

# AP Series Industrial Pushbutton Switch

### **Features/Benefits**

- ***IP67 sealed***
- ***1,000,000 life cycle***
- ***Illumination / non-illumination***
- ***Multiple colored caps***
- ***Threaded or snap-in mounting***
- ***Caps available separately***
- ***RoHS compliant***

## Typical Applications

- **Harsh environments**
- **Off-Road**
- **Industrial**
- **Medical**
- **Transportation**
- **Joystick control modules**
- **Gaming**
- **Military**



## Specifications

FUNCTION: SPST Momentary  
CONTACT ARRANGEMENT: N.O.  
MOUNTING TYPE:  
Snap-in (no panel seal)  
Threaded body (hex nut, lock washer, and panel seal gasket provided)  
Torque spec for threaded body: Do not exceed 8-9 in-lbs (0.9-1.0 N.m)

## Mechanical

OPERATING LIFE: 1,000,000 cycles  
TOTAL TRAVEL: 2.1 ± 0.2 mm  
OPERATING POINT 1.55 ± 0.25 mm  
OVER TRAVEL: 0.6 min.  
OPERATING FORCE: 4N ± 1N standard configuration; other force  
option 2N ± 0.5N  
VIBRATION: 10-500 Hz 10g Max  
SHOCK: 60g 11ms sawtooth wave

## Electrical

CONTACT RATING:  
200mA @ 24 V DC resistive (500,000 cycles)  
100mA @ 50 V DC resistive (500,000 cycles)  
400mA @ 32 V AC resistive (500,000 cycles)  
125mA @ 125 V AC resistive (1,000,000 cycles)

DIELECTRIC STRENGTH: 1000 V AC min.  
INSULATION RESISTANCE: 1 G  $\Omega$  @ 500 VDC  
INITIAL CONTACT RESISTANCE 50 m $\Omega$  max (without wire leads)  
BOUNCE TIME: <5 ms

## Materials

HOUSING: PBT  
BASE: PBT  
CAP: PBT  
ACTUATOR:  
    Illuminated: Clear polycarbonate  
    Non-illuminated: PBT  
INTERNAL SEAL: Silicone rubber  
TERMINALS: Copper alloy, gold over silver  
MOVABLE CONTACT: Copper alloy, gold over silver  
TERMINAL SEAL: Epoxy  
WIRE LEADS: UL1569 Black 22 AWG

## Operating Environment

OPERATING TEMPERATURE: -40°C to 85°C (+105°C non-illuminated)  
ESD PROTECTION: 20 KV min.

