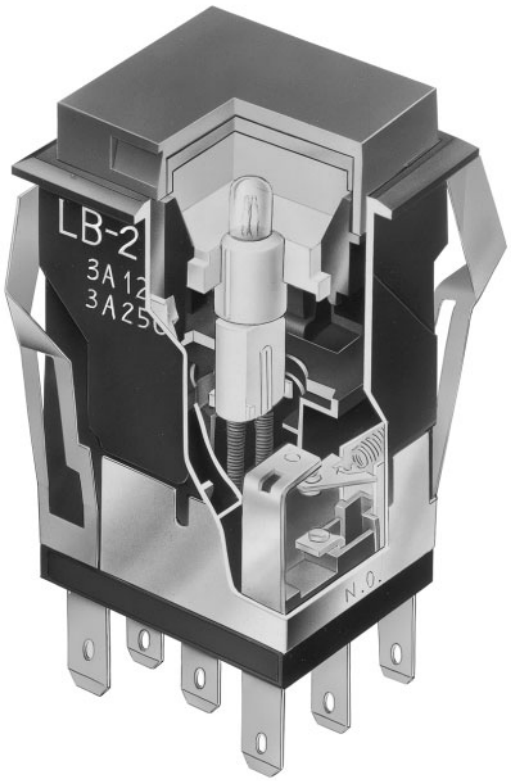
Distinctive Characteristics

Carefully designed light diffusion and filtering system produce 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.

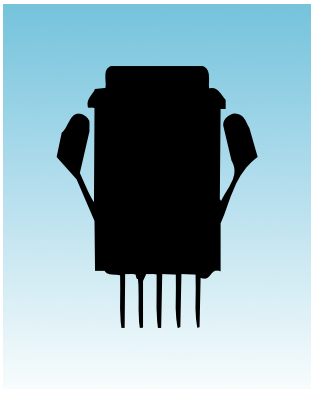
Snap-action contact mechanism gives long electrical life and sensitivity of actuation.

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 IEC529 specifications (similar to NEMA 4 & 13).

Compact switch design minimizes behind panel depth.

Actual Size



Nonilluminated models available and shown in the Pushbutton section.

Matching indicators available and shown in the Indicator section.

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
Note: See Supplement Index (page Z1) to find explanation of operating range.

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: 450 grams
Contact Timing: Nonshorting (break-before-make)
Travel for Momentary Circuit: 1.5mm (.059") pretravel; 1.5mm (.059") overtravel; 3.0mm (.118") total travel
Travel for Maintained Circuit: 2.2mm (.087") pretravel; 0.8mm (.031") overtravel; 3.0mm (.118") total travel

Materials & Finishes

Housing: Glass fiber reinforced polyamide
Snap-in Frame: Stainless steel
Movable Contact: Silver alloy or copper with gold plating
Stationary Contacts: Silver alloy or copper with gold plating
Base: Diallyl phthalate
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/s^2) 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 (.88 lbf) maximum downward force on cap
Quick Connect Force: 52.95N (11.9 lbf) maximum downward force on connector
Soldering Time & Temperature: 3 seconds @ 350°C or 5 seconds @ 270°C
Process Seal: Not available

Standards & Certifications

Flammability Standards: UL94V-0 base
UL Recognized: All models recognized at 3A @ 125V or 250V AC or 0.4A @ 28V DC maximum;
UL File No. WOYR2.E44145; add "/U" to end of part number to order UL mark on switch.
CSA Certified: All models certified at 3A @ 125V or 250V AC or 0.4VA @ 28V maximum;
CSA File Nos. 023535-0-000; add "/C" to end of part number to order CSA mark on switch.

