

22.5 mm Push Buttons

Product Overview



Bulletin 800F Plastic and Metal Operators

- 22.5 mm mounting hole
- IP65/66, Type 4/4X/13
- Internationally rated operators

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Bulletin 800FP Plastic Operators

- IP65/66, Type 4/4X/13
- Engineering grade thermoplastics
- Chemical-resistant for harsh environments



Bul. 800FP Plastic Operators

Bulletin 800FM Metal Operators

- IP65/66, Type 4/13
- Die-cast metal construction
- Chrome-plated



Bul. 800FM Die-Cast Metal Operators



Overview, Continued

3-Across x 2-Deep Back-of-Panel (6 Circuits Max.)

- Rugged snap-fit design for plastic or metal latch
- Stackable contact blocks
- Rotating collar for easy one-hand latch removal
- Color-coded contact block plungers for contact identification

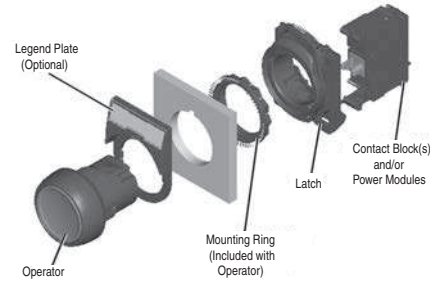


Plastic Latch with Contact Block



Metal Latch with Contact Block

Assembly Overview



Specifications*

Front-of-Panel (Operators)

Description		Mechanical Ratings	
		Plastic (Bulletin 800FP)	Metal (Bulletin 800FM)
Vibration (assembled to panel)		Tested at 10...2000 Hz, 1.52 mm displacement (peak-to-peak) max./10 G max. for 3 hr duration, no damage	
Shock		Tested at 1/2 cycle sine wave for 11 ms; no damage at 100 G	
Degree of protection*		IP65/66 (Type 3/3R/4/4X/12/13)	IP65/66 (Type 3/3R/4/12/13)
Mechanical durability per EN 60947-5-1 (Annex C)	10 000 000 Cycles	Momentary push buttons, momentary mushroom	
	1 000 000 Cycles	Multi-function, selector switch, key selector switch, selector jog, SensEject™ key selector switch	
	500 000 Cycles	Non-illuminated push-pull E-stop‡	
	300 000 Cycles	Twist-to-release E-stop, illuminated push-pull E-stop‡, alternate action push buttons	
	100 000 Cycles	Potentiometer, toggle switch	
Operating forces (typical with one contact block)		Flush/extended = 5 N, E-stop = 36 N Mushroom = 9 N	
Operating torque (typical application with one contact block)		Selector switch = 0.25 N•m (2.2 lb•in)	
Mounting torque	Plastic	1.7 N•m (15 lb•in)	
	Metal	4.4 N•m (40 lb•in)	
Environmental			
Temperature range (operating)		-25...+70 °C (-13...+158 °F)§	
Temperature range (short term storage)		-40...+85 °C (-40...+185 °F)	
Humidity		50...95% RH from 25...60 °C (77...140 °F)	

* Performance Data — see page Important-3 of the Industrial Controls catalog.

* Momentary mushroom operators are IP65. Plastic keyed operators are IP66, Type 4/13; not Type 4X.

‡ Limit of four contact blocks max. for these devices.

§ Operating temperatures below 0 °C (32 °F) are based on the absence of freezing moisture and liquids, UL Recognized to 55 °C (131 °F) - Incandescent module max. 40 °C (104 °F).

Product Certifications

Certifications	UR/UL, CSA, CCC, CE
Standards Compliance — CE Marked	NEMA ICS-5; UL 508, EN ISO 13850, EN 60947-1, EN 60947-5-1, EN 60947-5-5
Terminal Identification	EN/IEC 60947-1
Shipping Approvals	ABS
RoHS	✓

