

Distinctive Characteristics

Carefully designed light diffusion and filtering system produces bright, full surface illumination with front panel relamping.

Spot illumination available in single and bicolor LEDs.

Choice of super bright LEDs in white, green, and blue in addition to standard or bright red, amber, and green LEDs.

Stainless steel clips provide secure mounting with a wide range of panel thicknesses.

Latchdown feature gives indication of circuit status. Audible and tactile feedback with smooth and responsive operation.

Snap-action contact mechanism gives long electrical life and sensitivity of actuation.

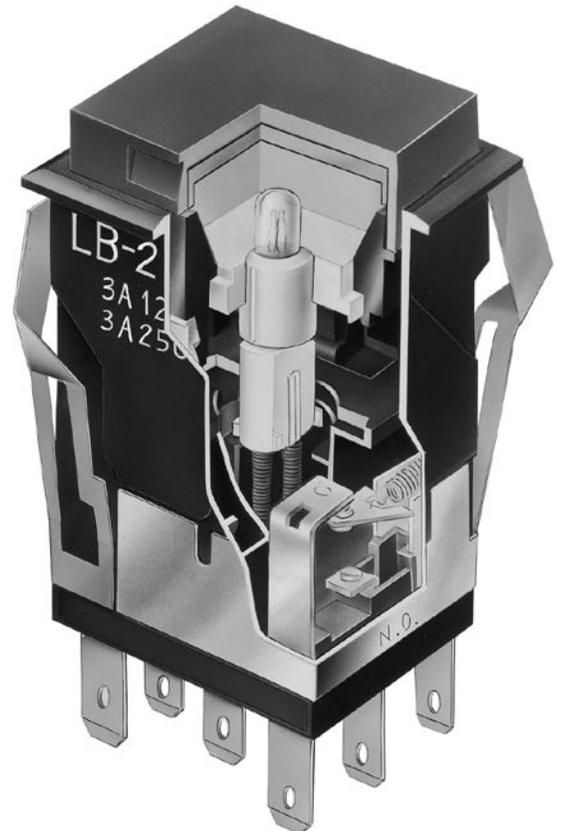
Combination solder lug and .110" quick connect terminals are epoxy sealed to prevent entry of flux, dust, and other contaminants.

Panel sealed model meets IP65 of IEC60529 specifications (similar to NEMA 4 & 13).

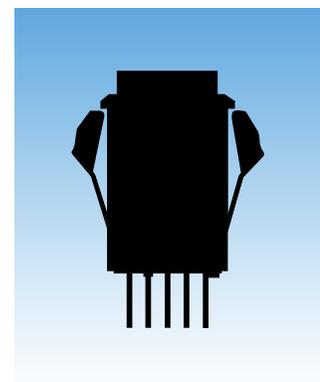
Compact switch design minimizes behind panel depth.

Nonilluminated models available and shown in the Pushbutton section.

Matching indicators available and shown at the end of Section M.



Actual Size



General Specifications

Electrical Capacity (Resistive Load)

Power Level (silver): 3A @ 125V AC or 3A @ 250V AC or 3A @ 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 for silver; 100 milliohms maximum for gold
Insulation Resistance: 200 megohms minimum @ 500V DC
Dielectric Strength: 1,000V AC minimum between contacts for 1 minute minimum;
 1,500V AC minimum between contacts & case for 1 minute minimum
Mechanical Life: 1,000,000 operations minimum for momentary circuit
 200,000 operations minimum for maintained circuit
Electrical Life: 100,000 operations minimum
Nominal Operating Force: 4.41N
Contact Timing: Nonshorting (break-before-make)
Travel: Momentary: Pretravel .059" (1.5mm); Overtravel .059" (1.5mm); Total Travel .118" (3.0mm)
 Maintained: Pretravel .087" (2.2mm); Overtravel .031" (0.8mm); Total Travel .118" (3.0mm)

Materials & Finishes

Housing: Glass fiber reinforced polyamide (UL94V-0)
Snap-in Frame: Stainless steel
Movable Contact: Silver alloy or copper with gold plating
Stationary Contacts: Silver alloy or copper with gold plating
Base: Liquid crystal polymer (UL94V-0)
Switch Terminals: Phosphor bronze with silver or gold plating
Lamp Terminals: Brass with silver plating

Environmental Data

Operating Temp Range: -25°C through +50°C (-13°F through +122°F)
 Note: When used with a polyvinyl chloride splash cover, the lowest limit is 0°C (32°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 5 shocks in each direction)
Sealing: Not available for snap-in; see next section for panel seal.

Installation

Cap Installation Force: 3.92N maximum downward force on cap
Quick Connect Force: 52.95N maximum downward force on connector
Soldering Time & Temperature: Manual Soldering: See Profile A in Supplement section.

Standards & Certifications



Flammability Standards: UL94V-0 housing & base
UL & C-UL Recognized:



