

# AP Series

## Industrial Pushbutton Switches



### Description

AP series industrial pushbutton switches are found in applications used in the industrial industry, because of their ability to withstand harsh environments. AP switches are IP67 sealed and come with optional illumination and multiple colored caps, ensuring they can match any design or style.

### 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

### Applications

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

### Specifications

<b>Function</b>	SPST Momentary
<b>Contact Arrangement</b>	N.O.
<b>Mounting Type</b>	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 Characteristics

<b>Operating Life</b>	1,000,000 cycles
<b>Total Travel</b>	2.1 ± 0.2 mm
<b>Operating Point</b>	1.55 ± 0.25 mm
<b>Over Travel</b>	0.6 min.
<b>Operating Force</b>	4N ± 1N standard configuration; other force option 2N ± 0.5N
<b>Vibration</b>	10-500 Hz 10g Max.
<b>Shock</b>	60g 11ms sawtooth wave

### Electrical Characteristics

<b>Contact Rating</b>	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)
<b>Dielectric Strength</b>	1,000 V AC min.
<b>Insulation Resistance</b>	1 G Ω @ 500 V DC
<b>Initial Contact Resistance</b>	50 mΩ max (without wire leads)
<b>Bounce Time</b>	< 5 ms
<b>Operating Temperature</b>	-40°C to 85°C (+105°C non-illuminated)
<b>ESD Protection</b>	20 KV min.
<b>Sealing</b>	IP67 for threaded body IP65 for snap-in version (no panel seal)

### Materials

<b>Housing</b>	PBT
<b>Base</b>	
<b>Cap</b>	
<b>Actuator</b>	Illuminated: Clear polycarbonate Non-illuminated: PBT
<b>Internal Seal</b>	Silicone rubber
<b>Terminals</b>	Copper alloy, gold over silver plating
<b>Movable Contact</b>	
<b>Terminal Seal</b>	Epoxy
<b>Wire Leads</b>	UL1569 Black 22 AWG

#### Notes:

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

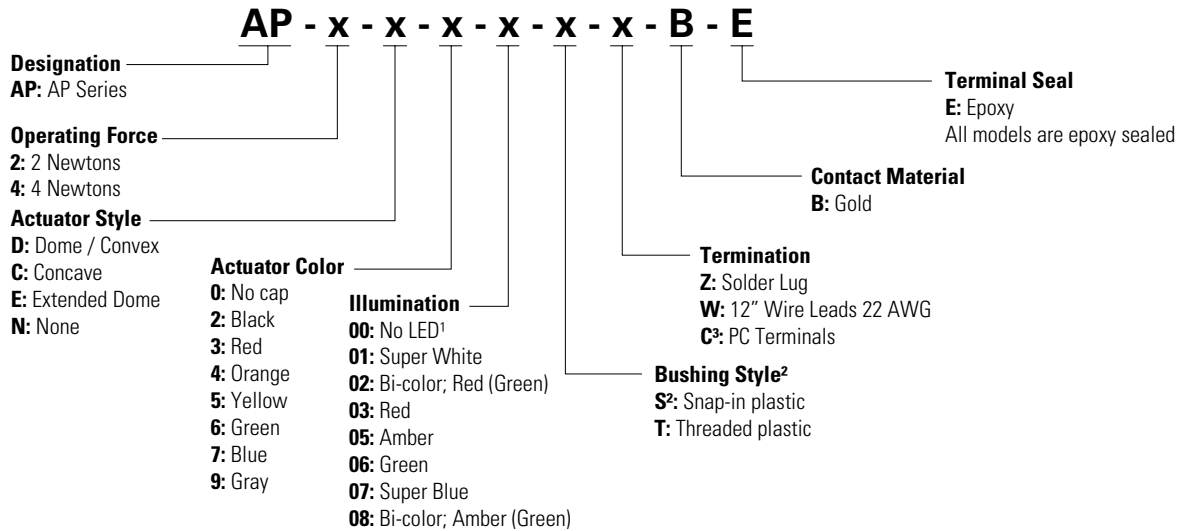
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## Industrial Pushbutton Switches



