

Pushbutton Switches

SERIES	FEATURE	ACTUATION	MAX RATING <small>(Resistive @ 115VAC, 28VDC)</small>	SEAL RATING	APPROVALS	MOUNTING	CIRCUITRY
LP3	LED Lighted	Momentary Action	5A	IP64, IP68S	UL (E61705)	5/8", 15/32" dia. Threaded, Press Fit	SPST-DB, SPDT-DB
LP3-V	LED Lighted, Vandal Resistant	Momentary Action	5A	IP64, IP68S	UL (E61705)	5/8", 3/4" dia. Threaded	SPST, SPDT-DB
LP5	LED Lighted	Alternate Action	5A	IP64, IP68S	UL (E61705)	5/8", 15/32" dia. Threaded, Press Fit	SPST, SPDT
LP5-V	LED Lighted, Vandal Resistant	Alternate Action	5A	IP64, IP68S	UL Recognized Component, UL1500 Ignition Protected	5/8", 3/4" dia. Threaded	SPST, SPDT
LP7-D	Dome Shape, Anodized Case	Momentary Action	5A	IP64, IP68S	N/A	15/32" dia. Threaded	SPST-DB, SPDT-DB
LP9	LED Lighted	Momentary Action	5A	IP68S	UL (E61705)	15/32" dia. Threaded, Snap-In	SPST-DB, SPDT-DB
LP9L	LED Lighted, Dome Shape, Low Level	Momentary Snap Action	50mA	IP68S	N/A	15/32" dia. Threaded	SPST-DB, SPDT-DB
LPL	Indicator Light	N/A	N/A	IP64, IP68S	N/A	5/8", 15/32" dia. Threaded, Press Fit	N/A
P1	Mil Grade	Momentary Action, Push-Pull	10A	IP64, MIL-PRF-8805 Design 2 or 3, IP68S	UL (E61705), CSA (LR43865)	5/8", 15/32" dia. Press Fit	SPDT-DB, SPST-DB
P3	Commercial	Momentary Action, Push-Pull	10A	IP64, IP68S	UL (E61705), CSA (LR43865)	5/8", 15/32" dia. Press Fit	SPDT-DB, SPST-DB
P3-D	Dome Shape	Momentary Action	10A	IP64, IP68S	UL (E61705)	5/8" dia. Threaded	SPST-DB, SPDT-DB
P4	1 to 4 Poles, Custom Pushbutton	Momentary Action, Two Step	8A	IP64	N/A	1/4", 15/32", 5/8" dia. Threaded, Press Fit	1 to 4 Poles SPDT, DPDT
P5	Commercial & Mil Grades	Alternate Action	10A	IP64, MIL-PRF-8805 Design 2, IP68S	UL (E61705)	5/8", 15/32" dia. Threaded, Press Fit	SPST, SPDT
P5-D	Dome Shape, Commercial & Mil Grades	Alternate Action	10A	IP64, MIL-PRF-8805 Design 2, IP68S	UL (E61705)	5/8" dia. Threaded	SPST, SPDT
P5-V	Vandal Resistant	Alternate Action	10A	IP64, MIL-PRF-8805 Design 2, IP68S	UL (E61705)	5/8", 3/4" dia. Threaded	SPST, SPDT
P7	Subminiature, Mil Grade	Momentary Action	5A	IP64, MIL-PRF-8805 Design 2 & 3, IP68S	UL (E61705), CSA (LR43865)	1/4", 15/32" dia. Threaded, Press Fit	SPST-DB, SPDT-DB
P7-D	Dome Shape	Momentary Action	5A	IP64, IP68S	UL (E61705)	15/32" dia. Threaded	SPST-DB, SPDT-DB
P8	Shorter Behind Panel Depth	Momentary Action, Push-Pull	10A	IP64, IP68S	UL (E61705), CSA (LR43865)	5/8", 15/32", 1/2" dia. Threaded, Press Fit	SPST-DB, SPDT-DB
P8-V	Vandal Resistant	Momentary Action	10A	IP64, IP68S	UL (E61705)	5/8", 3/4" dia. Threaded	SPST-DB, SPDT-DB
P9	Dome Shape	Momentary Action	5A	IP64, IP68S	UL (E61705), CSA (LR43865)	15/32" dia. Threaded, Snap-In	SPST-DB, SPDT-DB
P9L	Dome Shape, Low Level	Momentary Action	50mA	IP64, IP68S	N/A	15/32" dia. Threaded, Snap-In	SPST-DB, SPDT-DB
PE	Mil Grade	Momentary Action	5A	IP64, MIL-PRF-8805 Design 2	N/A	1/4" Threaded	SPST-DB, SPST-DB
PE2	Mil Grade	Momentary Action	2A	Splashproof, MIL-PRF-8805 Symbol 6	N/A	15/32" Threaded	2 Circuit, DPDT
P6	Limit Switch, Mil Grade	(Pin, Roller) Momentary Action	7A	M8805 Design 3 & 4, MIL-PRF-8804	N/A	5/8", 15/32" dia. Threaded	1, 2, & 4 Poles
P6-3	Subminiature Limit Switch	(Lever, Plunger, Roller) Momentary Action	10A	MIL-PRF-8805, Design 3	N/A	3/8", 1/2" dia. Mounting Holes	1, 2 & 3 Poles

ILLUMINATED & SEALED PUSHBUTTONS

LP3
ILLUMINATED
PUSHBUTTONS

MOMENTARY ACTION COMMERCIAL GRADE LED ILLUMINATED & SEALED

Raised Dome



Front Mount



The LP3 offers rugged, sealed construction with the added benefit of reliable LED illumination. This precision snap-action switch is designed for use in off-highway, material handling, industrial controls, marine, medical and demanding commercial applications. Choose from the standard mounting styles and electrical ratings, or contact us for custom configurations.

On sealed models, a silicone boot operating on our patented "rolling sleeve" principle protects the contact area against contamination at the button area. This boot provides long life and smooth operation over a wide temperature range. Sealed terminals protect the contact area from hostile environments and solder flux on both sealed and unsealed models.

High contact pressure, amazingly low contact resistance and extremely low contact bounce are all the result of the OTTO snap-action mechanism. Extra long electrical life and precise trip point offer added value and precision operation.

Features:

- **Watertight to IP68S or moistureproof & dusttight to IP64**
- **LED lighted with the ability to accommodate 2, 6, 12 & 24VDC power & includes reverse voltage protection**
- **Tall & dome style buttons permitting sublimated & pad printed legends**
- **Less than 25mΩ contact resistance, low level option**
- **Quick disconnect terminals**
- **15/32" & 5/8" thread, press fit & dome case options**
- **RoHS/WEEE/Reach compliant**

Standard Characteristics/Ratings:

ELECTRICAL RATINGS:

Load	Sea Level @ 28VDC or 115VAC, 60/400Hz
Resistive	5A
Inductive	3A
Lamp	1A
Motor	3A
DWV	1050Vrms through switch contacts only
Low Level	10mA @ 30mV

Electrical Life: 25,000 cycles

LIGHTING:

Light Source Voltage (DC)	Actual Voltage Nominal (DC)	Voltage Max (DC)
2	2	2.6
6	7	8
12	13.5	14.5
24	28	28.6

Mechanical Life: 250,000 cycles @ +85°C
25,000 cycles @ -40°C

Seal: IP64 or IP68S

Operating Temp Range: -40°C to +85°C

Operating Force: 2.5 +/- .5 lbs. or 5.0 +/- 1.0 lb.

Total Travel: 0.080 inches max

Overtravel: 0.010 inches min

MATERIALS:

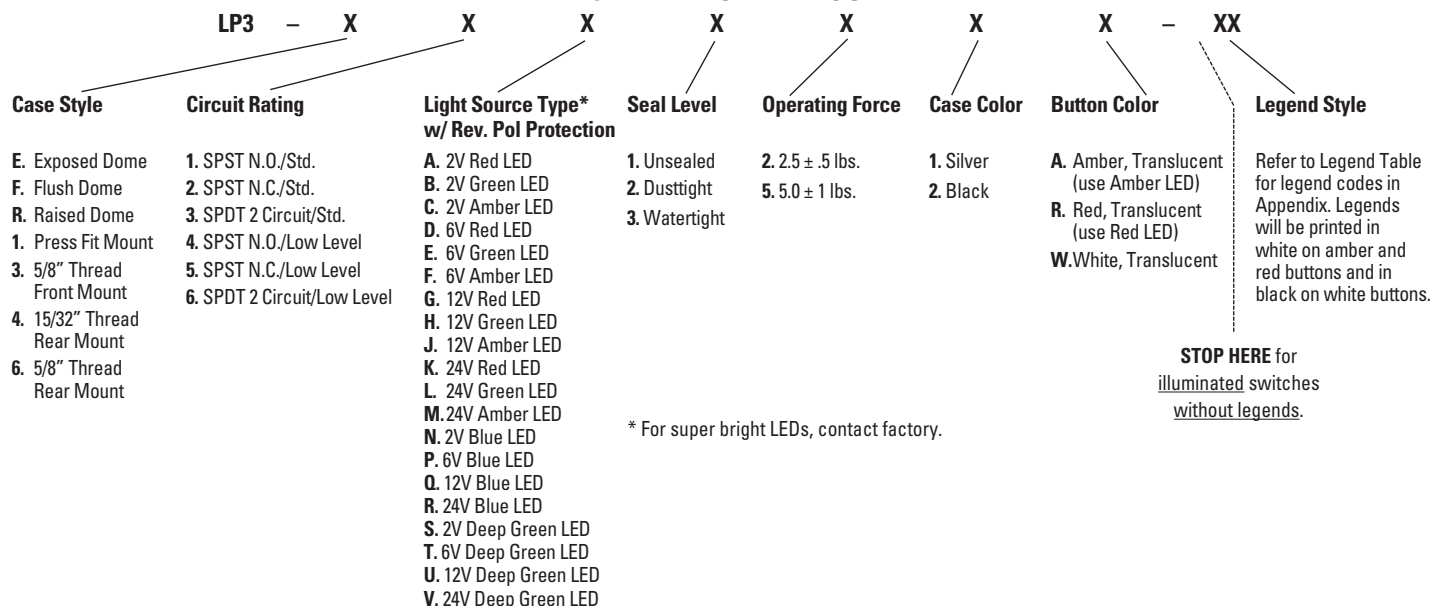
Case: Anodized aluminum alloy

Button: Thermoplastic

Terminals: Standard and low level options available

Mounting Hardware: Hex nut, lockwasher and panel gasket when applicable

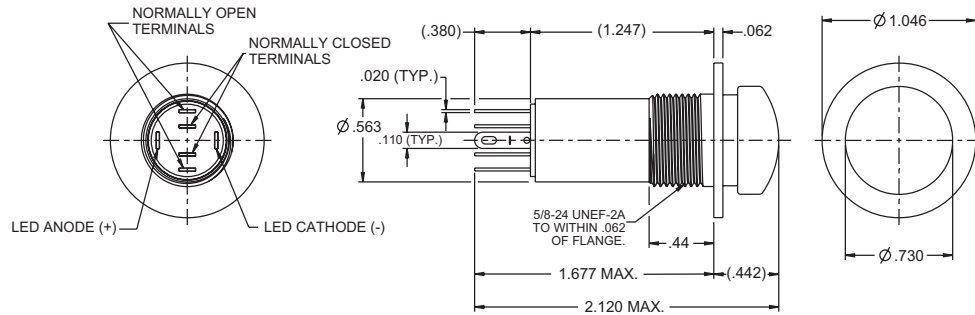
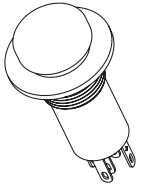
LP3 PART NUMBER CODE



MOMENTARY ACTION COMMERCIAL GRADE LED ILLUMINATED & SEALED

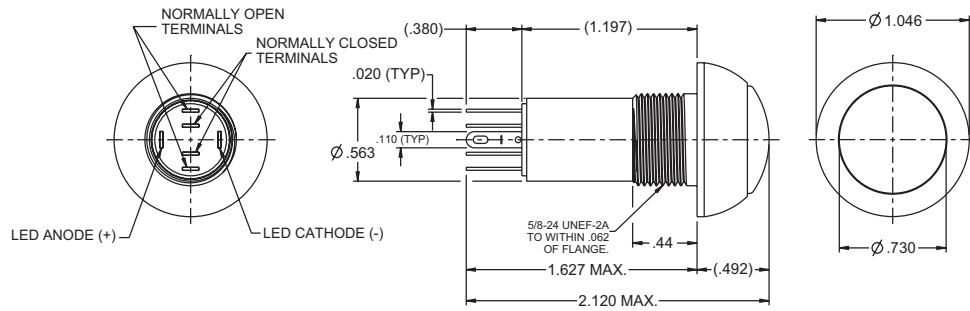
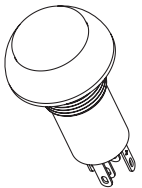
LP3-E

Momentary, Exposed Dome Button



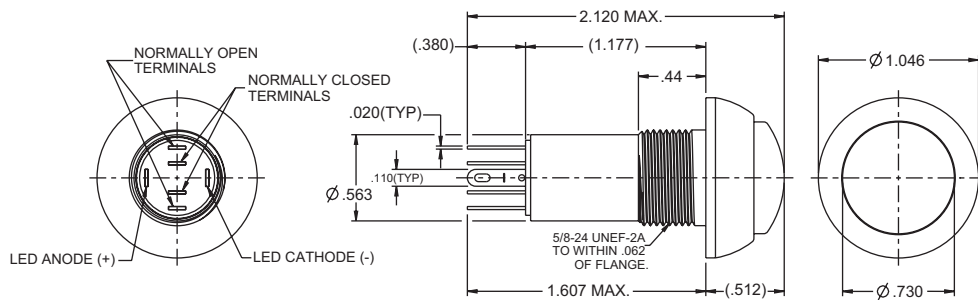
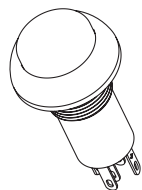
LP3-F

Momentary, Flush Dome Button



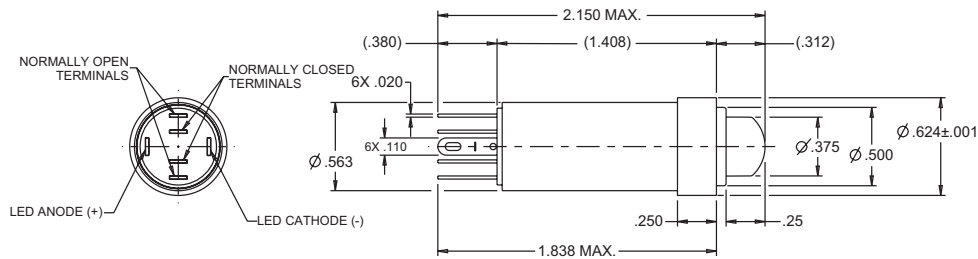
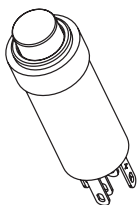
LP3-R

Momentary, Raised Dome Button



LP3-1

Momentary, Press Fit Mount

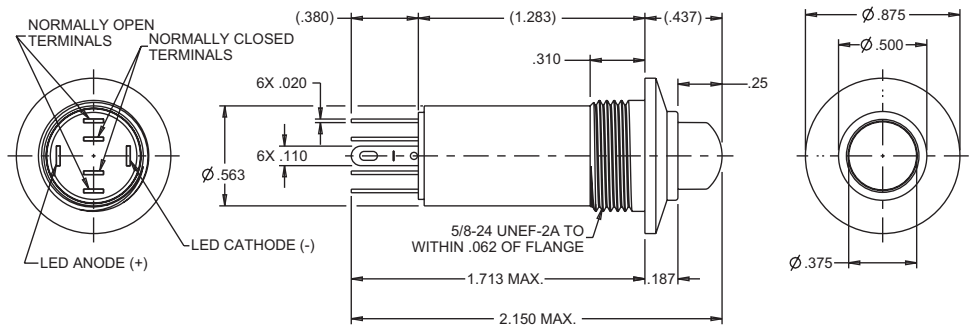
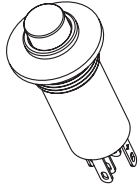


ILLUMINATED & SEALED PUSHBUTTONS

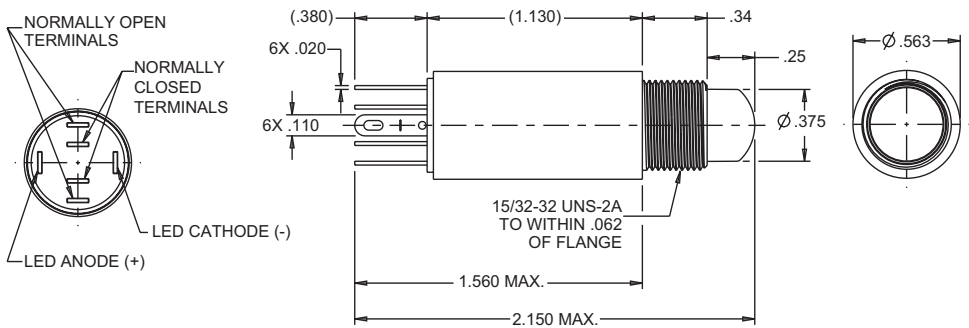
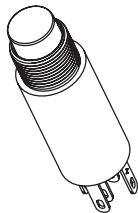
LP3
ILLUMINATED
PUSHBUTTONS

MOMENTARY ACTION COMMERCIAL GRADE LED ILLUMINATED & SEALED

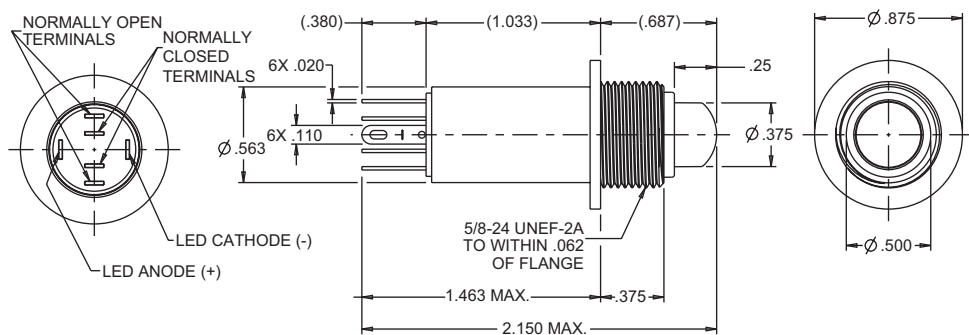
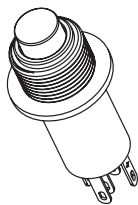
LP3-3
Momentary, 5/8" Threaded Front Mount



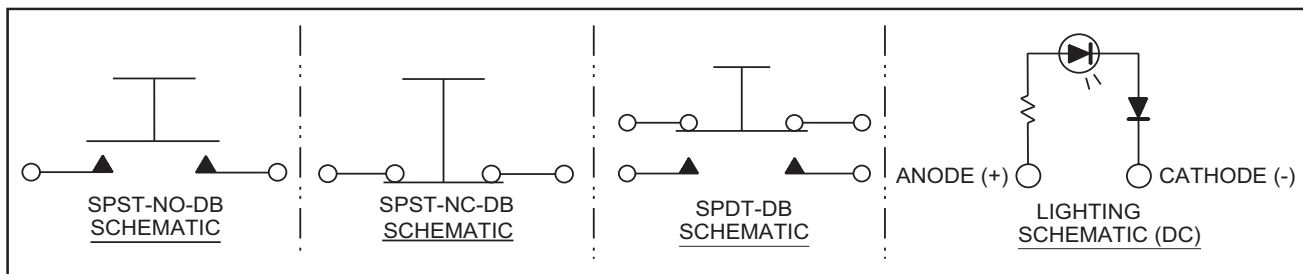
LP3-4
Momentary, 15/32" Threaded Rear Mount



LP3-6
Momentary, 5/8" Threaded Rear Mount



NOTE:
For indicator light only,
see LPL indicator light pages 105-107.



MOMENTARY ACTION RING ILLUMINATED, VANDAL RESISTANT CASE & BUTTON



High Profile
Curved Button

The LP3-V is a momentary switch designed to provide attractive, lighted position indication for applications in harsh environments, where security and reliability are paramount. The series features both aluminum and stainless steel cases watertight to IP68S. Alternate action is available in the LP5-V series.

This high reliability switch offers the durability and ruggedness our customers have come to expect with the added benefit of illumination. They are ideal for marine, off-highway and industrial control applications that require an illuminated switch.

This switch offers positive tactile feedback, less than 25mΩ contact resistance, and a variety of LED colors available in both flat and domed actuator bezel shapes.

Features:

- Security (aluminum) or vandal resistant (stainless steel) case & button
- Ring illuminated
- Watertight to IP68S option
- Less than 25mΩ contact resistance
- Variety of button options and LED colors
- Drop in replacement to the P8-V series
- RoHS/WEEE/Reach compliant

Standard Characteristics/Ratings:		
ELECTRICAL RATINGS:		
Load	Sea Level @ 28VDC or 115VAC, 60/400Hz	
Resistive	5A	
Inductive	3A	
Lamp	1A	
Motor	3A	
DWV	1050Vrms through switch contacts only	
Low Level	10mA @ 30mV	
Electrical Life:	25,000 cycles	
LIGHTING:		
Light Source Voltage (DC)	Actual Voltage Nominal (DC)	Voltage Max (DC)
2	2	2.6
6	7	8
12	13.5	14.5
24	28	28.6
Mechanical Life:	250,000 cycles @ +85°C 25,000 cycles @ -40°C	
Seal:	IP64 or IP68S	
Operating Temp Range:	-55°C to +85°C	
Operating Force:	2.5 +/- 0.5 lb. or 5.0 +/- 1.0 lb.	
Total Travel:	0.080 inches max	
Overtravel:	0.010 inches min	
MATERIALS:		
Case:	Stainless steel or anodized aluminum alloy	
Button:	Thermoplastic	
Center Cap:	Stainless steel or anodized aluminum alloy	
Terminals:	Standard silver plate with optional gold plate for low level applications	
Mounting Hardware:	Hex nut, lockwasher and panel gasket when applicable	

LP3-V PART NUMBER CODE

Type	Case Style	Circuit Rating	Light Source Type* w/ Rev. Pol Protection	Seal Level	Operating Force	Case/Center Cap Color	Button Profile
A. Aluminum	1. 5/8-24 & Hex Nut	1. SPST N.O./Std.	A. 2V Red LED	2. Dusttight	2. 2.5 lbs.	1. Silver	1. High Profile Flat Button
V. Stainless	2. 5/8-24 & Knurl Nut	2. SPST N.C./Std.	B. 2V Green LED	3. Watertight	5. 5.0 lbs.	2. Black**	2. High Profile Curved Button
	3. 5/8-24 W/D-Flat & Hex Nut	3. SPDT 2 Circuit/Std.	C. 2V Amber LED				3. Low Profile Flat Button
	4. 5/8-24 W/D-Flat & Knurl Nut	4. SPST N.O./Low Level	D. 6V Red LED				4. Low Profile Curved Button
	5. 3/4-20 & Hex Nut	5. SPST N.C./Low Level	E. 6V Green LED				5. Flush Profile Flat Button
	6. 3/4-20 & Knurl Nut	6. SPDT 2 Circuit/Low Level	F. 6V Amber LED				
	7. 3/4-20 W/D-Flat & Hex Nut		G. 12V Red LED				
	8. 3/4-20 W/D-Flat & Knurl Nut		H. 12V Green LED				
			I. 12V Amber LED				
			J. 12V Green LED				
			K. 24V Red LED				
			L. 24V Green LED				
			M. 24V Amber LED				
			N. 2V Blue LED				
			P. 6V Blue LED				
			Q. 12V Blue LED				
			R. 24V Blue LED				
			S. 2V Deep Green LED				
			T. 6V Deep Green LED				
			U. 12V Deep Green LED				
			V. 24V Deep Green LED				

CASE STYLE		
DIMENSION	1 - 4	5 - 8
(BUTTON DIA.)	0.525	0.590
(THREAD)	5/8-24 UNEF-2A	3/4-20 UNEF-2A
FLAT	0.594	0.718

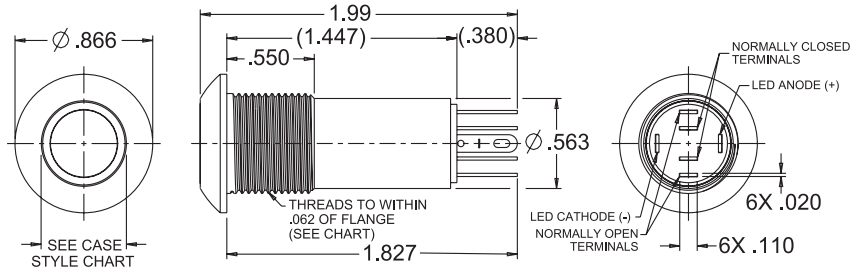
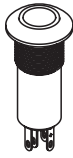
* For additional LED lighting options, contact factory.
** Only available on LP3-A styles.

ILLUMINATED VANDAL RESISTANT PUSHBUTTONS

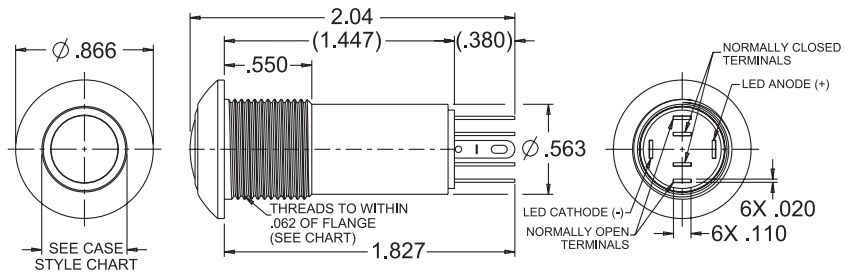
LP3-V
ILLUMINATED
VANDAL RESISTANT
PUSHBUTTONS

MOMENTARY ACTION RING ILLUMINATED, VANDAL RESISTANT CASE & BUTTON

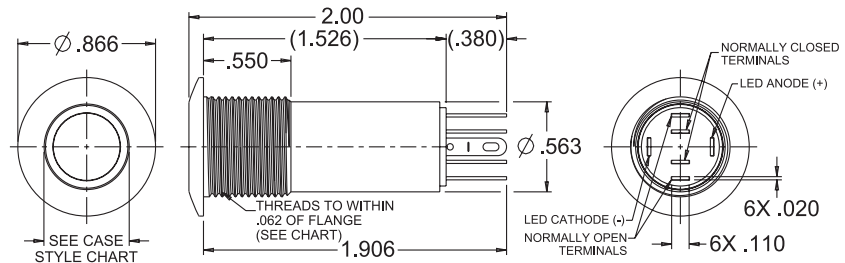
LP3-XXXXXXX1
High Profile Flat Button



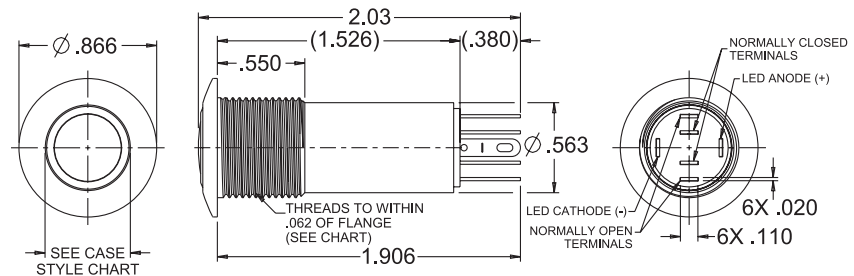
LP3-XXXXXXX2
High Profile Curved Button



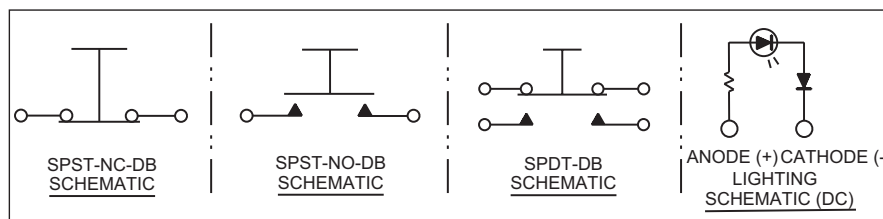
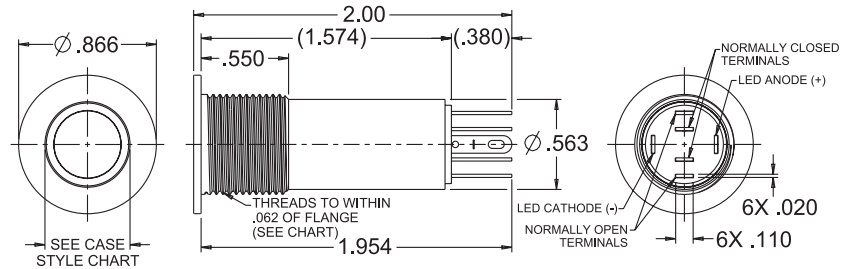
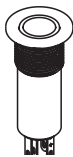
LP3-XXXXXXX3
Low Profile Flat Button



LP3-XXXXXXX4
Low Profile Curved Button



LP3-XXXXXXX5
Flush Profile Flat Button



ALTERNATE ACTION, LED ILLUMINATED & SEALED

Front Mount



Raised Dome



The LP5 offers the same rugged, sealed construction as the proven P5 series with the added benefit of reliable LED illumination. It is a precision snap-action switch designed for use in off-highway, material handling, industrial controls, marine, medical and other demanding Commercial applications. Choose from the standard mounting styles and electrical ratings, or contact us for custom configurations.