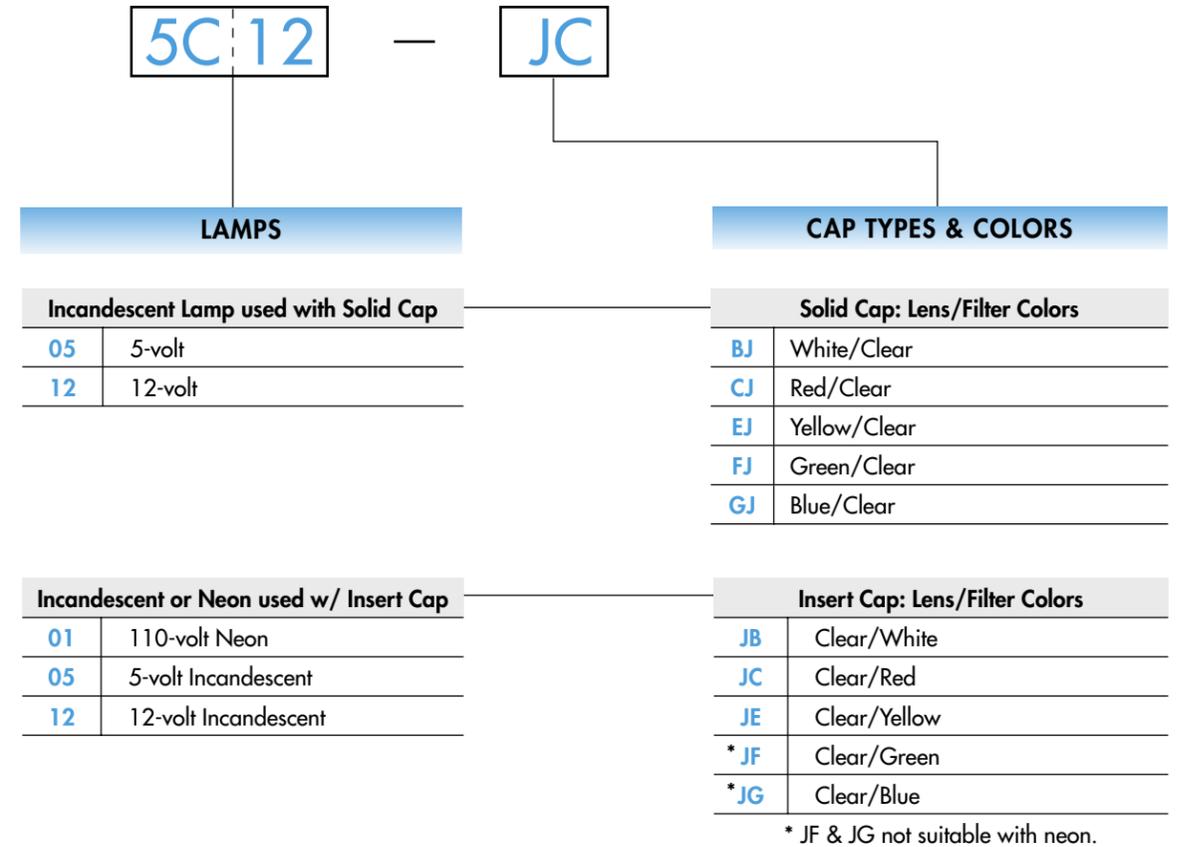
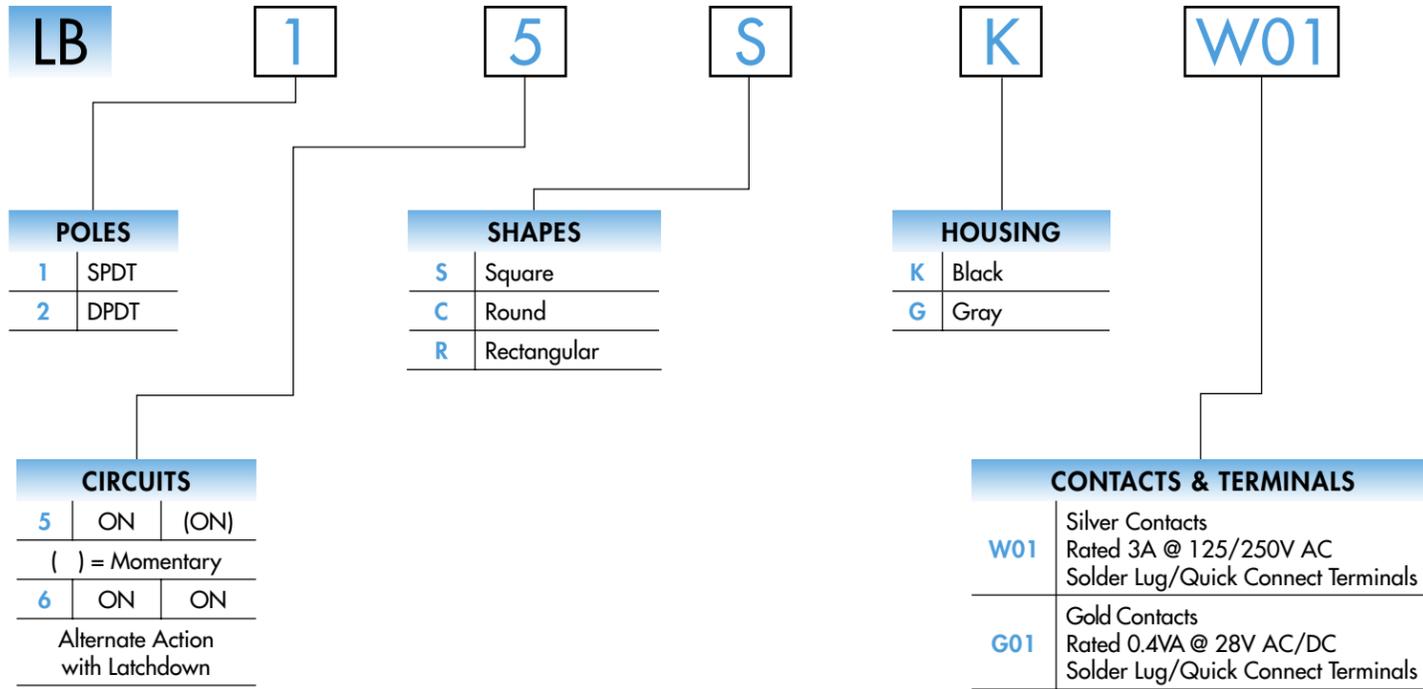
All models recognized at 3A @ 125V or 250V AC or 0.4VA @ 28V AC/DC maximum;
 UL File No. WOYR2.E44145; add "/U" to end of part number to order UL mark on switch.
 C-UL File No. WOYR8.E44145; add "/C-UL" to end of part number to order C-UL mark on switch.



CSA Certified:

All models certified at 3A @ 125V or 250V AC or 0.4VA @ 28V AC/DC maximum;
 CSA File Nos. 023535-0-000; add "/C" to end of part number to order CSA mark on switch.

