

NKK®

SERIES HB

SUPER-SUBMINIATURE/REAR PANEL MOUNTING

A-25-19

DISTINCTIVE FEATURES

LED and spot illumination available.
Front panel relamping.

Compact front panel design with
.354" square or round shroud size.

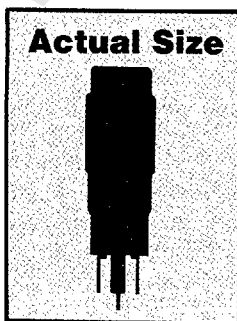
Rear panel threaded mounting. Behind
panel depth of less than one inch. 8mm
(.315") body diameter fits common size
panel cutout.

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

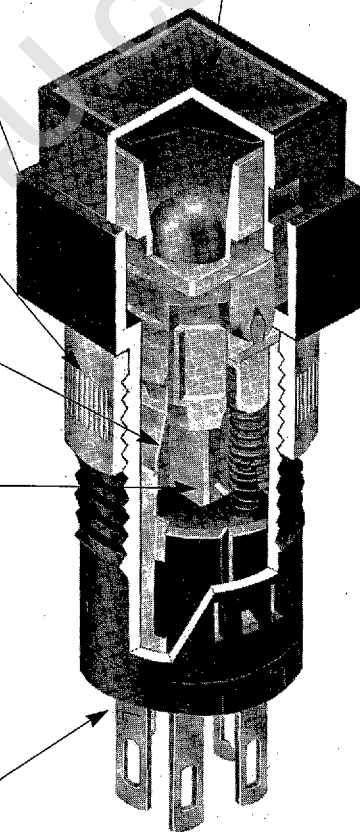
Dual, sliding contacts with self-cleaning
action provide contact stability, high
reliability and increased operating life.

Minimal contact bounce is achieved
with sliding contact mechanism.

Molded-in terminals lock out flux, dust
and other contaminants.



Longer normally closed terminal facilitates
wiring and soldering.



Pushbuttons

Illuminated

NKK®
switches

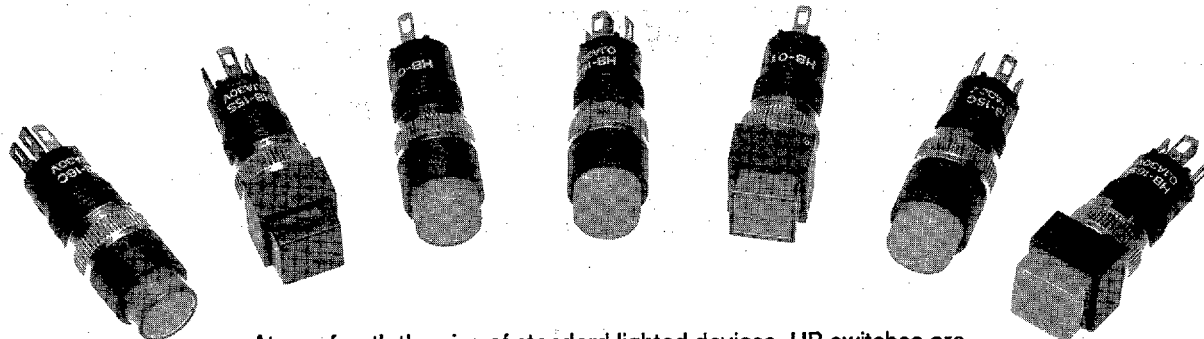
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NKK® SERIES HB PUSHBUTTON SWITCHES

SUPER-SUBMINIATURE/REAR PANEL MOUNTING

APPLICATION DATA



At one-fourth the size of standard lighted devices, HB switches are uniquely suited to applications where space is at a premium. These super-subminiature single pole double throw switches with silver solder lug terminals have a rating of 0.1 amp @ 30V. Square or round shrouds vary the front panel appearance. A single element LED provides illumination for colored transparent caps and spot illuminated cap. Also available are matching indicators. Solid caps are suitable for nonilluminated applications. HB series switches are recognized by Underwriters Laboratories Inc. (UL File No. E44145).

GENERAL SPECIFICATIONS

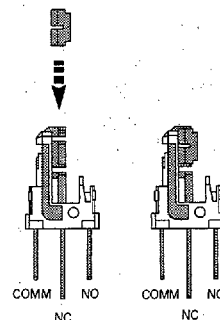
Electrical Capacity: (Resistive Load)	0.1A maximum @ 30V AC/ DC
Contact Resistance:	50 milliohms maximum
Insulation Resistance:	100 megohms minimum @ 500V DC
Dielectric Strength:	500V AC minimum
Mechanical Life:	100,000 operations minimum
Electrical Life:	50,000 operations minimum
Pretravel:	2.2mm (.087")
Overtravel:	0.8mm (.031")
Total Travel:	3.0mm (.118")
Ambient Temp Range:	Illuminated: -25°C through +50°C (-13°F through +122°F) Nonilluminated: -25°C through +70°C (-13°F through +158°F)
Nominal Operating Force:	350 grams

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

SLIDING CONTACT MECHANISM

The unique sliding contact mechanism offers benefits unavailable in conventional mechanisms. A dual wiping movable contact slides along the stationary contacts to provide excellent contact stability, increased operating life, and high reliability. Contact operation is break before make.