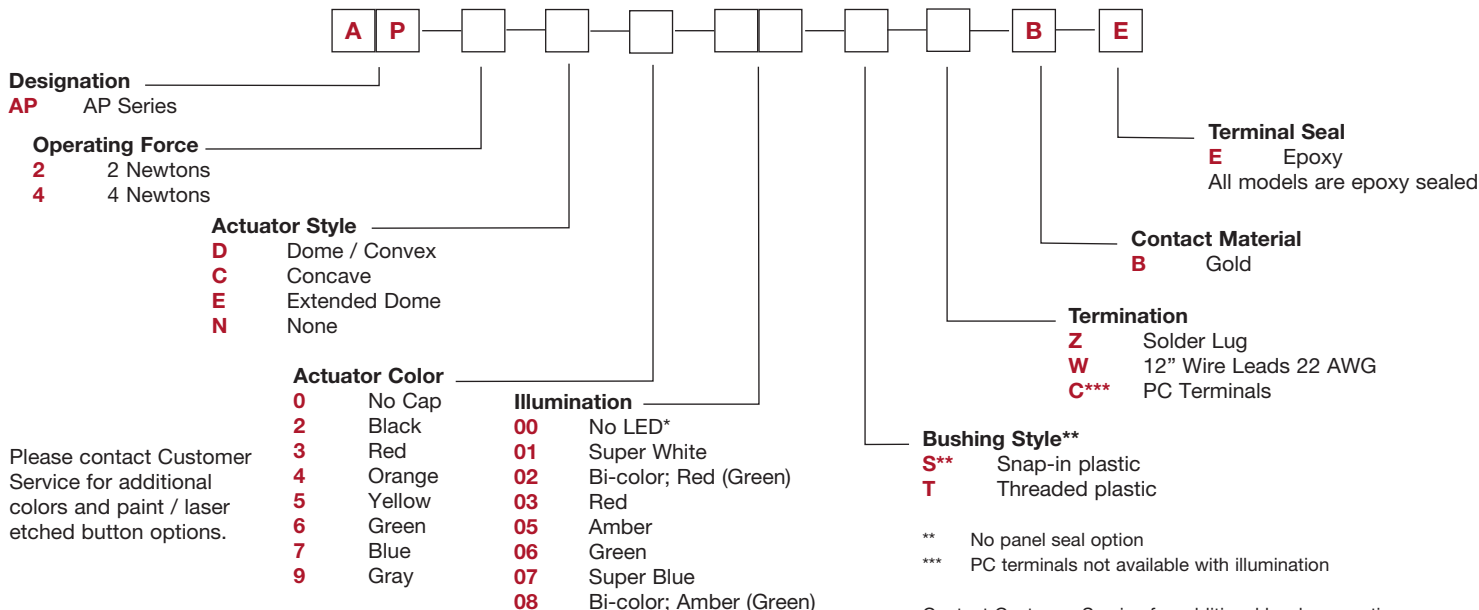
## Process Environment

SEALING: IP67 for threaded body  
IP65 for snap-in version (no panel seal)

**NOTE:** Specifications and materials listed above are for switches with standard options. For information on specific and custom switches, please contact Customer Service.

## Build-A-Switch

To order, simply select desired option from each category and place in the appropriate box.



\* No LED available in short body only

Contact Customer Service for additional hardware options.

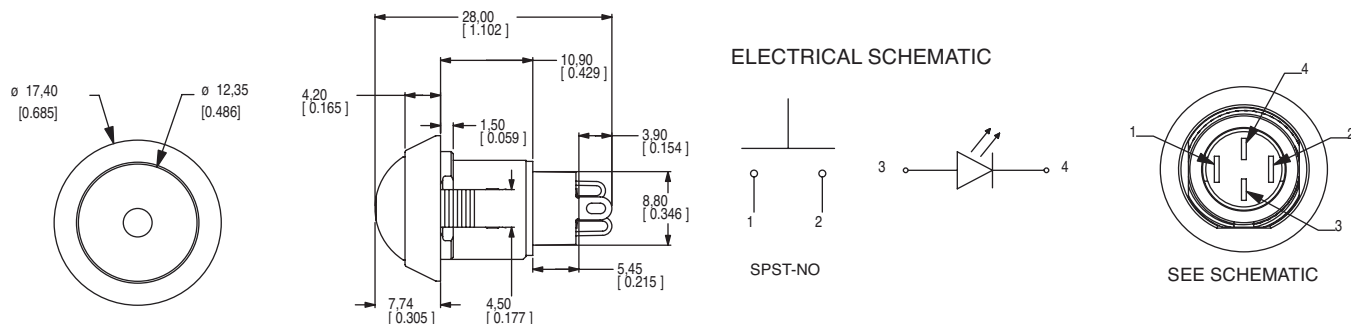
# AP Series Industrial Pushbutton Switch



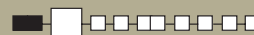
A

Pushbutton

## STANDARD VIEW

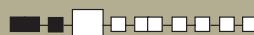


## OPERATING FORCE

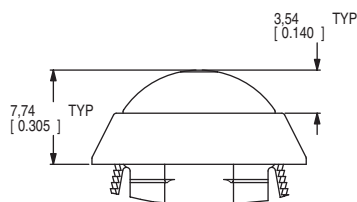


| OPTION CODE | OPERATING FORCE |
|-------------|-----------------|
| <b>2</b>    | 2 N, 200 g      |
| <b>4</b>    | 4 N, 400 g      |

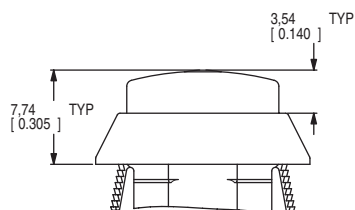
## ACTUATOR STYLE



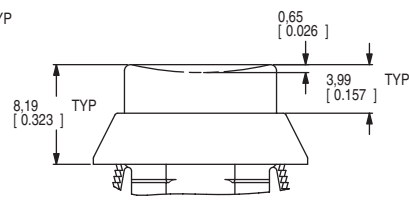
### D DOME / CONVEX



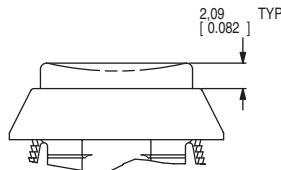
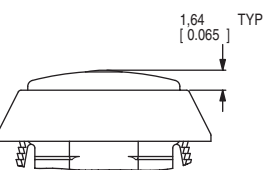
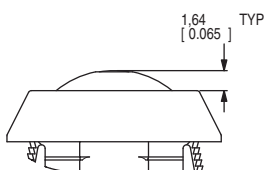
### E EXTENDED DOME