Now you can design panels with both alternate and momentary action switches and have uniform panel appearance. The OTTO LP5 series features alternate action in the same pushbutton and housing configurations as the OTTO momentary LP3 series.

Push and the LP5 series switch turns "on." Push again and the LP5 switch turns "off." Positive tactile feedback is featured so the operator is clearly aware the switch mode has been actuated. The button returns to the original position after each actuation.

Features:

- **Watertight to IP68S; moistureproof & dusttight to IP64**
- **LED lighted with the ability to accommodate 2, 6, 12 & 24VDC power & includes reverse voltage protection**
- **Tall & dome style buttons in translucent white, red & amber permitting sublimated & pad printed legends**
- **Less than 25mΩ contact resistance**
- **Quick disconnect terminals**
- **15/32" & 5/8" thread, press fit & dome case options**
- **RoHS/WEEE/Reach compliant**

Standard Characteristics/Ratings:

ELECTRICAL RATINGS:

Load	Sea Level @ 28VDC or 115VAC, 60/400Hz
Resistive	5A
Inductive	3A
Lamp	1A
Motor	3A
DWV	1050Vrms through switch contacts only
Low Level	10mA @ 30mV

Electrical Life: 25,000 cycles

LIGHTING:

Light Source Voltage (DC)	Actual Voltage Nominal (DC)	Voltage Max (DC)
2	2	2.6
6	7	8
12	13.5	14.5
24	28	28.6

Mechanical Life: 200,000 cycles

Seal: IP64 or IP68S

Operating Temp Range: -40°C to +85°C

Operating Force: 3.0 lbs. +1.0/-0.5 lb.

Total Travel: 0.180 inches max

Overtravel: 0.012 inches min

MATERIALS:

Case: Anodized aluminum alloy

Button: Thermoplastic

Terminals: Standard silver plate with optional gold plate for low level applications

Mounting Hardware: Hex nut, lockwasher and panel gasket when applicable

LP5 PART NUMBER CODE

LP5	-	X		X		X	-	XX				
Case Style		Circuit Rating		Light Source Type* w/ Rev. Pol Protection		Seal Level		Case Color		Button Color		Legend Style
E. Exposed Dome		1. SPST/Std.		A. 2V Red LED		1. Unsealed		1. Silver		A. Amber, Translucent (use Amber LED)		Refer to Legend Table for legend codes in Appendix. Legends will be printed in white on amber and red buttons and in black on white buttons.
F. Flush Dome		2. SPDT/Std.		B. 2V Green LED		2. Dusttight		2. Black		R. Red, Translucent (use Red LED)		
R. Raised Dome		3. SPST/Low Level		C. 2V Amber LED		3. Watertight				W. White, Translucent		
1. Press Fit Mount		4. SPDT/Low Level		D. 6V Red LED								
3. 5/8" Thread Front Mount				E. 6V Green LED								
4. 15/32" Thread Rear Mount				F. 6V Amber LED								
6. 5/8" Thread Rear Mount				G. 12V Red LED								
				H. 12V Green LED								
				I. 12V Amber LED								
				J. 24V Red LED								
				K. 24V Green LED								
				L. 24V Amber LED								
				M. 24V Blue LED								
				N. 2V Blue LED								
				O. 6V Blue LED								
				P. 12V Blue LED								
				Q. 24V Blue LED								
				R. 2V Deep Green LED								
				S. 6V Deep Green LED								
				T. 12V Deep Green LED								
				U. 24V Deep Green LED								
				V. 24V Deep Green LED								

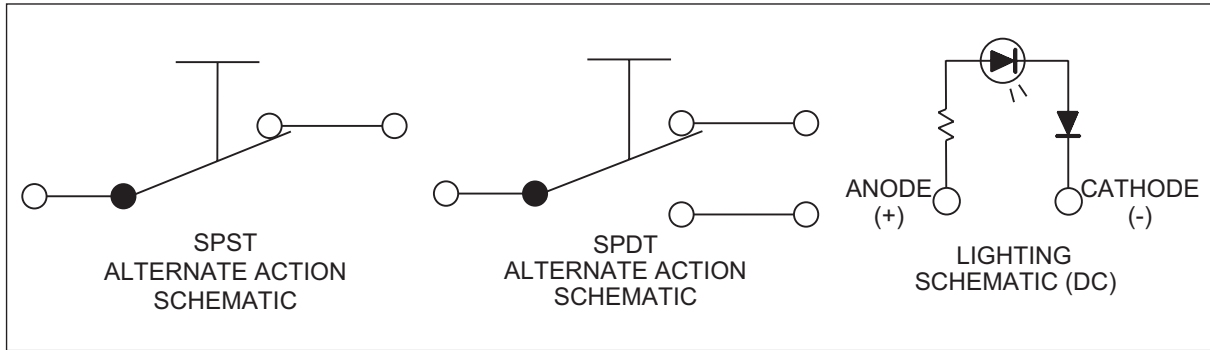
STOP HERE for illuminated switches without legends.

* For super bright LEDs, contact factory.

ILLUMINATED ALTERNATE ACTION PUSHBUTTONS

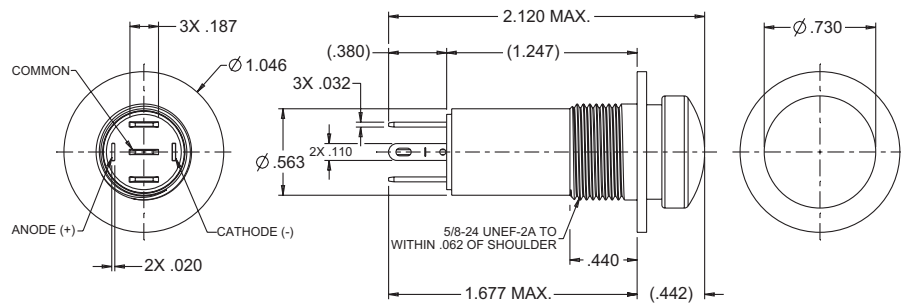
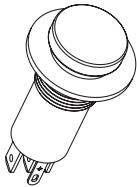
LP5
ILLUMINATED
PUSHBUTTONS

ALTERNATE ACTION, LED ILLUMINATED & SEALED



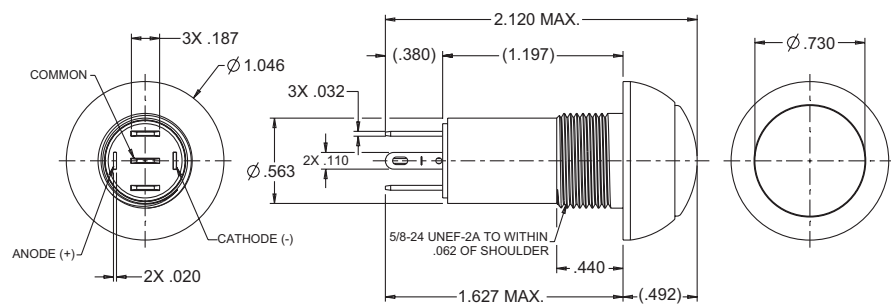
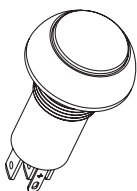
LP5-E

Alternate Action, Exposed Dome Button



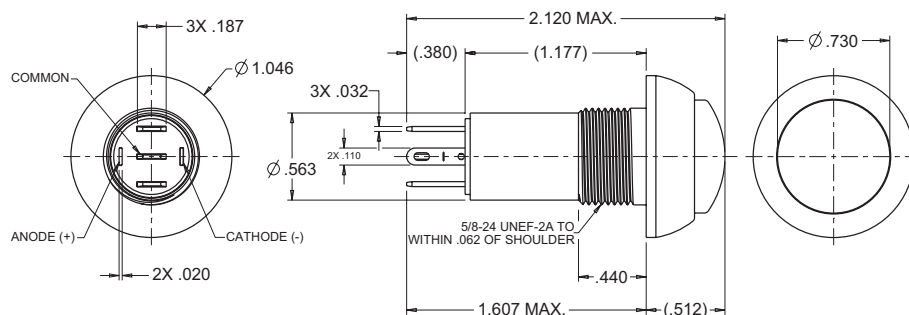
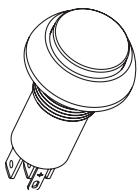
LP5-F

Alternate Action, Flush Dome Button



LP5-R

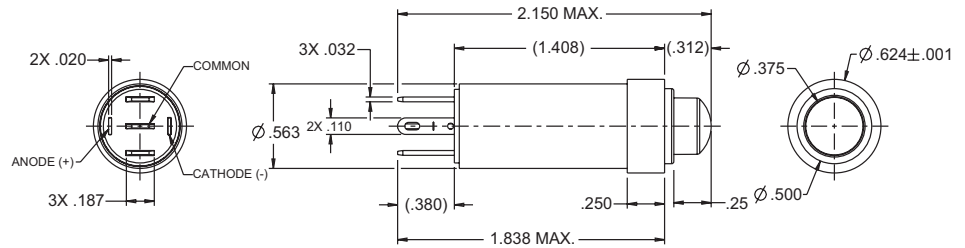
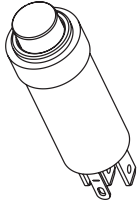
Alternate Action, Raised Dome Button



ALTERNATE ACTION, LED ILLUMINATED & SEALED

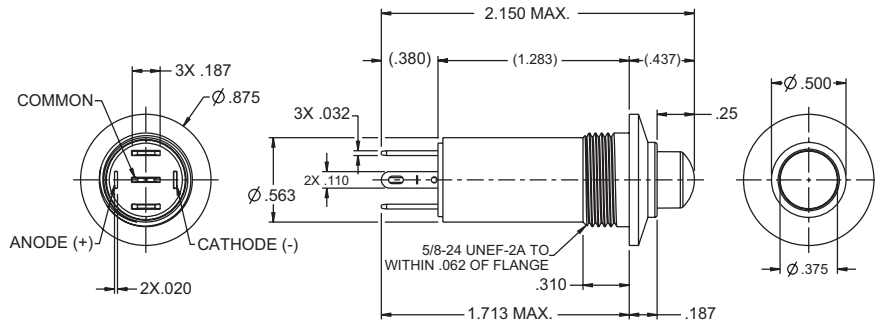
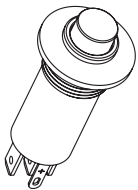
LP5-1

Alternate Action, Press Fit Mount



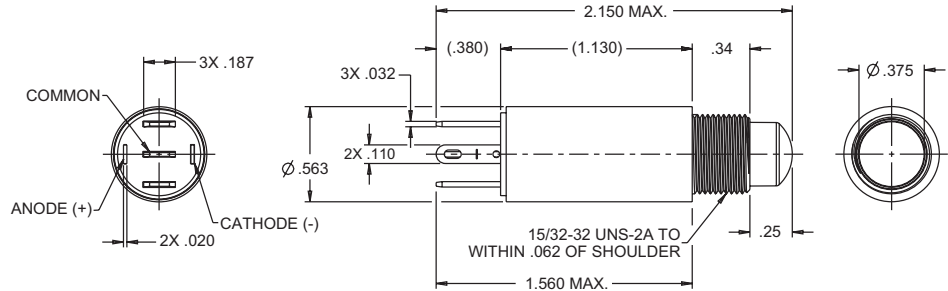
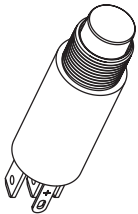
LP5-3

Alternate Action, 5/8" Threaded Front Mount



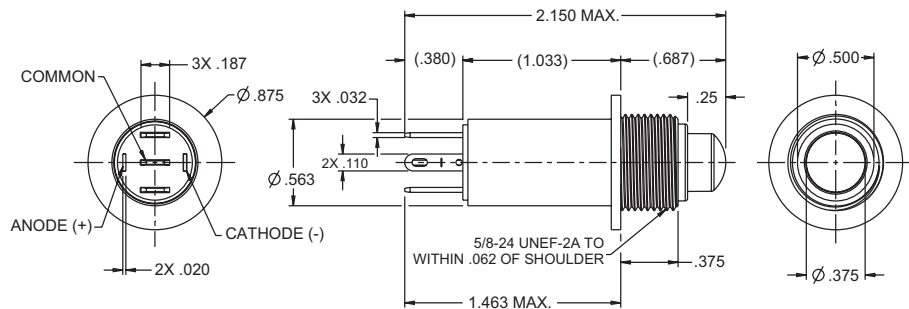
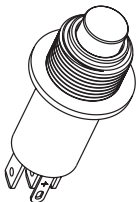
LP5-4

Alternate Action, 15/32" Threaded Rear Mount



LP5-6

Alternate Action, 5/8" Threaded Rear Mount



NOTE:
For indicator light only,
see LPL indicator light pages 105-107.

ILLUMINATED VANDAL RESISTANT PUSHBUTTONS

LP5-V
ILLUMINATED
VANDAL RESISTANT
PUSHBUTTONS

ALTERNATE ACTION RING ILLUMINATED, METAL CASE & BUTTON



High Profile
Curved Button



The LP5-V series is an alternate action switch that has been designed to provide attractive, lighted position indication for applications in harsh environments, where security and reliability are paramount. The series features both aluminum and stainless steel cases watertight to IP68S. UL1500 ignition protected. Momentary action is available in the LP3-V series.

This high reliability switch offers the durability and ruggedness our customers have come to expect with the added benefit of illumination. Ideal for marine, off-highway and industrial control applications that require an illuminated switch.

This switch offers positive tactile feedback, less than 25mΩ contact resistance, and a variety of LED colors available in both flat and domed actuator bezel shapes.

Features:

- **Security (aluminum) or vandal resistant (stainless steel) case & button**
- **Ring illuminated**
- **Watertight to IP68S**
- **Less than 25mΩ contact resistance**
- **Variety of button options and LED colors**
- **Drop in replacement to the P5-V series**
- **UL recognized & CSA certified**
- **RoHS/WEEE/Reach compliant**

Standard Characteristics/Ratings:

ELECTRICAL RATINGS:

Load	Sea Level @ 28VDC or 115VAC, 60/400Hz
Resistive	5A
Inductive	3A
Lamp	1A
Motor	3A
DWV	1050Vrms through switch contacts only
Low Level	10mA @ 30mV
Electrical Life:	25,000 cycles

LIGHTING:

Light Source Voltage (DC)	Actual Voltage Nominal (DC)	Voltage Max (DC)
2	2	2.6
6	7	8
12	13.5	14.5
24	28	28.6

Mechanical Life:	200,000 cycles
Seal:	IP64 or IP68S
Operating Temp Range:	-40°C to +85°C
Operating Force:	3.0 lbs. +1.0/-0.5 lb.
Total Travel:	0.180 inches max
Overtravel:	0.012 inches min
MATERIALS:	
Case:	Stainless steel or anodized aluminum alloy
Button:	Thermoplastic
Center Cap:	Stainless steel or aluminum
Terminals:	Standard and low level options available
Mounting Hardware:	Hex nut, lockwasher and panel seal gasket

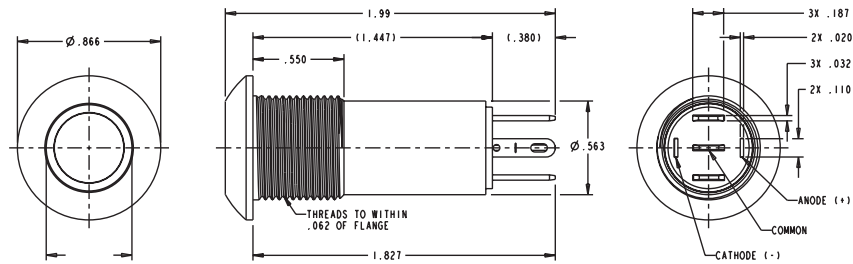
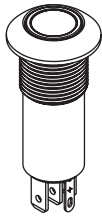
LP5-V PART NUMBER CODE

Type	Case Style	Circuit Rating	Light Source Type* w/ Rev. Pol Protection	Seal Level	Case/Center Cap Color	Button Profile
A. Aluminum	1. 5/8-24 & Hex Nut	0. Indicator Light	A. 2V Red LED	2. Dusttight	1. Silver	1. High Profile Flat Button
V. Stainless	2. 5/8-24 & Knurl Nut	1. SPST/Std.	B. 2V Green LED	3. Watertight	2. Black**	2. High Profile Curved Button
	3. 5/8-24 W/D-Flat & Hex Nut	2. SPDT/Std.	C. 2V Amber LED			3. Low Profile Flat Button
	4. 5/8-24 W/D-Flat & Knurl Nut	3. SPST/Low Level	D. 6V Red LED			4. Low Profile Curved Button
	5. 3/4-20 & Hex Nut	4. SPDT/Low Level	E. 6V Green LED			5. Flush Profile Flat Button
	6. 3/4-20 & Knurl Nut		F. 6V Amber LED			
	7. 3/4-20 W/D-Flat & Hex Nut		G. 12V Red LED			
	8. 3/4-20 W/D-Flat & Knurl Nut		H. 12V Green LED			
			J. 12V Amber LED			
			K. 24V Red LED			
			L. 24V Green LED			
			M. 24V Amber LED			
			N. 2V Blue LED			
			P. 6V Blue LED			
			Q. 12V Blue LED			
			R. 24V Blue LED			
			S. 2V Deep Green			
			T. 6V Deep Green			
			U. 12V Deep Green			
			V. 24V Deep Green			

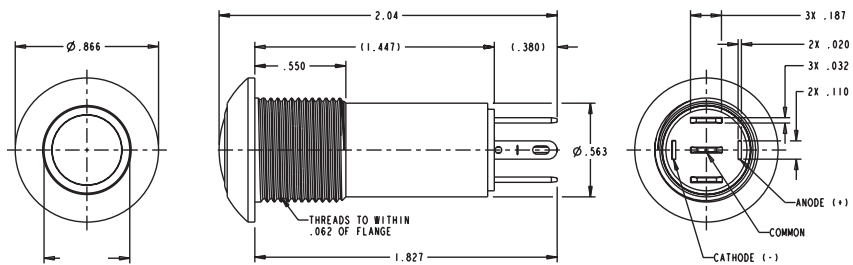
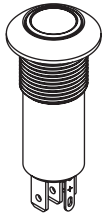
* For additional LED lighting options, contact factory.
** Only available on LP5-A styles.

ALTERNATE ACTION RING ILLUMINATED, STAINLESS STEEL CASE & BUTTON

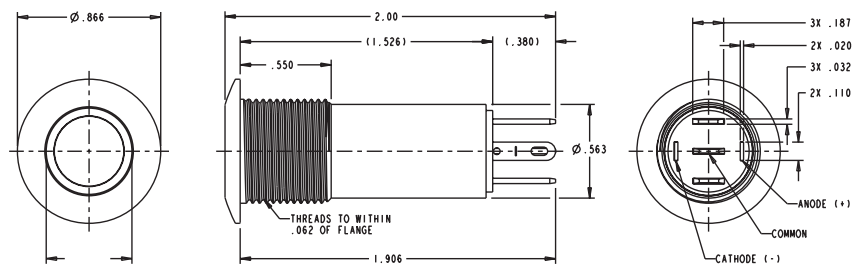
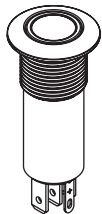
High Profile Flat Button
Button Profile Style 1



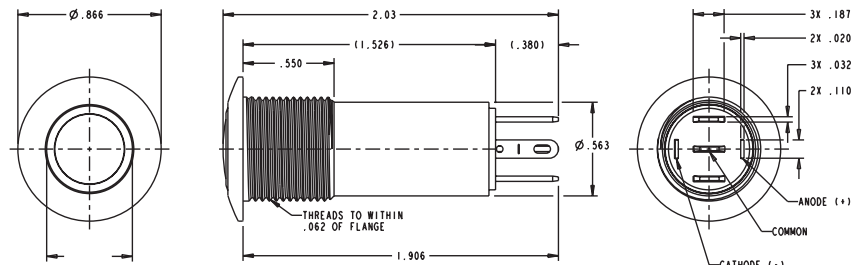
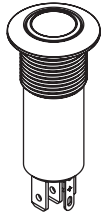
High Profile Curved Button
Button Profile Style 2



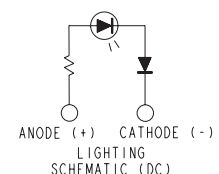
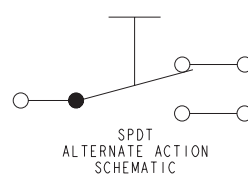
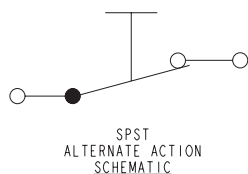
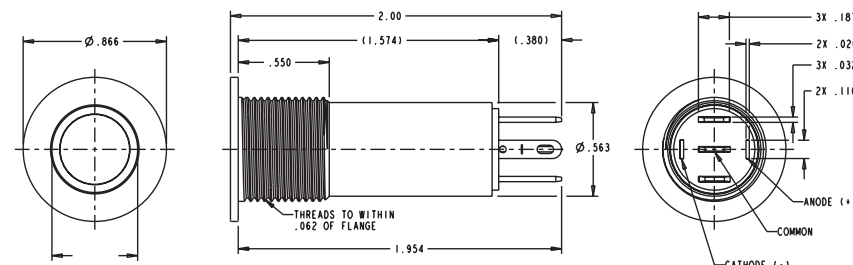
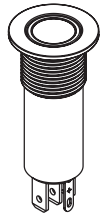
Low Profile Flat Button
Button Profile Style 3



Low Profile Curved Button
Button Profile Style 4



Flush Profile Flat Button
Button Profile Style 5



SEALED DOME ILLUMINATED PUSHBUTTONS

LP7-D
ILLUMINATED
PUSHBUTTONS

MOMENTARY ACTION, ATTRACTIVE & HIGHLY RUGGEDIZED FOR WET & DUSTY ENVIRONMENTS

The LP7-D series pushbutton switches feature a contoured dome style pushbutton. While sharing similar size and characteristics to the P9 series, the LP7-D offers added durability with its anodized aluminum alloy case.

Button versions include flush dome and raised dome. The switch series features short behind panel depth. They also offer excellent mechanical and electrical performance while operating under severe conditions found in demanding applications.

The LP7-D Dome series offers one million mechanical operations and an electrical life of 25,000 operations.

The LP7-D Dome series is a quality precision switch designed for use in panels, control grips, computers, instruments, heavy equipment and other demanding applications where attractive, highly ruggedized pushbutton switches are required.

The LP7-D series is manufactured to the highest standards and built to withstand harsh environments, offering anodized aluminum alloy cases with seal options of dusttight to IP64 or watertight to IP68S. The LP7-D series offers long life LED lighting in a variety of colors and can accommodate 2 & 12VDC power.

Features:

- Attractive dome style button
- Watertight to IP68S; dusttight to IP64
- LED illuminated with the ability to accommodate 2 & 12VDC power
- Flush and raised buttons in glossy or matte finish available in a variety of colors
- 15/32" threaded case style
- RoHS/WEEE/Reach compliant



Flush Dome
Also available with
Raised Dome

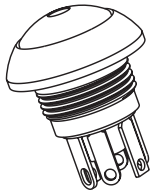
Standard Characteristics/Ratings:		
ELECTRICAL RATINGS:		Sea Level @ 28VDC or 115VAC
Load	N.O./N.C.	S.P.D.T
Resistive	5A	4A
Inductive	3A	2A
Motor	3A	N/A
DWV	1050Vrms through switch contacts only	
Low Level	10mA @ 30mV	
Electrical Life:	25,000 cycles	
LIGHTING:		
Light Source Voltage (DC)	Actual Voltage Nominal (DC)	Voltage Max (DC)
2	2	2.6
12	13.5	14.5
Mechanical Life:	1,000,000 cycles	
Seal:	IP64 or IP68S	
Operating Temp Range:	-40°C to +85°C	
Operating Force:	1.7 lbs. ± 0.5 lbs.	
Total Travel:	0.080 inches max	
Overtravel:	0.010 inches min	
MATERIALS:		
Case:	Anodized aluminum alloy	
Button:	Thermoplastic	
Terminals:	Silver with gold plate	
Mounting Hardware:	Hex nut, lockwasher and panel seal gasket	

LP7-D PART NUMBER CODE

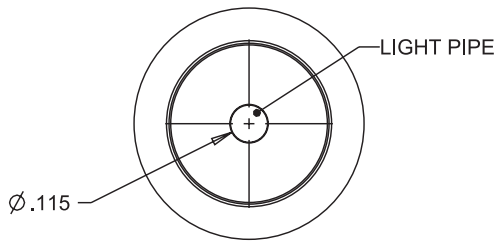
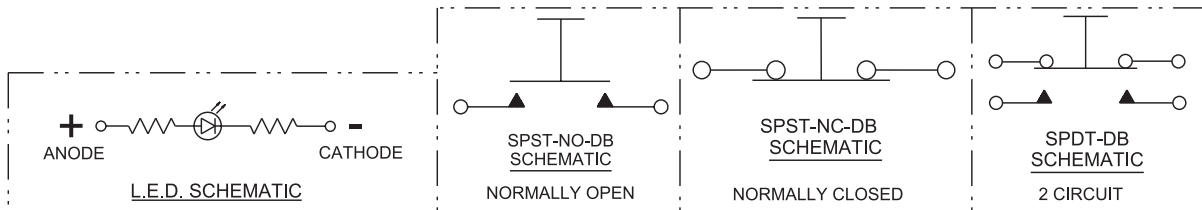
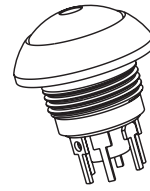
LP7-D	X	X	X	X	X	X
Button Style	Terminal Style/Seal	Circuit Form	Contact Rating	Light Source*	Case Color	Button Color
1. Flush	1. Standard Solder Terminal Dusttight	1. N.O.	1. Standard Current	A. 2V Red LED	1. Clear	1. Red
2. Raised	2. Standard Solder Terminal Watertight	2. N.C.	2. Low Level Current	B. 2V Green LED	2. Black	2. Black
3. Flush Matte	3. P.C. Pin Terminal Dusttight	3. 2 Circuit		C. 2V Amber LED		3. Orange
4. Raised Matte	4. P.C. Pin Terminal Watertight			D. 2V Blue LED		4. Yellow
				E. 2V White LED		5. Green
				F. 12V Red LED		6. Blue
				G. 12V Green LED		7. Violet
				H. 12V Amber LED		8. Gray
				J. 12V Blue LED		9. White
				K. 12V White LED		
				L. 2V Deep Green LED		
				M. 12V Deep Green LED		

* For additional LED lighting options, contact factory.

