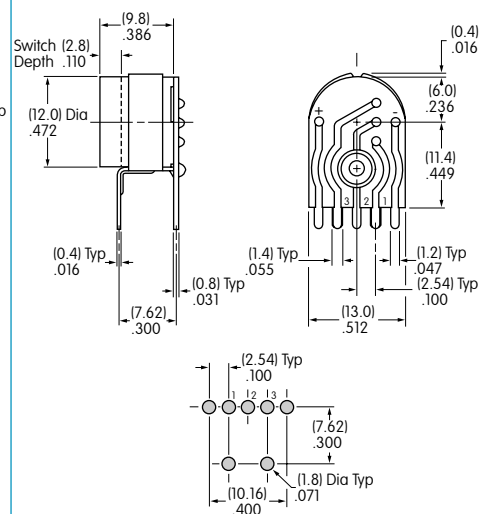
AT701
Single Pole
Straight PC
Terminals



AT702
Double Pole
Straight PC
Terminals



AT077
Single Pole
Right Angle PC
Terminals

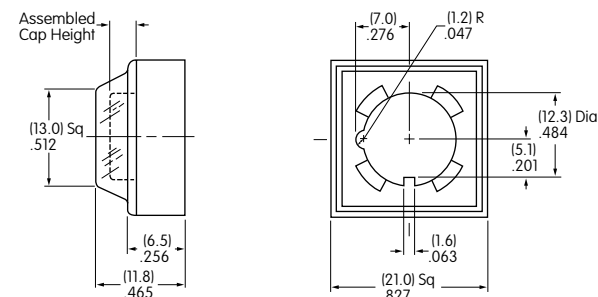
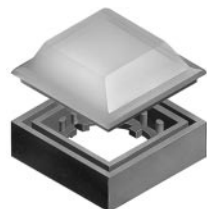


Material: Glass reinforced polyamide
Note: Order adaptors separately.

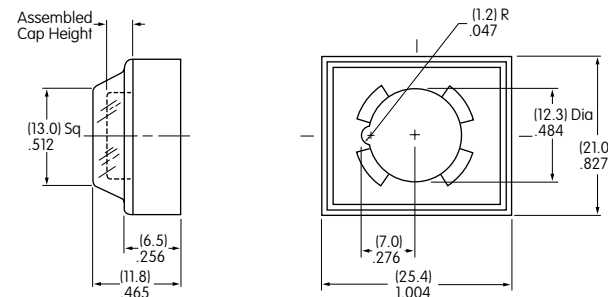
Splash Covers

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

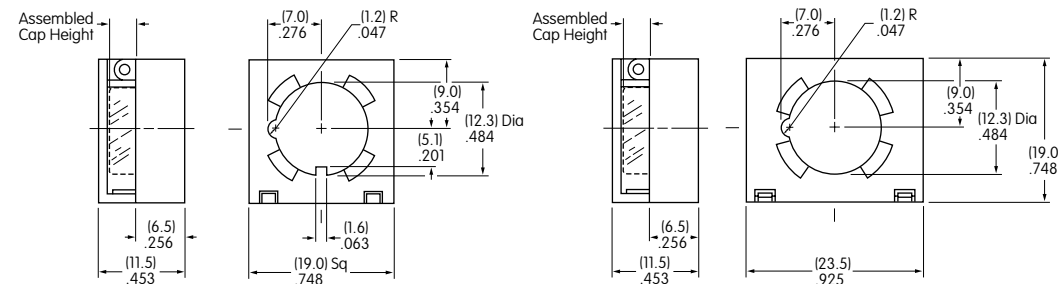


Panel Thickness
Range:

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".