TYPICAL SWITCH ORDERING EXAMPLE

LB | 1 | 5 | S | K | W01 — 5C | 12 — JC

POLES

1	SPDT
2	DPDT

CIRCUITS

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

SHAPES

S	Square
C	Round
R	Rectangular

HOUSING

K	Black
G	Gray

CONTACTS & TERMINALS

W01	Silver Contacts and Solder Lug/Quick Connect Terminals 3A @ 125/250V AC
G01	Gold Contacts and Solder Lug/Quick Connect Terminals 0.4VA @ 28V AC/DC

LAMPS

Incandescent Lamp used with Solid Cap

05	5-volt
12	12-volt

Incandescent or Neon used w/Insert Cap

01	110-volt Neon
05	5-volt Incandescent
12	12-volt Incandescent

Bright LED used with LED Cap

Colors		Resistor	
5C	Red	No Code	No Resistor
		05	5-volt
5D	Amber	12	12-volt
5F	Green	24	24-volt

Super Bright LED used with LED Cap

6B	White
6F	Green
6G	Blue

LED in Spot Illuminated Cap

1C	Red Single Color
1D	Amber Single Color
1F	Green Single Color
CF	Red/Green Bicolor

CAP TYPES & COLORS

Solid Cap: Lens/Filter Colors

BJ	White/Clear
CJ	Red/Clear
EJ	Yellow/Clear
FJ	Green/Clear
GJ	Blue/Clear

Insert Cap: Lens/Filter Colors

JB	Clear/White
JC	Clear/Red
JE	Clear/Yellow
*JF	Clear/Green
*JG	Clear/Blue

* JF & JG not suitable with neon.

LED Cap: Lens/Diffuser Colors

JB	Clear/White
JC	Clear/Red
JD	Clear/Amber
JF	Clear/Green

LED Cap: Lens/Diffuser Colors

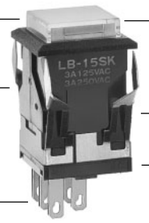
JB	Clear/White

Spot Illuminated Cap Colors

A	Black	Available in square and round only.
B	White	
C	Red	
F	Green	

DESCRIPTION FOR TYPICAL ORDERING EXAMPLE

LB15SKW01-5C12-JC



Red, 12-volt, Bright LED with Resistor

SPDT ON-(ON) Circuit

Silver Contacts and Solder Lug/Quick Connect Terminals; rated 3A @ 125/250V AC

Clear Cap with Red Diffuser

Square Shape

Black Housing

IMPORTANT:

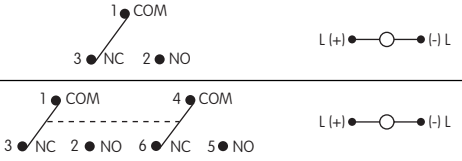
Switches are supplied without UL & CSA marking unless specified. Specific models & ratings noted on General Specifications page.

NKK Switches • email: sales@nkkswitches.com • Phone (480) 991-0942 • Fax (480) 998-1435 www.nkkswitches.com

POLES & CIRCUITS

Pole	Model	Plunger Position ( ) = Momentary: Normal	Plunger Position ( ) = Momentary: Down	Connected Terminals: Normal	Connected Terminals: Down	Throw & Power/Lamp Schematics
SP	LB15 *LB16	ON ON	(ON) ON	1-3	1-2	SPDT
DP	LB25 *LB26	ON ON	(ON) ON	1-3 4-6	1-2 4-5	DPDT

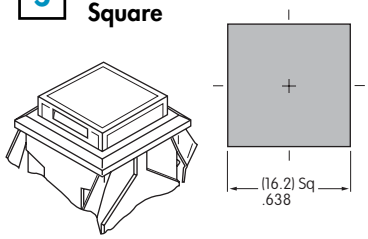
Notes: (1) Switch is marked with NC, NO, COM, L+, L-.
(2) Lamp circuit is isolated & requires external power source.