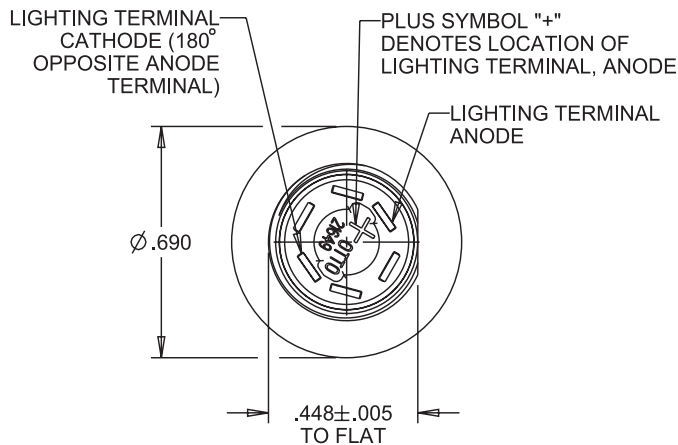
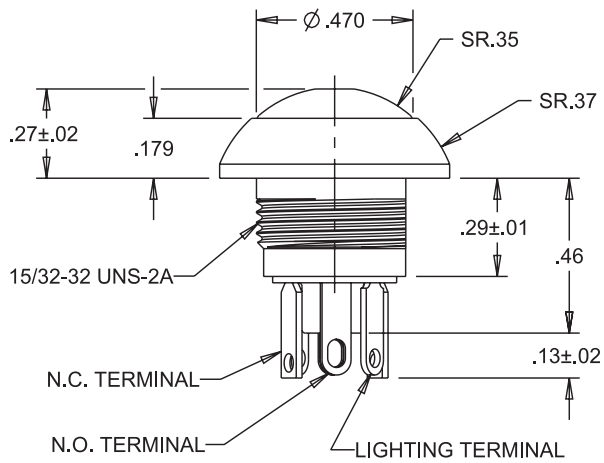
MOMENTARY ACTION, ATTRACTIVE & HIGHLY RUGGEDIZED FOR WET & DUSTY ENVIRONMENTS



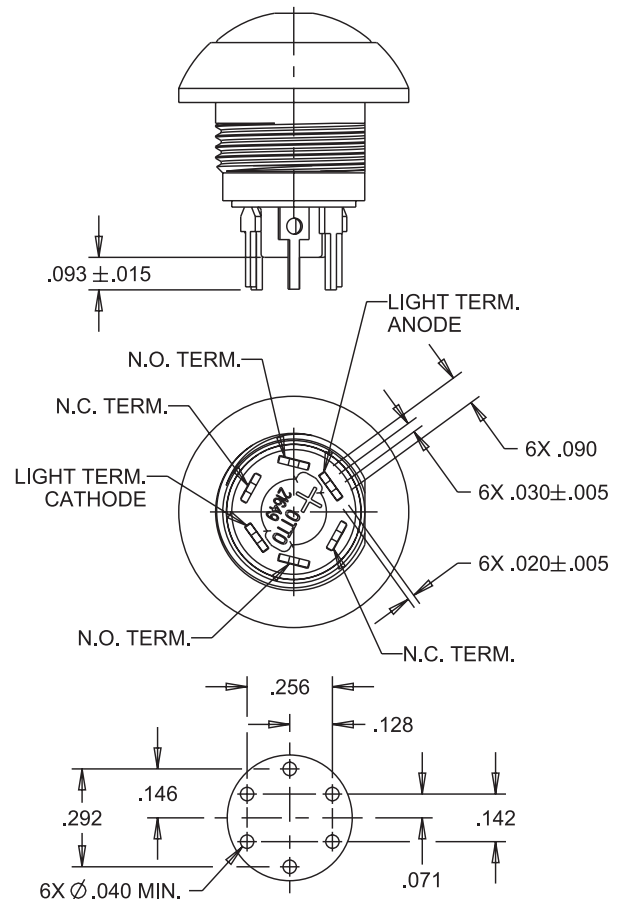
LP7-D FLUSH BUTTON ROUND THREADED



STANDARD TERMINALS (TERMINALS NOT ORIENTED TO CASE FLAT)



P.C. TERMINALS (ORIENTATED TO CASE FLATS AS SHOWN)



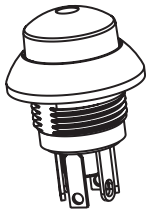
COMPONENT SIDE P.C. MOUNTING PATTERN,
CASE FLAT ON RIGHT AS DEPICTED IN SWITCH VIEW

SEALED DOME ILLUMINATED PUSHBUTTONS

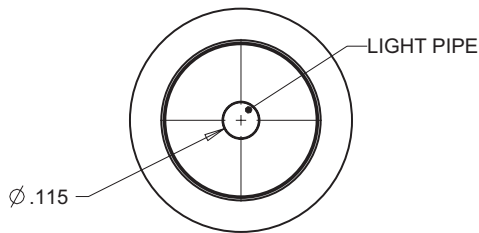
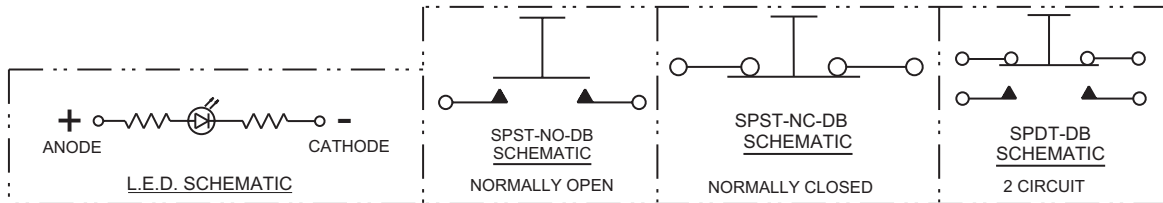
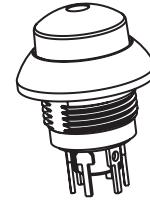
LP7-D

ILLUMINATED
PUSHBUTTONS

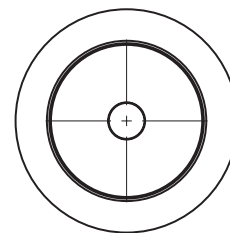
MOMENTARY ACTION, ATTRACTIVE & HIGHLY RUGGEDIZED FOR WET & DUSTY ENVIRONMENTS



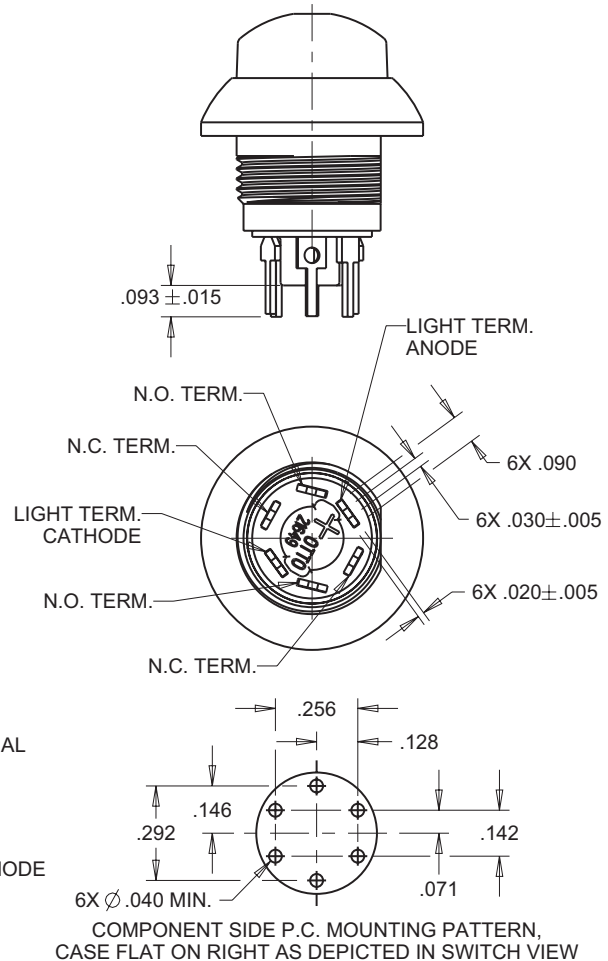
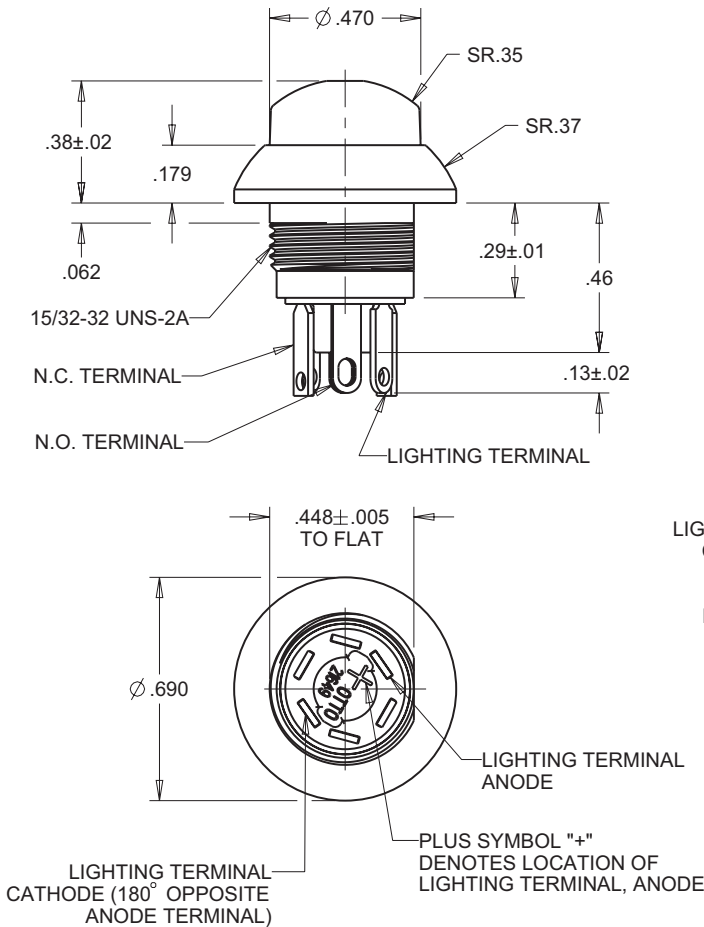
LP7-D RAISED BUTTON ROUND THREADED



STANDARD TERMINALS (TERMINALS NOT ORIENTED TO CASE FLAT)



P.C. TERMINALS (ORIENTATED TO CASE FLATS AS SHOWN)



MOMENTARY ACTION COMMERCIAL GRADE LED ILLUMINATED & WATERTIGHT SEALED

The OTTO LP9 Lighted Dome series is a quality precision switch designed for use in panels, control grips, instruments, heavy equipment and other demanding applications where attractive, rugged, lighted pushbutton switches are required.

The LP9 series offers a positive tactile feedback, signaling the operator when the switch is operated with the added benefit of reliable LED illumination. The LP9 series offers four button versions; flush and raised profile with either a glossy or matte finish. It also comes with a threaded case for hex nut mounting while providing a short behind panel depth.

The LP9 series is constructed to meet IP68S watertight seal. Expect 25,000 operations at full rated load of 5 amps resistive or 3 amps inductive; 500,000 operations at 500mA/200mA resistive.

The LP9 series are momentary snap-action double break switches, available in standard and low operate forces. The LED is available in five colors and has the ability to accommodate 2 or 12VDC.

Features:

- **Watertight to IP68S**
- **LED lighted with the ability to accommodate 2 or 12VDC**
- **LED available in 6 colors**
- **Flush & raised button style**
- **Matte or glossy button finish**
- **Positive tactile feedback contact transfer**
- **Withstands extreme shock & vibration**
- **Short behind panel depth**
- **RoHS/WEEE/Reach compliant**

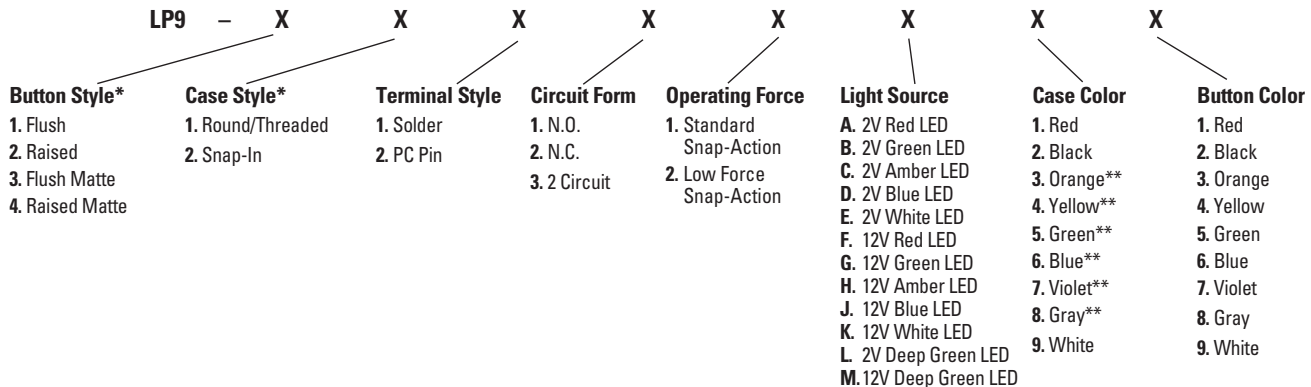


Flush Dome

Also available with
Raised Dome

Standard Characteristics/Ratings:			
ELECTRICAL RATINGS:		Sea Level @ 28VDC or 115VAC, 60/400Hz	
Load	N.O./N.C.	Cycles	Operating Force
Resistive	5A	25,000	Standard
Inductive	3A	25,000	Standard
Resistive	500mA	500,000	Standard
Resistive	200mA	500,000	Low or Standard
DWV	1050Vrms through switch contacts only		
Low Level	10mA @ 30mV	25,000	
Electrical Life:		See Rating Chart	
LIGHTING:			
Light Source Voltage (DC)	Actual Voltage Nominal (DC)	Voltage Max (DC)	
2	2	2.6	
12	13.5	14.5	
Mechanical Life:		1,000,000 cycles	
Seal:		IP68S	
Operating Temp Range:		-55°C to +85°C	
Operating Force:		1.7 +/- 0.5 lb. (standard force) 12 +/- 4 oz (low force)	
Total Travel:		0.080 inches max	
Overtravel:		0.010 inches min	
MATERIALS:			
Case:		Thermoplastic	
Button:		Thermoplastic	
Terminals:		Silver with gold plate	
Mounting Hardware:		Hex nut and lockwasher for round/threaded style case only Panel gasket for snap-in style case only	

LP9 PART NUMBER CODE



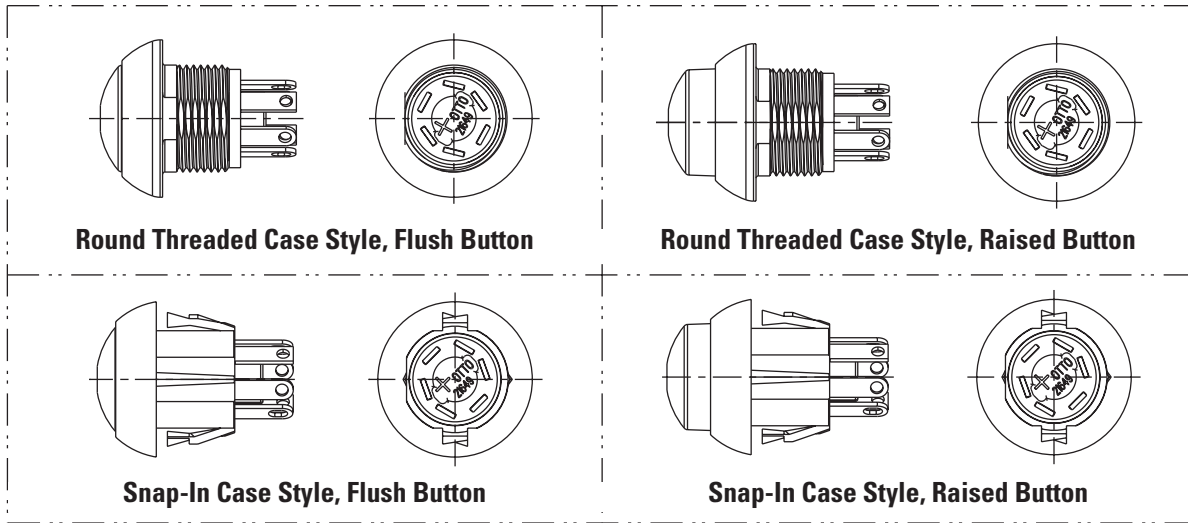
* Button and case will be of the same texture.
For all mixed gloss/matte combination options, contact factory.
** For minimum requirement, contact factory.

ILLUMINATED SEALED DOME PUSHBUTTONS

LP9

ILLUMINATED
PUSHBUTTONS

MOMENTARY ACTION COMMERCIAL GRADE LED ILLUMINATED & WATERTIGHT SEALED

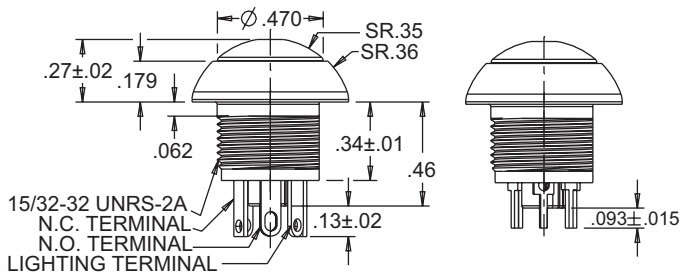


Standard Terminals

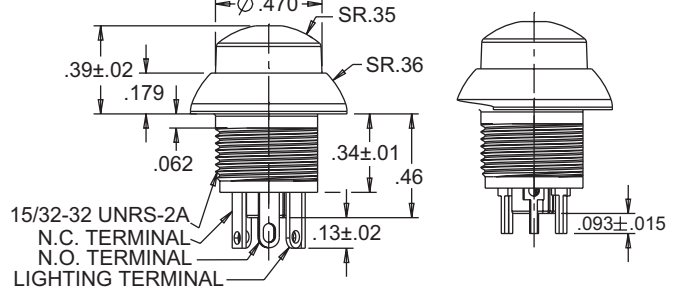
P.C. Terminals

Standard Terminals

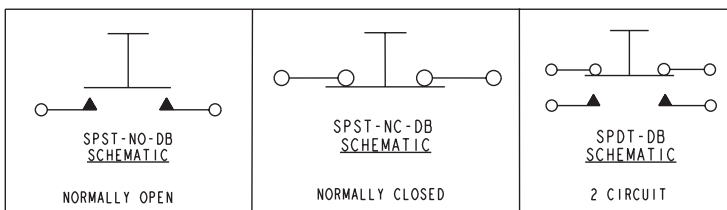
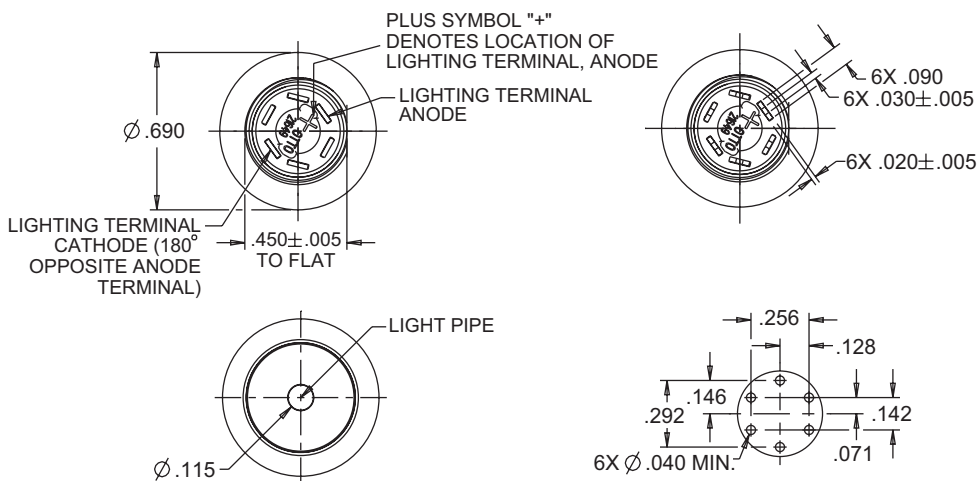
P.C. Terminals



FLUSH BUTTON ROUND THREADED



RAISED BUTTON ROUND THREADED



LOW LEVEL MOMENTARY ACTION COMMERCIAL GRADE LED ILLUMINATED & WATERTIGHT SEALED

The OTTO LP9L Lighted Dome series is a quality precision switch designed for use in panels, control grips, instruments and other demanding applications where attractive, rugged, lighted low level pushbutton switches are required.

The LP9L series offers a positive tactile feedback, signaling the operator when the switch is operated with the added benefit of reliable LED illumination. The LP9L series offers four button versions; flush and raised profile with either a glossy or matte finish. It also comes with a threaded case for hex nut mounting while providing a short behind panel depth.

The LP9L series is constructed to meet IP68S watertight seal. Expect 500,000 operations at 50mA resistive.

The LP9L series are momentary snap-action double break switches, available in standard and low operate forces. The LED is available in five colors and has the ability to accommodate 2 or 12VDC.

Features:

- Low level switch
- Watertight to IP68S
- LED lighted with the ability to accommodate 2 or 12VDC
- LED available in 6 colors
- Flush & raised button style
- Matte or glossy button finish
- Positive tactile feedback contact transfer
- Withstands extreme shock & vibration
- Short behind panel depth
- RoHS/WEEE/Reach compliant



Raised Dome

Also available with
Flush Dome

Standard Characteristics/Ratings:		
ELECTRICAL RATINGS:	Sea Level @ 28VDC or 115VAC, 60/400Hz	
Load		
Resistive:	50mA	
DVV:	1050Vrms through switch contacts only	
Electrical Life:	500,000 cycles	
LIGHTING:		
Light Source Voltage (DC)	Actual Voltage Nominal (DC)	Voltage Max (DC)
2	2	2.6
12	13.5	14.5
Mechanical Life:	500,000 cycles	
Seal:	IP68S	
Operating Temp Range:	-55°C to +85°C	
Operating Force:	1.7 +/- 0.5 lb. (standard force) 12 +/- 4 oz (low force)	
Total Travel:	0.080 inches max	
Overtravel:	0.010 inches min	
MATERIALS:		
Case:	Thermoplastic	
Button:	Thermoplastic	
Terminals:	Silver with gold plate	
Mounting Hardware:	Hex nut and lockwasher for round/threaded style case only Panel gasket for snap-in style case only	

LP9L PART NUMBER CODE

LP9L	-	X	X	X	X	X	X	X
Button Style*	Case Style*	Terminal Style	Circuit Form	Operating Force	Light Source	Case Color	Button Color	
1. Flush	1. Round/Threaded	1. Solder	1. N.O.	1. Standard Snap-Action	A. 2V Red LED	1. Red	1. Red	
2. Raised	2. Snap-In	2. PC Pin	2. N.C.	2. Low Force Snap-Action	B. 2V Green LED	2. Black	2. Black	
3. Flush Matte			3. 2 Circuit		C. 2V Amber LED	3. Orange**	3. Orange	
4. Raised Matte					D. 2V Blue LED	4. Yellow**	4. Yellow	
					E. 2V White LED	5. Green**	5. Green	
					F. 12V Red LED	6. Blue**	6. Blue	
					G. 12V Green LED	7. Violet**	7. Violet	
					H. 12V Amber LED	8. Gray**	8. Gray	
					J. 12V Blue LED	9. White	9. White	
					K. 12V White LED			
					L. 2V Deep Green LED			
					M. 12V Deep Green LED			

* Button and case will be of the same texture.

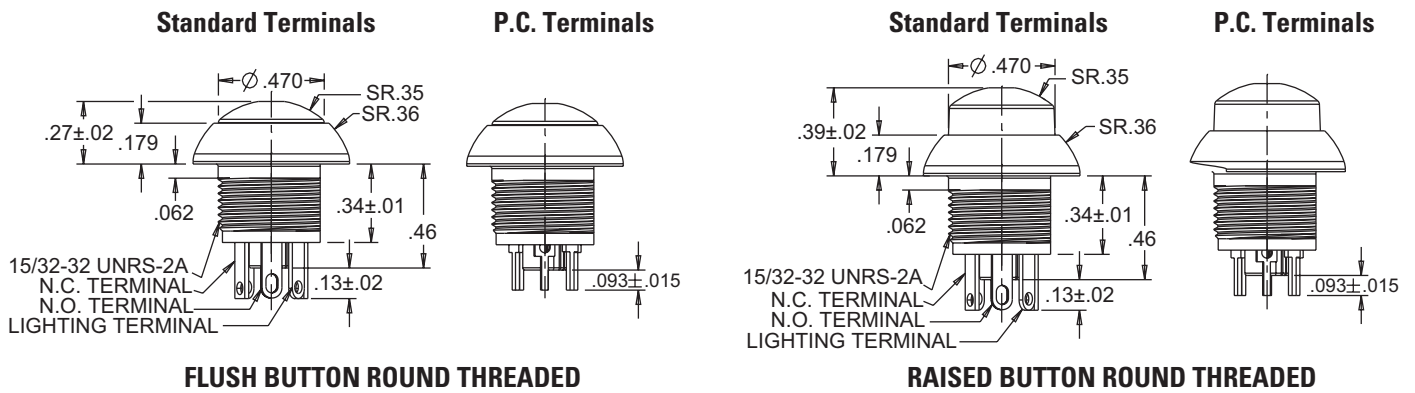
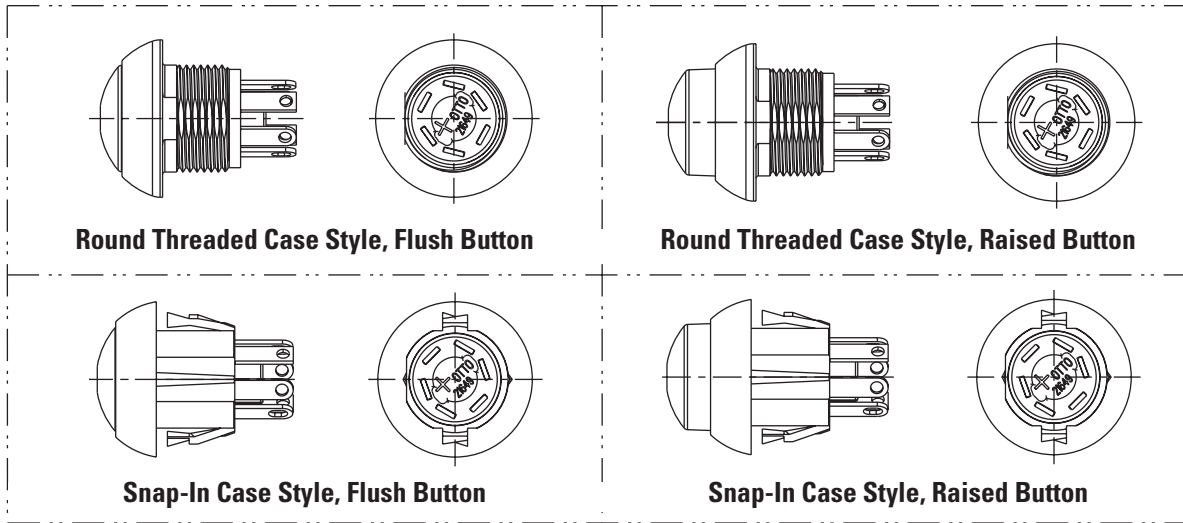
For all mixed gloss/matte combination options, contact factory.