Bulletin 800F
22.5 mm Push Buttons
Specifications

Back-of-Panel Components*

Electrical Ratings			
Standard contact block ratings	A600, Q600 600V AC AC 15, DC 13 to IEC/EN 60947-5-1 and UL 508, 17V, 5 mA min.		
Low voltage contact block ratings*	5V, 1 mA DC min. C300, R150, AC 15, DC 13 to EN 60947-5-1 and UL 508		
	Nominal Voltage	Range	Current Draw
LED Module Ratings	24...120V AC/DC	20...132V AC/DC	15 mA (AC), 12 mA (DC)
	24V AC	10...29V AC	31 mA
	24V DC	10...30V DC	24 mA
	120V AC	102...132V AC	6 mA
	240V AC	204...264V AC	6 mA
Frequency	50/60 Hz, DC		
Thermal current	10 A max. enclosed (40 °C ambient) to UL508, EN 60947-5-1		
Insulation voltage (U _i)	Screw terminal = 690V, spring-clamp = 300V		
Wire capacity (screw terminal)‡	#18...12 AWG (0.75...2.5 mm ²) Max. (2) #14 AWG or (1) #12 AWG		
Wire capacity (spring-clamp terminal)	#18...14 AWG (0.75...1.5 mm ²) One per spring clamp, two spring clamps per terminal		
Recommended tightening torque on screw terminals	0.7...0.9 N•m (6...8 lb•in)		
Dielectric strength (minimum)	2500V for one minute		
External short circuit protection	Standard blocks	10 A type gL/gG cartridge fuse to EN 60269-2-1 or gN (Class J to UL 248-8 or Class C to UL 248-4)	
	Low voltage contact blocks	6 A type gL/gG cartridge fuse to EN 60269-2-1 or gN (Class J to UL 248-8 or Class C to UL 248-4)	
Electrical shock protection	Finger-safe conforming to IP2X		
Mechanical Ratings			
Vibration (assembled to panel)	Tested at 10...2000 Hz, 1.52 mm displacement (peak-to-peak) max./10 G max. 6 hr		
Shock	Tested at 1/2 cycle sine wave for 11 ms and no damage at 100 G max.		
Contact durability per EN 60947-5-1 (Annex C)	10 000 000 cycles		
Contact operation	N.O.	Slow double make and break	
	N.C. & S.M.C.B.	Slow double make and break — positive opening ⊖	
	N.O.E.M.	Double break / double make, early make	
	N.C.L.B.	Double break / double make, late break — positive opening ⊖	
	N.C.E.B.	Double break / double make, early break — positive opening ⊖	
Push button travel to change electrical state	N.C. and N.O.E.M.	1.5 mm (0.060 in.)	
	N.O. and N.C.L.B.	2.5 mm (0.1 in.)	
Operating forces (typical)	Single circuit contact block	3.4 N	
	Dual circuit contact block	5...6.5 N	
Illumination			
LED Dominant Wavelength	Green	525 nm	
	Red	629 nm	
	Yellow	590 nm	
	Blue	470 nm	
	White	—	
LED Luminous Intensity	Green	780 mcd	
	Red	780 mcd	
	Yellow	600 mcd	
	Blue	168 mcd	
	White	360 mcd	
Incandescent maximum wattage	2.6 W		
Materials			
Springs	Stainless steel and zinc coated music wire		
Electrical contacts	Standard	Silver-nickel	
	Low voltage	Gold-plated over silver	
Terminals	Screw	Brass	
	Spring-clamp	Silver-plated brass	

* Performance Data — see page Important-3 of the Industrial Controls catalog.

* Low voltage contacts are recommended for applications below 17V, 5 mA.

‡ Wires less than #18 AWG (0.75 mm²) may not hold in terminal securely.



Material Listing

Component	For Use with	Material Used
Panel gasket	All operators	Nitrile, TPE
Diaphragm seal	Illuminated push button, non-illuminated push button	Automotive industry acceptable silicone
K-seal	Selector switch, key selector switch, push/twist-to-release E-stop, key E-stop, push/pull mushroom	Nitrile
Diaphragm retainer, return spring I	Illuminated push button, non-illuminated push button, momentary mushroom	Stainless steel
Return spring II	Reset, selector switch, key selector switch, alternate action, push/twist-to-release E-stop, key E-stop, push/pull mushroom	Zinc-coated music wire
Button cap/mushroom head	Non-illuminated push button, momentary mushroom, reset, push/twist-to-release E-stop, key E-stop, push/pull mushroom, multi-function	PBT/polycarbonate blend
2-color molded button cap	Non-illuminated push button	PBT/polycarbonate blend
Lens	Multi-function	Acetal
Lens, knob	Illuminated push button, illuminated momentary mushroom, illuminated selector switch	Polyamide
Knob	Non-illuminated selector switch	Glass-filled polyamide
Plastic bezel/bushing I	Non-illuminated push button, illuminated push button, momentary mushroom, selector switch, key selector switch, push/twist-to-release E-stop, key E-stop, push/pull mushroom, multi-function, reset	Glass-filled polyamide
Plastic bezel/bushing II, jam nut	Pilot light, reset jam nut, reset pushers	Glass-filled PBT
Metal bezel/bushing	All metal operators	Zinc
Diffuser	Illuminated push button, pilot light	Polycarbonate
Legend frames	—	Glass-filled polyamide
Plastic mounting ring	All plastic operators	Glass-filled polyamide
Metal mounting ring	All metal operators	Chromated zinc
Plastic latch	—	Glass-filled polyamide
Metal latch	—	Chromated zinc + stainless steel
Plastic enclosure	—	PBT/polycarbonate blend
Metal enclosure	—	Aluminum
Terminal screws	LED module, incandescent module, contact blocks	Zinc-plated steel with chromate
Terminals	LED module, incandescent module, contact blocks	Brass with silver-nickel contacts
Spring clamps	LED module, incandescent module, contact blocks	Stainless steel
Lamp socket	Incandescent module	Brass
Housing	Incandescent module, LED module	Glass-filled polyamide
Low-voltage terminals	Contact blocks	Gold-plated silver-nickel contacts
Low-voltage spanner	Contact blocks	Gold-plated silver-nickel contacts
Spanner	Contact blocks	Brass with silver-nickel contacts
Boot	Toggle Switch, illuminated push button, non-illuminated push button, multi-function illuminated and non-illuminated	Automotive industry acceptable silicone