Pushbuttons

Illuminated

SUPER-SUBMINIATURE/REAR PANEL MOUNTING

TYPICAL SWITCH ORDERING EXAMPLE

HB 1 5 S K W01 — EE

POLE		
1	SPDT	

HOUSING	
K	Black only

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

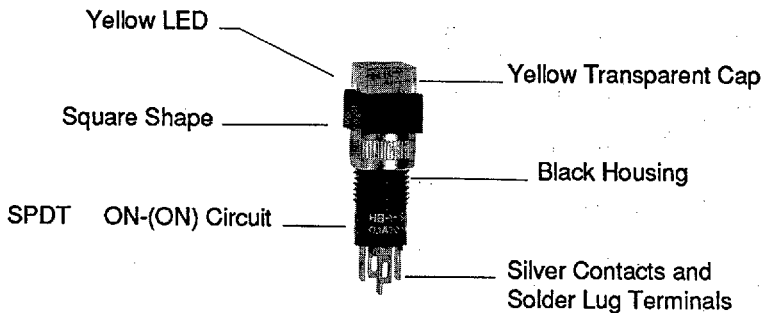
CONTACTS & TERMINALS	
W01	Silver Contacts and Solder Lug Terminals

SHAPES	
S	Square
C	Round

CAP TYPES & COLOR COMBINATIONS	
Transparent Cap Lens/Diffuser Colors & LED Colors	
CC	Red Lens/Diffuser with Red LED
EE	Yellow Lens/Diffuser with Yellow LED
FF	Green Lens/Diffuser with Green LED
BC	White Diffuser with Red LED
BE	White Diffuser with Yellow LED
BF	White Diffuser with Green LED
Square Spot Illuminated Cap Cap/LED Colors	
AC	Square Black Cap with Red LED
AE	Square Black Cap with Yellow LED
AF	Square Black Cap with Green LED
Nonilluminated Cap Colors	
A	Black (square only)
B	White
C	Red
E	Yellow
F	Green
G	Blue

DESCRIPTION FOR TYPICAL ORDERING EXAMPLE (HB15SKW01-EE):

SERIES HB PUSHBUTTON



IMPORTANT: Switches are supplied without UL marking unless specified. See Supplement for instructions.

Pushbuttons

Illuminated

NKK® SERIES HB PUSHBUTTON SWITCHES

SUPER-SUBMINIATURE/REAR PANEL MOUNTING

POLES AND CIRCUITS

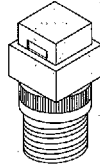
POLE & THROW	MODEL	PLUNGER POSITION & TERMINAL NUMBERS	
		Normal	Down
SPDT	HB15 HB16	ON ON	(ON) ON
CONNECTED TERMINALS		1-3	1-2
SCHEMATICS Power/Lamp			

Terminal numbers are not actually on the switch, but labels "NO, NC, C, L" are. LED circuit is isolated and requires an external switch.

SHAPES

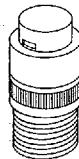
S .354" Square Shroud

Square shroud for use with square cap. The shroud is an integral part of the switch body and comes in black only.



C .354" Round Shroud

Round shroud for use with round cap. The shroud is an integral part of the switch body and comes in black only.



HOUSING

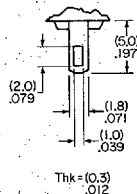
K Housing available in black only.

RATING, CONTACTS, AND TERMINAL TYPE

W01 0.1 Amp Rating

Silver Contacts

Solder Lug Terminals



SOLDERING AND WIRING

Soldering Specifications

3 seconds @ 350°C 5 seconds @ 270°C

Wiring Specifications

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

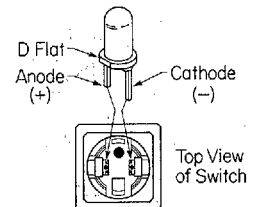
LED SPECIFICATIONS



AT 616 Single Element LED
Used with Transparent, Spot Illuminated, & Indicator Caps

Colors:	Red	Yellow	Green
Forward Peak Current I_{FM}	30mA	20mA	30mA
Continuous Fwd Current I_F	24mA	16mA	24mA
Forward Voltage V_F	2.04V	1.88V	2.02V
Reverse Peak Voltage V_{FM}	5V	5V	5V
Current Reduction Rate Above 25°C ΔI_F	0.40 mA/°C	0.26 mA/°C	0.40 mA/°C
Ambient Temp Range	-25°C ~ +50°C		

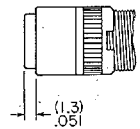
The electrical specifications shown are determined at a basic temperature of 25°C. If the source voltage exceeds rated voltage, the required ballast resistor value can be calculated by using the formula shown in the supplement.



