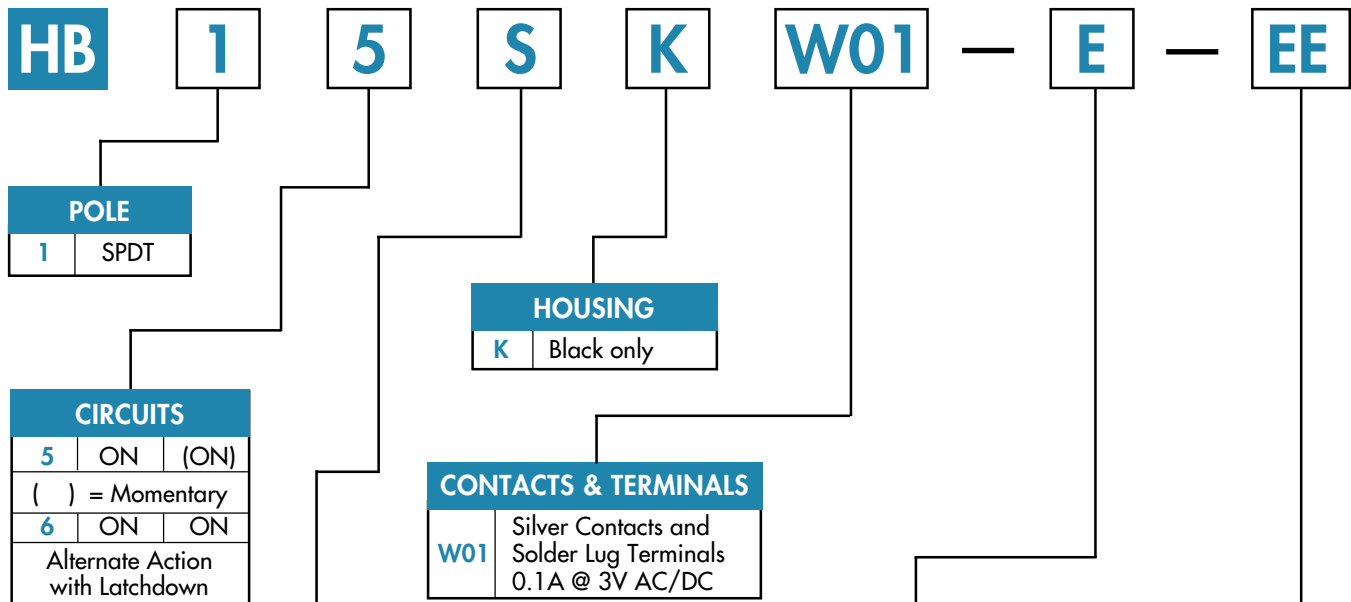


## TYPICAL SWITCH ORDERING EXAMPLE



SHAPES	
S	Square
C	Round

LEDS	
Illumination	
C	Red
E	Yellow
F	Green
G	Blue
Blue for caps JB & A Spot Illuminated only.	

CAP TYPES & COLORS	
Transparent Cap Lens/Diffuser Colors	
CC	Red Lens/Diffuser
EE	Yellow Lens/Diffuser
FF	Green Lens/Diffuser
JB	Clear Lens/White Diffuser
Square Spot Illuminated Cap Cap Color	
A	Square Black Cap

**IMPORTANT:**

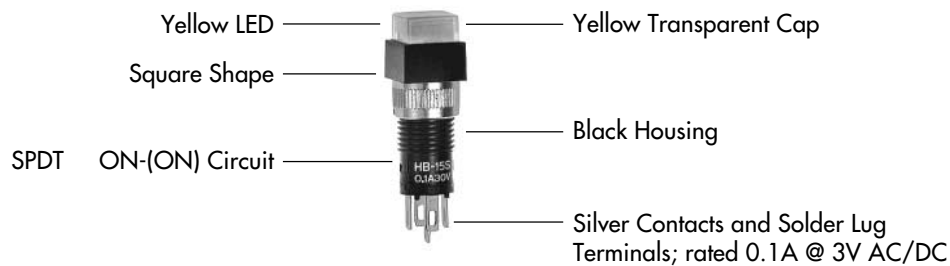
Switches are supplied without UL marking unless specified.  
Specific models & ratings noted on General Specifications page.