22.5 mm Push Buttons

Product Selection

Single Turn Potentiometer Assembly*†§



Series B



Series A

Resistive Element	Series B Cat. No.	Series A Cat. No.*
None (Operator Only)*	800FP-POT	800FP-POTA
150 Ω	800FP-POT1	800FP-POT1A
500 Ω	800FP-POT2	800FP-POT2A
1000 Ω	800FP-POT3	800FP-POT3A
2500 Ω	800FP-POT4	800FP-POT4A
5000 Ω	800FP-POT5	800FP-POT5A
10000 Ω	800FP-POT6	800FP-POT6A

* The Cat. No. 800FP-POT is a complete operator assembly supplied without the resistive element, used with potentiometers having a shaft diameter of 6.0 mm (0.23 in.) and a shaft length of 50.0 mm (1.97 in.), or a shaft diameter of 6.4 mm (0.25 in.) and a shaft length of 22.5 mm (0.88 in.). This operator is used with Type "J" potentiometers only.

⊛ Rated 300V AC/DC, 2 W max.

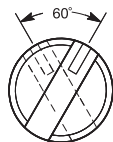
† A latch is not needed.

§ Additional hole spacing required for potentiometers. See page 10-125 for panel hole spacing requirements.

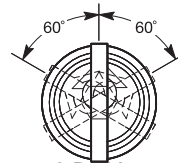
♣ Not stocked. Longer lead-time.

Key Operated Selector Switch - SensEject™

Patented Spring-Loaded Key Ejection System



2-Position
Switching Angle



3-Position
Switching Angle

Operator Construction	Operator Type	Key Eject Position	Key Option§	Spare Keys	Contact Blocks	Cat. No. >
Round Metal Operator — SensEject is IP6X (dust-tight) Type 1	2-Position Maintained		Zadi Key 06Z	800F-AKE006	None	800FM-KEM2106Z
					1 N.O.; 1 N.C.	800FM-KEM2106ZMX11
	3-Position Spring Return from Both		Zadi Key 01Z	800F-AKE001	None	800FM-KEB3401Z
					2 N.O.; 3 N.C.	800FM-KEB3401ZMX23

§ Not intended for high security applications. Interoperability is possible with certain key/cylinder lock combinations. Consult your local Rockwell Automation sales office or Allen-Bradley distributor for interoperability information.

> Includes latch and spacer block.



22.5 mm Configured Pendant Stations

Product Selection

Bul. 800F Pilot Lights — Monolithic



Lens Color	Lamp Voltage	Cat. No.
Green	24V AC/DC	800FD-P3N3
	120V AC	800FD-P3N5
Red	24V AC/DC	800FD-P4N3
	120V AC	800FD-P4N5
Yellow	24V AC/DC	800FD-P5N3
	120V AC	800FD-P5N5
Blue	24V AC/DC	800FD-P6N3
	120V AC	800FD-P6N5
Clear	24V AC/DC	800FD-P7N3
	120V AC	800FD-P7N5

Bul. 800F Potentiometer Operators*



Resistive Element (Ω)	Cat. No.
150	800FP-POT1
500	800FP-POT2
1000	800FP-POT3
2500	800FP-POT4
5000	800FP-POT5
10 000	800FP-POT6

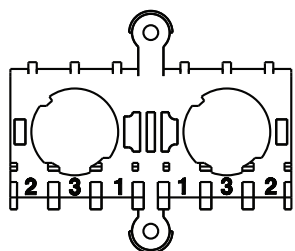
* Only available in Position 1 for a 3-hole enclosure, Positions 1 and/or 5 for a 5-hole enclosure, Positions 1 and/or 7 for a 7-hole enclosure, and positions 1 and/or 9 for a 9-hole enclosure. No latches are required.