Correct LED Orientation:
D flat opposite black dot inside actuator block.

LATCHDOWN MECHANISM

The latchdown feature on alternate action circuits provides visible, audible, and tactile feedback. The cap extends 1.3mm (.051") above the shroud when in latchdown position. Smooth and responsive operation is achieved with the design of this mechanism.



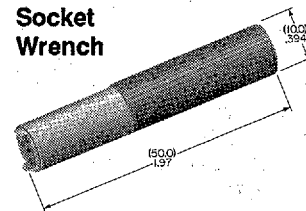
MOUNTING

Recommended Panel Thickness: 0.5mm ~ 5.0mm (.020" ~ .197"). Overtightening the mounting nut may damage the switch housing.

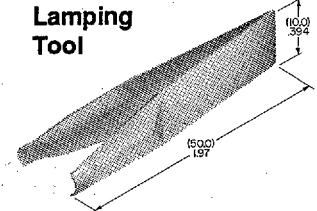
PCB Mounting: Solder lug terminals are spaced .100" X .200". This enables PCB mounting which can be accomplished by elongating PC board holes to .080".

Tools for Mounting and Relamping

AT110 Socket Wrench



AT111 Lamping Tool



Pushbuttons

Illuminated

SUPER-SUBMINIATURE/REAR PANEL MOUNTING

CAP TYPES & COLOR COMBINATIONS

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

Transparent Cap for LED

Color Codes:

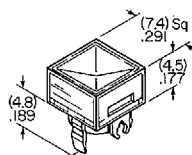
Colored Lens

- CC** Red Diffuser with Red LED
- EE** Yellow Diffuser with Yellow LED
- FF** Green Diffuser with Green LED

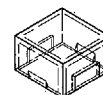
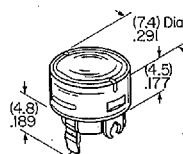
Clear Lens

- BC** White Diffuser with Red LED
- BE** White Diffuser with Yellow LED
- BF** White Diffuser with Green LED

AT4031 Square



AT4032 Round



Transparent Lens



Translucent Colored Diffuser



Colored LED AT616

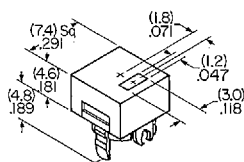
Polycarbonate

Spot Illuminated Cap for LED

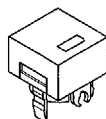
Black Opaque Cap/LED

AT4052 Square

- AC**
- AE**
- AF**



Black Cap with Translucent Window



Colored LED AT616



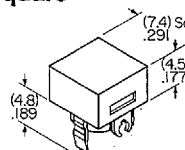
Polycarbonate with matte finish

Nonilluminated Cap

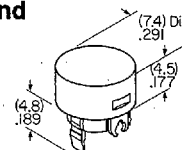
Cap Color Codes:

- A** (black in square only)
- B** **F**
- C** **G**
- E**

AT4035 Square

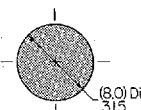
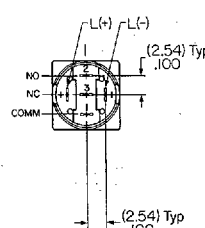
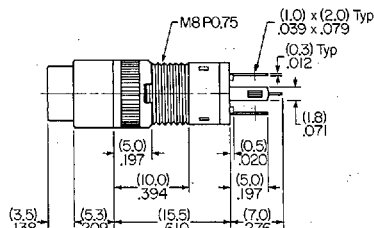
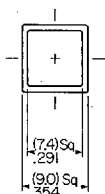


AT4036 Round



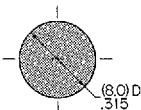
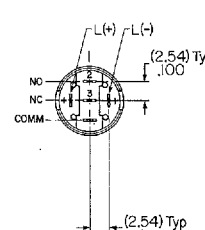
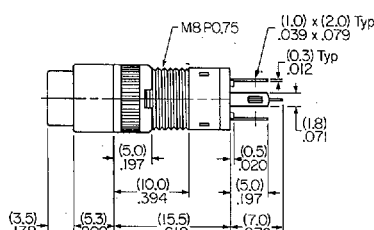
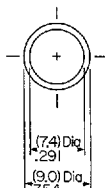
Polycarbonate

Square/Solder Lug Terminals/Single Pole



HB15SKW01-CC Model Shown

Round/Solder Lug Terminals/Single pole



HB16CKW01-CC Model Shown

Pushbuttons
Illuminated