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

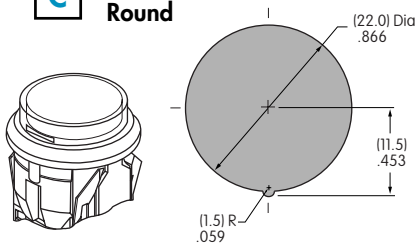
SHAPES & PANEL CUTOUTS

S **.622" Square**

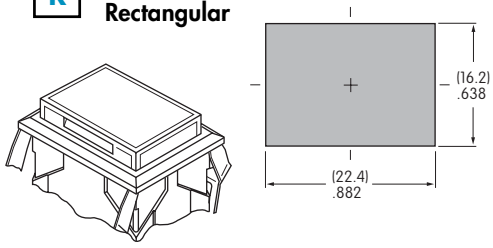


Cutout for 1 switch: .638" x .638"
Cutout for 1 switch with barriers: .638" x .815"

C **.854" Round**



R **.622" x .866" Rectangular**



Cutout for 1 switch: .638" x .882"
Cutout for 1 switch with barriers: .638" x 1.059"

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

HOUSING

Housing Colors Available: **K** Black **G** Gray

CONTACT MATERIALS, RATINGS, & TERMINALS

W01 **Silver Contacts**

G01 **Gold Contacts**

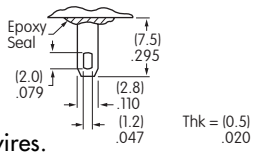
Power Level
3A @ 125V AC & 250V AC

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

See Supplement page Z1 for complete explanation of operating range.

Solder Lug/Quick Connect

The .047" x .079" oblong hole accommodates one solid 18-gauge wire or two solid or stranded 20-gauge wires.



INCANDESCENT & NEON LAMP CODES & SPECIFICATIONS

AT607 & AT607N

T-1 Bi-pin

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

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

Electrical specifications are determined at a basic temperature of 25°C. Lamp circuit is independent of switch operation.

LED CODES & SPECIFICATIONS

Electrical specifications are determined at a basic temperature of 25°C. LED circuit is independent of switch operation.
LEDs are colored in OFF state. For dimension drawings of lamps see 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).

Bright LED without Resistor

AT635

LEDs are colored in OFF state.

T-1½ Bi-pin

Color Codes: Red 5C / Amber 5D / Green 5F		No Code No Resistor		
Forward Peak Current	I_{FM}	30mA	30mA	30mA
Continuous Forward Current	I_F	20mA	20mA	40mA
Forward Voltage	V_F	1.9V	2.0V	2.1V
Reverse Peak Voltage	V_{RM}	5V	5V	5V
Current Reduction Rate Above 25°C	ΔI_F	0.42mA/°C	0.29mA/°C	0.42mA/°C
Ambient Temperature Range		-25°C ~ +50°C		

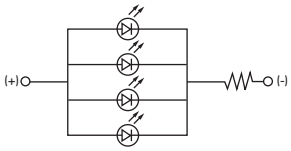
Bright LED with Resistor

AT627 with Resistor

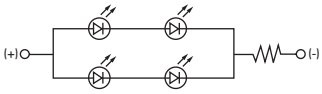
T-1 Bi-pin

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

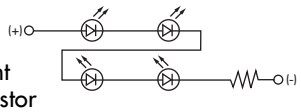
AT627 5-volt, 4-element with Resistor



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

Attention Electrostatic Sensitive Devices — Colors:		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		
Ambient Temperature Range		-25°C ~ +50°C		

CAP TYPES & COLOR COMBINATIONS

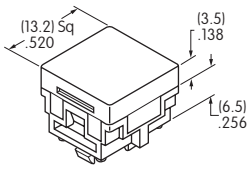
Color Codes: **A** Black **B** White **C** Red **D** Amber **E** Yellow **F** Green **G** Blue **J** Clear

Solid Cap for Incandescent Lamp

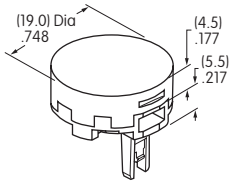
Lens/Filter Colors Available:

BJ FJ CJ GJ EJ

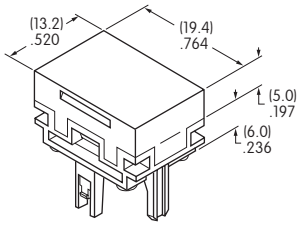
AT476 Square



AT4012 Round



AT4026 Rectangular



Translucent Colored Lens

Transparent Clear Filter

Lamp AT607

Material: Polycarbonate Finish: Glossy

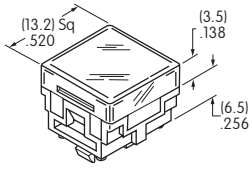
Insert Cap for Incandescent or Neon Lamp

Lens/Filter Colors Available:

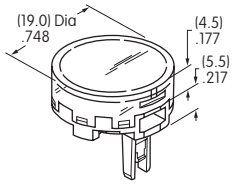
JB JF JC JG JE

JF & JG not suitable with neon.