### C CONCAVE



DOWN POSITION



## ACTUATOR COLOR



| OPTION CODE | ACTUATOR COLOR |
|-------------|----------------|
| <b>0</b>    | No Cap         |
| <b>2</b>    | Black          |
| <b>3</b>    | Red            |
| <b>4</b>    | Orange         |
| <b>5</b>    | Yellow         |
| <b>6</b>    | Green          |
| <b>7</b>    | Blue           |
| <b>9</b>    | Gray           |

For additional colors please contact Customer Service.



Third Angle  
Projection



28 Jul 21

Dimensions are shown: mm (inches)  
Specifications and dimensions subject to change



# AP Series Industrial Pushbutton Switch

A

Pushbutton

## ILLUMINATION



| OPTION CODE | ILLUMINATION TYPE            | TYPICAL INTENSITY* |       | PEAK WAVELENGTH | Vf Forward Voltage |
|-------------|------------------------------|--------------------|-------|-----------------|--------------------|
|             |                              | MIN                | MAX   |                 |                    |
|             |                              | (mcd)              |       | (nm)            |                    |
| 00          | Model without illumination   | N/A                |       | N/A             |                    |
| 01          | LED Super White              | 4,000              | 5,000 | N/A             | 3.5                |
| 02          | LED Bi-Color – Red (Green)   | 10                 | 20    | 635/565         | 2.0                |
| 03          | LED Red                      | 4                  | 8     | 700             | 2.0                |
| 05          | LED Amber                    | 35                 | 50    | 610             | 2.0                |
| 06          | LED Green                    | 35                 | 50    | 565             | 2.0                |
| 07          | LED Super Blue               | 800                | 1,500 | 470             | 3.8                |
| 08          | LED Bi-Color – Amber (Green) | 10                 | 10    | 585/565         | 2.0                |

\*LED FORWARD CURRENT: 20 mA

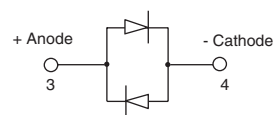
LED FORWARD VOLTAGE: see chart above

LED REVERSE VOLTAGE: 5.0 V MAX

\* For information on specific and custom LED, please contact Customer Service.

NOTE:

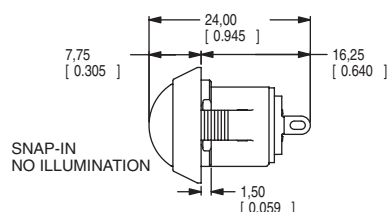
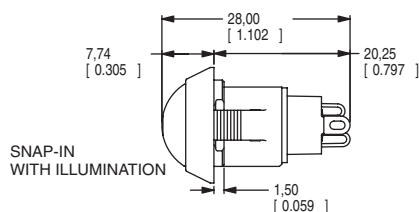
For bi-color LED's the polarity must be reversed to alternate the color



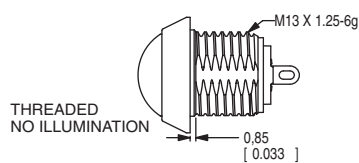
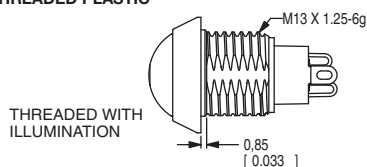
## BUSHING STYLE



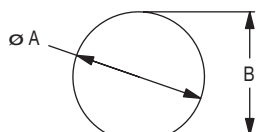
### S SNAP-IN



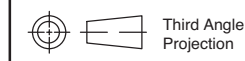
### T THREADED PLASTIC



### PANEL CUTOUT



| PANEL THICKNESS                           | DIM A (± 0.05 mm)      | DIM B (± 0.05 mm)      |
|-------------------------------------------|------------------------|------------------------|
| 1 mm<br>[0.039 in]                        | 13.70 mm<br>[0.539 in] | 13.00 mm<br>[0.512 in] |
| 2 mm<br>[0.079 in]                        | 13.80 mm<br>[0.539 in] | 13.00 mm<br>[0.512 in] |
| 3 mm<br>[0.118 in]                        | 13.90 mm<br>[0.547 in] | 13.10 mm<br>[0.516 in] |
| THREADED BODY<br>MIN PANEL THICKNESS 1 mm | 13.70 mm<br>[0.539 in] | 13.00 mm<br>[0.512 in] |