** For minimum requirement, contact factory.

ILLUMINATED SEALED DOME PUSHBUTTONS

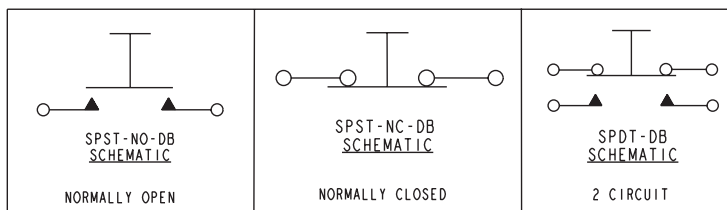
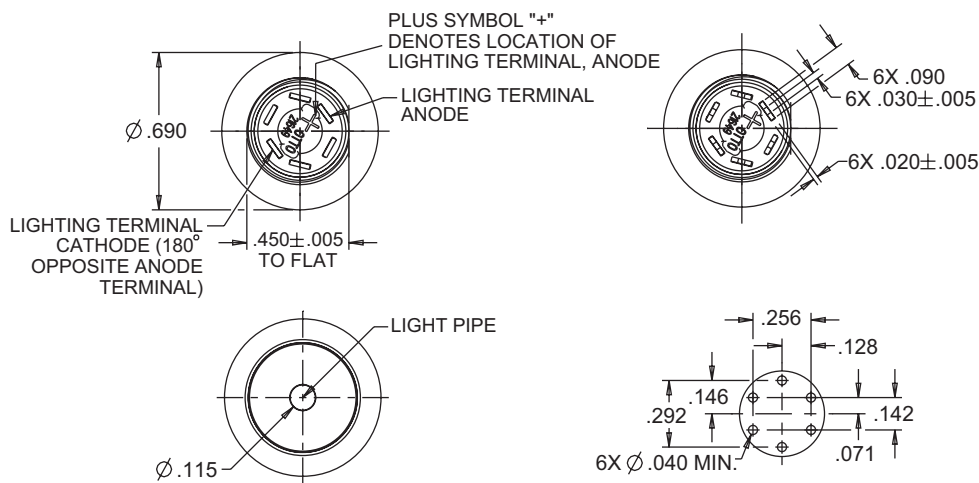
LP9L
ILLUMINATED
PUSHBUTTONS

MOMENTARY ACTION COMMERCIAL GRADE LED ILLUMINATED & WATERTIGHT SEALED



FLUSH BUTTON ROUND THREADED

RAISED BUTTON ROUND THREADED



The LPL Indicator Light series offers an excellent means of indicating the activity of a circuit by providing a visual on/off indication of process conditions. The LPL series is ideally suited as part of a panel mounted indicator for control panels, instrumentation and front panel fault indicators.

The LPL series is manufactured to the highest standards and built to withstand harsh environments, offering anodized aluminum alloy cases with seal options of moistureproof and dusttight to IP64 or watertight to IP68S. The LPL series offers long life LED lighting in a variety of colors and can accommodate 2 to 24VDC power.

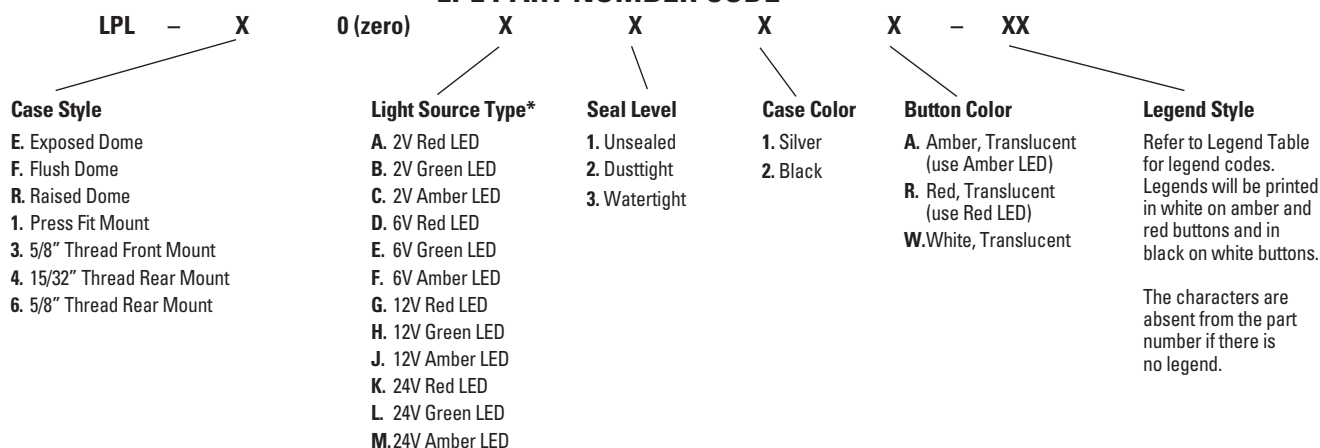
Features:

- **Seal options include:**
 - ◆ **Watertight per MIL-PRF-8805, Design 3 and watertight 1 meter to IP68S**
 - ◆ **Dusttight per MIL-PRF-8805, Design 2 and Dusttight/protected against splashing water per IP64**
 - ◆ **Unsealed**
- **LED lighted with the ability to accommodate 2, 6, 12 & 24VDC power and includes reverse voltage protection**
- **Tall and dome style buttons in translucent white, red & amber permitting sublimated & pad printed legends**
- **15/32" & 5/8" thread, press fit & dome case styles available**
- **Built-in current limiting resistor & reverse polarity protection**
- **Looks identical to the LP3 & LP5 series to provide a cohesive panel look**
- **RoHS/WEEE/Reach compliant**



Standard Characteristics/Ratings:		
LIGHTING:		
Light Source Voltage (DC)	Actual Voltage Nominal (DC)	Voltage Max (DC)
2	2	2.6
6	7	8
12	13.5	14.5
24	28	28.6
Seal:	Options include: <ul style="list-style-type: none"> • Watertight per MIL-PRF-8805, Design 3 and IP68S • Dusttight per MIL-PRF-8805, Design 2 and IP64 • Unsealed 	
Operating Temp Range: -55°C to +85°C		
MATERIALS:		
Case:	Anodized aluminum alloy	
Button:	Thermoplastic	
Terminals:	Brass	
Mounting Hardware:	Hex nut, lockwasher and panel gasket when applicable	

LPL PART NUMBER CODE



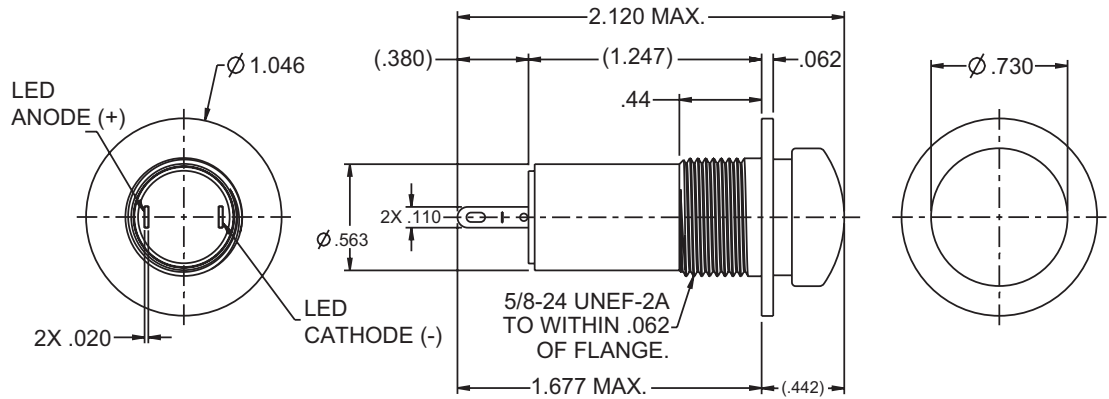
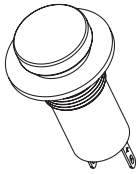
* For super bright LEDs, contact factory.

LPL INDICATOR LIGHTS

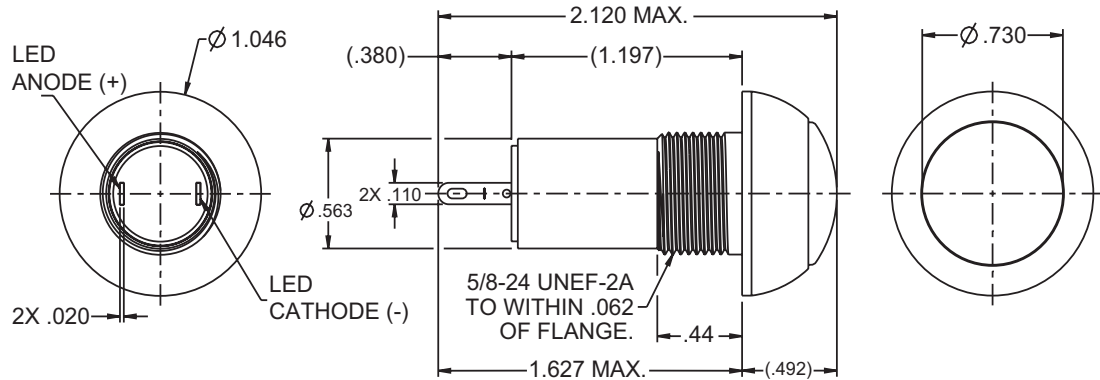
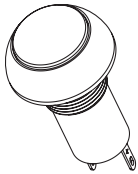
LPL
INDICATOR
LIGHTS

LED ILLUMINATED & SEALED

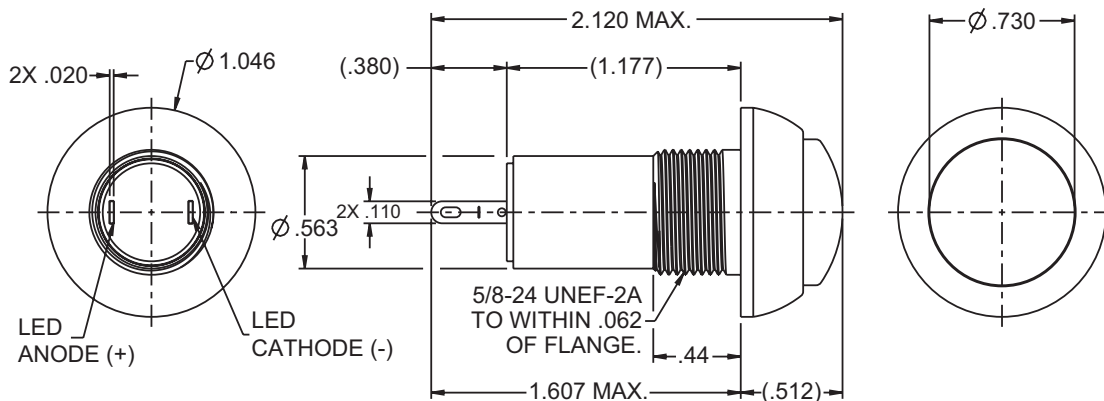
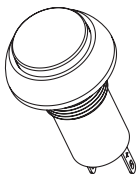
LPL-E0
Exposed Dome Button



LPL-F0
Flush Dome Button



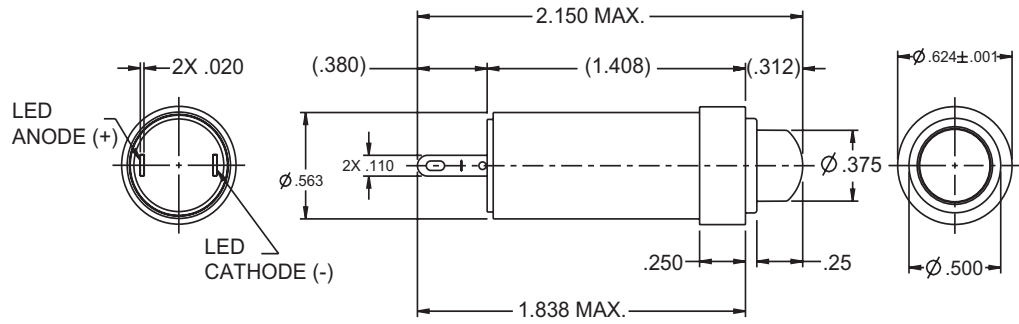
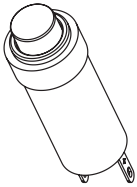
LPL-R0
Raised Dome Button



LED ILLUMINATED & SEALED

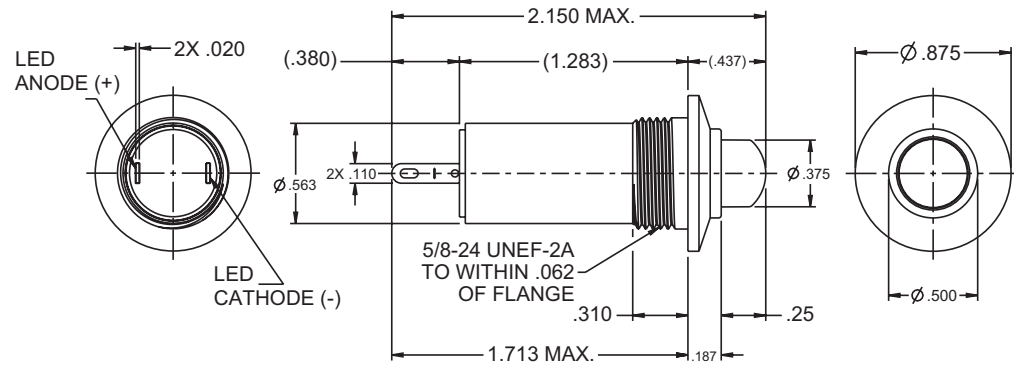
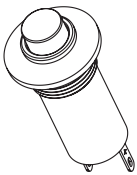
LPL-10

Press Fit Mount



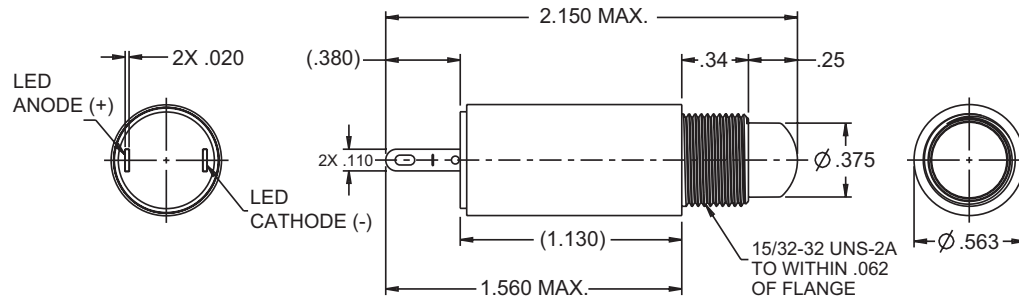
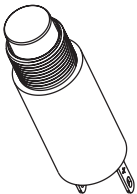
LPL-30

5/8" Threaded Front Mount



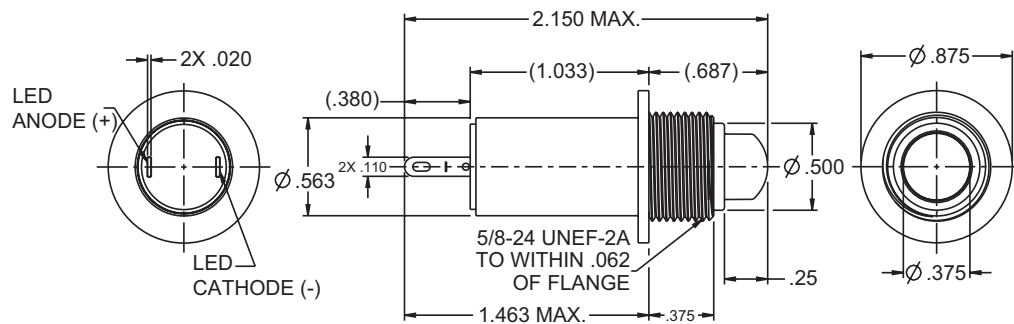
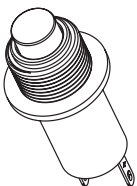
LPL-40

15/32" Threaded Rear Mount



LPL-60

5/8" Threaded Rear Mount



MOMENTARY ACTION, SEALED, SNAP-ACTION, DOUBLE BREAK

The P1 offers a mechanical life that is well beyond the 50,000 cycles required by MIL-PRF-8805. The double break switching mechanism has an incredibly fast transfer time, reducing arcing and increasing contact life. The inherent wiping action breaks welds and scrubs the contacts clean on every actuation.

The P1 switch offers vastly improved life under extreme conditions found in most military environments. Moistureproofing is accomplished in two ways. The pushbutton is sealed with a silicone boot operating on our patented "rolling sleeve," providing longer life and smoother operation over a wide temperature range. Epoxy seals protect the contacts and terminals from hostile environments and solder flux.

Watertight sealing to Commercial (IP68S) and Military (MIL-PRF-8805 Design 3) standards are available. This watertight design is also available in commercial construction as the P3 series (add "W" to your part number).

High contact force (120g/4.2 oz), low contact resistance (25mΩ max) and short contact bounce result from our snap-action mechanism. These characteristics guarantee exceptional current carrying capabilities over the life of the switch. With the optional low level (gold plate) configuration, the P1 is well suited to interface directly to computers and other solid state devices.

The P1 switch is a quality precision snap-action switch designed for use in panel boards, control grips, computers, instruments, pressure switches and other hand or machine operated applications where sealed pushbutton switches are required. Its precision permits the P1 to be used as a limit switch with unique size, high electrical ratings and a wide choice of mounting styles.

Features:

- **Button sealed with patented "rolling sleeve" principle**
- **Contact area sealed at button & terminals**
- **Less than 25mΩ contact resistance**
- **Ideal for low level switching as well as up to 10 amp duty**
- **Positive tactile feedback**
- **Variety of mounting styles**
- **Engraved buttons & bezels available**
- **UL recognized & CSA certified**
- **Watertight to IP68S available**
- **RoHS/WEEE/Reach compliant**



Standard Characteristics/Ratings:

ELECTRICAL RATINGS:

Load	Sea Level @ 28VDC or 115VAC, 60/400Hz	50,000 feet @ 28VDC or 115VAC, 60/400Hz
Resistive	10A	N/A
Inductive	5A	5A
Lamp	3A	N/A
Motor	3A	N/A
Center Contact	3A max	N/A
DWV	1050Vrms	400Vrms
Low Level	10mA @ 30mV max DC or peak AC	

Electrical Life: 25,000 cycles

Mechanical Life: 50,000 cycles, circuit forms 3, 4, & 5
250,000 cycles, circuit forms 1, 2 & 6

Seal: MIL-PRF-8805 Design 2 or
Watertight per IP68S or MIL-PRF-8805 Design 3

Operating Temp Range: -55°C to +85°C

Operating Force: 2.5 lbs. or 4.0 lbs.

Reset Force: 0.75 lb. or 1.0 lb.

Total Travel: 0.085 +/- 0.015 inches

Overtravel: 0.012 inches min

Movement Differential: 0.015 inches min

MATERIALS:

Case: Black anodized aluminum alloy


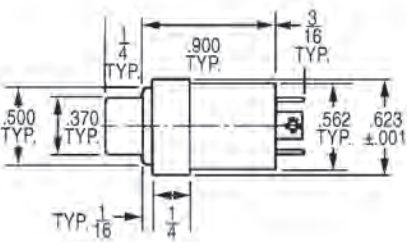

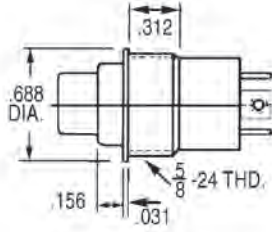

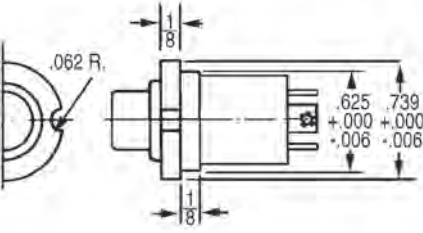

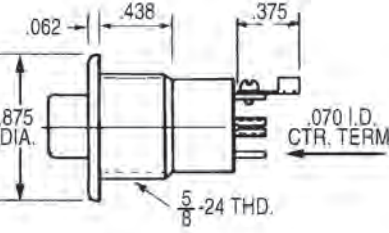

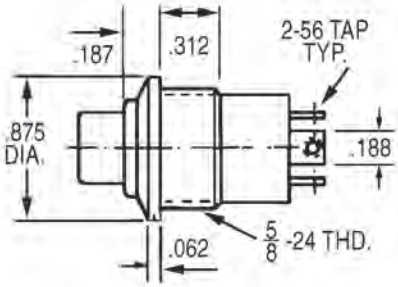

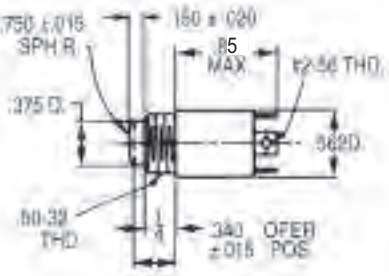

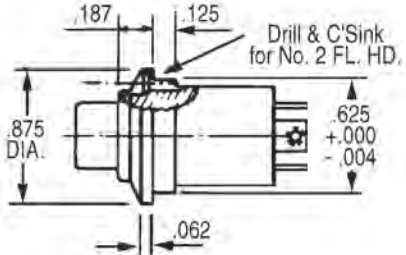

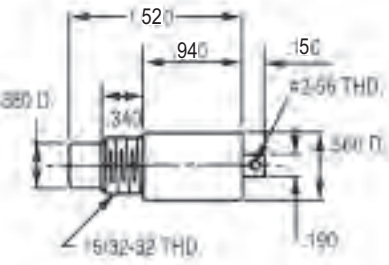

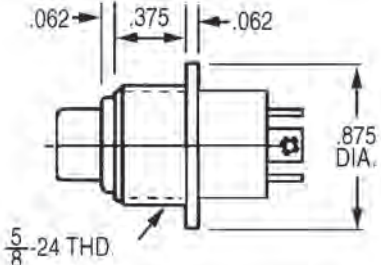
Button: Thermoplastic

Terminals: Brass with silver plate, gold plate for low level

Terminal Hardware: Screws, lockwasher and solder lugs for screw terminal option

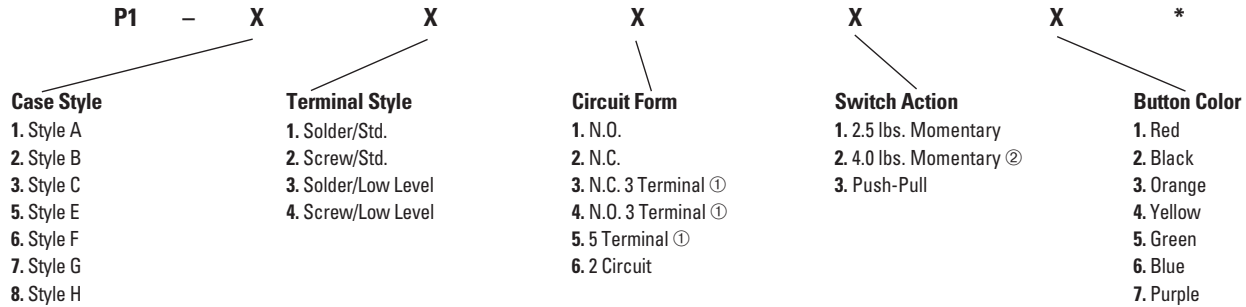
Mounting Hardware: Hex nut and lockwasher, panel seal on watertight switches

MOMENTARY ACTION, LOW LEVEL UP TO 10 AMPS

<p>P1-1 (MIL-A)</p> 		<p>P1-7 (MIL-G)</p> 	
<p>P1-2 (MIL-B)</p> 		<p>P1-8 (MIL-H)</p> 	
<p>P1-3 (MIL-C)</p> 		<p>Unsealed P1-90013 Operating Force: 5.0 lbs. max Circuit: SPDT-DB Case: Black anodized aluminum Button: Black nylon</p>  	
<p>P1-5 (MIL-E)</p> 		<p>Watertight P1-90024 Dusttight P1-90014 Operating Force: 4.0 +/- 1.0 lb. Circuit: SPST-N.O. Case: Black anodized aluminum Button: Red nylon</p>  	
<p>P1-6 (MIL-F)</p> 			

MOMENTARY ACTION, LOW LEVEL UP TO 10 AMPS

P1 PART NUMBER CODE



* Add "W" for watertight to IP68S. (For watertight seal to MIL-PRF-8805 Design 3, please contact factory.)

① Circuit styles with 3 and 5 terminals have 50,000 cycle mechanical life per MIL-PRF-8805.

② Military standard is 4.0 lbs.

ORDERING INFORMATION:

Select the OTTO P1 series switch to match your application requirements. Combinations of features are almost unlimited. When ordering, specify the Military (MS) Number and/or OTTO Part Number.

Example: P1-32629 is MS25089-3CW, "C" style case, 2 circuit contact configuration, 4.0 lbs. operating force, white button. For low level model, specify P1-34629, MS25089-3CWL. A partial cross reference list of Military (MS) Numbers to OTTO Part Numbers may be found in the back section of this catalog.

EXAMPLES OF CUSTOMIZED P1 SERIES SEALED PUSHBUTTONS

Special Cap On Press Fit Case

Total Travel: 0.085" +/- 0.015"
Operating Force: 4.0 +/- 1.0 lb.
Reset Force: 1.0 lb. min
Circuit: SPDT 2 circuit
Mechanical Life: 250,000 cycles
Button: Black oxide #303 Stainless Steel
Housing: Black anodized aluminum
P1-10047



Long Pushbutton

Dusttight per MIL-PRF-8805, this extra long button is installed in a Type P1 "C" case style.