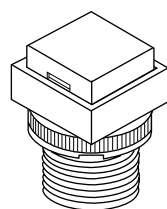


Material: Cover: Polycarbonate Base: Polyamide

ASSEMBLY INSTRUCTIONS

Cap Removal & Installation

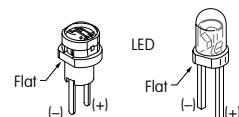
For alternate action models cap must be in UP position for cap removal. Indentations on opposite sides of the cap provide an easy way to lift the cap out of the holder, using either the finger nails, or cap extractor AT109.



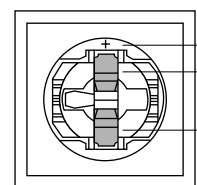
LED Polarity & Orientation in Lamp Socket



LED AT628



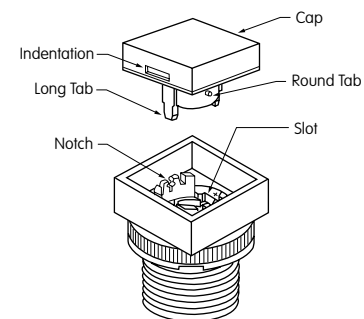
LEDs AT625 AT631 AT632



(+) 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.

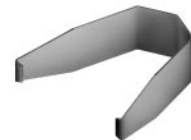


AT108 Socket Wrench
for Bushing Mounting

Overtightening the mounting nut may damage the switch housing.



AT109 Cap Extractor



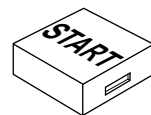
AT111 Lamping Tool



LEGENDS

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

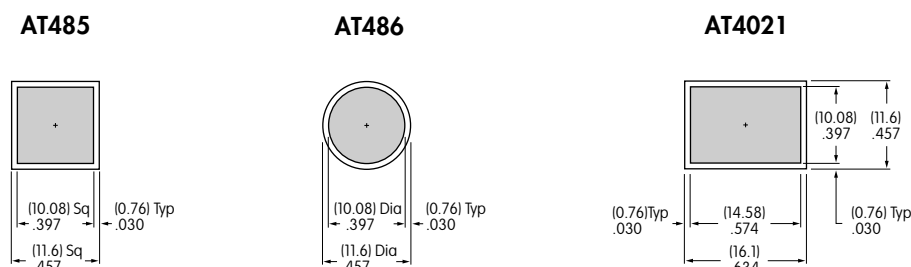
Suggested Printable Area for Lens



Recommended Print Method:

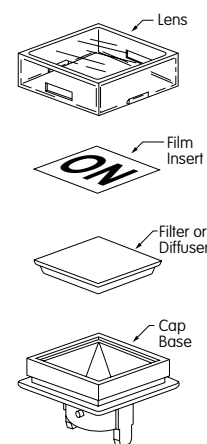
Screen Print or Pad Print

Epoxy based ink is recommended.



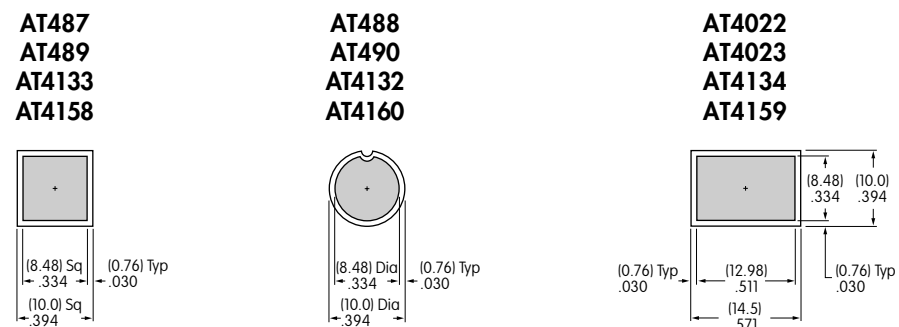
Shaded areas are printable areas.

Suggested Printable Area for Film Insert



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

Recommended Print Method:
Screen Print with Epoxy Based Ink

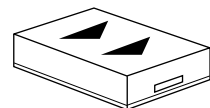


Shaded areas are printable areas.

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.

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