Third Angle  
Projection



A 0.1mm min. chamfer on the leading edge of the mounting hole is recommended for snap-in version.  
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Dimensions are shown: mm (inches)  
Specifications and dimensions subject to change

# AP Series Industrial Pushbutton Switch

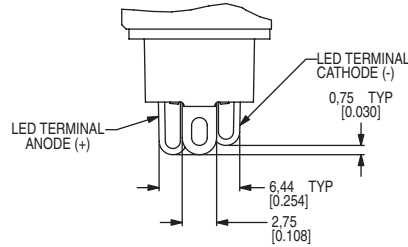
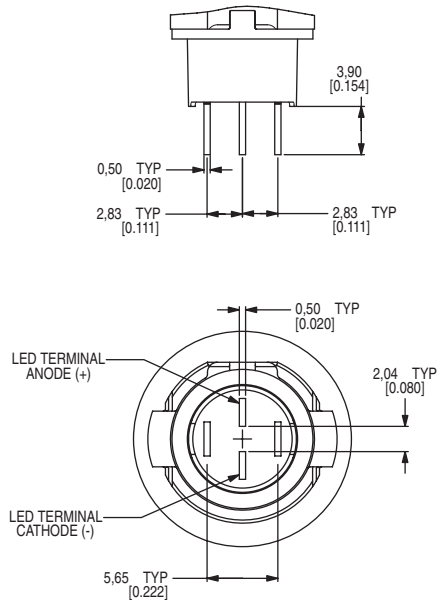


A  
Pushbutton

## TERMINATION



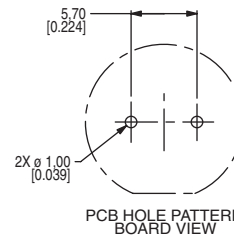
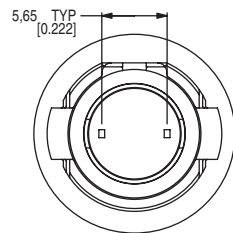
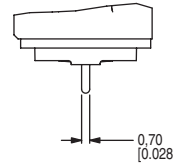
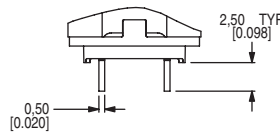
### Z SOLDER LUG



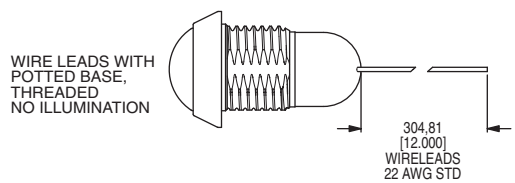
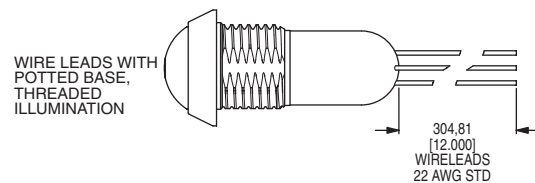
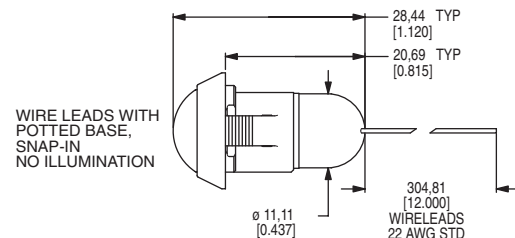
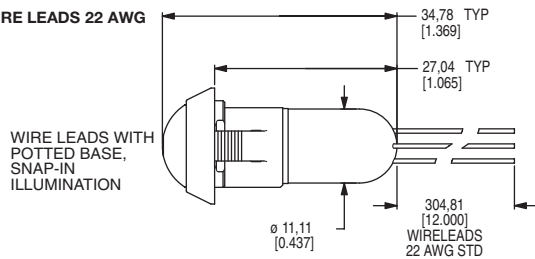
\* Switching terminals are gold and LED terminals are silver

### C PC TERMINALS

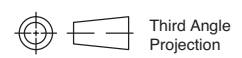
\*\*\* Illumination not available with PC Terminals