Total Travel: 0.085" +/- 0.015"
Operating Force: 4.0 lbs.
Circuit: SPNO-DB
Rating: 10 amps Resistive
Mechanical Life: 250,000 cycles
Electrical Life: 25,000 cycles
P1-30074



Special Push-Pull Switch

Total Travel: 0.085" +/- 0.015"
Operating Force: 0.5 lb. to 2.0 lbs.
Circuit: SPNO-DB
Mechanical Life: 250,000 cycles
Button: Black on white nylon
Housing: Black anodized aluminum
Case: Style "C"
P1-30052



Large Diameter Button

Button diameter is 1.187" and is red anodized aluminum mounted on a Type P1 style "C" body. Button is free to rotate 360°.

Total Travel: 0.085" +/- 0.015"
Operating Force: 2.5, +0.5, -1.0 lb.
Circuit: SPDT 2 circuit
Rating: 10 amps Resistive
Mechanical Life: 250,000 cycles
Electrical Life: 25,000 cycles
P1-30075



Special Knurled Shroud

Total Travel: 0.085" +/- 0.015"
Operating Force: 4.0 +/- 1.0 lb.
Rest Force: 1.0 lb. min
Circuit: SPDT 2 circuit
Mechanical Life: 250,000 cycles
Button: Red nylon
Housing: Black anodized aluminum
P1-90108



Vandal Resistant

Stainless steel housing and button are watertight sealed. Ideal for unattended machines operated by the public.

Operating Force: 2.5, +1.0, -0.5 lb.
Circuit: SPNO-DB
Mechanical Life: 250,000 cycles
Bezel: 1.5" dia.
Button: 0.812" dia.
P1-90135-2

For smaller 0.969" dia., DPDT-DB design, see P4-10155-2.



- Large buttons, up to 0.765" diameter
- Symbols & 9 colors of buttons
- Watertight to IP68S
- 10 amp resistive rating



NOTE: Refer to Standard Legends Chart in Appendix for available symbols.



P1-10142-X

COMMERCIAL GRADE PUSHBUTTONS

P3

COMMERCIAL
PUSHBUTTONS

MOMENTARY ACTION, SEALED, SNAP-ACTION, DOUBLE BREAK

Makes and breaks every time! Less than 25mΩ contact resistance because the OTTO design features inherent rocking action that breaks welds and wipes contacts clean.

The P3 is the commercial version of the P1 Pushbutton switch, offering vastly improved life under extreme conditions found in some industrial environments. The pushbutton is sealed by a silicone boot operating on our patented "rolling sleeve," providing longer life and smoother operation over a wide temperature range. Epoxy protects the contacts and terminals from hostile environments and solder flux.

High contact force (120g/4.2 oz), low contact resistance (25mΩ max) and short contact bounce are the result of our snap-action mechanism. These characteristics provide exceptional current carrying capabilities over the life of the switch. With the optional low level (gold plate) configuration, the P3 is well suited to interface directly to computers and other solid state devices.

Watertight sealing is available by simply adding "W" to your part number. Because the P3 is a double break switch, wide connection possibilities, longer life and greater capacity are offered. The P3 design provides a unique terminal connection to the moving element for added flexibility. Special versions can be provided with five terminals to control up to four circuits.

Features:

- Button sealed with patented "rolling sleeve" principle
- Contact area sealed at button & terminals
- Less than 25mΩ contact resistance
- Positive tactile feedback
- Variety of mounting styles
- Engraved buttons & bezels available
- UL recognized & CSA certified
- 1 million mechanical cycle life
- Watertight to IP68S available
- RoHS/WEEE/Reach compliant



Standard Characteristics/Ratings:

ELECTRICAL RATINGS:

Load	Sea Level @ 28VDC or 115VAC, 60/400Hz	50,000 feet @ 28VDC or 115VAC, 60/400Hz	Cycles
Resistive	10A	N/A	100,000
Inductive	5A	5A	100,000
Lamp	3A	N/A	100,000
Center Contact	3A max	N/A	100,000
DWV	1050Vrms	400Vrms	
Low Level	10mA @ 30mV max DC or peak AC		

Electrical Life:

See Rating Chart
 Mechanical Life: 1 million cycles, circuit forms 1, 2 & 6
 100,000 cycles, circuit forms 3, 4 & 5

Seal: IP64 or IP68S

Shock: MIL-STD-202, method 207

Operating Temp Range: -55°C to +85°C

Operating Force: 2.5 lbs. or 4.0 lbs.

Reset Force: 0.75 lb. min or 1.0 lb.

Total Travel: 0.085 +/- 0.015 inches

Overtravel: 0.012 inches min

Movement Differential: 0.015 inches min

MATERIALS:

Case: Anodized aluminum alloy

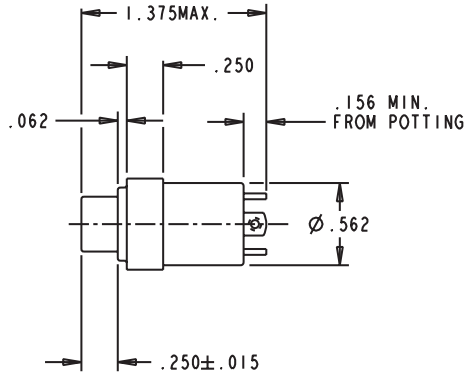
Button: Thermoplastic

Terminals: Brass with silver, gold for low level

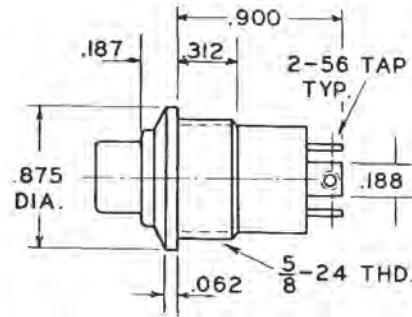
Terminal Hardware: Screws, lockwasher and terminal lug for screw terminal option

Mounting Hardware: Hex nut, lockwasher and panel seal when applicable

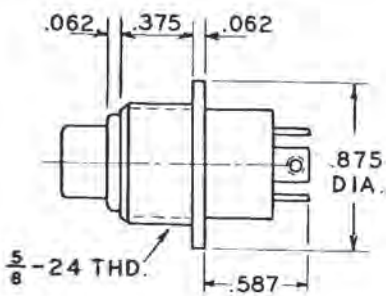
IDEAL FOR USE IN HEAVY MACHINERY & COMMERCIAL APPLICATIONS



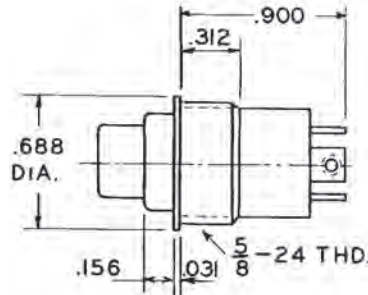
Style P3-1



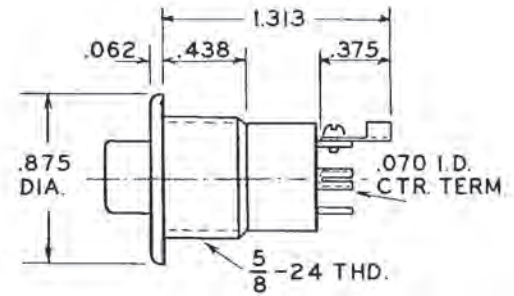
Style P3-3



Style P3-6



Style P3-7



Style P3-8

ORDERING INFORMATION:

Select the OTTO P3 switch to match your application requirements. Combinations of features are almost unlimited.

Example: P3-31111 is style 3 case, solder terminals, standard contact rating, SPST-N.O. contact configuration, 2.5 lbs. operating force, red button. For low level switching capability, specify P3-33111.

P3 PART NUMBER CODE

P3	-	X	X	X	X	X	*
Case Style		Terminal Style/Rating	Circuit Form	Operating Force/Action	Button Color		
1. Style 1		1. Solder/Std.	1. N.O.	1. 2.5 lbs./Momentary	1. Red		
3. Style 3		2. Screw/Std.	2. N.C.	2. 4.0 lbs./Momentary	2. Black		
6. Style 6		3. Solder/Low Level	3. N.C. 3 Terminal	3. Push-Pull	3. Orange		
7. Style 7		4. Screw/Low Level	4. N.O. 3 Terminal		4. Yellow		
8. Style 8			5. 5 Terminal		5. Green		
			6. 2 Circuit		6. Blue		
					7. Purple		
					8. Gray		
					9. White		

* Add "W" suffix for watertight to IP68S.

EXAMPLES OF CUSTOMIZED P3 SERIES SEALED PUSHBUTTONS

Special Shaped Bezel

Total Travel: 0.085" +/- 0.015"
Operating Force: 2.5, +0.5, -1.0 lb.
Reset Force: 0.75 lb. min
Circuit: SPNO-DB (Other circuits available)
Mechanical Life: 1,000,000 cycles
Button: Red nylon
Housing: Clear anodized aluminum
P3-30017



Special Journalled Button

Watertight to IP68S, black anodized case and thermoplastic button available in nine colors.
Circuit: SPNO-DB
Mechanical Life: 1,000,000 cycles
Electrical Life: 100,000 cycles
P3-90308-X
 (X denotes button color)



Special Large Round Button, Quick Connect Tab Terminals

Total Travel: 0.085" +/- 0.015"
Operating Force: 4.0 +/- 1.0 lb.
Reset Force: 1.0 lb. min
Circuit: SPNO-DB (Other circuits available)
Mechanical Life: 1,000,000 cycles
Button: Black nylon
Housing: Clear anodized aluminum
P3-30031



Large Diameter Button

Nine different button colors, black anodized protective shroud, watertight to IP68S.
Circuit: SPNO-DB
Mechanical Life: 1,000,000 cycles
Electrical Life: 100,000 cycles at full load
P3-90207-X
 (X denotes button color)



Special Right Angle, Quick Connect Tabs, P3-6 Style

Total Travel: 0.085" +/- 0.015"
Operating Force: 2.5, +0.5, -1.0 lb.
Reset Force: 0.75 lb. min
Circuit: SPNO-DB
Mechanical Life: 1,000,000 cycles
Button: Red nylon
Housing: Clear anodized aluminum
P3-60024



Special "H" Case with Round Shaped Button

Operating Force: 4.0 +/- 1.0 lb.
Reset Force: 1.0 lb. min
Circuit: SPNC-DB (Other circuits available)
Mechanical Life: 1,000,000 cycles
Button: Red nylon
Housing: Black anodized aluminum
P3-80016



Special Snap-In, Panel-Sealed, Rectangular Shaped Button

Total Travel: 0.125" max
Operating Force: 4.0 +/- 1.0 lb.
Reset Force: 1.0 lb. min
Circuit: SPNO-DB (Other circuits available)
Mechanical Life: 1,000,000 cycles
Button: Black polyester
Housing: Clear anodized celenex
P3-90037



Large Diameter Button

Nylon button is 1.187". Snaps on to special style body with leads. Dusttight to IP64.
Operating Force: 2.5, +0.5, -1.0 lb.
Mechanical Life: 1,000,000 cycles
Rating: 10 amps Resistive
Circuit: SPDT 2 circuit
P3-30101-X



Protective Shroud

This pushbutton is designed to avoid accidental actuation of the switch. The shroud requires the operator to purposely operate the switch. The actuation occurs below the height of the protective shroud, thus protecting against unintentional actuation.

Same ratings and sealing characteristics as the standard P3 series.

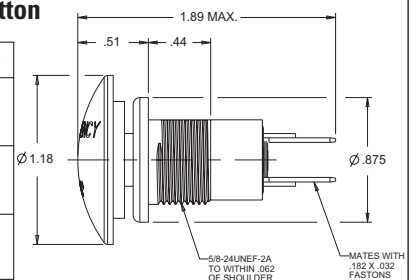
SPNC is shown.

P3-90009



Emergency Stop Pushbutton

PART NUMBER	BUTTON COLOR
P330115-1	RED
P330115-2	BLACK
P330115-3	ORANGE
P330115-4	YELLOW
P330115-5	GREEN
P330115-6	BLUE
P330115-7	VIOLET
P330115-8	GRAY
P330115-9	WHITE



MOMENTARY ACTION, ATTRACTIVE & RUGGED FOR WET & DUSTY ENVIRONMENTS

Rugged pushbutton switches with new contoured dome styling. There are two design versions: flush dome and raised dome button profile. They also offer excellent mechanical and electrical performance while operating under severe conditions found in demanding applications.

The P3-D Dome features dusttight and moistureproof or watertight sealed construction (add "W" to your part number for watertight seal). 100,000 operations at rated load of 10 amps resistive or 5 amps inductive; up to a million mechanical operations in low level switching applications.

The P3-D Dome is available in standard and low operating force double break snap-action models. All are momentary action. Special contact variations are available. High contact pressure and unique contact design provide low contact resistance for low level switching capability as well as full rated service.

The P3-D Dome is a quality precision snap-action switch designed for use in panels, control sticks, computers, instruments, heavy equipment and other demanding applications where attractive, rugged pushbutton switches are required.

Features:

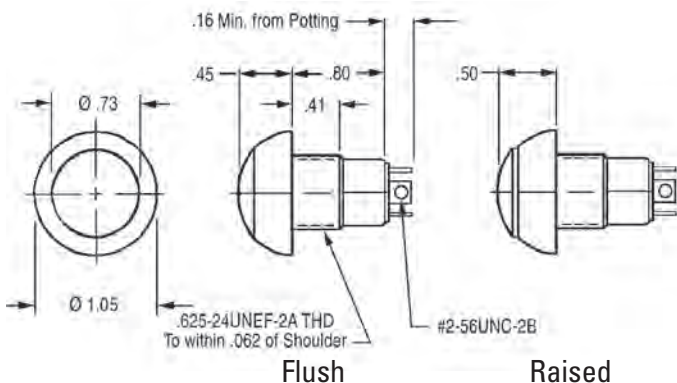
- Attractive dome style button
- 2 contoured button styles
- Double break momentary action
- Withstands extreme shock & vibration
- Positive tactile feedback
- Solder & screw terminal styles
- Moistureproof & dusttight to IP64
- Watertight to IP68S available
- RoHS/WEEE/Reach compliant



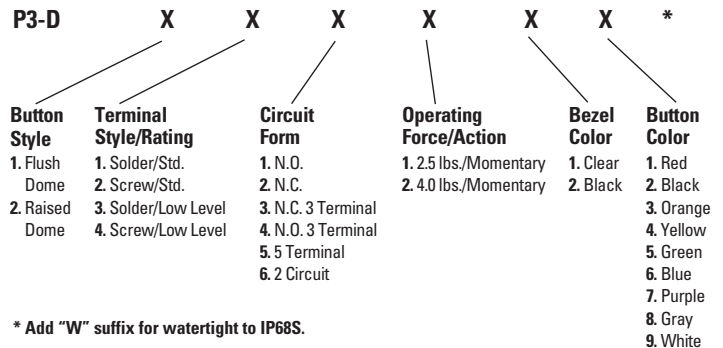
Flush Dome Button



Standard Characteristics/Ratings:		
ELECTRICAL RATINGS:		
Load	Sea Level @ 28VDC or 115VAC, 60/400Hz	Cycles
Resistive	10A	100,000
Resistive	15A	25,000
Inductive	5A	100,000
Lamp	3A	100,000
Center Contact	3A max	100,000
DWV	1050Vrms	
Low Level	10mA @ 30mV	100,000
Electrical Life:	See Rating Chart	
Mechanical Life:	1,000,000 cycles, circuit forms 1, 2 & 6 100,000 cycles, circuit forms 3, 4 & 5	
Seal:	IP64 or IP68S	
Operating Temp Range:	-55°C to +85°C	
Operating Force:	2.0 lbs. to 4.0 lbs., +0.5/-1.0 lb.	
Total Travel:	0.075 +/- 0.015 inches	
Overtravel:	0.012 inches min	
Movement Differential:	0.015 inches min	
MATERIALS:		
Case:	Anodized aluminum alloy	
Button:	Thermoplastic	
Terminals:	Brass with silver plate, gold plate for low level	
Terminal Hardware:	Screws, lockwasher and terminal lugs	
Mounting Hardware:	Hex nut, lockwasher and panel seal when applicable	



P3-D PART NUMBER CODE



* Add "W" suffix for watertight to IP68S.

AUXILIARY ACTUATORS FOR BASIC SWITCHES

BUSHING MOUNT PUSHBUTTONS FOR OTTO B2 & B3 BASICS

IP68S Sealed Construction



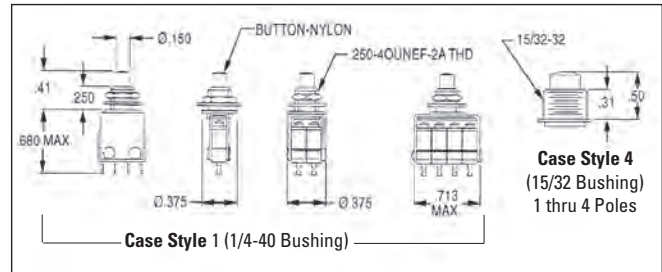
P4 series auxiliary actuators are designed to work with OTTO B2 (single break) and B3 (double break) basic switches. Auxiliary type actuators offer a wide variety of styles and types. Special basic switch characteristics can be specified to match your application needs. All case styles, except 1 and 4, feature OTTO's patented "rolling sleeve" principle and are sealed to IP68S.

Number of Poles	Operating Force (oz)	Release Force (oz)
1	8	2
2	16	2
3	24	3
4	32	4

Unsealed Construction



These unsealed pushbutton actuators feature a choice of 1/4" and 15/32" mounting bushings with nylon buttons available in nine colors. Choose single, two, three and four pole models. To order standard models, use the Part Number Code shown below.

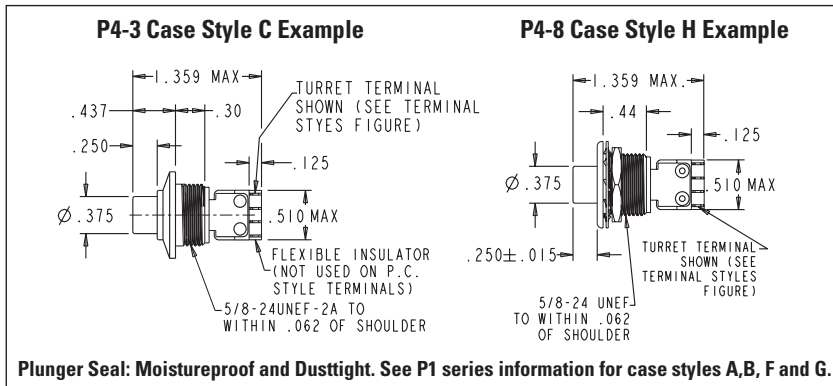


Sealed Construction

Moistureproof at the front panel. Choice of one and two pole configurations. Select from a variety of six bezel/bushing mount case styles in clear (silver) or black anodized aluminum. Styles C, H and F are illustrated here. For styles A, B and G, see P1 series information. Buttons are available in nine colors. Basic switches are per MIL-PRF-8805/101.

Operating Force: 4.0 lbs. max

Use Part Number Code below to specify your requirements.



RFI Shielding Option with Moistureproof Panel Seal

RFI shielding can be included along with the moistureproof sealing feature in all case styles (except styles 1 and 4) and in single or double pole momentary action. Case styles are illustrated at left. The plunger seal is dusttight and moistureproof. Basic switches per MIL-PRF-8805/101.

Operating Force: 5.0 lbs. max

To order, see Part Number Code below.

ORDERING INFORMATION:

Standard Auxiliary Actuator Assemblies for Basics

Select the OTTO P4 pushbutton switch assembly to match your specific application needs. Standard and special features are shown at right. Specify your choice by building the OTTO Part Number Code.

Example: P4-614121 features the style "F" case, DPDT (4 terminals each), PC terminals, single step momentary action, black bezel with red button.

P4 PART NUMBER CODE

P4	X	X	X	X	X	X
Case Style	Terminal Style	Circuit Form	Switching Action	Bezel Color	Button Color	
1. 1/4-40 THD	1. PC Terminal	1. SPDT 3 Terminal	1. Momentary	1. Silver	1. Red	
2. Style B ①	2. Turret	2. SPDT 4 Terminal	2. Two Step ③ ④	2. Black	2. Black	
3. Style C	3. Wire Wrap	3. DPDT 6 Terminal	3. RFI Shielded ③ (Momentary)		3. Orange	
4. 15/32-32 THD		4. DPDT 8 Terminal			4. Yellow	
5. Style A ①		5. 3PDT 9 Terminal ②			5. Green	
6. Style F		6. 3PDT 12 Terminal ②			6. Blue	
7. Style G ①		7. 4PDT 12 Terminal ②			7. Purple	
8. Style H		8. 4PDT 16 Terminal ②			8. Gray	
					9. White	

① See P1 Series information for front panel appearance details.
 ② Available in case styles 1 and 4 only.
 ③ Not available in case styles 1 and 4.
 ④ Available in circuit form 3 and 4 only.

BUSHING MOUNT PUSHBUTTONS FOR B2 & B3 BASICS



P4-10050-x



P4-10149-x

Rugged Sealed Panel

These rugged, sealed aluminum pushbutton actuators are anodized in a variety of colors. Available in one and two pole models. An O-ring provides the panel seal to keep out water and dust from the basic switches behind the panel.

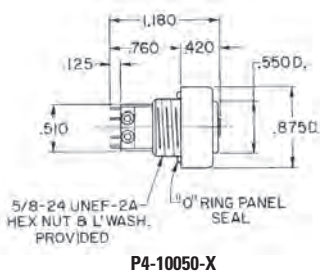
Operating Force:

1 Pole: 2.5 lbs. max
2 Pole: 4.0 lbs.

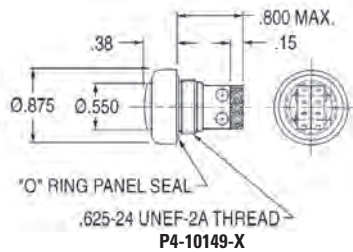
To order, please use Table A.

Table A

Part No. SPDT-DB	Part No. DPDT-DB	Button Color
P4-10050-1	P4-10149-1	Red
P4-10050-2	P4-10149-2	Black
N/A	P4-10149-3	Orange
N/A	P4-10149-4	Yellow
N/A	P4-10149-6	Blue
N/A	P4-10149-7	Purple
N/A	P4-10149-9	Clear



P4-10050-X



P4-10149-X

Standard Sealed TwoStep™

Ideal for applications requiring three modes of operation: "OFF," Level 1 and Level 2. Plunger seal is dusttight and moistureproof. Available in P1 series bezel styles C, F and H. Two pole only.

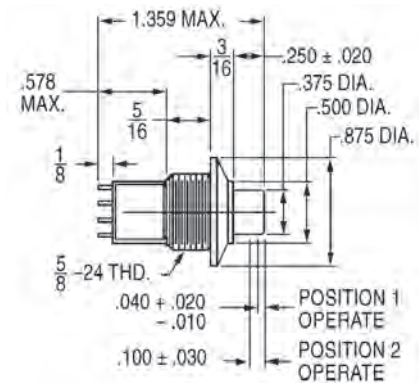
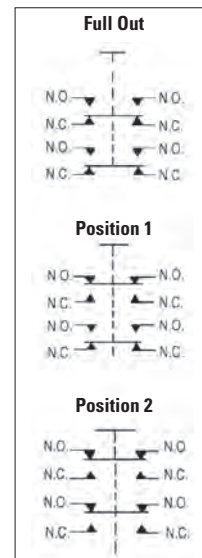


Standard Operating Force:

Position 1: 2.25 lbs. max
Position 2: 3.25 lbs. max

Total Travel: 0.140 inches max

Sequence of Action



Miniature, Offset Pushbutton

This miniature switch features an offset pushbutton to clear back of panel interference, stainless steel bushing and natural acetal button.

Operating Force: 8 oz max

Circuit: SPDT

Rating: 1 amp Resistive

Mechanical Life: 50,000 cycles

Electrical Life: 25,000 cycles

P4-900027



Special TwoStep™ Pushbutton, Dusttight Sealed

Switch "A" operates at Level 1; stays "on" when Level 2 operates Switch "B".

Circuit: SPDT 2 circuit

Rating: 5 amps Resistive
3 amps Inductive @ 28VDC

Operating Force: Level 1: 1.75 +/- 0.5 lb.
Level 2: 2.75 +/- 0.5 lb.

Button: Red nylon

P4-20002



Style F, Panel Sealed, 2 Pole

Moistureproof and dusttight sealed switch features the "F" style bezel, as illustrated on previous page. Button is molded of gray nylon.

Total Travel: 0.100" max

Operating Force: 4.0 lbs. +/- 1.0 lb.

Circuit: DPNO-DB

Rating: 10 amps Resistive
5 amps Inductive

Mechanical Life: 50,000 cycles

Electrical Life: 25,000 cycles

P4-600009



Splash and Dusttight Sealed, 2 Pole, 4 Circuit

Operating Force: 4.0 lbs. +/- 1.0 lb.

Circuit: DPDT 4 circuit

Rating: 5 amps Resistive
3 amps Inductive

Contacts: Gold plate per MIL-PRF-8805/101-010

Button: Black nylon

P4-10044



BUSHING MOUNT PUSHBUTTONS FOR B2 & B3 BASICS

Square Button, Single Pole, 2 Circuit

This subminiature pushbutton switch features a button molded of Lexan.

Operating Force: 24 +/- 4 oz

Rating: 5 amps Resistive
3 amps Inductive

Contacts: Gold plate

White and other colors available.

P4-300015



Vandal Resistant

Brass plated dull nickel housing and button is watertight sealed. Ideal for unattended machines operated by the public.

Total Travel: 0.10" max

Operating Force: 4.0 lbs. max

Circuit: DPNO-DB

Mechanical Life: 250,000 cycles

Bezel: 0.969" dia.

Button: 0.600" dia.

P4-10155-2

For larger 1.5" dia., SPNO-DB design, see P1-90135-2.



Watertight Panel Sealed Double Pole

Dress ring has O-ring provision for watertight panel seal. Button and case are black. Switch uses MIL-PRF-8805/101 basics. Seal is watertight. Operating force is 4.0 lbs.

P4-900003



1/4-40 Bushing, SPDT 2 Circuit

This subminiature pushbutton switch features an anti-turn device to facilitate installation.

Operating Force: 10 oz max

Rating: 8 amps Resistive @ 28VDC

Bushing: Stainless steel

Bracket: Stainless steel

Button: Nylon

P4-10029



6 Pole, Right Angle, PC Mount

Solders into printed circuit board. Basic switches per MIL-PRF-8805/4.

Operating Force: 3.5 lbs. max

Rating: 1 amp Resistive

Contacts: Gold

Button Color: Choice of nine colors

P4-10073-X

(X denotes button color)



2 Pole, Right Angle, Bushing Mount—Single and TwoStep™ Versions

Right angle bushing mount assembly of basic switches. Either 2-mode momentary or 3-mode. TwoStep™ (OFF-Level 1-Level 2) action.

Operating Force: 24 +/- 4 oz

Rating: 8 amps Resistive

Plunger: Red nylon (Other colors available)

Bushing: Stainless steel

Single Level: P4-10022

TwoStep™: P4-20003



8 Pole, Positive Detent, Sealed

Circuit: 8 PDT

Rating: 1 amp Resistive
0.5 amps Inductive

Bracket: Stainless steel

Bushing: Aluminum black anodized

Button: Nylon, choice of nine colors

P4-10082-X

(X denotes button color)



Shroud Protected Button, 2 Pole

Button is protected against accidental actuation by a black anodized shroud.