TYPICAL SWITCH ORDERING EXAMPLE



DESCRIPTION FOR TYPICAL ORDERING EXAMPLE

LB15SKW01-5C12-JC



IMPORTANT:



Switches are supplied without UL, C-UL & CSA markings unless specified. Specific models & ratings noted on General Specifications page.

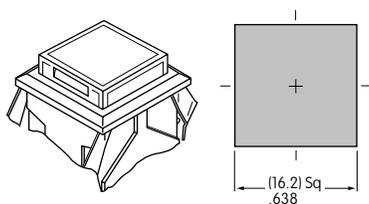
POLES & CIRCUITS

Pole	Model	Plunger Position () = Momentary		Connected Terminals		Throw & Switch/Lamp Schematics
		Normal	Down	Normal	Down	
SP	LB15 *LB16	ON ON	(ON) ON	1-3	1-2	Notes: Switch is marked with NC, NO, COM, L+, L-. Lamp circuit is isolated and requires external power source.
DP	LB25 *LB26	ON ON	(ON) ON	1-3 4-6	1-2 4-5	

* When in latchdown position for the alternate circuit, cap position is .039" (1.0mm) above the built-in bezel.

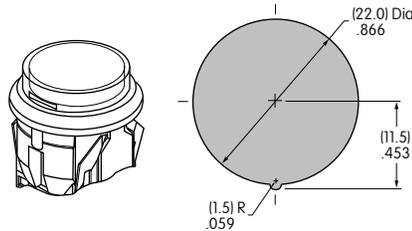
SHAPES & PANEL CUTOUTS

S .622" (15.8mm)
Square

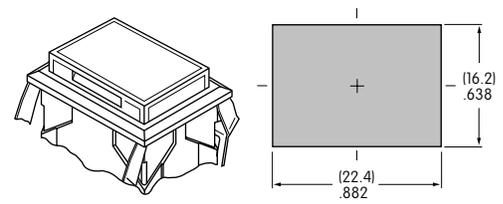


Cutout for 1 switch:
.638" x .638" (16.2mm x 16.2mm)
Cutout for 1 switch with barriers:
.638" x .815" (16.2mm x 20.7mm)

C .854" (21.7mm)
Round



R .622" x .866" (15.8mm x 22.0mm)
Rectangular



Cutout for 1 switch:
.638" x .882" (16.2mm x 22.4mm)
Cutout for 1 switch with barriers:
.638" x 1.059" (16.2mm x 26.9mm)

Panel Thickness for Switches & Barriers: .039" ~ .157" (1.0 ~ 4.0mm)
Panel Thickness for Protective Guards & Splash Covers: .039" ~ .138" (1.0 ~ 3.5mm)

HOUSING

Housing Colors Available:

K Black

G Gray

CONTACT MATERIALS, RATINGS & TERMINALS

W01 Silver Contacts

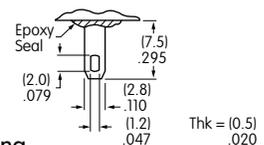
Power Level
3A @ 125V AC & 250V AC

G01 Gold Contacts

Logic Level
0.4VA max. @ 28V AC/DC max.

Solder Lug/Quick Connect

Optional PCB adaptors
AT711 & AT712 available;
illustrated in "Optional
Accessories" immediately following
"Typical Switch Dimensions."



Complete explanation of operating range in Supplement section.

INCANDESCENT & NEON LAMP CODES & SPECIFICATIONS

AT607 & AT607N



T-1 Bi-pin

		05	12	01 *
AT607 Incandescent 5-volt or 12-volt; AT607N Neon 110-volt				
Voltage	V	5V AC	12V AC	110V AC
Current	I	115mA	60mA	1.5mA
Endurance	Avg. Hours	7,000		10,000
Ambient Temp. Range		-25°C ~ +50°C		

The electrical specifications shown are determined at a basic temperature of 25°C. Lamp circuit is isolated and requires external power source.

* Recommended Resistors for Neon:
33K ohms for 110V AC;
100K ohms for 220V AC

LED 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 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.

Additional lamp detail is shown in the Accessories & Hardware section.

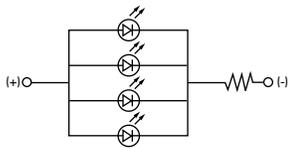
Bright LED without Resistor

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

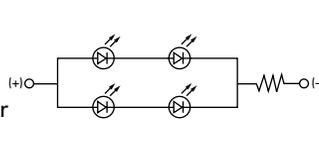
Bright LED with Resistor

AT627 with Resistor  T-1 Bi-pin	Color Codes:	Red 5C	Amber 5D	Green 5F	Resistor Codes 05 12 24
	Forward Peak Current	I_{FM}			Red: —, Amber: —, Green: —
	Continuous Forward Current	I_F			Red: 52mA, Amber: 26mA, Green: 13mA
	Forward Voltage	V_F			Red: 5V, Amber: 12V, Green: 24V
	Reverse Peak Voltage	V_{RM}			Red: 4V, Amber: 8V, Green: 16V
	Current Reduction Rate Above 25°C	ΔI_F			0.50mA/°C
	Ambient Temperature Range				-25° ~ +50°C

