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

Table of Contents
See below.

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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

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Allen-Bradley

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
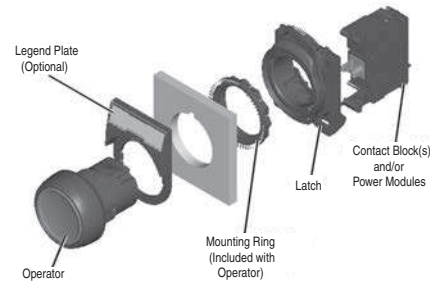• Color-coded contact block plungers for contact identification

Assembly Overview

Plastic Latch with Contact Block   *Metal Latch with Contact Block*

Specifications∗

Front-of-Panel (Operators)

Mechanical Ratings			
Description		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	✓

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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**	**Frequency**
LED Module Ratings	24…120V AC/DC 24V AC 24V DC 120V AC 240V AC	20…132V AC/DC 10…29V AC 10…30V DC 102…132V AC 204…264V AC	15 mA (AC), 12 mA (DC) 31 mA 24 mA 6 mA 6 mA	50/60 Hz, DC 50/60 Hz DC 50/60 Hz 50/60 Hz
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 mm²) Max. (2) #14 AWG or (1) #12 AWG			
Wire capacity (spring-clamp terminal)	#18…14 AWG (0.75…1.5 mm²) 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 Red Yellow Blue White	525 nm 629 nm 590 nm 470 nm —		
LED Luminous Intensity	Green Red Yellow Blue White	780 mcd 780 mcd 600 mcd 168 mcd 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

A-B Allen-Bradley   www.ab.com/catalogs   Preferred availability cat. nos. are **bold.**   **10-69**
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Momentary Push Button Operators, Non-Illuminated — Flush, Extended, Guarded

Flush Operator
Cat. No. 800FP-F3

Extended Operator
Cat. No. 800FM-E4

Guarded Operator
Cat. No. 800FP-G6

Color	Pkg. Quantity	Flush		Extended	
		Plastic	Metal	Plastic	Metal
		Cat. No.	Cat. No.	Cat. No.	Cat. No.
Black		**800FP-F2**	**800FM-F2**	**800FP-E2**	**800FM-E2**
Green	1	**800FP-F3**	**800FM-F3**	**800FP-E3**	**800FM-E3**
Red		**800FP-F4**	**800FM-F4**	**800FP-E4**	**800FM-E4**

$$800F \quad \underset{a}{P} \; - \; \underset{b}{F} \quad \underset{c}{3} \; - \; \underset{d}{\underline{\quad}}$$

a

Operator Construction	
Code	Description
P	Round plastic operator (IP66, Type 4/4X/13)
M	Round metal operator (IP66, Type 4/13)

b

Operator Type	
Code	Description
F	Flush
E	Extended
G	Guarded

c

Color Cap	
Code	Color
0	Orange
1	White
2	Black
3	Green
4	Red
5	Yellow
6	Blue
8	Grey∗
9	No cap
X	Assortment pack❈

d

Packaging	
Code	Description
Blank	1 per package
BP	10 per package‡

∗ Available in flush only.
❈ Assortment pack contains one cap of each color, not available in BP packaging.
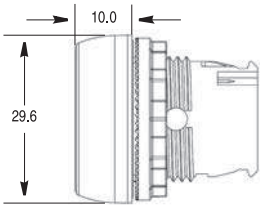‡ Only available with no color cap (**9** from Table c).
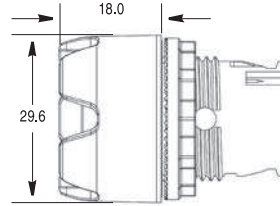
Approximate Dimensions

Dimensions in millimeters. Dimensions are not intended to be used for manufacturing purposes. Refer to RAISE software for additional dimensional information.
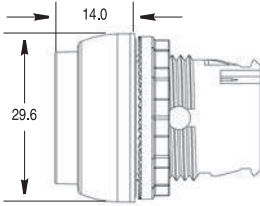
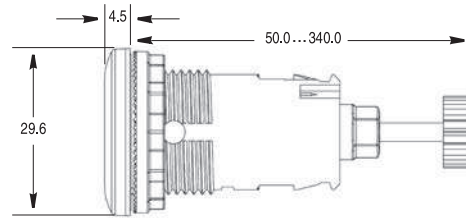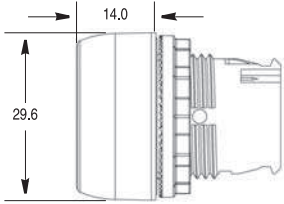### Non-Illuminated and Illuminated Momentary Flush Push Button Operators

10.0
29.6

Illuminated and Non-Illuminated Momentary Extended Push Button Operators

14.0
29.6
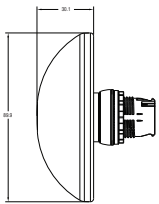
Non-Illuminated Guarded, Illuminated and Non-Illuminated Alternate Action Push Button Operators

14.0
29.6

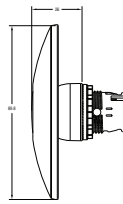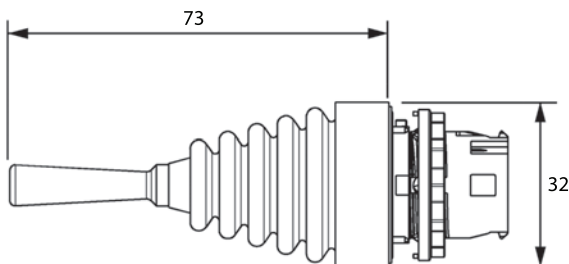### 90 mm Half Dome

90 mm Mushroom

Toggle Switch Operators

73
32

Illuminated Momentary Guarded Push Button Operators

18.0
29.6

Reset Operators with Reset Rod

4.5
50.0…340.0
29.6

Pilot Light Operators

11.0
29.6

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

22.0
A
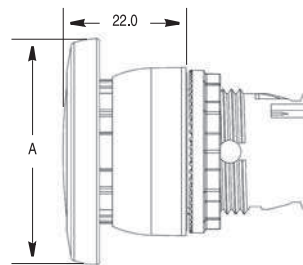
Operator	A
40 mm	39.8
60 mm	59.8

Selector Jog Operators

21.8
30

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