### W 12" WIRE LEADS 22 AWG



Wires: Black wires - Terminals  
Red wires - LED (+) Positive  
White wire - LED (-) Negative



**C&K**

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Dimensions are shown: mm (inches)  
Specifications and dimensions subject to change



# AP Series Industrial Pushbutton Switch

A

Pushbutton

## CONTACT MATERIAL



**B** GOLD

| OPTION CODE | CONTACT MATERIAL |
|-------------|------------------|
| <b>B</b>    | Gold             |

## TERMINAL SEAL



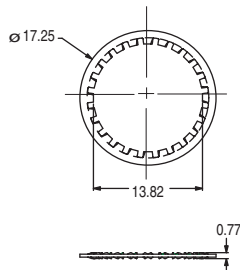
**E** EPOXY

All models are epoxy sealed

## HARDWARE

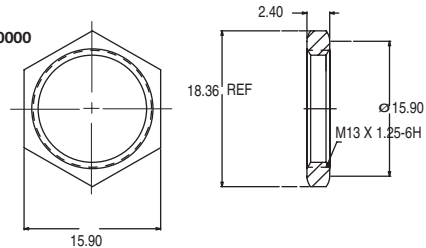
### LOCK WASHER

Part Number 647D00A47



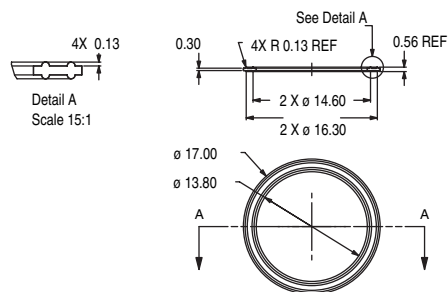
### HEX NUT

Part number 515D00000

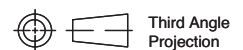


### PANEL SEAL

Part Number 655D00000



Caps available on next page



Third Angle  
Projection



### AVAILABLE CAPS



**481D** **XX** **XXX**

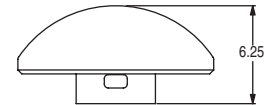
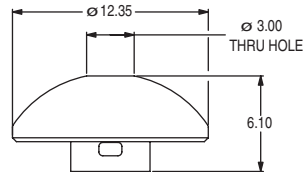
Cap Color ———  
Style ———

| OPTION | CAP COLOR |
|--------|-----------|
| 01     | WHITE     |
| 02     | BLACK     |
| 03     | RED       |
| 04     | ORANGE    |
| 05     | YELLOW    |
| 06     | GREEN     |
| 07     | BLUE      |
| 08     | BROWN     |
| 09     | GRAY      |

| PART NUMBER | HOLE | STYLE         |
|-------------|------|---------------|
| 481DXX000   | NO   | DOME          |
| 481DXX001   | YES  | DOME          |
| 481DXX002   | NO   | EXTENDED DOME |
| 481DXX003   | YES  | EXTENDED DOME |
| 481DXX004   | NO   | CONCAVE       |
| 481DXX005   | YES  | CONCAVE       |

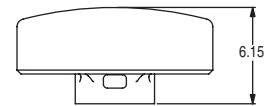
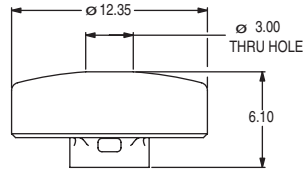
#### DOME

481DXX000 = NO HOLE  
481DXX001 = HOLE



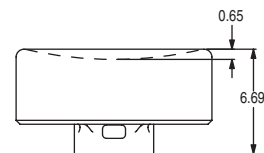
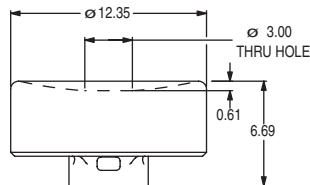
#### EXTENDED DOME

481DXX002 = NO HOLE  
481DXX003 = HOLE



#### CONCAVE

481DXX004 = NO HOLE  
481DXX005 = HOLE





# APB Series Backlit Pushbutton Switch

## Features/Benefits

- IP67 sealed
- 1,000,000 life cycle
- Illumination
- Threaded or snap-in mounting
- RoHS compliant

## Typical Applications

- Harsh environments
- Off-Road
- Industrial
- Medical
- Transportation
- Joystick control modules
- Gaming
- Military