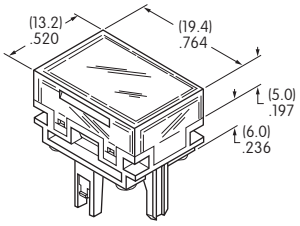
AT477 Square



AT4013 Round



AT4027 Rectangular



Transparent Clear Lens

Translucent Colored Filter

Lamps AT607 or AT607N

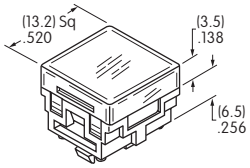
Material: Polycarbonate Finish: Glossy

Cap for Bright LED without Resistor

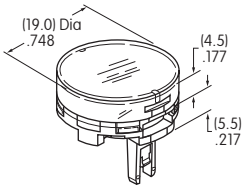
Lens/Diffuser Colors Available:

JB JC JD JF

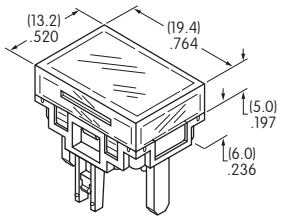
AT4176 Square

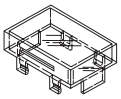


AT4178 Round

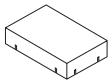


AT4177 Rectangular





Transparent Clear Lens



Translucent Colored Diffuser

Bright LED AT635

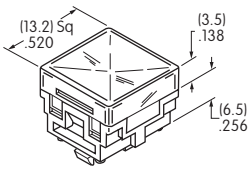
Material: Polycarbonate Finish: Glossy

Cap for Bright LED with Resistor

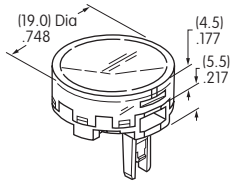
Lens/Diffuser Colors Available:

JB JC JD JF

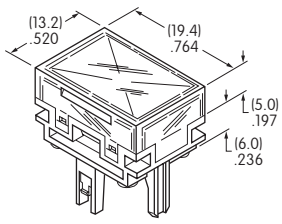
AT4162 Square

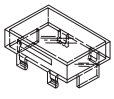


AT4164 Round

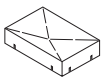


AT4163 Rectangular





Transparent Clear Lens



Translucent Colored Diffuser

Bright LED AT627

Material: Polycarbonate Finish: Glossy

CAP TYPES & COLOR COMBINATIONS

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

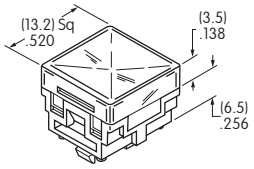
Cap for Super Bright LEDs

Lens/Diffuser Colors Available:

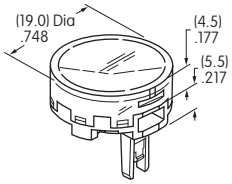
JB

Material: Polycarbonate
Finish: Glossy

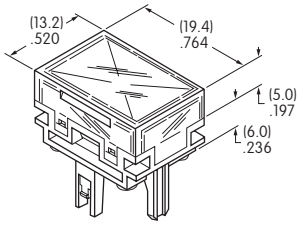
AT4129 Square

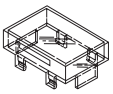


AT4128 Round

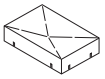


AT4130 Rectangular





Transparent Clear Lens



Translucent White Diffuser

LEDs AT625 AT631 AT632

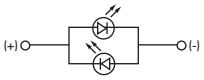
Spot Illuminated Cap with LED

Electrical specifications are determined at a basic temperature of 25°C. LED circuit is independent of switch operation. Single color LEDs are colored in OFF state & bicolor translucent white in OFF state. For dimension drawings of lamps see 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).