Operating Force: 4.0 lbs. +/- 1.0 lb.

Rating: 5 amps Resistive
2 amps Inductive @ 28VDC

Button: Red nylon

P4-900013



Miniature with Shrouded Pushbutton, Unsealed

Total Travel: 0.070" max

Operating Force: 2.5 lbs. max

Circuit: DPDT-DB

Rating: 8 amps Resistive @ 28VDC

Button: Black nylon

Housing: Clear anodized aluminum

Plunger: Unsealed

P4-10090



Miniature with Shrouded Pushbutton, Dusttight Sealed

Total Travel: 0.100" max

Operating Force: 4.0 lbs. max

Circuit: DPDT-DB

Rating: 8 amps Resistive @ 28VDC

Button: Black nylon

Housing: Black anodized aluminum

Plunger: Dusttight sealed

P4-900019



SEALED AGAINST DUST & MOISTURE

The P5 Alternate Action switches match the P1, P3 and P8 Momentary Action Pushbutton models for mixed function with common panel appearance. Now you can design panels with both alternate and momentary action switches and have uniform panel appearance. The P5 features alternate action in the same pushbutton and housing configuration as the momentary P1 and P3 and as a bonus, the P5 requires less behind the panel space than the P1 and P3 momentary versions.

Push and the P5 switch turns "on." Push again and the P5 switch turns "off." Positive tactile feedback is featured so the operator is clearly aware the switch mode has been executed. The button returns to the original position after each actuation.

To guard against front panel splash and dirt, the P5 series is sealed at the button with OTTO's patented "rolling sleeve" principle. The terminals are sealed with epoxy, providing a seal against flux during wiring and behind panel dirt and moisture. The combination of sealing provides smooth operation over a wide temperature range. Watertight sealing to IP68S is available.

A vandal resistant style is available in the P5-V series. Custom housings, shrouded buttons, contact configurations and materials are available to suit your application requirements. We also provide custom button engraving with epoxy ink backfill, watertight versions and other special characteristics.

Features:

- Button sealed with patented "rolling sleeve" principle
- Contact area sealed at case & terminals
- Moistureproof & dusttight to IP64 & MIL-PRF-8805 Design 2 or watertight to IP68S
- Less than 25mΩ contact resistance
- Handles low level up to 10 amps
- Variety of mounting styles
- Engraved buttons available
- Choice of 9 button & 3 bezel colors
- Panel appearance matches most other OTTO momentary pushbutton switches
- Unsealed construction also available
- RoHS/WEEE/Reach compliant

"Push On, Push Off" action



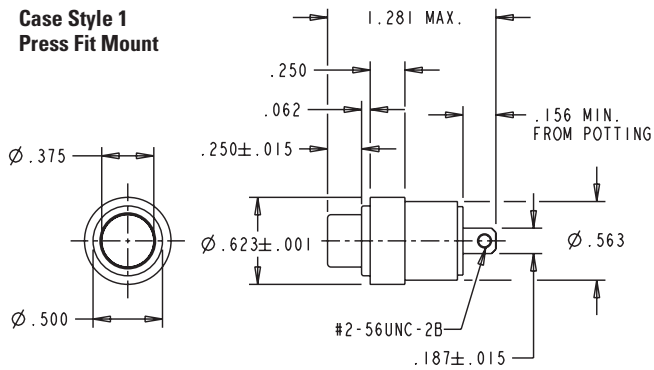
Standard Characteristics/Ratings:	
ELECTRICAL RATINGS:	
Load	Sea Level @ 28VDC or 115VAC, 60/400Hz
Resistive	10A
Inductive	5A
Lamp	1A
Motor	3A
DWV	1050Vrms
Low Level	10mA @ 30mV
Electrical Life:	25,000 cycles
Mechanical Life:	1,000,000 cycles
Seal:	IP64 & MIL-PRF-8805 Design 2 or IP68S
Operating Temp Range:	-55°C to +85°C
Operating Force:	3.0 lbs. +/-0.5 lb.
Total Travel:	0.180 inches max
Overtravel:	0.012 inches min
MATERIALS:	
Case:	Anodized aluminum alloy
Button:	Thermoplastic
Terminals:	Brass, silver plate or gold plate for low level
Terminal Hardware:	Terminal lugs, lockwasher and screw for screw terminal option
Mounting Hardware:	Hex nut, lockwasher and panel seal on watertight switches

ALTERNATE ACTION PUSHBUTTONS

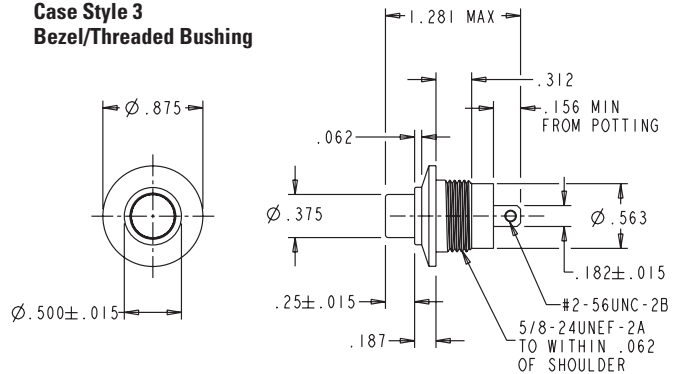
P5
ALTERNATE ACTION

SEALED AGAINST DUST & MOISTURE

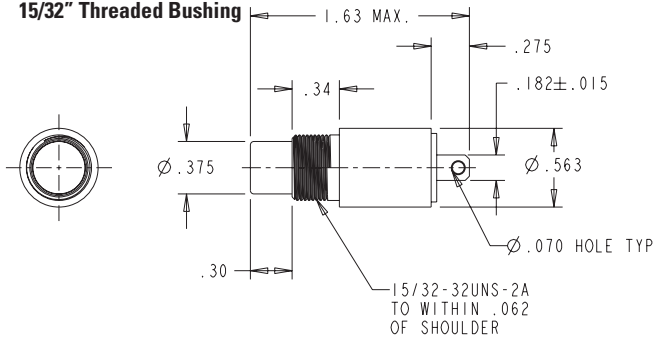
P5-1 Series Case Style 1 Press Fit Mount



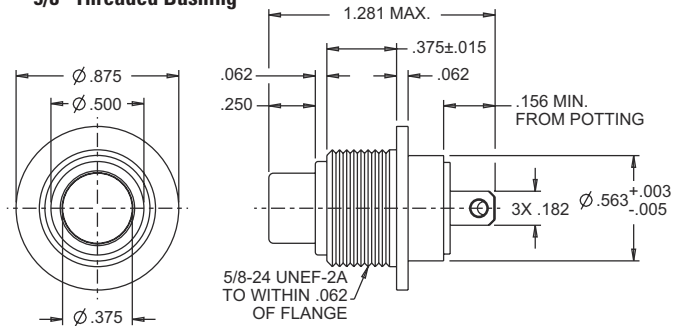
P5-3 Series Case Style 3 Bezel/Threaded Bushing



P5-4 Series Case Style 4 15/32" Threaded Bushing



P5-6 Series Case Style 6 5/8" Threaded Bushing



P5 PART NUMBER CODE

Case Style	Terminal Style	Circuit Form/Contact Material/Grade	Seal Level	Bezel Color	Button Color
1. Style 1	1. Solder	1. SPST/Silver/Commercial	1. Unsealed	1. Silver	1. Red
3. Style 3	2. Screw ①	2. SPST/Gold/Commercial	2. Dusttight	2. Black	2. Black
4. Style 4	3. 0.250" Quick Connect	3. SPDT/Silver/Commercial	3. Watertight	3. Red	3. Orange
6. Style 6		4. SPDT/Gold/Commercial			4. Yellow
		5. SPST/Silver/Military Grade			5. Green
		6. SPST/Gold/Military Grade			6. Blue
		7. SPDT/Silver/Military Grade			7. Purple
		8. SPDT/Gold/Military Grade			8. Gray
					9. White

① Screw terminals available on SPST circuit forms only.

ATTRACTIVE & RUGGED FOR WET & DUSTY ENVIRONMENTS

The rugged P5-D switch is an alternate action “push on, push off” pushbutton switch with contoured dome styling. With two design versions, a flush dome and raised dome button profile, the P5-D offers excellent mechanical and electrical performance while operating under severe conditions found in demanding applications.

The P5-D features unsealed, dusttight, moistureproof and watertight seal options. A mechanical life of one million cycles, 25,000 cycles at full load.

The P5-D is a quality precision, snap-action switch designed for use in panels, instruments and other demanding applications where attractive, rugged pushbutton switches are required.

“Push On, Push Off” action

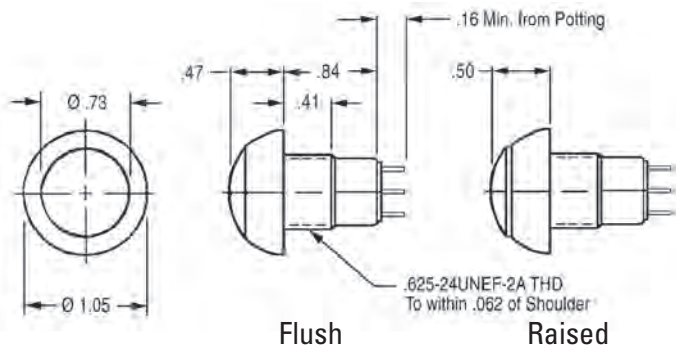


Flush Dome Button



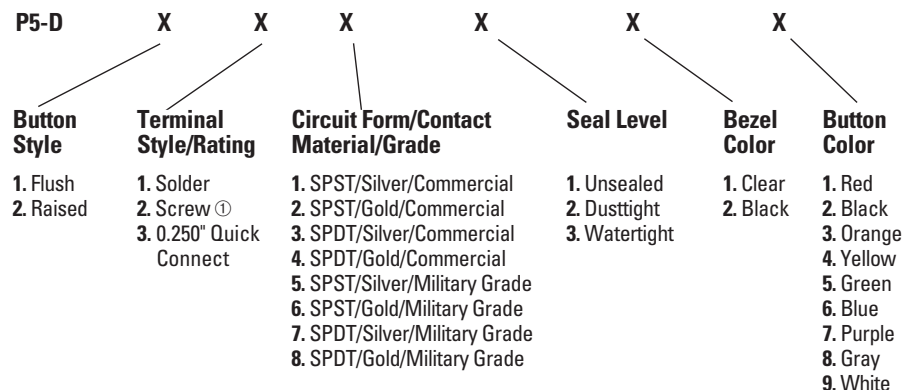
Features:

- 2 contoured button styles
- Button sealed with patented “rolling sleeve” principle
- Contact area sealed at case & terminals
- Less than 25mΩ contact resistance
- Handles low level up to 10 amps
- Choice of 9 button colors
- Moistureproof & dusttight to IP64 & MIL-PRF-8805 Design 2 or watertight to IP68S options
- Unsealed construction also available
- RoHS/WEEE/Reach compliant



Standard Characteristics/Ratings:	
ELECTRICAL RATINGS:	
Load	Sea Level @ 28VDC or 115VAC, 60/400Hz
Resistive	10A
Inductive	5A
Lamp	1A
Motor	3A
DWV	1050Vrms
Electrical Life:	25,000 cycles
Mechanical Life:	1,000,000 cycles
Seal:	IP64 & MIL-PRF-8805 Design 2 or IP68S
Operating Temp Range:	-55°C to +85°C
Operating Force:	3.0 lbs. +/-0.5 lb.
Total Travel:	0.180 inches max
Overtravel:	0.012 inches min
MATERIALS:	
Case:	Anodized aluminum alloy
Button:	Thermoplastic
Terminals:	Brass with gold over silver
Terminal Hardware:	Screws, lockwashers and terminal lugs for screw terminal option
Mounting Hardware:	Hex nut, lockwasher

P5-D PART NUMBER CODE



① Screw terminals available on SPST circuit forms only.

VANDAL RESISTANT PUSHBUTTONS

P5-V

VANDAL RESISTANT
PUSHBUTTONS

ALTERNATE ACTION, SEALED AGAINST DUST & MOISTURE

The P5-V switch gives you all the functionality of the P5 Alternate Action switch with the added benefit of an aluminum security level case and button or a stainless steel vandal resistant case and button.

Push and the P5-V switch turns “on.” Push again and the switch turns “off.” Positive tactile feedback is featured so the operator is clearly aware the switch has been actuated. The button returns to the original position after each actuation.

To guard against front panel splash and dirt the P5-V is sealed at the button with OTTO’s patented “rolling sleeve” design. The terminals are sealed with epoxy, providing a seal against flux during wiring and behind panel dirt and moisture. The combination of sealing provides smooth operation over a wide temperature range. Watertight sealing to IP68S is also available.

We are able to provide custom button engraving with epoxy ink backfill and other special characters, shrouded buttons, contact configurations and materials to suit your application requirements.



High Profile
Flat Button

High Profile
Curved Button



Features:

- Security (aluminum) or vandal resistant (stainless steel) case & button
- Button sealed with patented “rolling sleeve” design
- Contact area sealed at case & terminals
- Watertight to IP68S or dusttight & moistureproof to IP64
- Less than 25mΩ contact resistance
- Handles low level up to 10 amps
- 1 million mechanical cycle life
- RoHS & WEEE Compliant

Standard Characteristics/Ratings:

ELECTRICAL RATINGS:

Load	Sea Level @ 28VDC or 115VAC, 60/400Hz
Resistive	10A
Inductive	5A
Lamp	1A
Motor	3A
DWV	1050Vrms
Low Level	10mA @ 30mV
Electrical Life:	25,000 cycles
Mechanical Life:	1,000,000 cycles
Seal:	IP64 or IP68S
Operating Temp Range:	-55°C to +85°C
Operating Force:	3.0 lbs. +1/-0.5 lb.
Total Travel:	0.180 inches max
Overtravel:	0.012 inches min

MATERIALS:

Case:	Anodized aluminum alloy or stainless steel
Button:	Anodized aluminum alloy or stainless steel
Terminals:	Brass with gold over silver
Terminal Hardware:	Screw, lockwasher and terminal lug when applicable
Mounting Hardware:	Hex nut or knurl nut, lockwasher and panel seal when applicable

SEALED AGAINST DUST & MOISTURE

<p>High Profile, Flat Button Bezel Profile/Button Style 1</p>	<p>Low Profile, Curved Button Bezel Profile/Button Style 4</p>															
<p>High Profile, Curved Button Bezel Profile/Button Style 2</p>	<p>Flush Mount, Flat Button Bezel Profile/Button Style 5</p>															
<p>Low Profile, Flat Button Bezel Profile/Button Style 3</p>	<div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>.625-24 UNEF-2A</p> </div> <div style="text-align: center;"> <p>.750-20 UNEF-2A</p> </div> </div> <table border="1" style="width: 100%; text-align: center;"> <thead> <tr> <th colspan="3">Case Style</th> </tr> <tr> <th>Dimension</th> <th>1 - 4</th> <th>5 - 8</th> </tr> </thead> <tbody> <tr> <td>A (Button Dia.)</td> <td>0.53</td> <td>0.590</td> </tr> <tr> <td>B (Thread)</td> <td>0.625-24 UNEF-2A</td> <td>0.750-20 UNEF-2A</td> </tr> <tr> <td>D-Flat</td> <td>0.59 or 0.594</td> <td>0.718</td> </tr> </tbody> </table>	Case Style			Dimension	1 - 4	5 - 8	A (Button Dia.)	0.53	0.590	B (Thread)	0.625-24 UNEF-2A	0.750-20 UNEF-2A	D-Flat	0.59 or 0.594	0.718
Case Style																
Dimension	1 - 4	5 - 8														
A (Button Dia.)	0.53	0.590														
B (Thread)	0.625-24 UNEF-2A	0.750-20 UNEF-2A														
D-Flat	0.59 or 0.594	0.718														

P5-V PART NUMBER CODE

P5	-	X	X	X	X	X	X
Type	Thread	Terminal Style/ Bezel Color	Circuit Form/ Contact Material	Seal	Bezel Profile/ Button		
V. Stainless A. Aluminum	1. 5/8-24 & Hex Nut 2. 5/8-24 & Knurl Nut 3. 5/8-24 W/D-Flat & Hex Nut 4. 5/8-24 W/D-Flat & Knurl Nut 5. 3/4-20 & Hex Nut 6. 3/4-20 & Knurl Nut 7. 3/4-20 W/D-Flat & Hex Nut 8. 3/4-20 W/D-Flat & Knurl Nut	1. Solder Terminal/Silver 2. Screw Terminal/Silver ② 3. Solder Terminal/Black ① 4. Screw Terminal/Black ①②	1. SPST/Silver 2. SPST/Gold 3. SPDT/Silver 4. SPDT/Gold	1. Dusttight 2. Watertight	1. High Profile/Flat Button 2. High Profile/Curved Button 3. Low Profile/Flat Button 4. Low Profile/Curved Button 5. Flush Profile		

① Only Available on P5-A Styles.
② Screw terminals available on SPST circuits only.

MOMENTARY ACTION, SEALED SUBMINIATURE PUSHBUTTON SNAP-ACTION SWITCHES

The P7 series incorporates OTTO's patented double break design in a significantly smaller package than the P1 series. These subminiature switches embrace today's technology requirements by allowing for a large number of switches to fit within a faceplate.

The long life snap-action design is protected from the environment by a silicone rubber boot, operating on a patented "rolling sleeve" principle that gives long sealed life and smooth operation.

The P7 series is designed to meet the requirements of MIL-PRF-8805 including low level switching (10mA @ 30mV) with power switching up to 5 amps at 28VDC as well.

A variety of mounting styles are offered to best match the application. The P7-1, P7-2, P7-7 and P7-8 case styles feature a swaged bushing shape to allow press fit installation in aircraft flight control and hand grips and similar applications. The other styles feature threaded bushing mounting. The P7-3 case style has a front panel bezel, while the P7-5 and P7-6 have conventional bushings for rear panel mounted installations. Silver or black bezels are standard. Other colors available on special order.

Pushbuttons are available in a choice of nine colors. Excellent tactile feedback assures the operator that contact transfer has been made.

A choice of MIL-SPEC and commercial versions of these switches are offered: Moistureproof and dusttight to IP64 and MIL-PRF-8805 Design 2 or watertight to IP68S and to MIL-PRF-8805 Design 3.

Features:

- Low level switching capability
- Less than 25mΩ contact resistance
- High contact pressure
- 6 circuit variations
- Positive tactile feedback
- Variety of mounting styles
- Qualified to MIL-PRF-8805/110
- Moistureproof & dusttight to IP64 & MIL-PRF-8805 Design 2 or watertight to IP68S & MIL-PRF-8805 Design 3
- RoHS/WEEE/Reach compliant



Standard Characteristics/Ratings:						
ELECTRICAL RATINGS:		Sea Level @ 28VDC			50,000 feet @ 28VDC	
Load	Circuits:	1 & 2	3-5	6	1 & 2	3-5 6
Resistive		5A	2.5A	4A	5A	2.5A 4A
Inductive		3A	1.5A	2A	3A	1.5A 2A
Lamp		1A	0.5A	N/A	N/A	N/A N/A
Motor		3A	1.5A	N/A	N/A	N/A N/A
DWV		1050Vrms			400Vrms	
Center Contact		3A max				
Low Level		10mA @ 30mV				
Electrical Life:		25,000 cycles				
Mechanical Life:		1,000,000 cycles				
Seal:		IP64 and MIL-PRF-8805 Design 2 or IP68S and MIL-PRF-8805 Design 3				
Operating Temp Range:		-55°C to +85°C				
Operating Force:		1.7 +/- 0.5 lb.				
Total Travel:		0.080 inches max				
Overtravel:		0.010 inches min				
MATERIALS:						
Case:		Anodized aluminum alloy				
Button:		Thermoplastic				
Terminals:		Brass with gold over silver				
Terminal Hardware:		None provided				
Mounting Hardware:		Hex nut, lockwasher and panel gasket when applicable				

SEALED AGAINST DUST & MOISTURE, LOW LEVEL SWITCHING OPTION

<p>P7-1 Series</p> <p>Case Style 1 Press Fit Mount</p> <p>Also available with PC terminals.</p>		<p>P7-6 Series</p> <p>Case Style 6 15/32" Threaded Bushing</p> <p>Also available with PC pins.</p>																																																																									
<p>P7-2 Series</p> <p>Case Style 2 Press Fit Mount</p> <p>Also available with PC pins.</p>		<p>P7-7 Series</p> <p>Case Style 7 Press Fit Mount</p> <p>Also available with PC pins.</p>																																																																									
<p>P7-3 Series</p> <p>Case Style 3 Bezel/Threaded Bushing</p> <p>Also available with PC pins.</p>		<p>P7-8 Series</p> <p>Case Style 8 Press Fit Mount Guarded Button</p> <p>Also available with PC pins.</p>																																																																									
<p>P7-5 Series</p> <p>Case Style 5 1/4" Threaded Bushing</p> <p>Also available with PC pins.</p>		<p>Terminal Style "A" & "B"</p> <p>Standard</p>																																																																									
<p>PC Pin Mounting Pattern</p> <p>(As viewed from switch bottom. See above drawings for terminal identification.)</p>	<p align="center">P7 PART NUMBER CODE</p> <p align="center">P7 - X X X X X X</p> <table border="0"> <thead> <tr> <th>Case Style</th> <th>Terminal Style/Construction Grade</th> <th>Circuit Form</th> <th>Contact Rating</th> <th>Bezel Color/ Button Dia.</th> <th>Button Color</th> </tr> </thead> <tbody> <tr> <td>1. Style 1</td> <td>A. Solder/Commercial</td> <td>1. N.O.</td> <td>1. Std.</td> <td>1. Clear/Std.</td> <td>1. Red</td> </tr> <tr> <td>2. Style 2</td> <td>B. Solder/Watertight</td> <td>2. N.C.</td> <td>2. Low Level</td> <td>2. Black/Std.</td> <td>2. Black</td> </tr> <tr> <td>3. Style 3</td> <td>Commercial</td> <td>3. N.C. 3 Terminal</td> <td></td> <td>3. Clear/0.312 ①</td> <td>3. Orange</td> </tr> <tr> <td>5. Style 5</td> <td>1. Solder/Military/Short</td> <td>4. N.O. 3 Terminal</td> <td></td> <td>4. Black/0.312 ①</td> <td>4. Yellow</td> </tr> <tr> <td>6. Style 6</td> <td>2. Solder/Commercial/Short</td> <td>5. 5 Terminal</td> <td></td> <td></td> <td>5. Green</td> </tr> <tr> <td>7. Style 7</td> <td>3. Solder/Mil. Watertight/Short</td> <td>6. 2 Circuit</td> <td></td> <td></td> <td>6. Blue</td> </tr> <tr> <td>8. Style 8</td> <td>4. PC Pin/Commercial</td> <td></td> <td></td> <td></td> <td>7. Purple</td> </tr> <tr> <td></td> <td>5. PC Pin/Military</td> <td></td> <td></td> <td></td> <td>8. Gray</td> </tr> <tr> <td></td> <td>6. PC Pin/Mil. Watertight</td> <td></td> <td></td> <td></td> <td>9. White</td> </tr> <tr> <td></td> <td>7. Solder/Com. Watertight/Short</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td></td> <td>8. PC Pin/Com. Watertight</td> <td></td> <td></td> <td></td> <td></td> </tr> </tbody> </table> <p>① Not available with Case Styles 1, 2 & 5.</p>			Case Style	Terminal Style/Construction Grade	Circuit Form	Contact Rating	Bezel Color/ Button Dia.	Button Color	1. Style 1	A. Solder/Commercial	1. N.O.	1. Std.	1. Clear/Std.	1. Red	2. Style 2	B. Solder/Watertight	2. N.C.	2. Low Level	2. Black/Std.	2. Black	3. Style 3	Commercial	3. N.C. 3 Terminal		3. Clear/0.312 ①	3. Orange	5. Style 5	1. Solder/Military/Short	4. N.O. 3 Terminal		4. Black/0.312 ①	4. Yellow	6. Style 6	2. Solder/Commercial/Short	5. 5 Terminal			5. Green	7. Style 7	3. Solder/Mil. Watertight/Short	6. 2 Circuit			6. Blue	8. Style 8	4. PC Pin/Commercial				7. Purple		5. PC Pin/Military				8. Gray		6. PC Pin/Mil. Watertight				9. White		7. Solder/Com. Watertight/Short						8. PC Pin/Com. Watertight				
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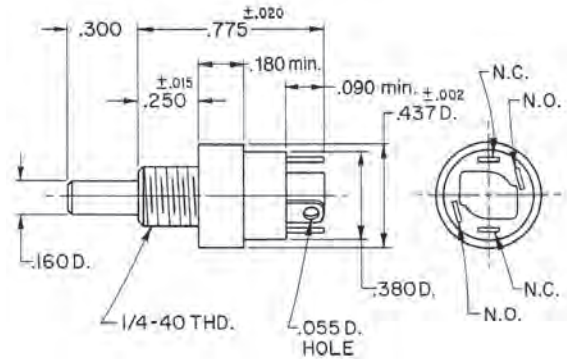
EXAMPLES OF CUSTOMIZED P7 SEALED PUSHBUTTONS



Special Longer Length Button

Panel seal gasket and watertight enclosure. Button is black nylon. Bezel is black anodized aluminum alloy.

Actuation Momentary
OTTO Part Number P7-500001

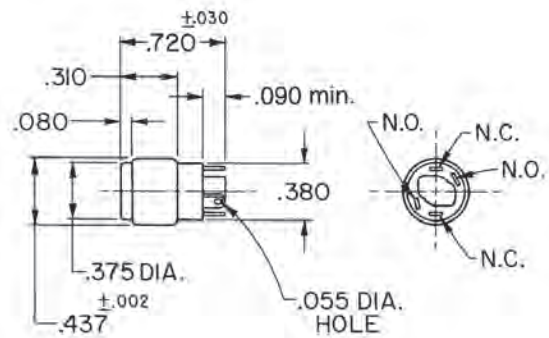


Special Large Button, Press Fit

Available with a 0.375" dia. button with three color options.

Color Red Black White
OTTO Part Number P7-900001 P7-900002 P7-900009

Contact factory for additional button color options.



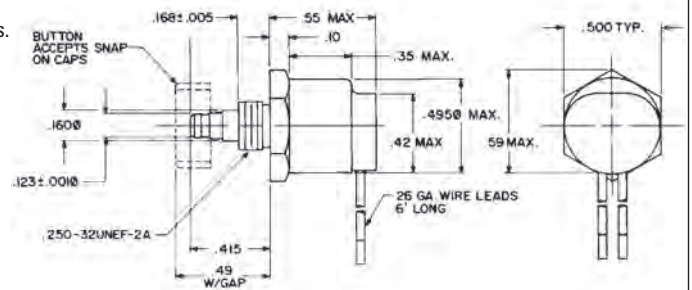
Special Snap-On Button, Wire Leads

Features changeable snap-on button caps available in two diameters and in a range of colors. Switch is splashproof sealed per MIL-PRF-8805 and is supplied with a silicone panel gasket.