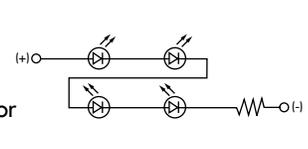
AT627
5-volt
4-element
with Resistor



AT627
12-volt
4-element
with Resistor



AT627
24-volt
4-element
with Resistor



Super Bright Single Element LED

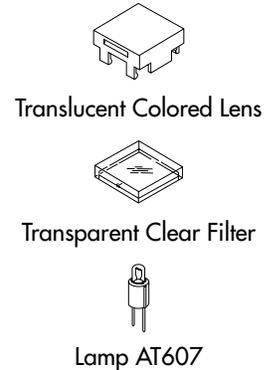
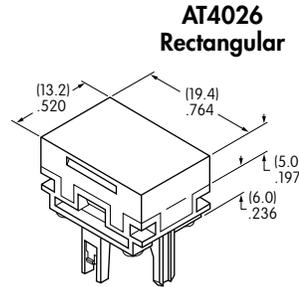
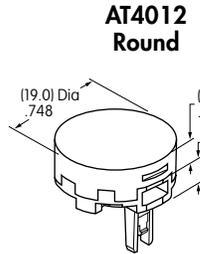
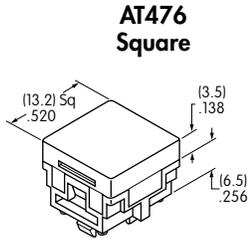
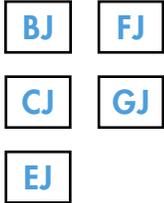
AT625G Blue AT631B White AT632F Green   T-1 Bi-pin				6B	6F	6G	
	Color	White	Green	Blue			
	Forward Peak Current	I_{FM}			30mA	30mA	30mA
	Continuous Forward Current	I_F			20mA	20mA	20mA
	Forward Voltage	V_F			3.6V	3.5V	3.6V
	Reverse Peak Voltage	V_{RM}			5V	5V	5V
	Current Reduction Rate Above 25°C	ΔI_F			0.50mA/°C		
	Ambient Temperature Range				-25° ~ +50°C		

CAP TYPES & COLOR COMBINATIONS

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

Solid Cap for Incandescent Lamp

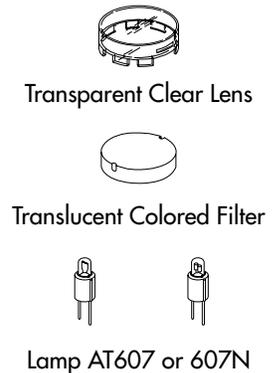
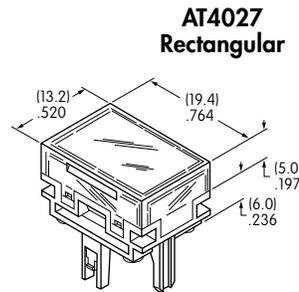
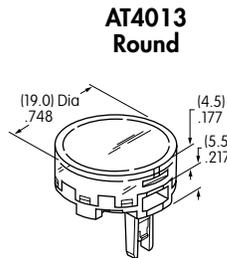
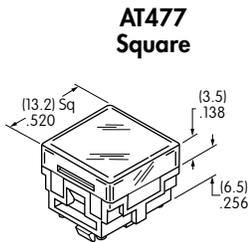
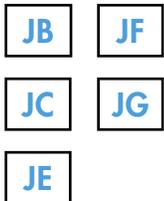
Lens/Filter
Colors Available:



Material: Polycarbonate Finish: Glossy

Insert Cap for Incandescent or Neon Lamp

Lens/Filter
Colors Available:

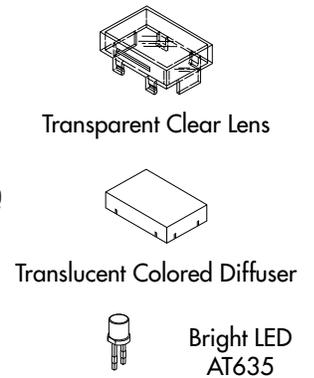
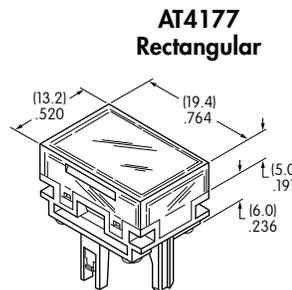
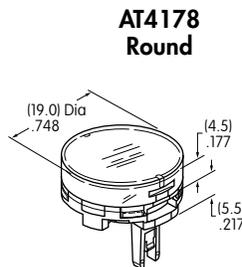
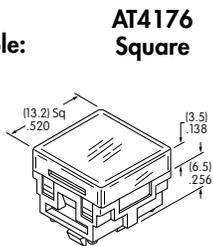


JF and JG not suitable with neon lamp.

Material: Polycarbonate Finish: Glossy

Cap for Bright LED without Resistor

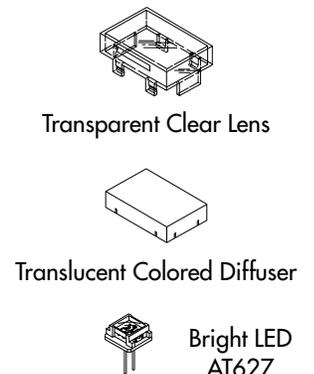
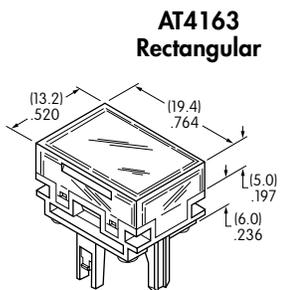
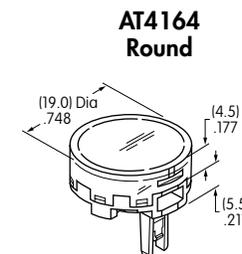
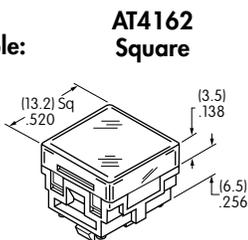
Lens/Diffuser
Colors Available:



Material: Polycarbonate Finish: Glossy

Cap for Bright LED with Resistor

Lens/Diffuser
Colors Available:



Material: Polycarbonate Finish: Glossy

CAP TYPES & COLOR COMBINATIONS

Color Codes: **A** Black **B** White **C** Red **D** Amber **F** Green **J** Clear

Cap for Super Bright LEDs

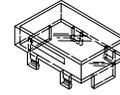
JB

Clear Lens
White Diffuser

AT4129
Square

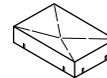
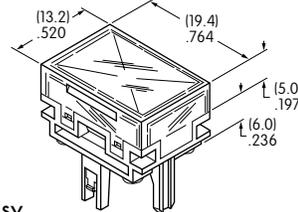
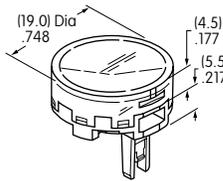
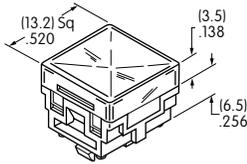
AT4128
Round

AT4130
Rectangular



Transparent
Clear Lens

Material:
Polycarbonate
Finish: Glossy



Translucent
White Diffuser

Material: Polycarbonate Finish: Glossy



LEDs AT625
AT631 AT632

Spot Illuminated Cap with LED

The electrical specifications shown are determined at a basic temperature of 25°C.
LED circuit is isolated and requires external power source.