LED Specifications

LED factory assembled in Spot Illuminated Caps

Not Available Separately

	Single Color LED with 1 Element	Bicolor LED with 2 Elements	Single Color			Bicolor
			**1C** Red	**1D** Amber	**1F** Green	**CF** Red/Green
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	0.43/38mA/°C
Ambient Temperature Range			-25°C ~ +50°C			

Cap Colors Available:

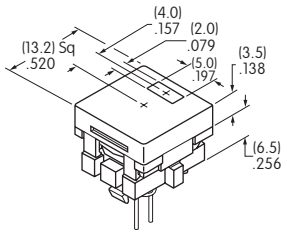
A

B

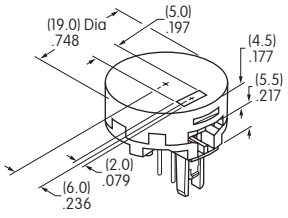
C

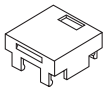
F

AT480 Square



AT4016 Round





Cap with Window

Factory Assembled LED; Not Available Separately

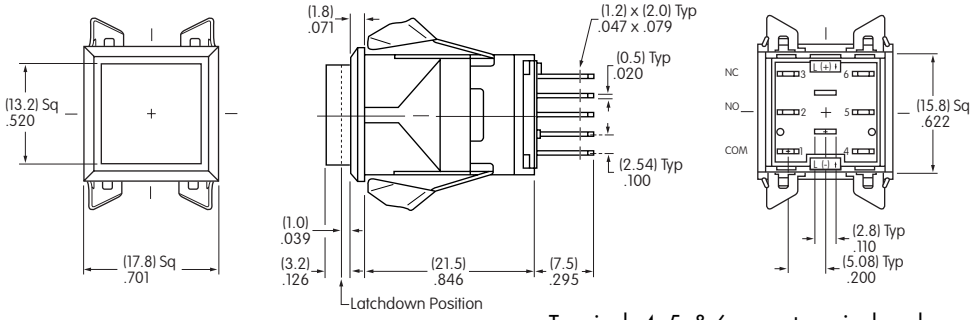
Material: Polycarbonate Finish: Glossy

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

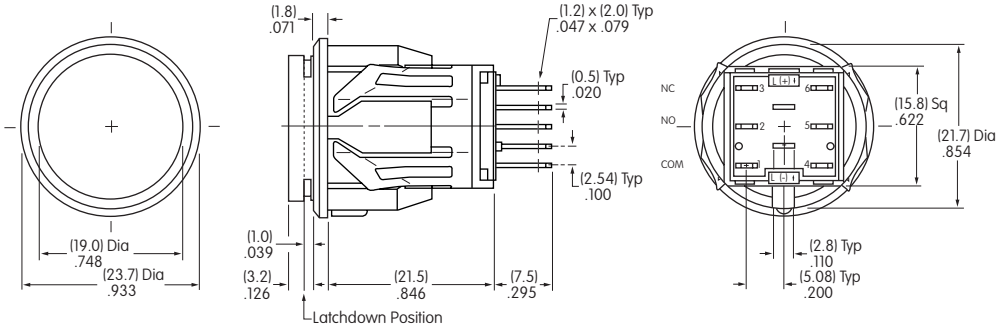


LB15SKW01-12-CJ

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

Round

Single & Double Pole