## Specifications

FUNCTION: SPST Momentary  
CONTACT ARRANGEMENT: N.O.  
MOUNTING TYPE:  
Snap-in (no panel seal)  
Threaded body (hex nut, lock washer, and panel seal gasket provided)  
Torque spec for threaded body: Do not exceed 8-9 in-lbs (0.9-1.0 N.m)

## Mechanical

OPERATING LIFE: 1,000,000 cycles  
TOTAL TRAVEL: 2.1 ± 0.2 mm  
OPERATING POINT 1.55 ± 0.25 mm  
OVER TRAVEL: 0.6 min.  
OPERATING FORCE: 4N ± 1N standard configuration; other force  
option 2N ± 0.5N  
VIBRATION: 10-500 Hz 10g Max  
SHOCK: 60g 11ms sawtooth wave

## Electrical

CONTACT RATING:  
200mA @ 24 V DC resistive (500,000 cycles)  
100mA @ 50 V DC resistive (500,000 cycles)  
400mA @ 32 V AC resistive (500,000 cycles)  
125mA @ 125 V AC resistive (1,000,000 cycles)

DIELECTRIC STRENGTH: 1000 V AC min.  
INSULATION RESISTANCE: 1 G Ω @ 500 VDC  
INITIAL CONTACT RESISTANCE 50 mΩ max (without wire leads)  
BOUNCE TIME: <5 ms

## Materials

HOUSING: PBT  
BASE: PBT  
CAP: Painted polycarbonate  
ACTUATOR:  
Illuminated: Clear polycarbonate  
INTERNAL SEAL: Silicone rubber  
TERMINALS: Copper alloy, gold over silver plating  
MOVABLE CONTACT: Copper alloy, gold over silver plating  
TERMINAL SEAL: Epoxy  
WIRE LEADS: UL1569 Black 22 AWG

## Operating Environment

OPERATING TEMPERATURE: -40°C to 85°C  
ESD PROTECTION: 20 KV min.

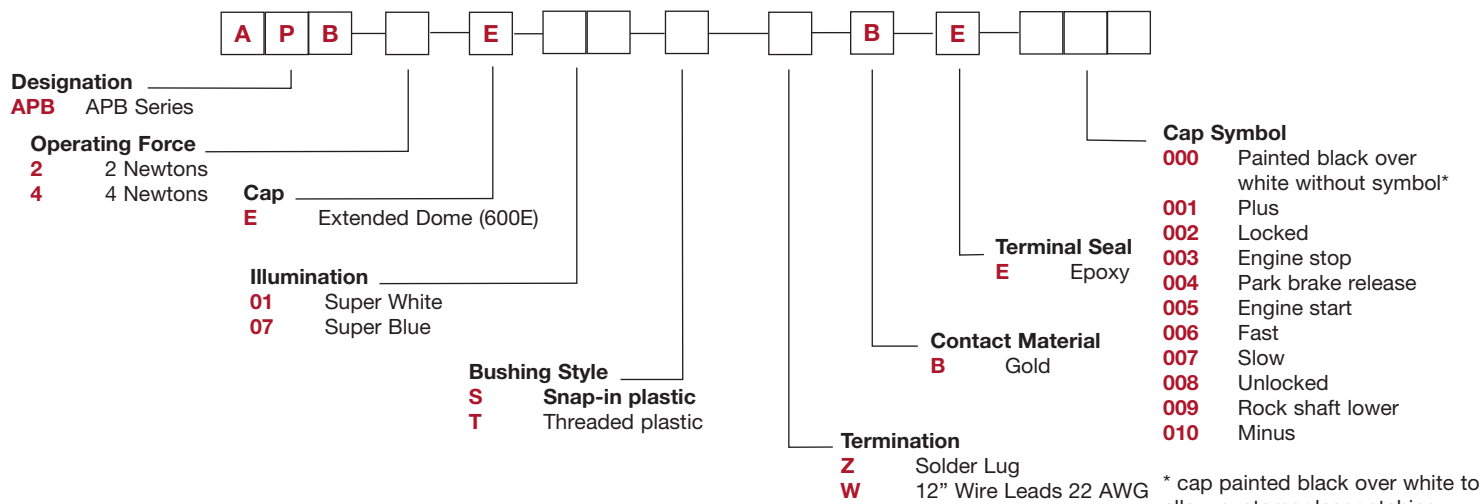
## Process Environment

SEALING: IP67 for threaded body  
IP65 for snap-in version (no panel seal)

**NOTE:** Specifications and materials listed above are for switches with standard options.  
For information on specific and custom switches, please contact Customer Service.