Illumination	
N	No Lamp

Cap Colors for Nonilluminated	
A	Black (Square only)
B	White
C	Red
E	Yellow
F	Green
G	Blue

### DESCRIPTION FOR TYPICAL ORDERING EXAMPLE

**HB15SKW01-E-EE**





### GENERAL SPECIFICATIONS

#### Electrical Capacity (Resistive Load)

**Power Level (code W):** 0.1A maximum @ 30V AC/DC

#### Other Ratings

**Contact Resistance:** 50 milliohms maximum  
**Insulation Resistance:** 100 megohms minimum @ 500V DC  
**Dielectric Strength:** 500V AC minimum  
**Mechanical Life:** 100,000 operations minimum  
**Electrical Life:** 50,000 operations minimum  
**Nominal Operating Force:** 350 grams  
**Contact Timing:** Nonshorting (break before make)  
**Travel:** 2.2mm (.087") pretravel; 0.8mm (.031") overtravel; 3.0mm (.118") total travel

#### Materials & Finishes

**Housing:** Glass fiber reinforced polyamide  
**Base:** Glass fiber reinforced polyamide  
**Movable Contact:** Phosphor bronze with silver plating  
**Stationary Contacts:** Phosphor bronze with silver plating  
**Common Terminal:** Phosphor bronze with silver plating  
**End Terminals:** Phosphor bronze with silver plating  
**Lamp Terminals:** Phosphor bronze with silver 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 5 shocks in each direction)

#### Installation

**Mounting Torque:** 5.0 kg/cm (4.34 lb/in) for round mounting nut  
**Cap Installation Force:** 1.0 kg (2.2 lb) maximum  
**Soldering Time & Temperature:** 3 seconds @ 350°C or 5 seconds @ 270°C  
**Process Seal:** Not available

#### Standards & Certifications

**UL Recognized:** All models recognized at 0.1A @ 30V AC/DC; UL File No. E44145



# Series HB

Subminiature Pushbutton Switches

## POLES & CIRCUITS

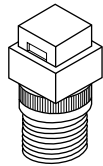
		Plunger Position ( ) = Momentary		Connected Terminals		Throw & Power/Lamp Schematics
Pole	Model	Normal	Down	Normal	Down	Notes: Terminals are marked with NO, NC, C, L. LED circuit is isolated and requires external power source.
SP	HB15 HB16	ON	(ON)	1-3	1-2	SPDT

## SHAPES

### S 9mm Square Shroud

Square shroud for use with square cap.

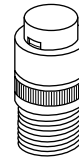
The shroud is an integral part of the switch body.



### C 9mm Dia. Shroud

Round shroud for use with round cap.

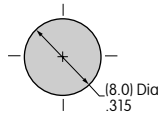
The shroud is an integral part of the switch body.



## Panel Cutout & Mounting

Recommended Panel Thickness:

0.5mm ~ 5.0mm (.020" ~ .197")



Overtightening the mounting nut may damage the switch housing.

## HOUSING

**K** Housing available in black only.

## CONTACT MATERIALS, RATINGS, & TERMINALS

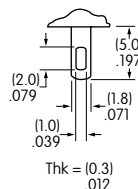
**W01** Silver Contacts

Power Level

0.1A maximum @ 30V AC/DC

### Solder Lug

The 1mm x 2mm oblong hole accommodates one solid or one stranded 20-gauge wire or two 22-gauge wires.



### PCB Mounting

Solder lug terminals are spaced 2.54mm x 5.08mm. This enables PCB mounting which can be accomplished by elongating PC board holes to 2.03mm.



# Series HB

## Subminiature Pushbutton Switches

### LED COLORS & SPECIFICATIONS

AT616 Red, Yellow, Green	Color	<b>C</b>	<b>E</b>	<b>F</b>	<b>G</b>	
		Red	Yellow	Green	Blue	
AT624 Blue	Forward Peak Current	$I_{FM}$	30mA	30mA	30mA	30mA
	Continuous Forward Current	$I_F$	20mA	20mA	20mA	20mA
	Forward Voltage	$V_F$	2.0V	2.0V	2.1V	3.6V
	Reverse Peak Voltage	$V_{RM}$	5V	5V	5V	5V
	Current Reduction Rate Above 25°C	$\Delta I_F$	0.40mA/°C	0.40mA/°C	0.40mA/°C	0.50mA/°C
Single Element LEDs		Ambient Temp Range	-25°C ~ +50°C			

Electrical specifications are determined at a basic temperature of 25°C.  
LED circuit is independent of switch operation. Single element LED is colored in OFF state.