Bul. 800F Hole Plug

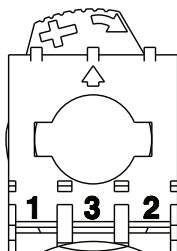


Color	Cat. No.
Black plastic	800F-N2

1-, 2-, and 3-Speed Contact Block Assemblies



Cat. No. **800FC-ALP**



Cat. No. **800F-ALP**

Operator Type	Interlock Type	Composite Cat. No.	Separate Catalog Numbers			
			Latch Cat. No.	Contact Block Location 1 Cat. No.	Contact Block Location 2 Cat. No.	Contact Block Location 3 Cat. No.
1-speed	No interlock	800F-PX10E	800F-ALP	—	—	800F-X10E
	Electrical interlock	800F-PX11C	800F-ALP	800F-X01B		
	Mechanical interlock§	800F-LX20C	800FC-ALP	—		
2-speed	Electrical & mechanical interlock§	800F-LX22C	800FC-ALP	800F-X01B	800F-X10N (Speed 2)	800F-X10E (Speed 1)
	No interlock	800F-PX20C	800F-ALP	—		
	Electrical interlock	800F-PX21C	800F-ALP	800F-X01B		
	Mechanical interlock§	800F-LX40C	800FC-ALP	—		
3-speed	Electrical & mechanical interlock§	800F-LX42C	800FC-ALP	800F-X01B	800F-X10E (Speed 2)	800F-X10M (Speed 1)‡
	No interlock	800F-PX30C	800F-ALP	800F-X10N		
	Mechanical interlock§	800F-LX60C	800FC-ALP	800F-X10N (Speed 3)		

⊛ Contact blocks come preassembled onto latch.

‡ For proper operation, **Cat. No. 800F-X10M** must be mounted in position 3 of either the mechanical or standard latch.

§ When ordering separate components, two pieces of each contact block must be ordered, one for each operator.

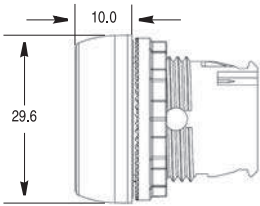
22.5 mm Push Buttons

Approximate Dimensions

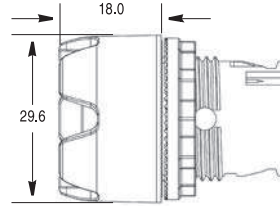
Approximate Dimensions

Dimensions in millimeters. Dimensions are not intended to be used for manufacturing purposes. Refer to RAISE software for additional dimensional information.

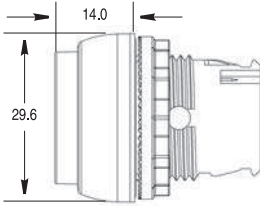
Non-Illuminated and Illuminated Momentary Flush Push Button Operators



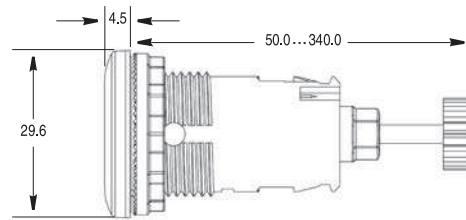
Illuminated Momentary Guarded Push Button Operators



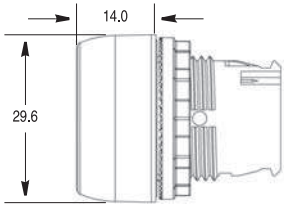
Illuminated and Non-Illuminated Momentary Extended Push Button Operators



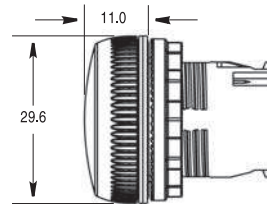
Reset Operators with Reset Rod



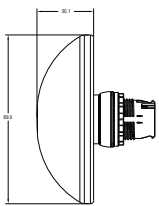
Non-Illuminated Guarded, Illuminated and Non-Illuminated Alternate Action Push Button Operators