Part Number: P7-500018

Button Color	0.440" Dia.	0.375" Dia.
Red	C400725-1	C400723-1
Black	C400725-2	C400723-2
Orange	C400725-3	C400723-3
White	C400725-9	C400723-9

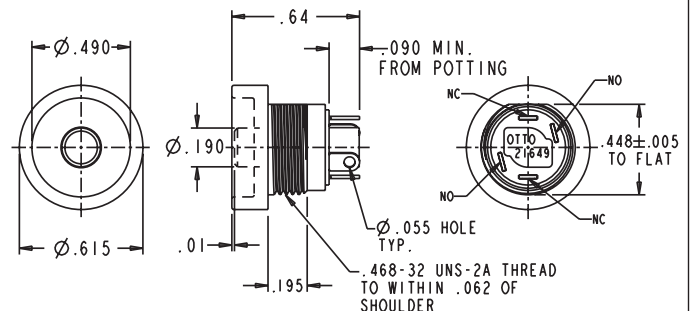
Contact factory for additional button color options.



Mini Pushbutton, Shrouded

This shrouded pushbutton is designed to reduce the chance of inadvertent actuation. Button size is .19". Enclosure design is watertight per IP68S.

Actuation Momentary
OTTO Part Number P7-900196



MOMENTARY ACTION, ATTRACTIVE & RUGGED FOR WET & DUSTY ENVIRONMENTS

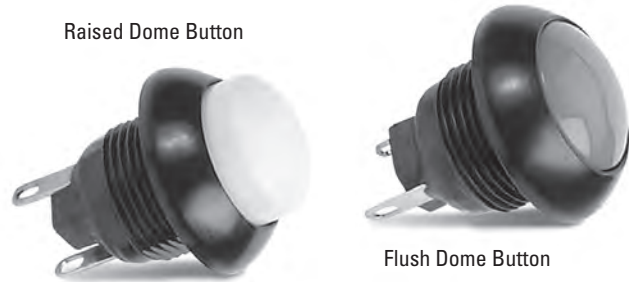
The P7-D pushbutton switch is a momentary switch with a contoured dome style pushbutton. Two design versions are offered; flush dome and raised dome button profile. The P7-D features a shorter behind panel depth, dusttight and moistureproof sealed construction excellent mechanical and electrical performance while operating under the most severe conditions. one million operations at 1 amp resistive, 50,000 at full rated load of 5 amps resistive or 3 amps inductive.

The P7-D is a double break switch with momentary circuit, the positive tactile feedback signals the operator when the switch is operated. Multiple contact variations are available as well as a variety of special order button legends. High contact pressure and unique contact design provide low contact resistance for low level switching capability as well as full rated service.

This quality precision snap-action switch is designed for use in instrument panels, grips, computers, heavy equipment and other applications where attractive rugged pushbutton switches are required.

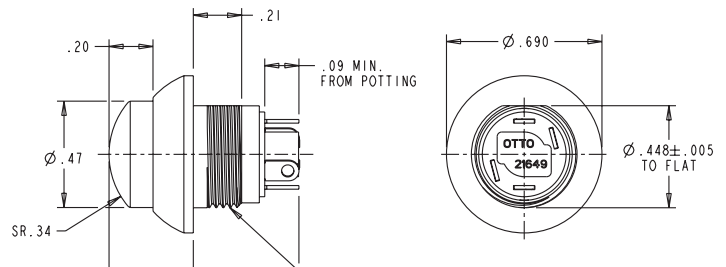
Features:

- Attractive dome style buttons
- Low level switching capability
- Less than 25mΩ contact resistance
- High contact pressure
- 6 circuit variations
- Positive tactile feedback
- Variety of mounting styles
- Constructed in accordance with MIL-PRF-8805/110 (no QPL)
- UL recognized & CSA certified
- Dusttight to IP64 & MIL-PRF-8805 Design 2 or watertight to IP68S
- RoHS/WEEE/Reach compliant

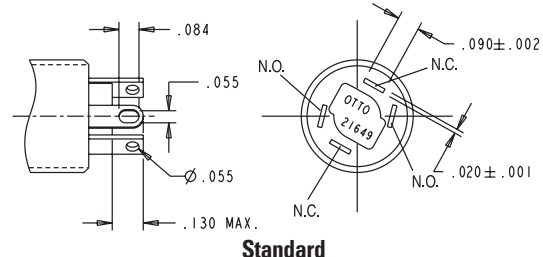


Standard Characteristics/Ratings:		
ELECTRICAL RATINGS:	Sea Level @ 28VDC or 115VAC, 60/400Hz	
Load	N.O./N.C.	Life Cycles
Resistive	1A	1,000,000
Resistive	5A	50,000
Inductive	3A	50,000
DWV	1050Vrms	
Low Level	10mA @ 30mV max	25,000
Electrical Life:	See Rating Chart	
Mechanical Life:	1,000,000 cycles	
Seal:	IP64 & MIL-PRF-8805 Design 2 or IP68S	
Operating Temp Range:	-55°C to +85°C	
Operating Force:	1.7 +/- 0.5 lb. (standard force)	
Total Travel:	0.080 inches max	
MATERIALS:		
Case:	Anodized aluminum alloy	
Button:	Thermoplastic	
Contacts:	Brass with gold over silver	
Terminal Hardware:	None provided	
Mounting Hardware:	Hex nut, lockwasher and panel seal on watertight versions	

Terminal Style Short



Terminal Style "A" & "B"



Standard

NOTE: For PC mounting pattern, see P7 series.

P7-D PART NUMBER CODE

P7-D	X	X	X	X	X	X
Button Style	Terminal Style/ Construction Grade	Circuit Form	Contact Rating	Bezel Color	Button Color	
F. Flush	A. Std. Commercial Solder	1. N.O.	1. Std.	1. Clear	1. Red	
R. Raised	B. Std. Watertight Commercial Solder	2. N.C.	2. Low Level	2. Black	2. Black	
	1. Solder/Military/Short	3. N.C. 3 Terminal			3. Orange	
	2. Solder/Commercial/Short	4. N.O. 3 Terminal			4. Yellow	
	3. Solder/Mil. Watertight/Short	5. 5 Terminal			5. Green	
	4. PC Pin/Commercial	6. 2 Circuit			6. Blue	
	5. PC Pin/Military				7. Purple	
	6. PC Pin/Mil. Watertight				8. Gray	
	7. Solder/Com. Watertight/Short				9. White	
	8. PC Pin/Com. Watertight					

COMPACT PUSHBUTTONS

P8
COMPACT
PUSHBUTTONS

MOMENTARY OR PUSH-PULL ACTION, SHORTER BEHIND PANEL, SUBMINIATURE DOUBLE BREAK

Makes and breaks every time!
OTTO's inherent rocking action
breaks, welds and wipes contacts clean.

The P8 series pushbutton switches feature a shortened back panel depth while offering all the features of the regular size P1 and P3 series switches. P8 series switches offer vastly improved electrical and mechanical life under extreme conditions found in most military and industrial environments.

On sealed models, a silicone boot operating on our patented "rolling sleeve" principle protects the contact area against contamination at the button area. This boot provides long life and smooth operation over a wide temperature range. Sealed terminals protect the contact area from hostile environments and solder flux on both sealed and unsealed models.

High contact force (120g/4.2 oz), low contact resistance (25mΩ max) and short contact bounce are the result of our snap-action mechanism. These characteristics guarantee exceptional current carrying capabilities over the life of the switch. With the optional low level configuration the P8 is well suited to interface directly to computers and other solid state devices.

The P8 series is a quality precision snap-action switch designed for use in panel boards, control sticks, computers, instruments, pressure switches and other hand or machine operated applications where rugged pushbutton switches are required. In addition, its precision permits the OTTO P8 to also be used as a limit switch. The P8 offers unique size, high electrical ratings and a wide choice of mounting styles.

Features:

- Shorter behind panel depth than OTTO's P1/P3
- Patented "rolling sleeve" button seal
- Contact area sealed at button & terminals
- Positive tactile feedback
- Less than 25mΩ contact resistance
- Variety of mounting styles
- Variety of button lengths & shapes
- Engraved buttons & bezels available
- Mechanical life 1 million cycles
- UL recognized & CSA certified
- Sealed to IP64 or IP68S
- RoHS/WEEE/Reach compliant



Standard Characteristics/Ratings:

ELECTRICAL RATINGS:

Load	Sea Level @ 28VDC or 115VAC, 60/400Hz
Resistive	10A
Inductive	5A
Lamp	3A
DVV	1050Vrms
Low Level	10mA @ 30mV

Electrical Life: 100,000 cycles (25,000 low level)

Mechanical Life: 1,000,000 cycles

Seal: IP64 or IP68S

Operating Temp Range: -55°C to +85°C

Operating Force: 2.5 lbs. +0.5/-1.0 lb. or 4.0 lbs. +/- 1.0 lb.

Total Travel: 0.085 +/- 0.015 inches

Overtravel: 0.012 inches min

MATERIALS:

Case: Anodized aluminum alloy

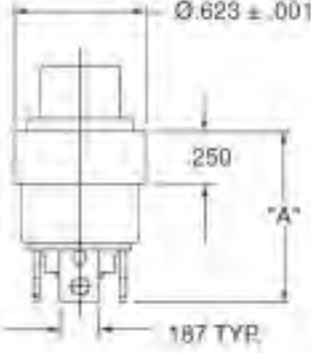

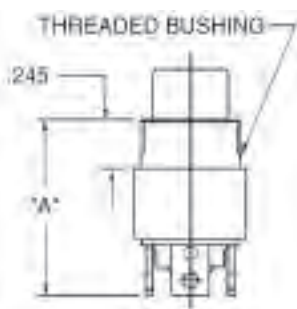
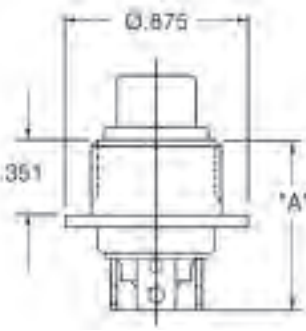
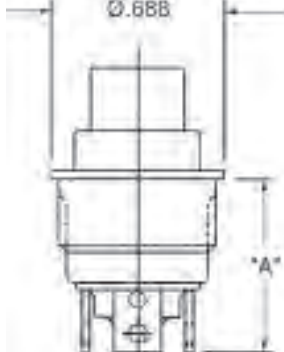
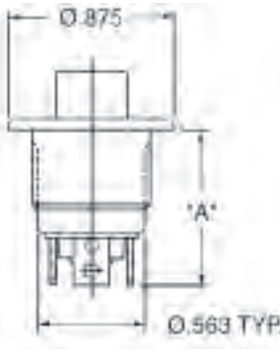
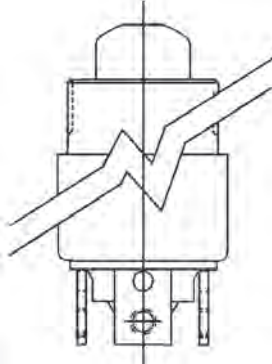
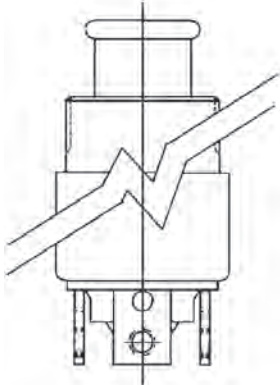
Button: Thermoplastic

Terminals: Brass with gold

Terminal Hardware: Terminal lugs, screws and lockwasher where applicable

Mounting Hardware: Hex nut, lockwasher, panel seal gasket when applicable

MOMENTARY OR PUSH-PULL ACTION, SHORTER BEHIND PANEL, SUBMINIATURE DOUBLE BREAK

<p>P8-1, Style A Bezel Press Fit Bushing Flat Button Shape Shown Specify Dia.: 0.312" or 0.375" Height: 0.187" or 0.250"</p>  <table border="1"> <thead> <tr> <th>Terminal Styles</th> <th>"A" (inches)</th> </tr> </thead> <tbody> <tr> <td>1, 2, 4 & 5</td> <td>0.808</td> </tr> <tr> <td>3 & 6</td> <td>0.922</td> </tr> </tbody> </table>	Terminal Styles	"A" (inches)	1, 2, 4 & 5	0.808	3 & 6	0.922	<p>P8-3, Style C Bezel 0.625-24 Bushing Flat Button Shape Shown Specify Dia.: 0.312" or 0.375" Height: 0.187" or 0.250"</p>  <table border="1"> <thead> <tr> <th>Terminal Styles</th> <th>"A" (inches)</th> </tr> </thead> <tbody> <tr> <td>1, 2, 4 & 5</td> <td>0.683</td> </tr> <tr> <td>3 & 6</td> <td>0.797</td> </tr> </tbody> </table>	Terminal Styles	"A" (inches)	1, 2, 4 & 5	0.683	3 & 6	0.797	<p>Small Bushing P8-4: 0.500-32 Bushing P8-5: 0.469-32 Bushing Flat Button Shape Shown Specify Dia.: 0.312" or 0.375" Height: 0.187" or 0.250"</p>  <table border="1"> <thead> <tr> <th>Model</th> <th>Terminal Styles</th> <th>"A" (inches)</th> </tr> </thead> <tbody> <tr> <td rowspan="2">P8-4</td> <td>1, 2, 4 & 5</td> <td>0.870</td> </tr> <tr> <td>3 & 6</td> <td>0.984</td> </tr> <tr> <td rowspan="2">P8-5</td> <td>1, 2, 4 & 5</td> <td>1.097</td> </tr> <tr> <td>3 & 6</td> <td>1.211</td> </tr> </tbody> </table>	Model	Terminal Styles	"A" (inches)	P8-4	1, 2, 4 & 5	0.870	3 & 6	0.984	P8-5	1, 2, 4 & 5	1.097	3 & 6	1.211	<p>P8-6, Style F Bezel 0.625-24 Bushing Flat Button Shape Shown Specify Dia.: 0.312" or 0.375" Height: 0.187" or 0.250"</p>  <table border="1"> <thead> <tr> <th>Terminal Styles</th> <th>"A" (inches)</th> </tr> </thead> <tbody> <tr> <td>1, 2, 4 & 5</td> <td>0.808</td> </tr> <tr> <td>3 & 6</td> <td>0.922</td> </tr> </tbody> </table>	Terminal Styles	"A" (inches)	1, 2, 4 & 5	0.808	3 & 6	0.922
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<p>P8-7, Style G Bezel 0.625-24 Bushing Flat Button Shape Shown Specify Dia.: 0.312" or 0.375" Height: 0.187" or 0.250"</p>  <table border="1"> <thead> <tr> <th>Terminal Styles</th> <th>"A" (inches)</th> </tr> </thead> <tbody> <tr> <td>1, 2, 4 & 5</td> <td>0.683</td> </tr> <tr> <td>3 & 6</td> <td>0.797</td> </tr> </tbody> </table>	Terminal Styles	"A" (inches)	1, 2, 4 & 5	0.683	3 & 6	0.797	<p>P8-8, Style H Bezel 0.625-24 Bushing Flat Button Shape Shown Specify Dia.: 0.312" or 0.375" Height: 0.187" or 0.250"</p>  <table border="1"> <thead> <tr> <th>Terminal Styles</th> <th>"A" (inches)</th> </tr> </thead> <tbody> <tr> <td>1, 2, 4 & 5</td> <td>0.810</td> </tr> <tr> <td>3 & 6</td> <td>0.924</td> </tr> </tbody> </table>	Terminal Styles	"A" (inches)	1, 2, 4 & 5	0.810	3 & 6	0.924	<p>Dome Button Shape Specify Dia.: 0.312" or 0.375" Height: 0.187" or 0.250"</p> 	<p>Push-Pull Button Shape Available as Button Style P only.</p> 																			
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ORDERING INFORMATION:

Select the OTTO P8 series switch to match your application requirements. Combinations of features are almost limitless. When ordering, please use the OTTO Part Number.

Example: P8-316329B specifies a "C" style bezel, silver color case, solder terminals, 2 circuit contact configuration, standard contact rating, watertight seal construction, 4.0 lbs. operating force momentary action, white button 0.375" diameter by 0.250" long, dome shaped. For low level switching option, specify P8-316529B.

P8 PART NUMBER CODE

Bezel Style	Terminal Style/Case Color	Circuit Form	Current Rating Level/Seal Type	Operating Force/Action	Button Color	Button Diameter/Length/Shape
1. Style A	1. Solder/Silver	1. N.O.	1. Std./Unsealed	1. 2.5 lbs./Momentary	1. Red	A. 0.375"/0.250"/Flat
3. Style C	2. Screw/Silver	2. N.C.	2. Std./Moistureproof	2. 4.0 lbs./Momentary	2. Black	B. 0.375"/0.250"/Dome
4. 0.50-32 THD	3. Faston/Silver	6. 2 Circuit	3. Std./Watertight	3. Push-Pull	3. Orange	C. 0.375"/0.187"/Flat
5. 0.469-32 THD	4. Solder/Black		4. Low Level/Moistureproof		4. Yellow	D. 0.375"/0.187"/Dome
6. Style F	5. Screw/Black		5. Low Level/Watertight		5. Green	E. 0.312"/0.250"/Flat
7. Style G	6. Faston/Black		6. Std./Dusttight		6. Blue	F. 0.312"/0.250"/Dome
8. Style H					7. Purple	G. 0.312"/0.187"/Flat
					8. Gray	H. 0.312"/0.187"/Dome
					9. White	P. 0.375"/0.250"/Flat

① Faston receptacles: 0.187" on N.O.; 0.110" on N.C. terminals.
 ② Push-pull action available in button style "P" only.
 ③ Unsealed units are not recommended for low level current duty.

VANDAL RESISTANT PUSHBUTTONS

P8-V
COMPACT
PUSHBUTTONS

MOMENTARY ACTION, SHORTER BEHIND PANEL, SUBMINIATURE DOUBLE BREAK, SNAP-ACTION

The P8 Vandal Resistant series is a durable, robust switch, offering the same quality and precision tactile feedback found in the standard P8 series. With a variety of case, mounting and terminal styles and a mechanical life of 1,000,000 cycles, this stainless steel sealed switch is ideal for door access security systems, public transit systems, emergency phones, traffic signals, industrial and process control environments and anywhere that ruggedness, durability and security are crucial.

OTTO P8 series pushbutton switches feature a shortened back of panel depth while offering all the features of the regular size P1 and P3 series switches. P8 series switches offer vastly improved electrical and mechanical life under extreme conditions found in most military and industrial environments.

On sealed models, a silicone boot operating on our patented "rolling sleeve" principle protects the contact area against contamination at the button area. This boot provides long life and smooth operation over a wide temperature range. Sealed terminals protect the contact area from hostile environments and solder flux on both sealed and unsealed models.

High contact pressure (120g/4.2 oz), low contact resistance (25mΩ) and short contact bounce (5ms max) are all a result of our snap-action mechanism. These characteristics provide exceptional current carrying capabilities over the life of the switch. Optional low level (gold plate) configuration makes the P8-V switches well suited to interface directly to computers and other solid state devices.

Features:

- **Stainless steel vandal resistant case**
- **Aluminum security level case**
- **Watertight to IP68S or moistureproof & dusttight to IP64**
- **Positive tactile feedback**
- **Less than 25mΩ contact resistance**
- **Variety of case and button styles available**
- **Mechanical life 1 million cycles**
- **UL recognized & CSA certified**
- **UL1500 ignition protected**
- **RoHS/WEEE/Reach compliant**



Flush Mount,
5/8" Thread Shown



Standard Characteristics/Ratings:

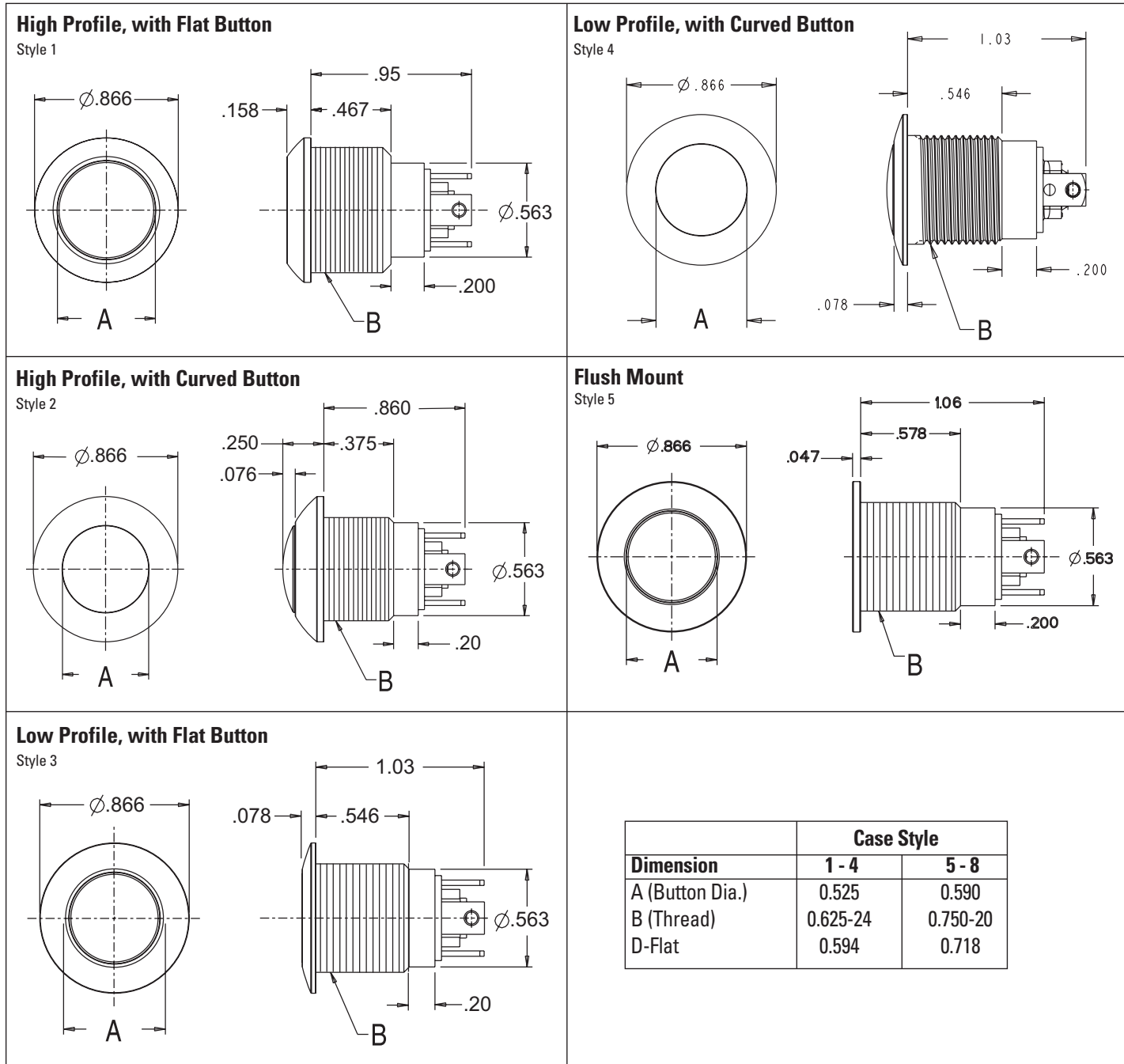
ELECTRICAL RATINGS:

Load	Sea Level @ 28VDC or 115VAC, 60/400Hz
Resistive	10A
Inductive	5A
Lamp	3A
DWV	1050Vrms
Low Level	10mA @ 30mV
Electrical Life:	100,000 cycles (25,000 low level)
Mechanical Life:	1,000,000 cycles
Seal:	IP64 or IP68S
Operating Temp Range:	-55°C to +85°C
Operating Force:	2.5 lbs. +0.5 /-1.0 lb. or 4.0 lbs. +/- 1.0 lb.
Total Travel:	0.085 +/- 0.015 inches
Overtravel:	0.012 inches min
Movement Differential:	0.015 inches min

MATERIALS:

Case:	Anodized aluminum alloy or stainless steel
Button:	Anodized aluminum alloy or stainless steel
Terminals:	Standard silver plate or optional gold plate for low level applications
Terminal Hardware:	Terminal lugs, screws and lockwasher when applicable
Mounting Hardware:	Hex nut, lockwasher and panel seal gasket when applicable

MOMENTARY ACTION, SHORTER BEHIND PANEL, SUBMINIATURE DOUBLE BREAK, SNAP-ACTION



P8-V PART NUMBER CODE

P8	-	X	X	X	X	X	X
Type	Case Style & Mounting		Terminal Style/ Case Color	Circuit Form	Current Rating/Seal	Operating Force	Button Profile
V. Vandal Resistant (SS Case & Button)	1. 5/8-24 & Hex Nut	2. 5/8-24 & Knurl Nut	1. Solder Terminal/Silver	1. N.O.	2. Std./Splashproof	1. 2.5 lbs.	1. High Profile/Flat Button
A. Security Level (AL Case & Button)	3. 5/8-24 W/D-Flat & Hex Nut	4. 5/8-24 W/D-Flat & Knurl Nut	2. Screw Terminal/Silver	2. N.C.	3. Std./Watertight	2. 4.0 lbs.	2. High Profile/Curved Button
	5. 3/4-20 & Hex Nut	6. 3/4-20 & Knurl Nut	3. Faston Terminal/Silver ②③	6. 2 Circuit	4. Low Level/Splashproof		3. Low Profile/Flat Button
	7. 3/4-20 W/D-Flat & Hex Nut		4. Solder Terminal/Black ①		5. Low Level/Watertight		4. Low Profile/Curved Button
	8. 3/4-20 W/D-Flat & Knurl Nut		5. Screw Terminal/Black ①				5. Flush Profile
			6. Faston Terminal/Black ①②③				

① Only available on P8-A Styles
 ② Overall length +0.12" for faston terminals
 ③ Faston receptacles: 0.187" on N.O.; 0.110" on N.C. terminals

SEALED DOME PUSHBUTTON SWITCHES

P9
 DOME
 PUSHBUTTONS

MOMENTARY ACTION, ATTRACTIVE & RUGGED FOR WET & DUSTY ENVIRONMENTS

The P9 Dome series pushbutton switches feature a contoured dome style pushbutton and share similar size and characteristics to the P7 series. Major differences are plastic housing construction and the availability of a shorting bar contact arrangement. There are two button versions: low button profile and high button profile. The P9 comes with a threaded case for hex nut mounting or with a snap-in case. The switch series features short behind panel depth. They also offer excellent mechanical and electrical performance while operating under severe conditions found in demanding applications.

The P9 Dome series is offered in dusttight and moistureproof sealed construction. One million mechanical operations and an electrical life of 25,000 operations at full rated load of 5 amps resistive or 3 amps inductive.

Watertight sealing is available simply by adding a "W" suffix to the part number to specify IP68S rating.

The P9 Dome series is available in standard and low-force double break snap-action and non-snap shorting bar models. All are momentary action. Special contact variations are available. High contact pressure and unique contact design provide low contact resistance for low level switching capability as well as full rated service. Solder, PC Pin, and 0.110" Quick Connect termination options are available.

Positive tactile feedback signaling the operator when the switch is operated is available in snap-action models but not shorting bar models.

The P9 Dome series is a quality precision switch designed for use in panels, control grips, computers, instruments, heavy equipment and other demanding applications where attractive, rugged pushbutton switches are required.