Single color LEDs are colored in OFF state; bicolor LEDs are translucent white in OFF state. Polarity marks are on 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.

Additional lamp detail is shown in the Accessories & Hardware section.

LED Specifications

	Single Color LED with 1 Element	Bicolor LED with 2 Elements	Single Color			Bicolor
			1C Red	1D Amber	1F Green	CF Red/Green
LED factory assembled in Spot Illuminated Caps						
Not Available Separately	Forward Peak Current	I_{FM}	10mA	30mA	30mA	30/25mA
	Continuous Forward Current	I_F	8mA	24mA	24mA	20mA
	Forward Voltage	V_F	1.9V	2.0V	2.1V	2.0/2.2V
	Reverse Peak Voltage	V_{RM}	5V	5V	5V	—
	Current Reduction Rate Above 25°C	ΔI_F	0.13mA/°C	0.40mA/°C	0.40mA/°C	0.43/0.38mA/°C
Ambient Temperature Range	-25° ~ +50°C					

Cap Colors
Available:

A

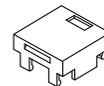
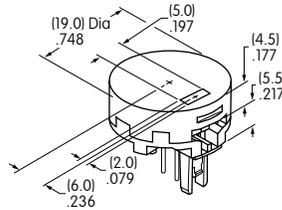
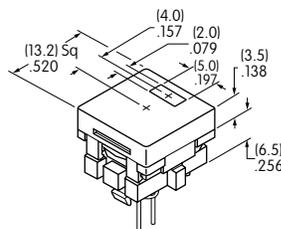
B

C

F

AT480
Square

AT4016
Round



Cap with Window



Factory Assembled LED;
Not Available Separately

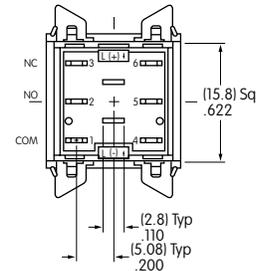
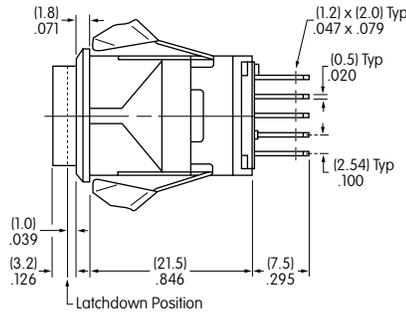
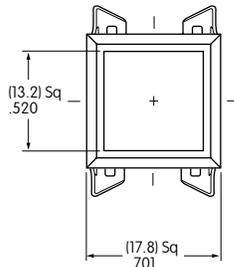
Material: Polycarbonate Finish: Glossy

When ordering spot illuminated cap separately, LED color must be specified.
Examples: AT480CA (red LED, black cap); AT4016CFB (red/green bicolored LED, white cap)

TYPICAL SWITCH DIMENSIONS

Square

Single & Double Pole

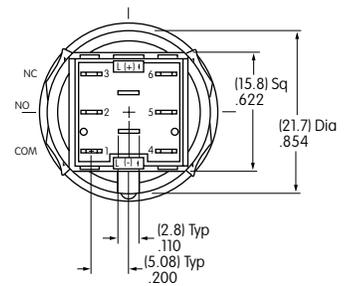
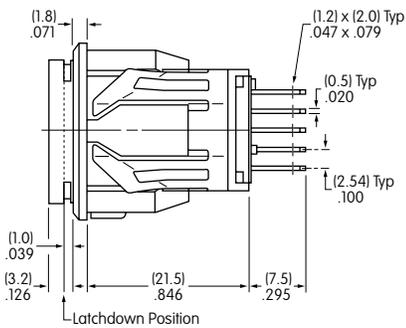
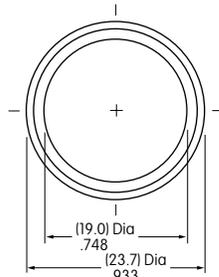


LB15KW01-12-CJ

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

Round

Single & Double Pole

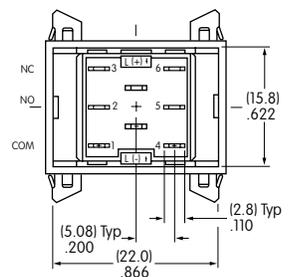
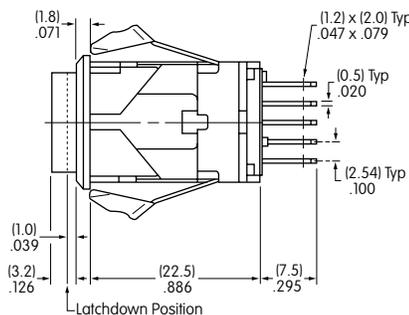
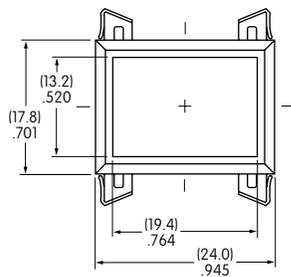