For dimension drawings 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](#).

**N** **No Lamp** Code N indicates that no lamp is used with AT4035 and AT4036.

### CAP TYPES & COLORS

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

#### Transparent Cap for LED

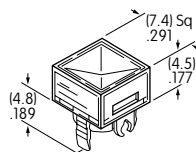
Lens/Diffuser Colors Available:

**CC** **EE** **FF** **JB**

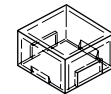
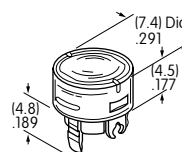
Material: Polycarbonate

Finish: Glossy

**AT4031**  
Square



**AT4032**  
Round



Transparent  
Lens



Translucent  
Colored Diffuser



Colored LED  
AT616 or  
AT624

#### Spot Illuminated Cap for LED

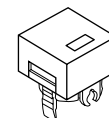
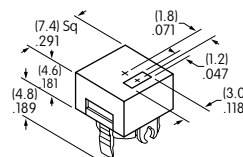
Cap Color Available:

**A** Black Opaque

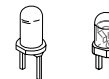
Material: Polycarbonate

Finish: Matte

**AT4052**  
Square



Black Cap with  
Translucent Window



Colored LED  
AT616 or AT624

#### Nonilluminated Cap

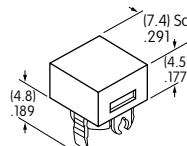
Cap Colors Available:

**A** (Black in Square only)

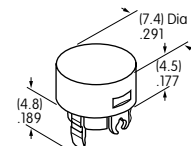
**B** **C** **E** **F** **G**

Material: Polycarbonate Finish: Glossy

**AT4035**  
Square



**AT4036**  
Round



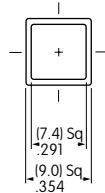


### TYPICAL SWITCH DIMENSIONS

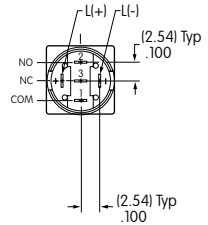
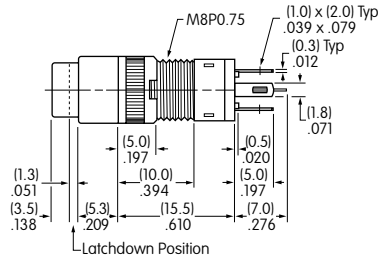
#### Square



HB155KW01-C-CC



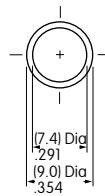
#### Single Pole



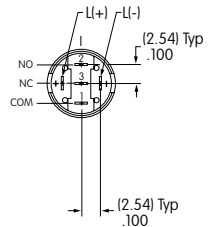
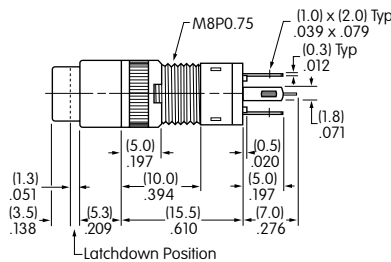
#### Round



HB16CKW01-C-CC



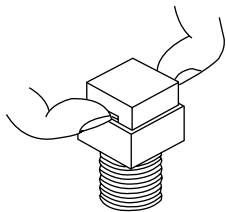
#### Single Pole



### ASSEMBLY INSTRUCTIONS

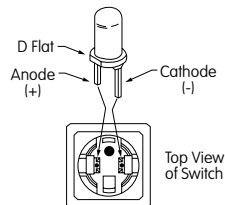
#### Cap Removal

1. Have cap in extended position (not latchdown) for alternate action models.
2. Use the grip slots on the sides of the cap and pull it out of the switch.



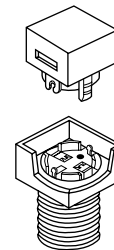
#### Correct LED Orientation

Insert the LED with the D flat opposite the black dot molded inside the lamp cavity.



#### Cap Replacement

1. Match the prongs on the cap base with the projections in the switch, at the same time aligning the spring clips on the cap with the indentations in the switch.
2. Press firmly in place.



#### AT111 Lamping Tool

Lamping Tool AT111 may be used to remove and replace LED.



#### AT110 Socket Wrench

Socket Wrench AT110 may be used to tighten the mounting nut.