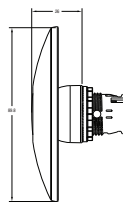
Pilot Light Operators



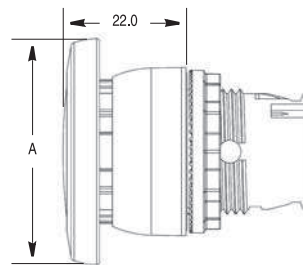
90 mm Half Dome



90 mm Mushroom

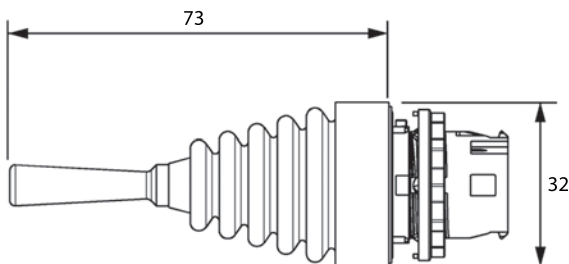


Illuminated and Non-Illuminated Momentary Mushroom Operators 40 mm and 60 mm

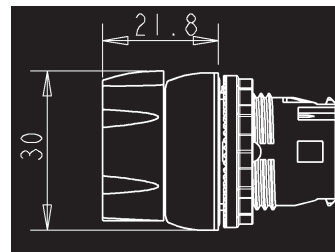


Operator	A
40 mm	39.8
60 mm	59.8

Toggle Switch Operators

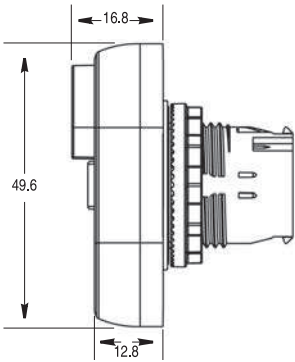


Selector Jog Operators

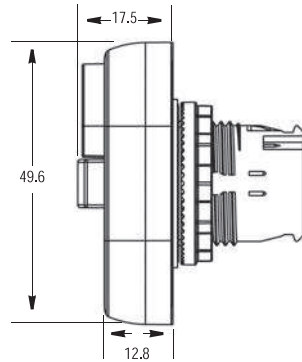


Dimensions in millimeters. Dimensions are not intended to be used for manufacturing purposes.

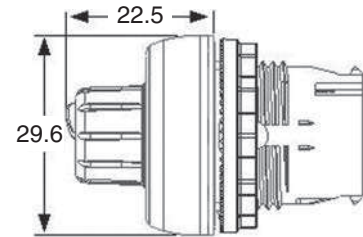
**Illuminated and Non-Illuminated
 2-Position Multi-Function Operators**



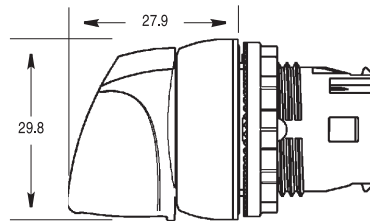
**Non-Illuminated 3-Position
 Multi-Function Operators**



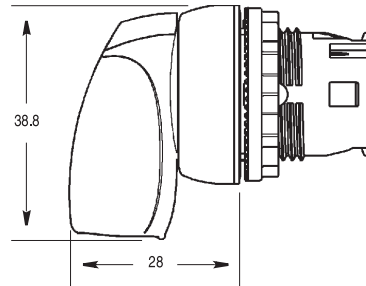
Potentiometer Operator



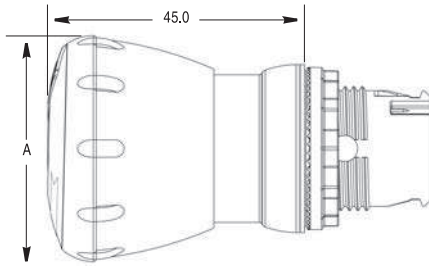
**Illuminated and Non-Illuminated Knob
 Selector Switch Operators**



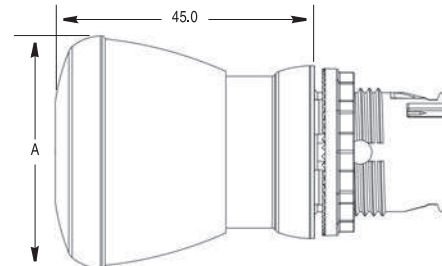
**Non-Illuminated Knob Lever Selector
 Switch Operators**