LB16CKW01-12-CJ

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

Rectangular

Single & Double Pole



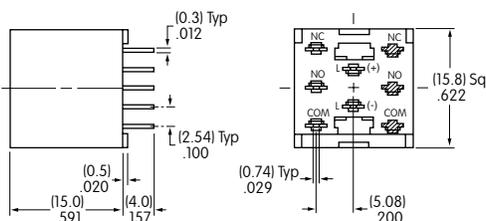
LB26RGW01-12-CJ

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

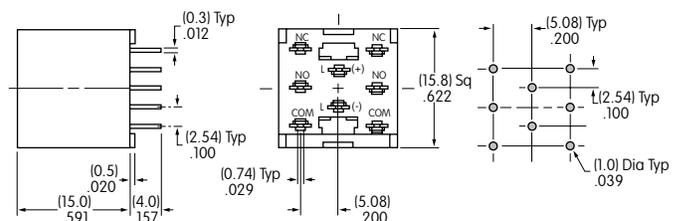
OPTIONAL ACCESSORIES

PCB Adaptors

AT711 Single Pole • Straight PC Terminals



AT712 Double Pole • Straight PC Terminals

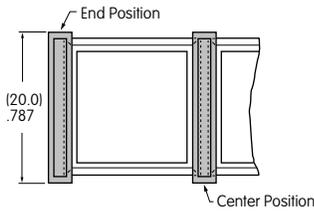


Note: Order adaptors separately.

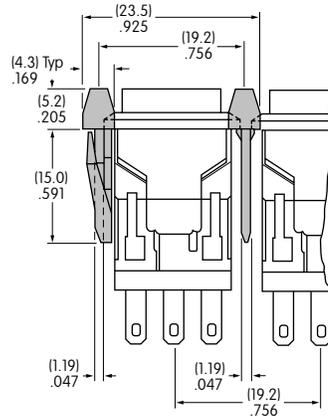
OPTIONAL ACCESSORIES

Barriers

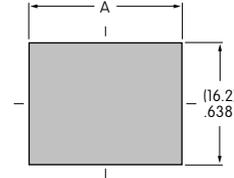
**AT497
End**



**AT498
Center**



Cutouts for More Than 1 Switch



Material: Polyamide

Square

$$A = .752'' (19.1\text{mm}) \times \text{Number of Switches} + .051'' (1.3\text{mm})$$

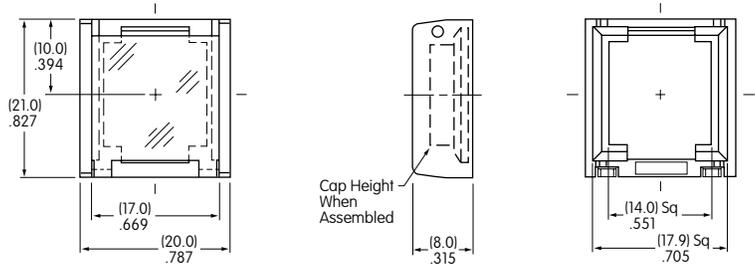
Rectangular

$$A = .996'' (25.3\text{mm}) \times \text{Number of Switches} + .051'' (1.3\text{mm})$$

Splash Covers

**AT499
Square
Protective Guard**

Opens 90°
Closes manually



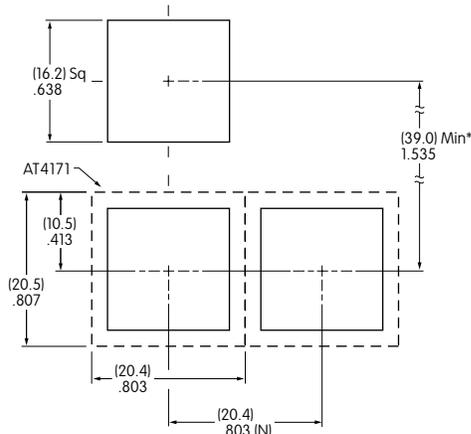
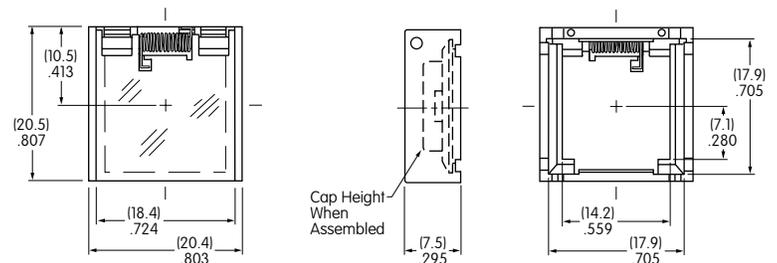
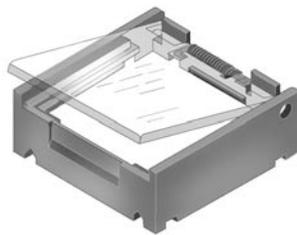
Material: Polyamide

Protective Guards reduce depth of switch behind panel by .020" (0.5mm).

Splash Covers

**AT4171
Square
Protective Guard**

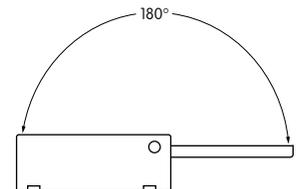
Opens 180°
Closes automatically



(N) = Number of switches * Minimum dimension allows opening of cover to 180°

Materials:

Cover: Clear Polycarbonate
Base: Black GFR Polyamide
Coil Spring: Stainless Steel



Recommended Panel Thickness:
.039" ~ .106" (1.0mm ~ 2.7mm)