### Ordering Number

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

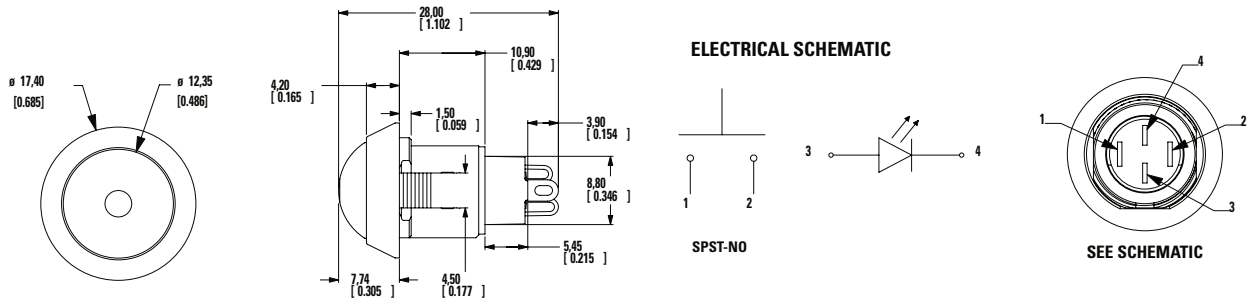


**Notes:**

Please contact Customer Service for additional colors and paint / laser etched button options. Contact Customer Service for additional hardware options.

- 1. No LED available in short body only
- 2. No panel seal option
- 3. PC terminals not available with illumination

### Standard View mm (inches)



### Operating Force

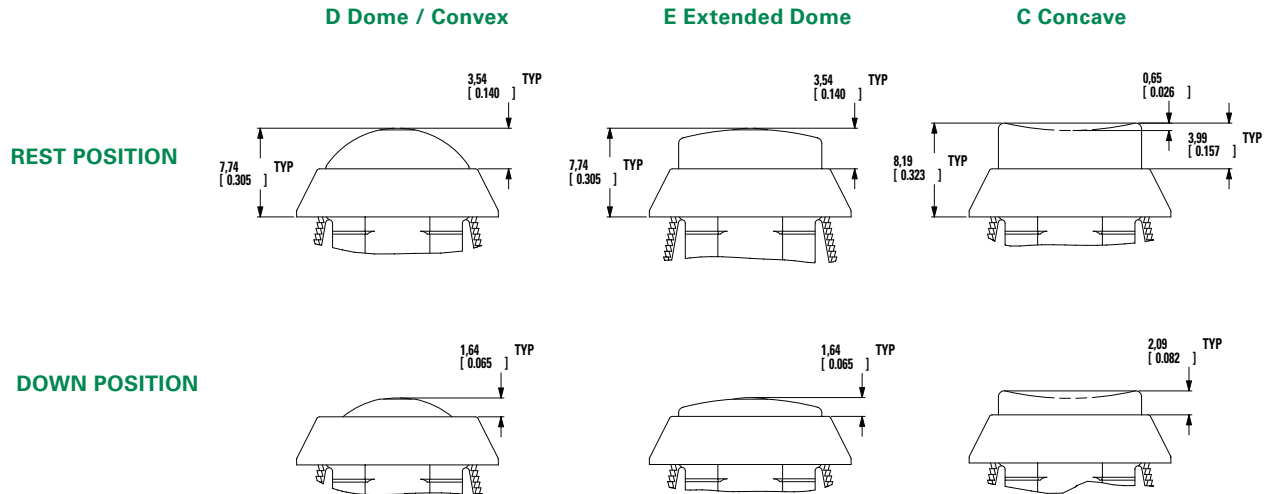
Option Code	Operating Force
2	2 N, 200 g
4	4 N, 400 g

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## Industrial Pushbutton Switches



### Actuator Style View mm (inches)



### Actuator Color

Option Code	Actuator Color
0	No cap
2	Black
3	Red
4	Orange
5	Yellow
6	Green
7	Blue
9	Gray

Notes: For additional colors please contact Customer Service.

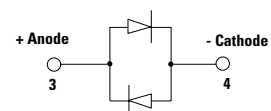
### Illumination

Option Code	Illumination Type	Typical Intensity <sup>1</sup>		Peak Wavelength (nm)	V1 Forward Voltage
		Min.	Max.		
		(mcd)			
00	Model without illumination	-	-	-	-
01	LED Super White	4,000	5,000	-	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

Notes: For information on specific and custom LED, please contact Customer Service.