**Illuminated and Non-Illuminated
 Twist-to-Release Operators
 30 mm, 40 mm, and 60 mm**

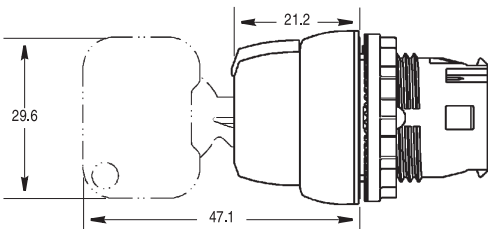


**Illuminated and Non-Illuminated
 Push-Pull Mushroom Operators
 30 mm, 40 mm, and 60 mm**

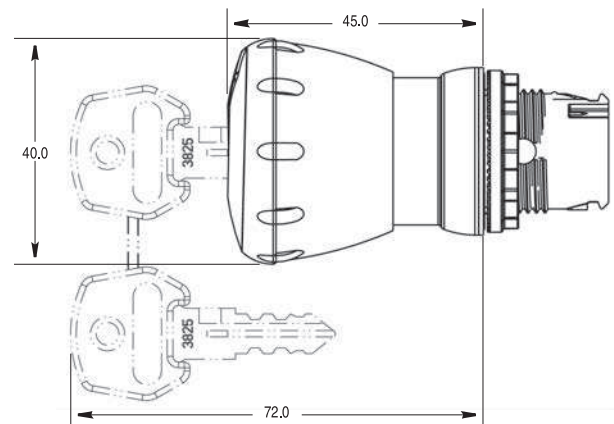


Operator	A
30 mm	30.0
40 mm	40.0
60 mm	60.0

**Key Selector Switch and Key Ejected
 SensEject Operators**



Mushroom Key Release Operator 40 mm

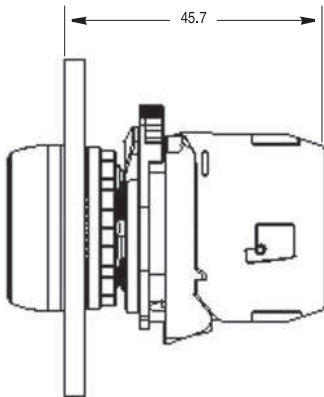


22.5 mm Push Buttons

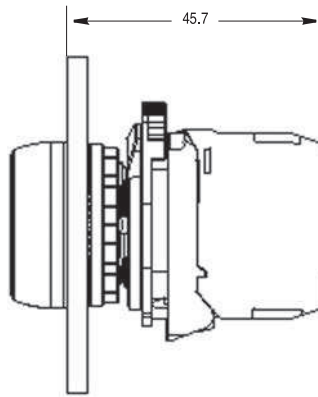
Approximate Dimensions

Dimensions in millimeters. Dimensions are not intended to be used for manufacturing purposes.

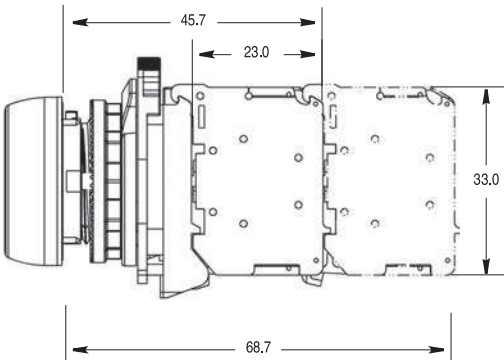
**Back-of-Panel Components —
Incandescent Module with Latch**



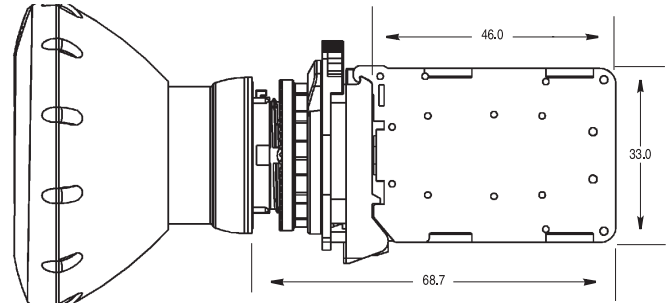
**Back-of-Panel Components —
LED Module with Latch**



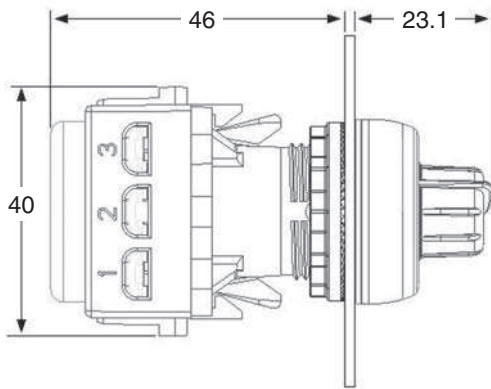
**Back-of-Panel Components —
Contact Cartridges with Latch**



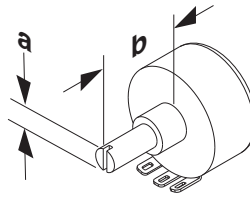
**Back-of-Panel Components —
Dual Circuit Contact Block or
Self Monitoring Contact Block
(Max. of 1 Deep)**



Potentiometer with Resistive Element



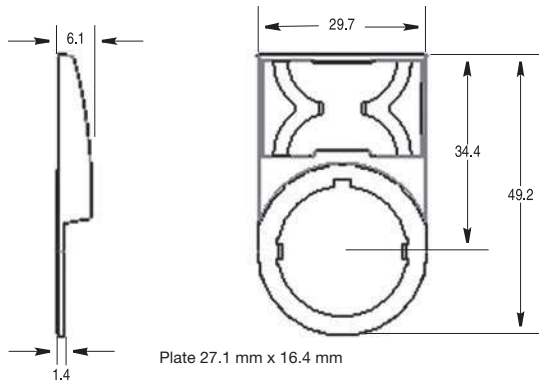
Customer Supplied Resistive Element



	Max.		Min.
a (Ø Dia.)	6.4 (0.252)	5.9 (0.232)	5.7 (0.224)
b (Length)	24 (0.945)	32 (1.26)	14 (0.551)

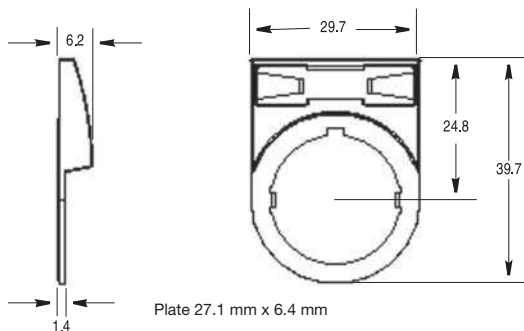
Dimensions in millimeters (inches).