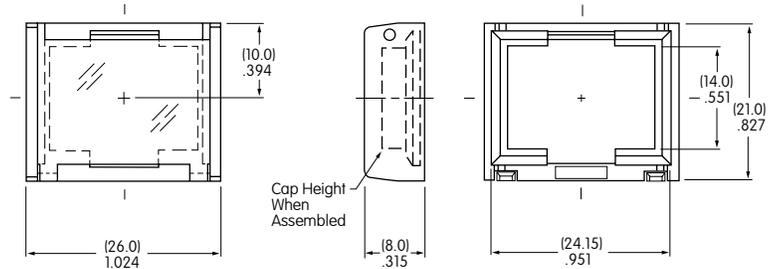
OPTIONAL ACCESSORIES

AT4057 Rectangular Protective Guard

Opens 90°
Closes manually



Protective Guard

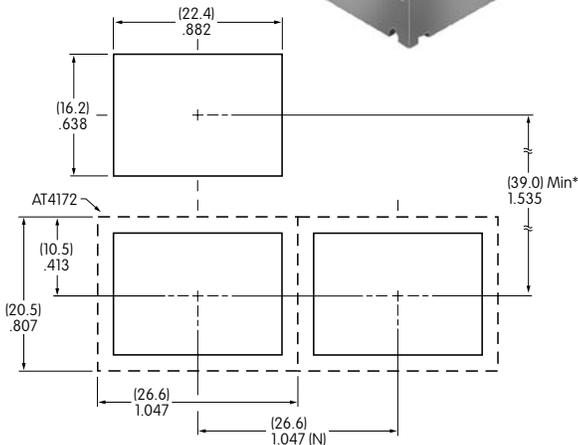
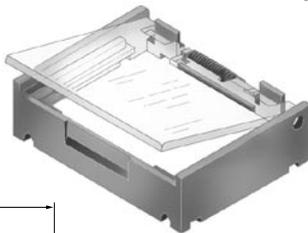


Material: Polyamide

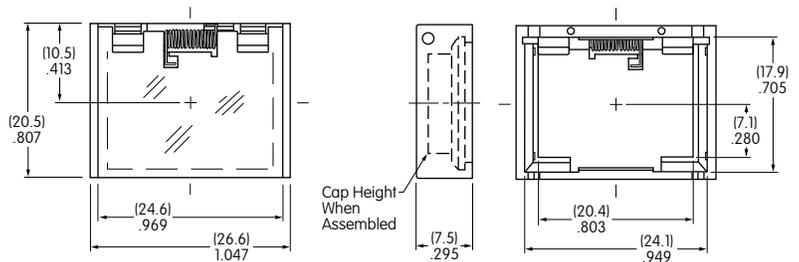
Protective Guards reduce depth of switch behind panel by .020" (0.5mm).

Spring Loaded Protective Guard

AT4172 Rectangular Protective Guard



[N] = Number of switches * Minimum dimension allows opening of cover to 180°

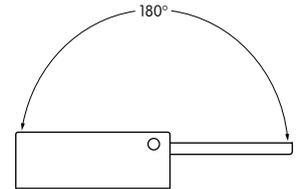


Opens 180°
Closes automatically

Materials:

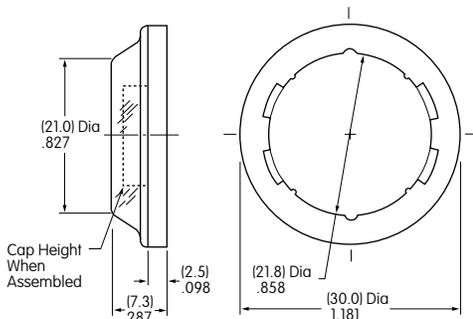
Cover: Clear Polycarbonate
Base: Black GFR Polyamide
Coil Spring: Stainless Steel

Recommended Panel Thickness:
.039" ~ .106" (1.0mm ~ 2.7mm)

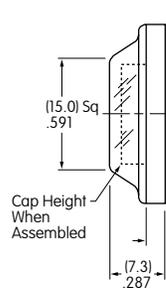
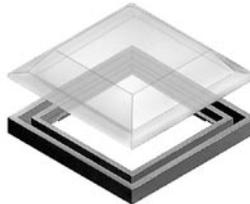


Dust Covers

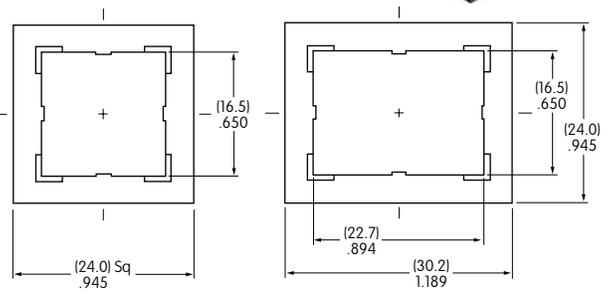
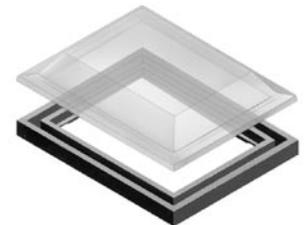
AT4002 Round



AT4001 Square



AT4011 Rectangular



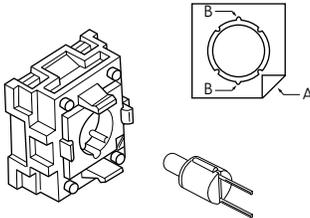
Materials: PVC with polyethylene gasket; PVC loses pliability below 0°C (32°F). Splash Covers reduce depth of switch behind panel by .020" (0.5mm).

ASSEMBLY INSTRUCTIONS

Lamp Installation & LED Orientation

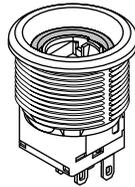
Incandescent & Neon Lamps AT607 & AT607N

Align projections on lamp with grooves (B) in holder when inserting lamp. To correctly join the lamp holder and cap base, match the cut corners (A).

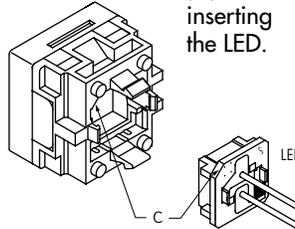


Bright LED AT627 Panel Seal Models Snap-in Models

For panel seal models, Bright LED must first be inserted into the lamp socket which is built into the switch. The cap can then be placed on the switch.