## Build-A-Switch

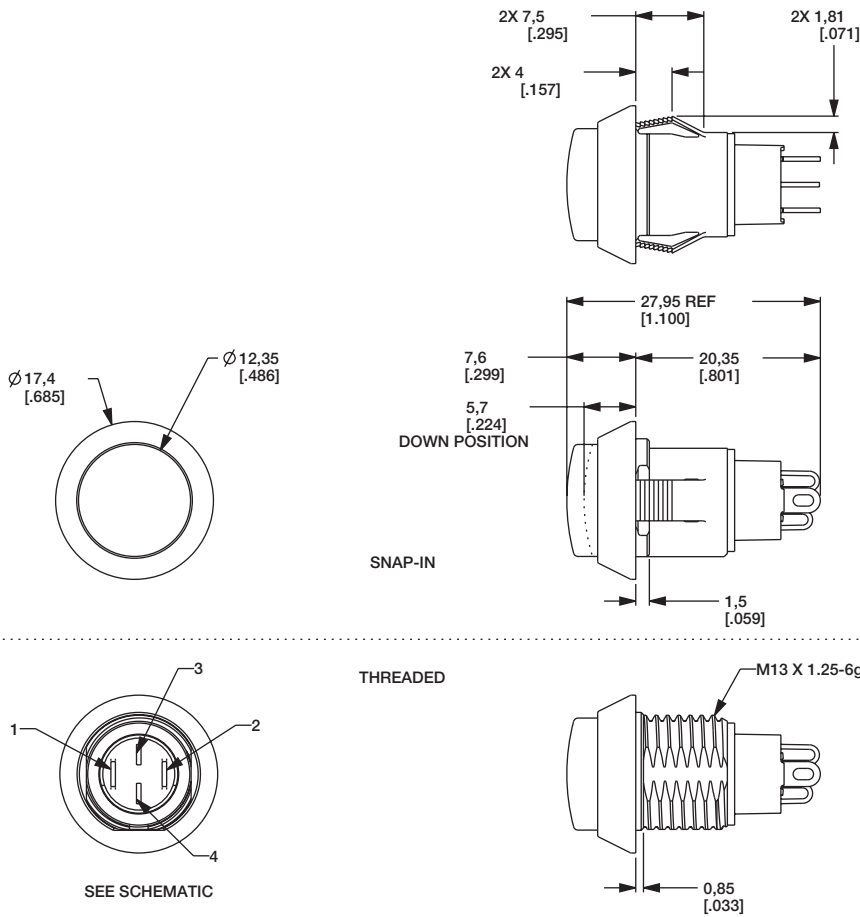
To order, simply select desired option from each category and place in the appropriate box.



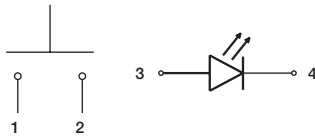
# APB Series Backlit Pushbutton Switch



A  
Pushbutton

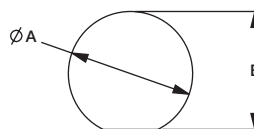


ELECTRICAL SCHEMATIC



SPST-NO-DB

PANEL CUTOUT



| PANEL THICKNESS                           | DIM A ( ±0.05 MM)      | DIM B ( ±0.05 MM)      |
|-------------------------------------------|------------------------|------------------------|
| 1 MM<br>[0.039 IN]                        | 13.70 MM<br>[0.539 IN] | 13.00 MM<br>[0.512 IN] |
| 2 MM<br>[0.079 IN]                        | 13.80 MM<br>[0.539 IN] | 13.00 MM<br>[0.512 IN] |
| 3 MM<br>[0.118 IN]                        | 13.90 MM<br>[0.547 IN] | 13.10 MM<br>[0.516 IN] |
| THREADED BODY<br>MIN PANEL THICKNESS 1 MM | 13.70 MM<br>[0.539 IN] | 13.00 MM<br>[0.512 IN] |

A 0.1 MM MIN CHAMFER ON THE LEADING EDGE OF MOUNTING HOLE IS RECOMMENDED FOR SNAP-IN VERSION.