30 x 50 mm Snap-In Legend Plate



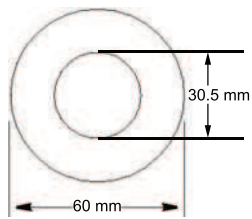
10

30 x 40 mm Snap-In Legend Plate

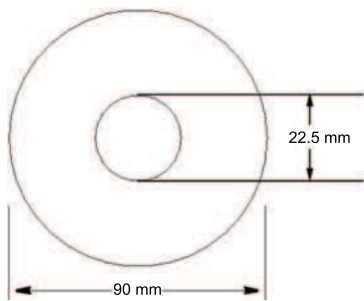


Dimensions in millimeters. Dimensions are not intended to be used for manufacturing purposes.

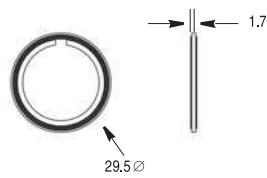
60 mm Round Legend — 15Y



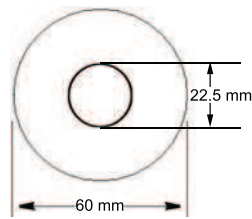
90 mm Round Legend



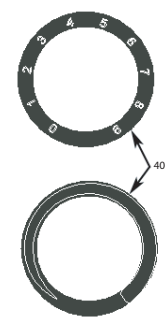
Trim Washer



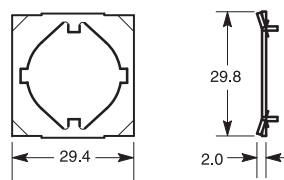
60 mm Round Legend — 15YS



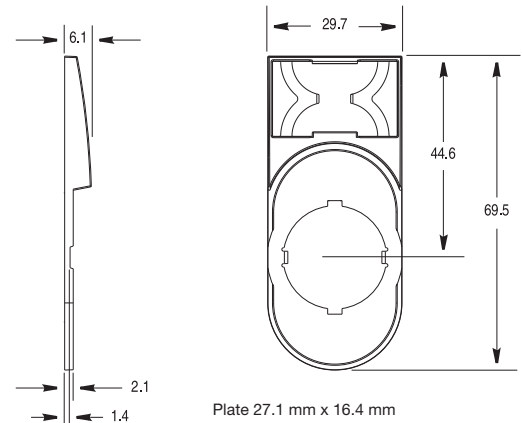
Potentiometer Legend Plate (Series A)



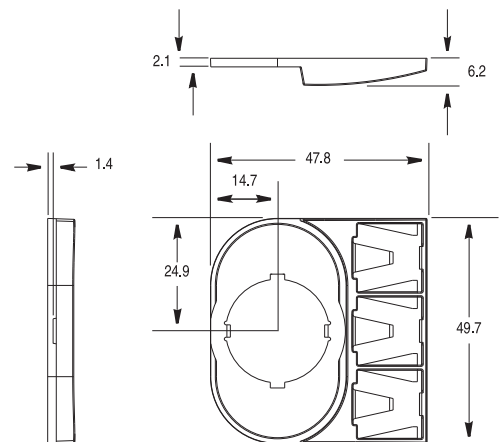
Anti-Rotation Washer



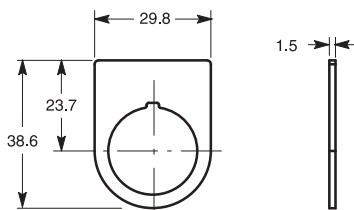
30 x 60 mm Snap-In Legend Plate



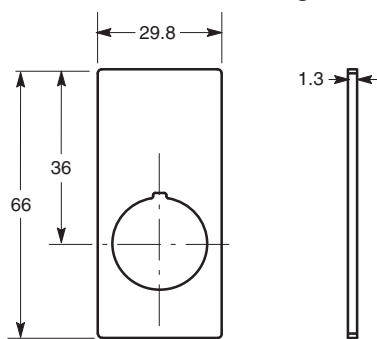
Special Multi-Function Snap-In Legend Plate



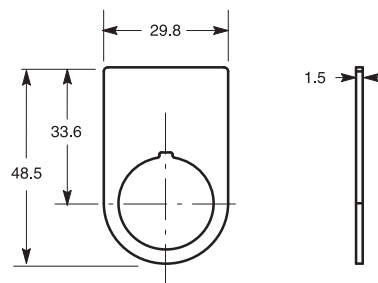
30 x 40 mm One-Piece Legend Plate



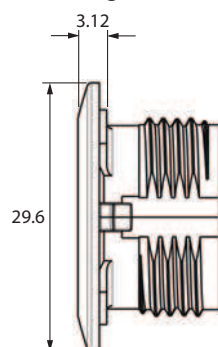
30 x 66 mm One-Piece Legend Plate



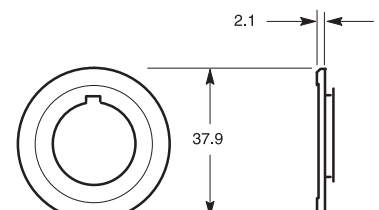
30 x 50 mm One-Piece Legend Plate



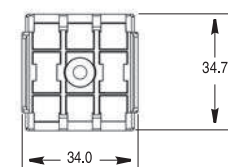
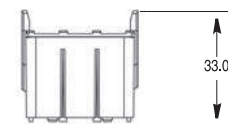
Hole Plug