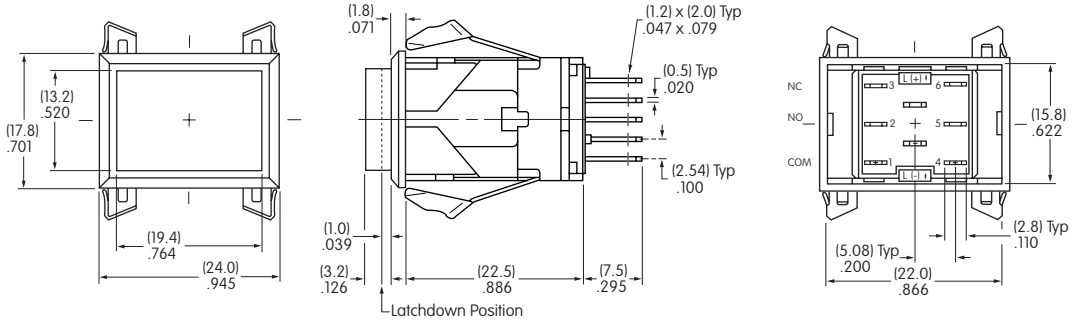


LB16CKW01-12-CJ

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

Rectangular

Single & Double Pole



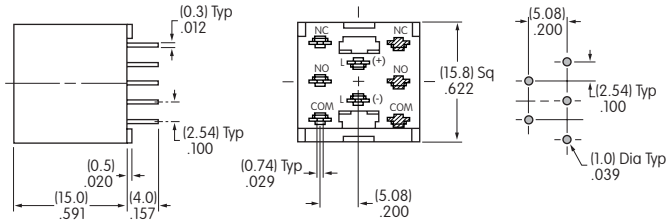
LB26RGW01-12-CJ

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

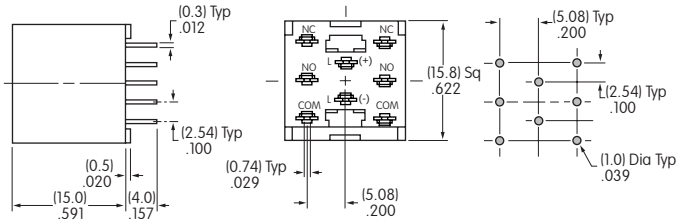
OPTIONAL ACCESSORIES

PCB Adaptors

AT711 **Single Pole • Straight PC Terminals**



AT712 **Double Pole • Straight PC Terminals**



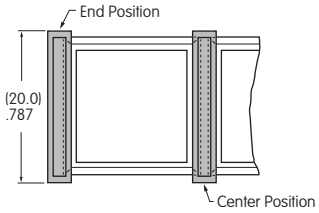
Note: Order adaptors separately.

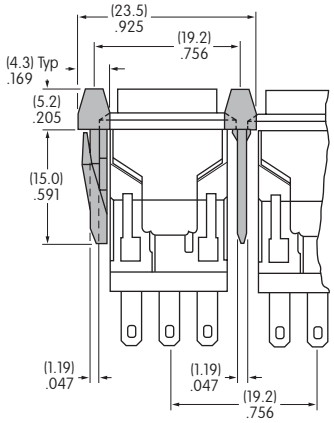
OPTIONAL ACCESSORIES

Barriers

AT497
End

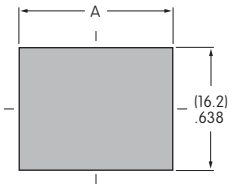
AT498
Center





Material: Polyamide

Cutouts for More Than 1 Switch

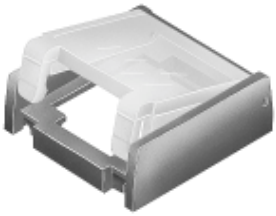


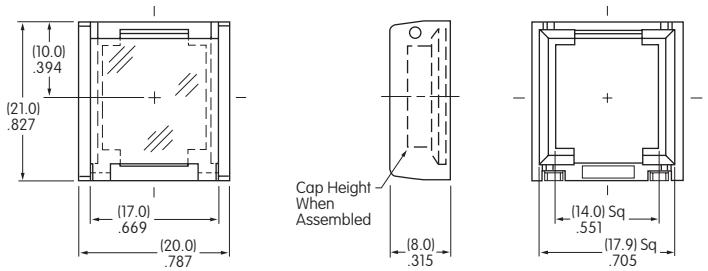
Square
A = .752" x Number of Switches + .051"
Rectangular
A = .996" x Number of Switches + .051"