Features:

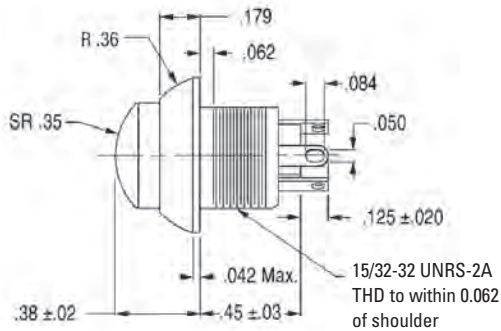
- Attractive dome style button
- 2 button heights
- Double break or shorting bar, momentary action
- All plastic housing & button construction
- Threaded body or snap-in panel mounting
- Withstands extreme shock & vibration
- Positive tactile feedback contact transfer on snap-action models
- Solder, PC Pin & 0.110" Quick Connect terminal styles
- Moistureproof & dusttight to IP64 or watertight to IP68S
- UL recognized & CSA certified
- RoHS/WEEE/Reach compliant



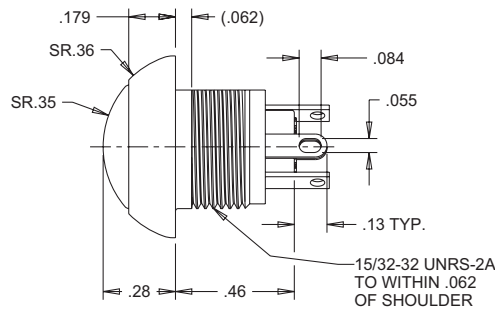
Standard Characteristics/Ratings:		
ELECTRICAL RATINGS: Sea Level @ 28VDC or 115VAC, 60/400Hz		
Load	N.O./N.C.	2 Circuit
Resistive	5A	4A
Inductive	3A	2A
DWV	1050Vrms	
Electrical Life:	25,000 cycles 5A @ 28VDC resistive snap-action	
Mechanical Life:	1,000,000 cycles	
Seal:	IP64 or IP68S	
Operating Temp Range:	-40°C to +85°C	
Operating Force:	Standard: 1.7 lbs. +/- 0.5 lb. Low Force: 12 oz +/- 4 oz Shorting Bar: 18 oz +/- 6 oz	
Total Travel:	0.080 inches max	
Overtravel:	0.010 inches min	
MATERIALS:		
Case:	Thermoplastic	
Button:	Thermoplastic	
Terminals:	Brass with gold over silver	
Terminal Hardware:	None provided	
Mounting Hardware:	Hex nut, lockwasher Panel gasket when applicable	

SEALED DOME PUSHBUTTONS

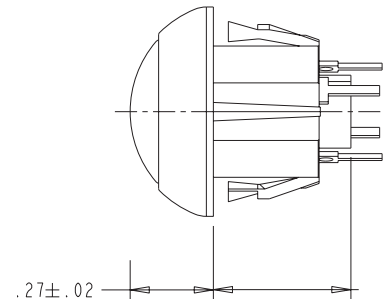
CHOICE OF SNAP-ACTION & SHORTING BAR ACTION



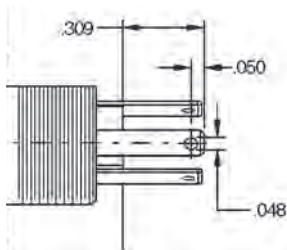
Raised Dome Button Style



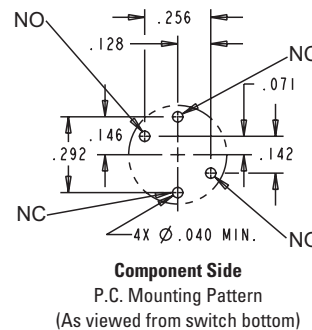
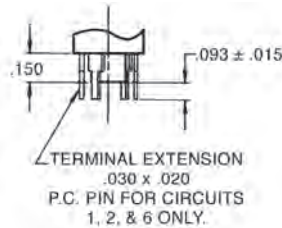
Flush Dome Button Style



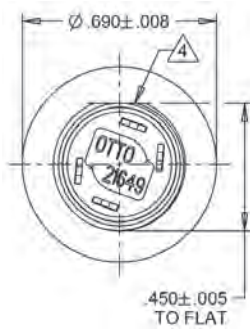
Snap-In Case
 (PC Terminals Shown)



0.110" Quick Connect Detail



Solder Terminals
 (Terminals not orientated to flat)
 Threaded Case



PC Pin
 (Orientated to case flats as shown)
 Snap-In Case

Recommended Panel Openings		
*Panel Thickness	Recommended Ø	DIM. Across D-Flat
0.024*	0.505	0.460
0.031	0.505	0.460
0.118*	0.505	0.460
0.125	0.505	0.460

* Must use panel gasket 401669 supplied with the switch.

- Snap-in case allows front panel mounting into 0.024" or 0.118" thick panels using panel gasket 401669 or into 0.031" and 0.125" thick panels
- 0.110" Quick Connect terminals allow reliable, solderless wire connections
- Flush Neoprene Black Boot P/N 402339
- Raised Neoprene Black Boot P/N 402246
- Flush Silicone Translucent Boot P/N 402599-1
- Raised Silicone Translucent Boot P/N 402611-1

P9 PART NUMBER CODE

ORDERING INFORMATION:

Select the OTTO P9 series features that match your specific application. Standard and special features are shown at right. Specify your choice by building the OTTO Part Number code.

Example: P9-211121 specifies raised dome style button, threaded case, solder terminals, N.O. circuit form, standard snap-action, black case/bezel, red button.

Button & Case Style***	Terminal Style	Circuit Form	Switch Action	Case/ Bezel Color	Button Color
1. Flush Dome & Threaded Case, Std. Finish	1. Solder	1. N.O.	1. Standard Snap-Action	1. Red	1. Red
2. Raised Dome & Threaded Case, Std. Finish	2. PC Pin	2. N.C. ①	2. Low Force Snap-Action	2. Black	2. Black
3. Flush Dome & Snap-In Case, Std. Finish	3. 0.110" Quick Connect	3. 2 Circuit ①	3. Non-Snap Shorting Bar	3. Orange**	3. Orange
4. Raised Dome & Snap-In Case, Std. Finish				4. Yellow**	4. Yellow
5. Flush Dome & Threaded Case, Matte Finish				5. Green**	5. Green
6. Raised Dome & Threaded Case, Matte Finish				6. Blue**	6. Blue
7. Flush Dome & Snap-In Case, Matte Finish				7. Violet**	7. Violet
8. Raised Dome & Snap-In Case, Matte Finish				8. Gray**	8. Gray
				9. White	9. White

① Not available in Shorting Bar version.

* Add "W" suffix for watertight to IP68S (will include panel gasket)

** Contact factory for minimum requirement.

*** Contact factory for std./matte button/case combination options.

SEALED DOME PUSHBUTTON SWITCHES

P9L
DOME
PUSHBUTTONS

LOW LEVEL MOMENTARY ACTION, ATTRACTIVE & RUGGED FOR WET & DUSTY ENVIRONMENTS

The P9L Dome series low level pushbutton switches feature a contoured dome style pushbutton and share similar size and characteristics to the P7 series. Major differences are plastic housing construction and the availability of a shorting bar contact arrangement. There are two button versions: low button profile and high button profile. The P9L comes with a threaded case for hex nut mounting or with a snap-in case. The switch series features short behind panel depth. They also offer excellent mechanical and electrical performance while operating under severe conditions found in demanding applications.

The P9L Dome series is offered in dusttight and moistureproof sealed construction. One million mechanical operations and an electrical life of 500,000 operations at 50mA resistive.

Watertight sealing is available simply by adding a "W" suffix to the part number to specify IP68S rating.

The P9L Dome series is available in standard and low-force double break snap-action and non-snap shorting bar models. All are momentary action. Special contact variations are available. High contact pressure and unique contact design provide low contact resistance for low level switching capability. Solder, PC Pin, and 0.110" Quick Connect termination options are available.

Positive tactile feedback signaling the operator when the switch is operated is available in snap-action models but not shorting bar models.

The P9L Dome series is a quality precision switch designed for use in panels, control grips, computers, instruments and other demanding applications where attractive, rugged low level pushbutton switches are required.

Features:

- **Low level switch**
- **Attractive dome style button**
- **2 button heights**
- **Double break or shorting bar, momentary action**
- **All plastic housing & button construction**
- **Threaded body or snap-in panel mounting**
- **Withstands extreme shock & vibration**
- **Positive tactile feedback contact transfer on snap-action models**
- **Solder, PC Pin & 0.110" Quick Connect terminal styles**
- **Moistureproof & dusttight to IP64 or watertight to IP68S**
- **UL recognized & CSA certified**
- **RoHS/WEEE/Reach compliant**



Standard Characteristics/Ratings:

ELECTRICAL RATINGS:

Load Sea Level @ 28VDC
or 115VAC, 60/400Hz

Resistive 50mA

DWV 1050Vrms

Electrical Life: 250,000 cycles 50mA @ 28VDC resistive snap-action

Mechanical Life: 250,000 cycles

Seal: IP64 or IP68S

Operating Temp Range: -40°C to +85°C

Operating Force: Standard: 1.7 lbs. +/- 0.5 lb.
Low Force: 12 oz +/- 4 oz
Shorting Bar: 18 oz +/- 6 oz

Total Travel: 0.080 inches max

Overtravel: 0.010 inches min

MATERIALS:

Case: Thermoplastic

Button: Thermoplastic

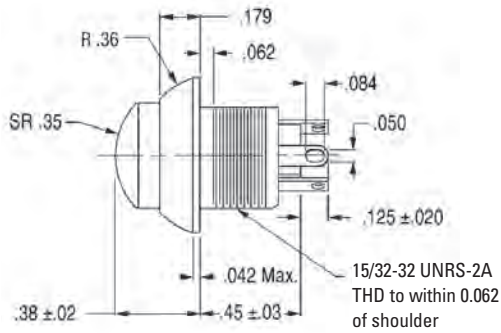
Terminals: Brass with gold

Terminal Hardware: None provided

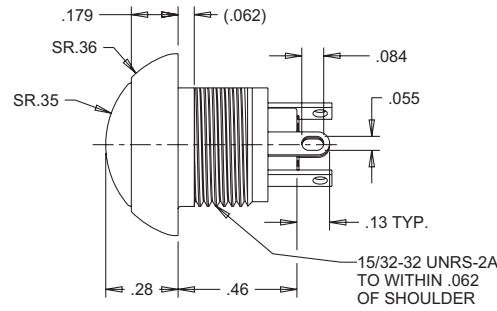
Mounting Hardware: Hex nut, lockwasher
Panel gasket when applicable

SEALED DOME PUSHBUTTONS

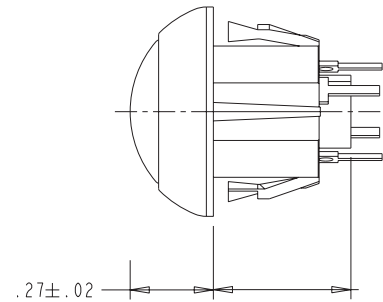
CHOICE OF SNAP-ACTION & SHORTING BAR ACTION



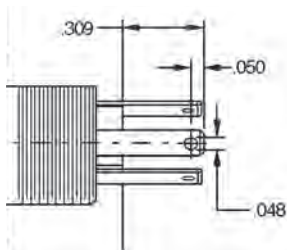
Raised Dome Button Style



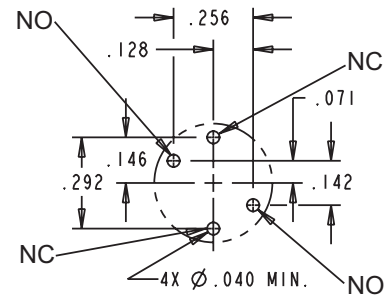
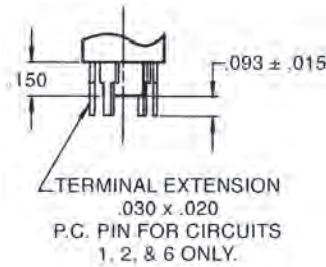
Flush Dome Button Style



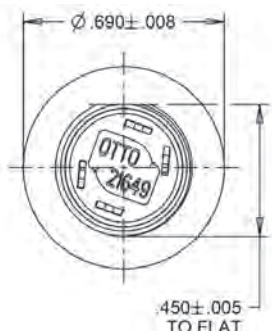
Snap-In Case
 (PC Terminals Shown)



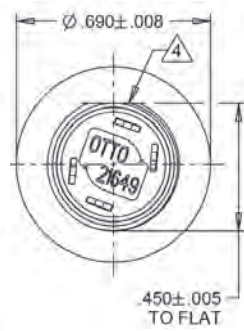
0.110" Quick Connect Detail



Component Side P.C. Mounting Pattern
 (As viewed from switch bottom)



Solder Terminals
 (Terminals not orientated to flat)
 Threaded Case



PC Pin
 (Orientated to case flats as shown)
 Snap-In Case

Recommended Panel Openings		
*Panel Thickness	Recommended Ø	DIM. Across D-Flat
0.024*	0.505	0.460
0.031	0.505	0.460
0.118*	0.505	0.460
0.125	0.505	0.460

* Must use panel gasket 401669 supplied with the switch.

- Snap-in case allows front panel mounting into 0.024" or 0.118" thick panels using panel gasket 401669 or into 0.031" and 0.125" thick panels
- 0.110" Quick Connect terminals allow reliable, solderless wire connections
- Flush Neoprene Boot P/N 402339
- Raised Neoprene Boot P/N 402246

P9L PART NUMBER CODE

ORDERING INFORMATION:

Select the OTTO P9L series features that match your specific application. Standard and special features are shown at right. Specify your choice by building the OTTO Part Number code.

Example: P9L-211121 specifies raised dome style button, threaded case, solder terminals, N.O. circuit form, standard snap-action, black case/bezel, red button.

P9L	-	X	X	X	X	X	*
Button & Case Style***			Terminal Style	Circuit Form	Switch Action	Case/ Bezel Color	Button Color
1.	Flush Dome & Threaded Case, Std. Finish	1.	Solder	1.	N.O.	1.	Red
2.	Raised Dome & Threaded Case, Std. Finish	2.	PC Pin	2.	N.C. ①	2.	Black
3.	Flush Dome & Snap-In Case, Std. Finish	3.	0.110" Quick Connect	3.	Circuit ①	3.	Orange**
4.	Raised Dome & Snap-In Case, Std. Finish					4.	Yellow**
5.	Flush Dome & Threaded Case, Matte Finish					5.	Green**
6.	Raised Dome & Threaded Case, Matte Finish					6.	Blue**
7.	Flush Dome & Snap-In Case, Matte Finish					7.	Violet**
8.	Raised Dome & Snap-In Case, Matte Finish					8.	Gray**
						9.	White

① Not available in Shorting Bar version.

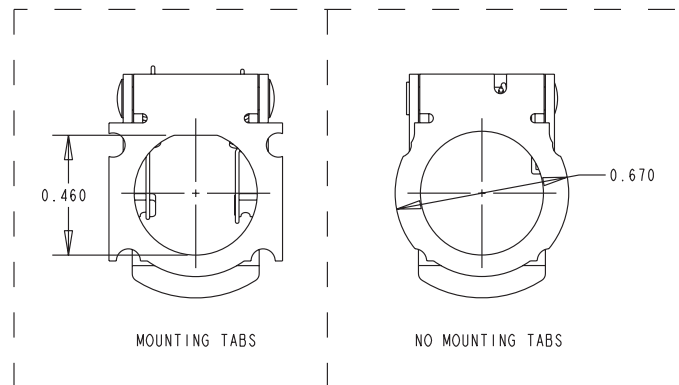
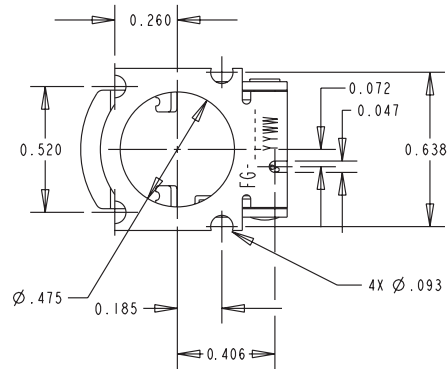
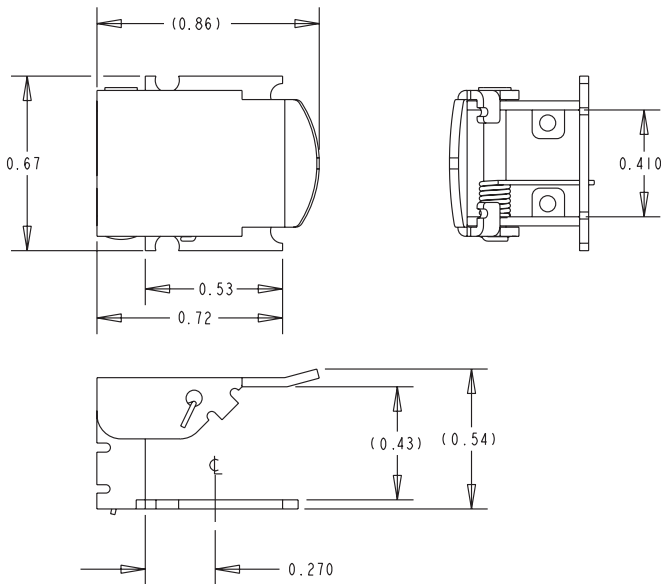
* Add "W" suffix for watertight to IP68S.

** Contact factory for minimum requirement.

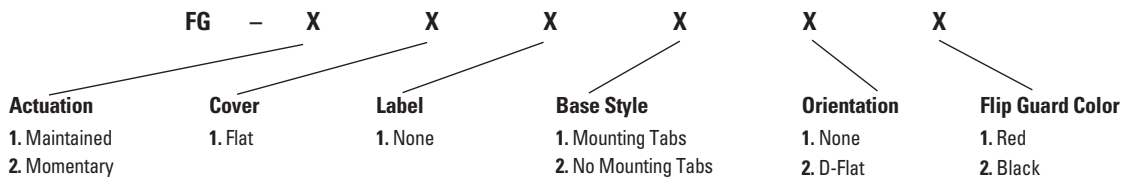
*** Contact factory for std./matte button/case combination options.

MAINTAINED OR MOMENTARY ACTION FLIP GUARD

The FG Flip Guard assembly offers a maintained or momentary actuation for pushbutton switches with a 15/32 threaded bushing. The FG flip guard's main feature is a spring-loaded cover that locks in either an open or closed position. In the open position the switch operates freely; in the closed position the switch is protected from accidental operation. The momentary open option prevents the guard from remaining in an open position, reducing the chance of accidental actuation. The flip guard is easily installed from the front panel and offers an optional D-flat or mounting tabs to prevent any rotation during assembly.



FG PART NUMBER CODE



MOMENTARY ACTION NORMALLY OPEN OR NORMALLY CLOSED



Features:

- MIL-PRF-8805/96 approved
- Momentary snap-action
- Sealed or unsealed
- Compact, space-saving design
- Black or red button colors available
- Clear or black case colors available
- RoHS/WEEE/Reach compliant

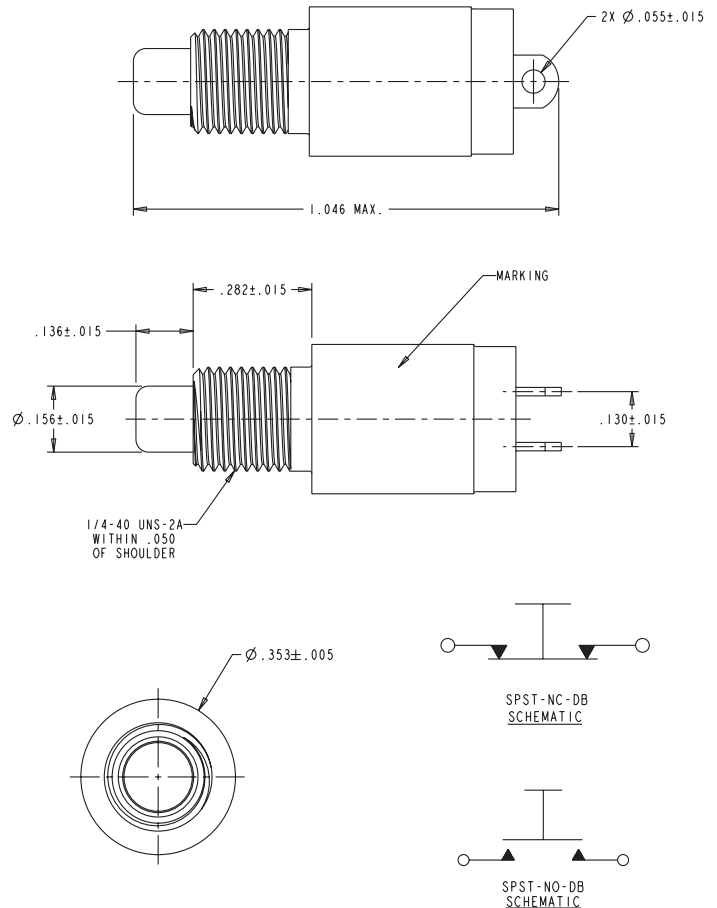
Standard Characteristics/Ratings:	
ELECTRICAL RATINGS:	
Load	Sea Level @ 28VDC or 115VAC, 60/400Hz
Resistive	5A
Inductive	2A
DVV	1000Vrms
Electrical Life:	25,000 cycles
Mechanical Life:	50,000 cycles
Seal:	Unsealed per MIL-PRF-8805 Design 1 or Dusttight per MIL-PRF-8805 Design 2
Operating Temp Range:	-55°C to +85°C
Operating Force:	1.5 lbs. +/- 0.5 lb. (unsealed) 1.75 lbs. +/- 0.5 lb. (dusttight)
Total Travel:	0.095 inches +/- 0.015 inches
Overtravel:	0.010 inches min
Pretravel:	0.010 inches min
MATERIALS:	
Case:	Anodized aluminum alloy, clear or black
Button:	Thermoplastic
Terminals:	Silver alloy
Mounting Hardware:	Hex nut and lockwasher

Momentary, Normally Open

OTTO PART NUMBER	MILITARY PART NUMBER	SEAL	CASE COLOR	BUTTON COLOR
PE-1111	M8805/96-001	UNSEALED	CLEAR	RED
PE-1112	M8805/96-002	UNSEALED	CLEAR	BLACK
PE-1121	M8805/96-005	UNSEALED	BLACK	RED
PE-1122	M8805/96-006	UNSEALED	BLACK	BLACK
PE-1211	M8805/96-009	DUST TIGHT	CLEAR	RED
PE-1212	M8805/96-010	DUST TIGHT	CLEAR	BLACK
PE-1221	M8805/96-013	DUST TIGHT	BLACK	RED
PE-1222	M8805/96-014	DUST TIGHT	BLACK	BLACK

Momentary, Normally Closed

OTTO PART NUMBER	MILITARY PART NUMBER	SEAL	CASE COLOR	BUTTON COLOR
PE-2111	M8805/96-003	UNSEALED	CLEAR	RED
PE-2112	M8805/96-004	UNSEALED	CLEAR	BLACK
PE-2121	M8805/96-007	UNSEALED	BLACK	RED
PE-2122	M8805/96-008	UNSEALED	BLACK	BLACK
PE-2211	M8805/96-011	DUST TIGHT	CLEAR	RED
PE-2212	M8805/96-012	DUST TIGHT	CLEAR	BLACK
PE-2221	M8805/96-015	DUST TIGHT	BLACK	RED
PE-2222	M8805/96-016	DUST TIGHT	BLACK	BLACK



PUSHBUTTONS PER MIL-PRF-8805/99

PE2
PUSHBUTTONS

MOMENTARY ACTION

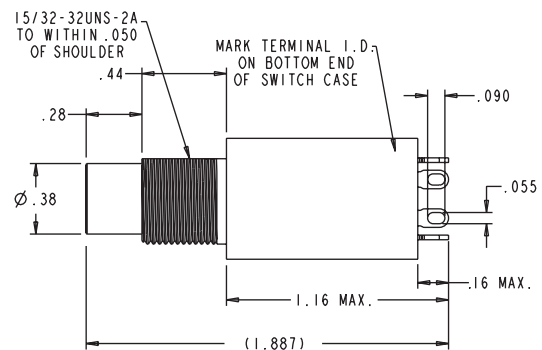
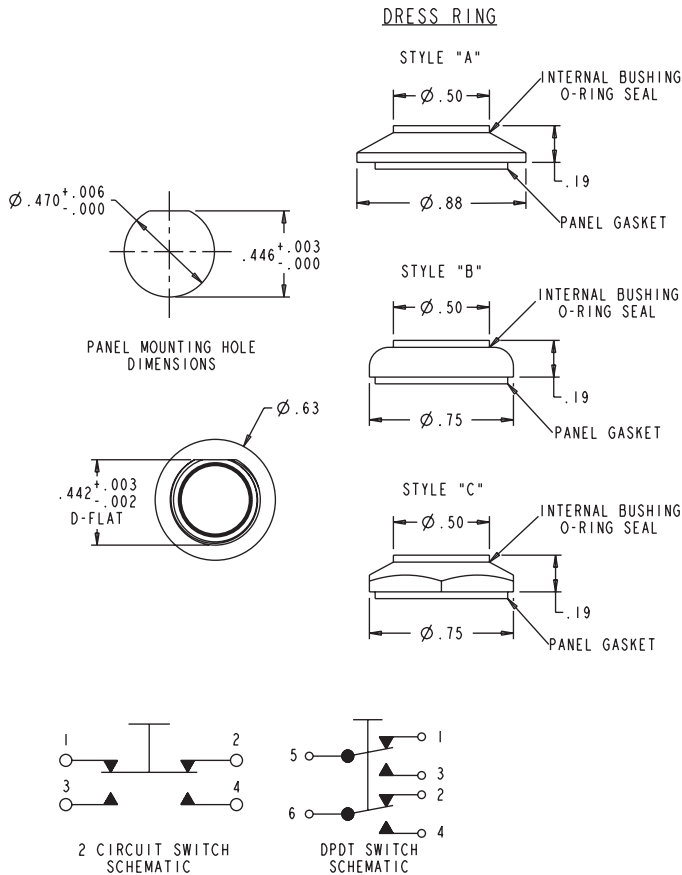
The PE2 with solder termination is qualified under MIL-PRF-8805/99. The PE2 is a rugged sealed switch; it meets high shock and vibration requirements and is ideal for tough environments. A variety of button colors and easy panel mounting options are provided. The PE2 is a momentary 2 circuit or DPDT, and has a 2A resistive 1.5A inductive 28VDC/115VAC rating. Splashproof with panel seal dress ring per MIL-PRF-8805, symbol 6.

Features:

- MIL-PRF-8805/99 approved
- Momentary snap-action
- Black, white or red button colors available
- Splashproof
- RoHS/WEEE/Reach compliant



Standard Characteristics/Ratings:		
ELECTRICAL RATINGS:		
Load	Sea Level @ 28VDC or 115VAC, 60/400Hz	70,000 feet @ 28VDC or 115VAC, 60/400Hz
Resistive	2A	2A
Inductive	1.5A	1.5A
Lamp	0.5A	0.5A
DWV	1000Vrms	500Vrms
Electrical Life:	25,000 cycles at full load	
Mechanical Life:	50,000 cycles	
Seal:	Splashproof with panel seal dress ring per MIL-PRF-8805, symbol 6	
Operating Temp Range:	-55°C to +85°C	
Operating Force:	4.5 lbs. +/- 1.5 lbs.	
Total Travel:	0.176 inches max	
MATERIALS:		
Case:	Anodized aluminum alloy, black	
Button:	Thermoplastic	
Terminals:	Brass, silver plate	
Mounting Hardware:	Hex nut, lockwasher, keying washer, dress ring with O-ring seal, panel gasket when applicable	



PE2 PART NUMBER CODE