30 mm to 22.5 mm Hole Adapter



Base Mount Adapter



Note: Panel thickness range is 1.0...6.0 mm maximum.

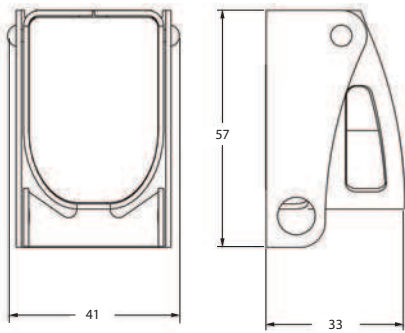
Panel thickness reduced to 4 mm (standard anti-rotation washer) or 5 mm (thin anti-rotation washer) when optional legend plates are used.

22.5 mm Push Buttons

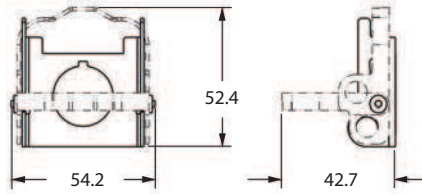
Approximate Dimensions

Dimensions in millimeters. Dimensions are not intended to be used for manufacturing purposes.

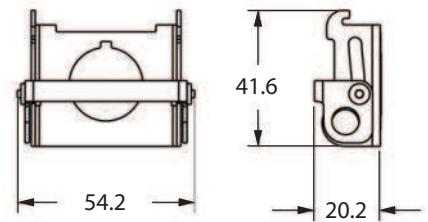
Locking Cover



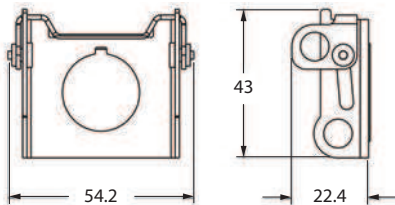
Maintained Mushroom Locking Attachment



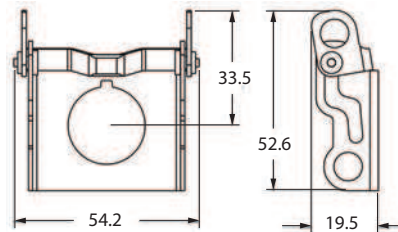
Momentary Mushroom Locking Attachment



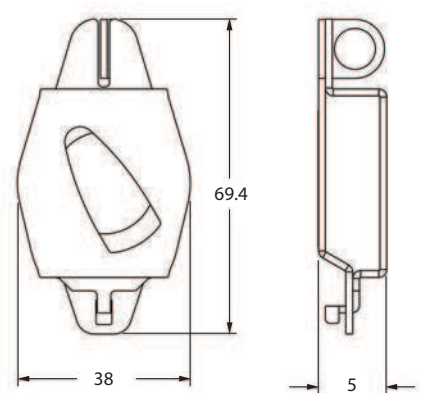
Extended Non-Illuminated Locking Attachment



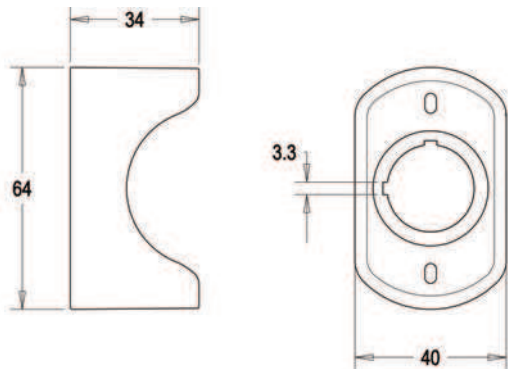
Flush Non-Illuminated Locking Attachment



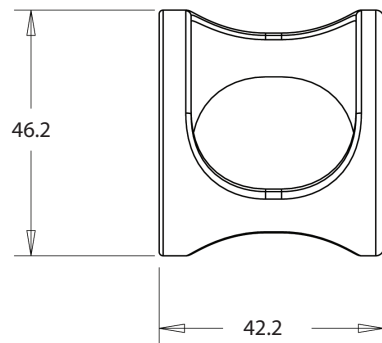
**Selector Switch Locking Cover
(Same for all Lock Positions)**



Narrow Guard



Protective Ring



Plastic Guard