Protective Guard

AT499
Square
Protective Guard

Opens 90°
Closes manually





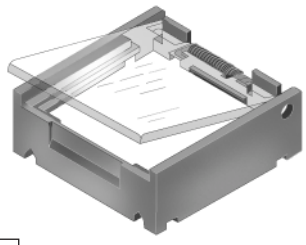
Material: Polyamide

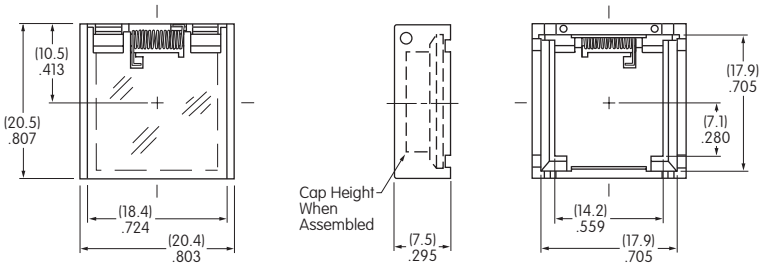
Protective Guards reduce depth of switch behind panel by .020".

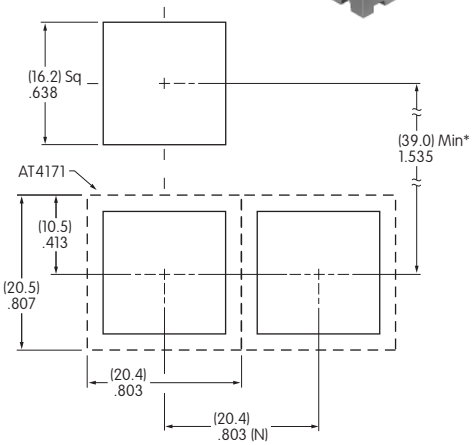
Spring Loaded Protective Guard

AT4171
Square
Protective Guard

Opens 180°
Closes automatically

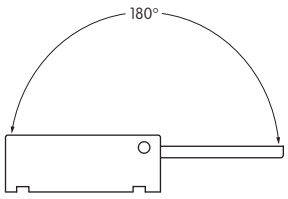






(N) = Number of switches * Minimum dimension allows opening of cover to 180°

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



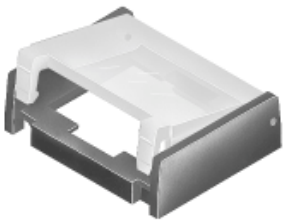
Recommended Panel Thickness:
1.0mm ~ 2.7mm (.039" ~ .106")