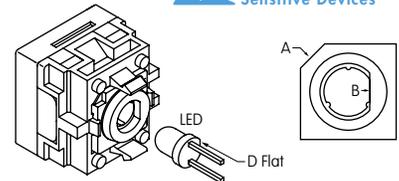


For snap-in models, Bright LED must be inserted into the cap first. Align cut corners (C) when inserting the LED.



Bright & Super Bright LEDs AT625, AT631, AT632, AT635

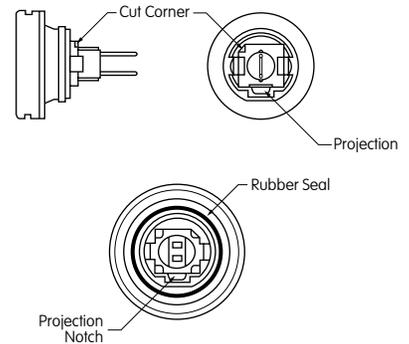
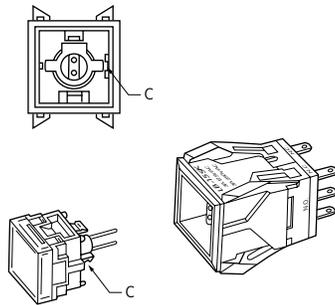
Align D-flat on LED with flat (B) in holder when inserting the LED. To correctly join the lamp holder and cap base, match the cut corners (A).



Switch & Cap Assembly

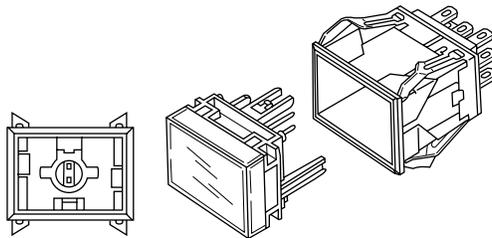
Round & Rectangular

Match clip on cap assembly with receptacle inside switch. Lamp terminals will then be aligned correctly with lamp socket.



Square

Match projection (C) on cap assembly with groove (C) inside switch. Lamp terminals will then be aligned correctly with lamp socket.



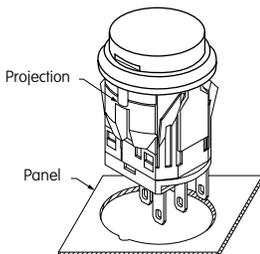
Panel Seal

With Lamps AT607, AT607N, and LEDs AT614, AT625, AT631, AT632: Match projection on cap assembly with notch inside switch. Lamp terminals will then be aligned correctly with lamp socket.

Installation & Maintenance

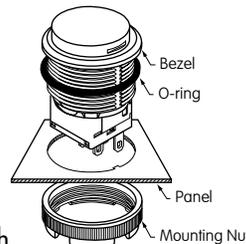
Snap-in Mount

Snap-in clip holds all switches firmly in place. To mount round switch, match the antirotation projection on switch with guide cut in panel. Snap into panel cutout.



Panel Seal Bushing Mount

Insert switch from the front of the panel with the o-ring between the built-in bezel and the panel. Install mounting nut AT075 (supplied with switch) from the rear of the panel. Overtightening mounting nut may damage the switch housing.



Lamp Replacement

Actuator must be in UP position. Pull off cap with cap extractor AT109. Replace lamp and reassemble as shown above.



AT109
Cap Extractor



AT112
Socket Wrench

LEGENDS



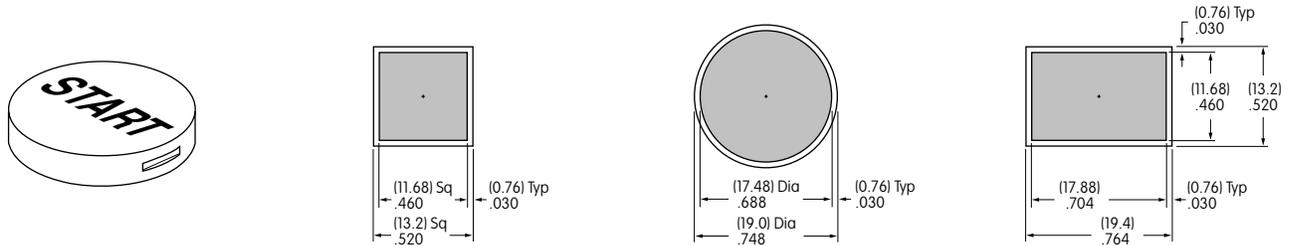
Easily create and submit your own legends using our new on-line Legend Maker.

Visit www.nkkswitches.com

For other legend support options, customers may either contact the factory and request the LB Legend Packet, or utilize the general information and basic specifications presented below.

Suggested Printable Area for Lens

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

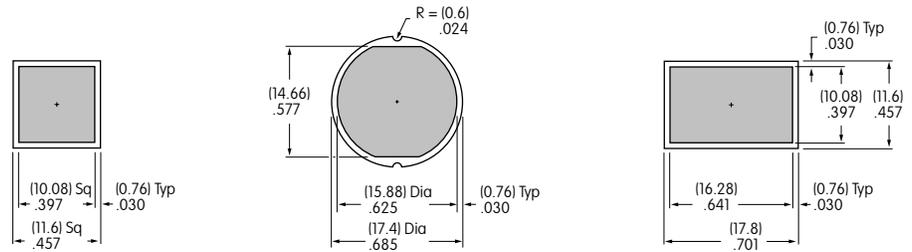
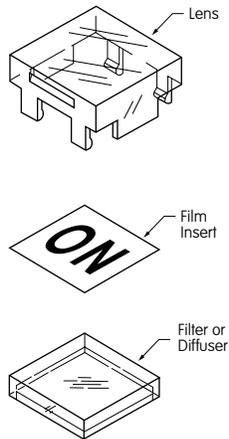


Shaded areas are printable areas.

Suggested Printable Area for Film Insert

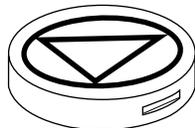
Recommended Print Method: Screen Print with Epoxy based ink

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.