1. LED Forward Current: 20 mA. LED Forward Voltage: see chart above. LED Reverse Voltage: 5.0 V Max.

### Bicolor LED



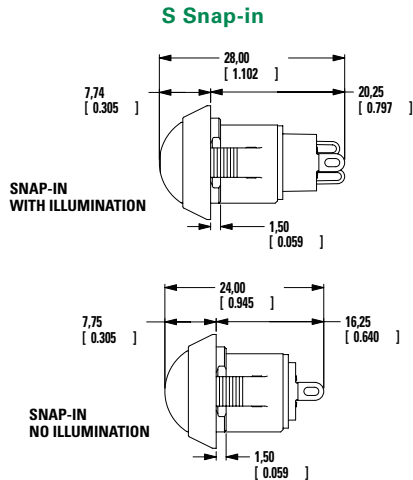
Notes: For bi-color LED's the polarity must be reversed to alternate the color

# AP Series

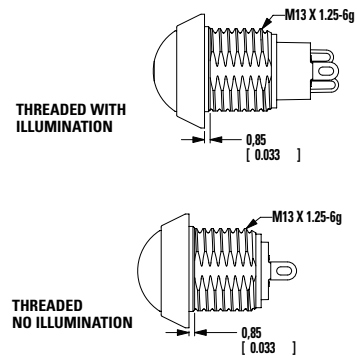
## Industrial Pushbutton Switches



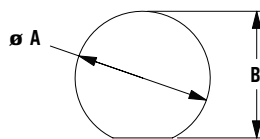
### Bushing Style mm (inches)



### T Threaded Plastic



### Panel Cutout

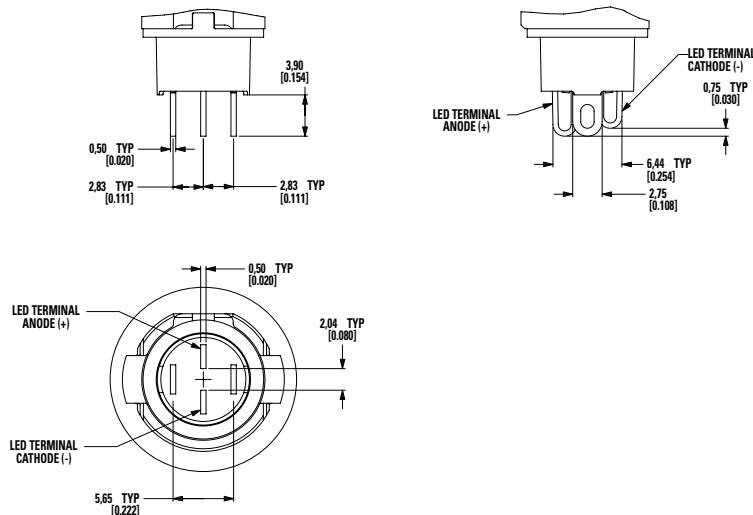


Panel Thickness	DIM A (± 0.05mm)	DIM B (± 0.05mm)
1 mm [0.039]	13.70 mm [0.539]	13.00 mm [0.512]
2 mm [0.079]	13.80 mm [0.539]	13.00 mm [0.512]
3 mm [0.118]	13.90 mm [0.547]	13.10 [0.516]
Threaded Body Min. Panel Thickness 1 mm	13.70 mm [0.539]	13.00 [0.512]

Notes: A 0.1mm min. chamfer on the leading edge of the mounting hole is recommended for snap-in version.

### Termination inches (mm)

#### Z Solder Lug



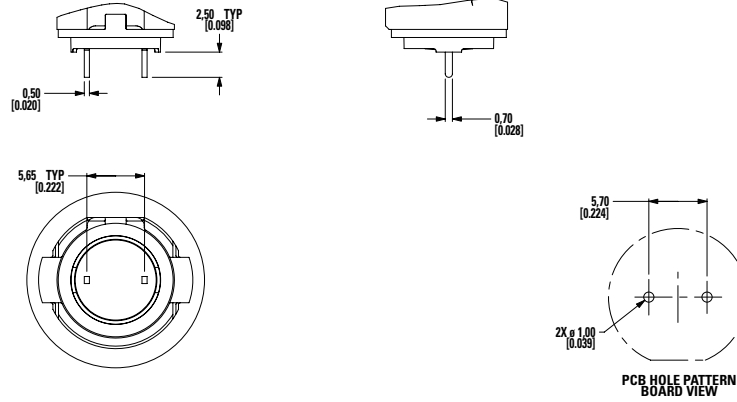
Notes: Switching terminals are gold and LED terminals are silver