Third Angle  
Projection





# APB Series Backlit Pushbutton Switch

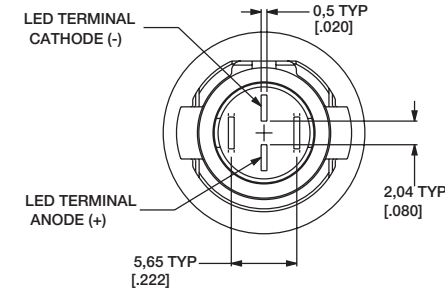
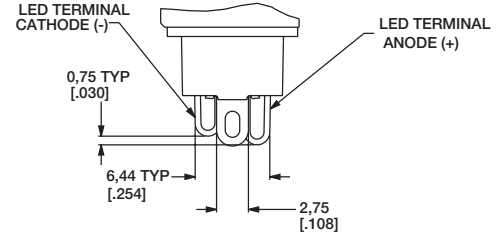
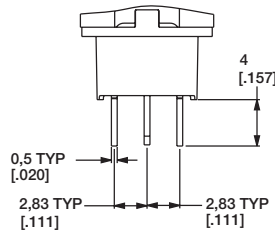
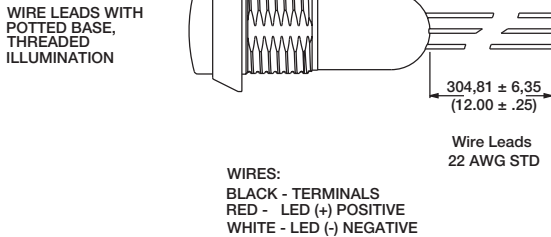
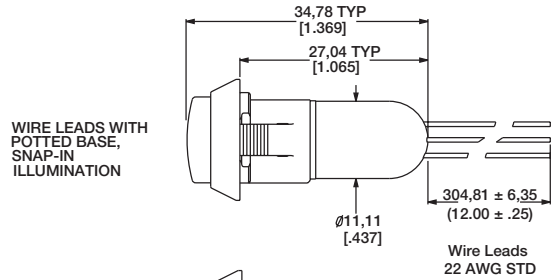
## TERMINATION

A

Pushbutton

**W** 12" WIRE LEADS

**Z** SOLDER LUG



## CONTACT MATERIAL



**B** GOLD

| OPTION CODE | CONTACT MATERIAL |
|-------------|------------------|
| <b>B</b>    | Gold             |

## TERMINAL SEAL



**E** EPOXY

All models are epoxy sealed

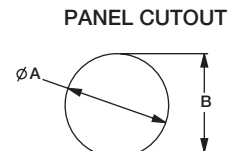




## CAP SYMBOLS

|  |      |  |                    |
|--|------|--|--------------------|
|  | -000 |  | NO SYMBOL          |
|  | -001 |  | PLUS               |
|  | -002 |  | LOCKED             |
|  | -003 |  | ENGINE STOP        |
|  | -004 |  | PARK BRAKE RELEASE |
|  | -005 |  | ENGINE START       |

|  |      |  |                  |
|--|------|--|------------------|
|  | -006 |  | FAST             |
|  | -007 |  | SLOW             |
|  | -008 |  | UNLOCKED         |
|  | -009 |  | ROCK SHAFT LOWER |
|  | -010 |  | MINUS            |



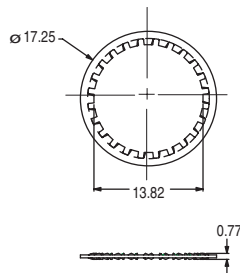
Panel Orientation  
Flat indicates bottom

See chart on previous page  
for dimensions

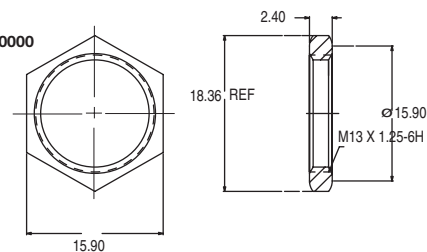
NOTES:  
1. ALL GRAPHICS MUST BE POSITIONED AS SHOWN, PERPENDICULAR TO ALIGNMENT FEATURE ON UNDERSIDE OF CAP.  
2. GRAPHIC MARKING MUST BE ALIGNED WITH THE FLAT FEATURE ON THE UNDERSIDE OF THE CAP AS SHOWN, TOLERANCE  $\pm 3^\circ$

## HARDWARE

LOCK WASHER  
Part Number 647D00A47



HEX NUT  
Part number 515D00000



PANEL SEAL  
Part Number 655D00000