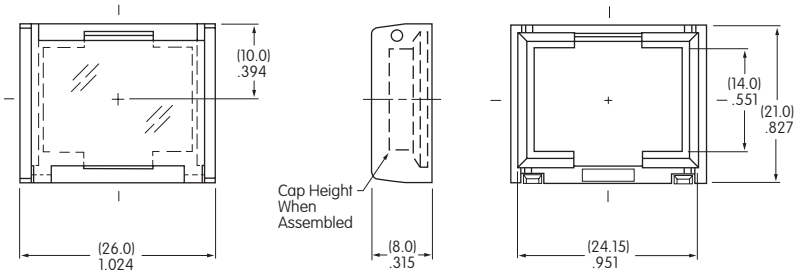
OPTIONAL ACCESSORIES

Protective Guard

AT4057
Rectangular
Protective Guard

Opens 90°
Closes manually



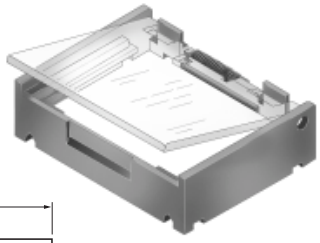


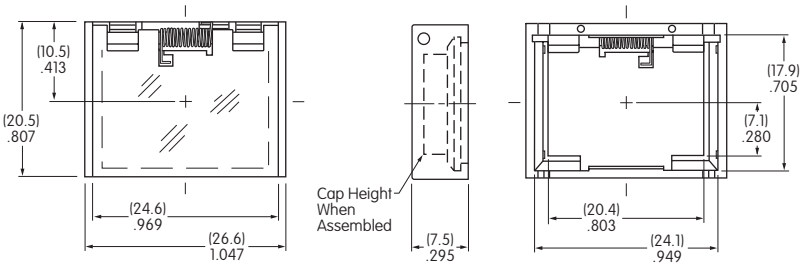
Material: Polyamide

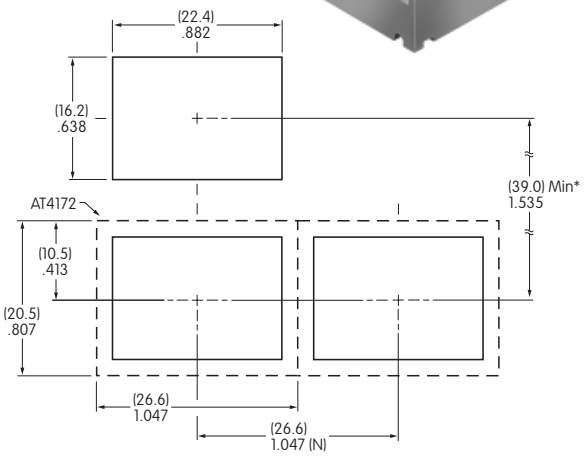
Protective Guards reduce depth of switch behind panel by .020".

Spring Loaded Protective Guard

AT4172
Rectangular
Protective Guard



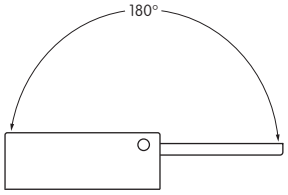




(N) = Number of switches * Minimum dimension allows opening of cover to 180°

Opens 180°
Closes automatically

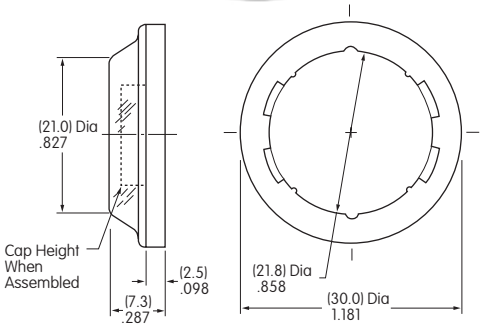
Materials:
Cover: Clear Polycarbonate
Base: Black GFR Polyamide
Coil Spring: Stainless Steel



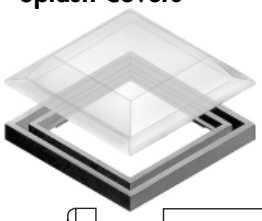
Recommended Panel Thickness:
1.0mm ~ 2.7mm (.039" ~ .106")

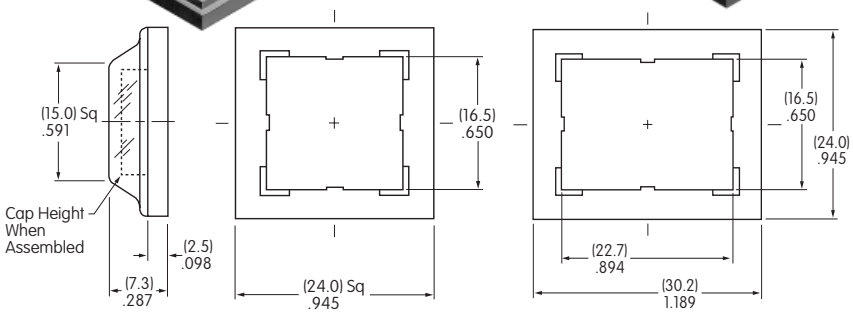
Splash Covers

AT4002
Round

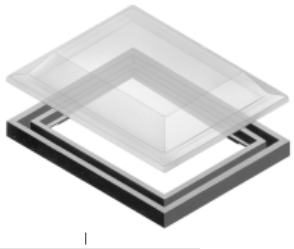


AT4001
Square





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".