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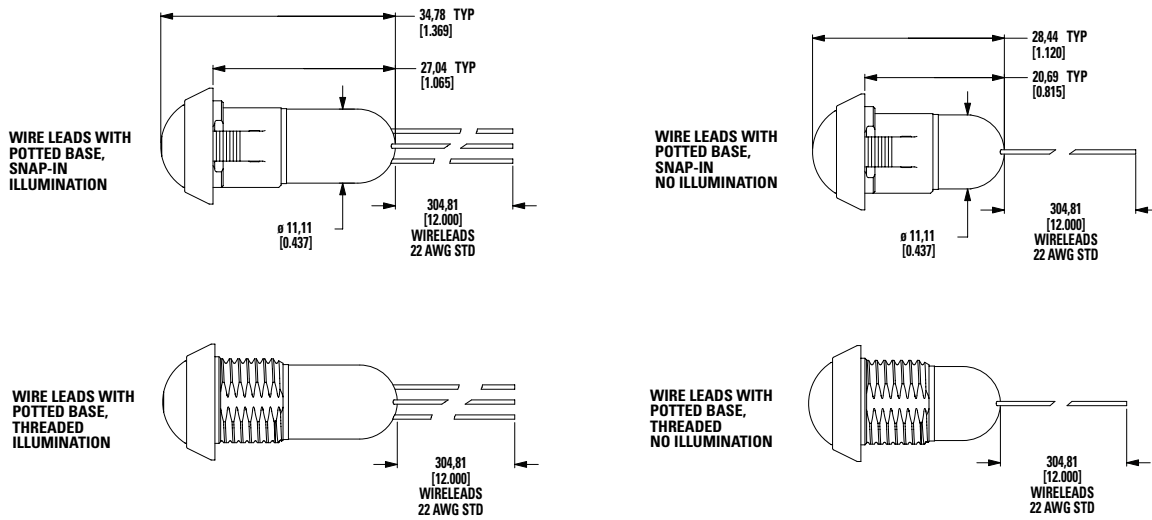


### C PC Terminals



Notes: Illumination not available with PC Terminals

### W 12" Wire Leads 22 AWG



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

### Contact Material

#### B Gold

Option Code	Contact Material
B	Gold

### Terminal Seal

#### E Epoxy

All models are epoxy sealed

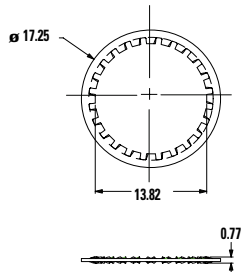
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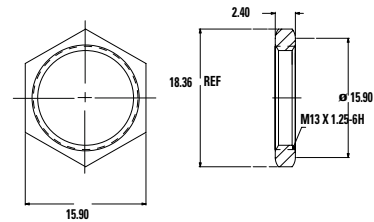


### Hardware (mm)

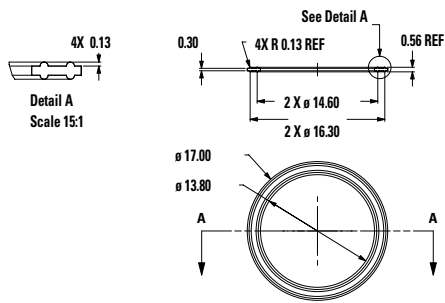
**Lock Washer**  
Part Number 647D00A47



**Hex Nut**  
Part number 515D00000



**Panel Seal**  
Part Number 655D00000

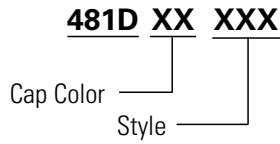


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### Available Caps



### Cap Color

Option Code	Cap Color
01	White
02	Black
03	Red
04	Orange
05	Yellow
06	Green
07	Blue
08	Brown
09	Gray

### Style

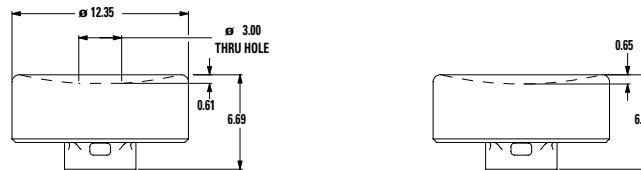
Part Number	Hole	Style
481DXX000	No	Dome
481DXX001	Yes	Dome
481DXX002	No	Extended Dome
481DXX003	Yes	Extended Dome
481DXX004	No	Concave
481DXX005	Yes	Concave

### Dome



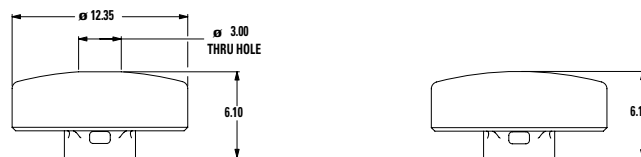
481DXX000 = NO HOLE  
481DXX001 = HOLE

### Concave



481DXX004 = NO HOLE  
481DXX005 = HOLE

### Extended Dome



481DXX002 = NO HOLE  
481DXX003 = HOLE

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