

# EMP Panel Mounted Pushbutton Stations, Selector Switches, Pilot Lights and Combinations

## Factory Sealed

Cl. I, Div. 1, Groups C,D  
 Cl. I, Div. 2, Groups B,C,D  
 Cl. II, Div. 1, Groups E,F,G  
 Cl. II, Div. 2, Groups F,G  
 Cl. III  
 NEMA 3,7CD,9EFG,12

Explosionproof  
 Dust-Ignitionproof  
 Raintight  
 Wet Locations

**4C**

**4C** Control Stations

### Application:

EMP panel mounted pushbutton stations, selector switches, pilot lights and combinations are used:

- together with instruments, gauges and meters all mounted on a panel of sheet steel or other suitable material in the fabrication of control boards
- in areas made hazardous due to the presence of flammable vapors, gases or highly combustible dusts
- in corrosive locations
- indoors at petroleum refineries, chemical and petrochemical plants and other process industry facilities where similar hazards exist

### Features:

- Compact enclosures which require a minimum of panel space, making them ideally suited for flow chart control boards
- Enclosures made in single, two and three gang sizes
- Accurately ground; wide flange on both body and cover for flame-tight joint
- Only the device operators and pilot lights protrude through the panel. Enclosures are behind the panel so that conduit and wiring is concealed
- Pilot lights are relamped from the front of the panel by unscrewing the knurled jewel assembly
- Mounting made easy – a 1 1/8" diameter hole is drilled for each threaded barrel and any panel up to 3/4" thick can be used; locking nuts clamp the assemblies to the panel and permit alignment with conduit and other fittings behind the panel
- Furnished with vertical through feed hubs – 1" size
- Units are factory sealed for Class I, Division 1 and 2, Groups C and D.

### Standard Materials:

- Bodies and covers – *Feraloy*® iron alloy
- Threaded barrels – copper-free aluminum
- Operating shafts – stainless steel
- Single pushbutton and selector switch operators – phenolic
- Double pushbutton operators – copper-free aluminum

### Standard Finishes:

- *Feraloy* iron alloy – electrogalvanized and aluminum acrylic paint
- Copper-free aluminum – barrels, black anodized; operators, natural
- Stainless steel – natural
- Phenolic – natural

### Electrical Rating Ranges:

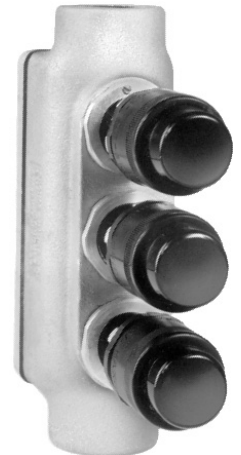
- Pushbutton stations and selector switches: heavy duty 600vac maximum
- Pilot lights: 110 to 600vac



EMP43



EMP501



EMP3000

### Certifications and Compliances:

- NEC/CEC:
  - Class I, Division 1, Groups C,D
  - Class I, Division 2, Groups B,C,D
  - Class II, Division 1, Groups E,F,G
  - Class II, Division 2, Groups F,G
  - Class III
- NEMA/EEMAC: 3, 7CD, 9EFG, 12
- UL Standard: 698
- CSA Standard: C22.2 No. 30

### Options:

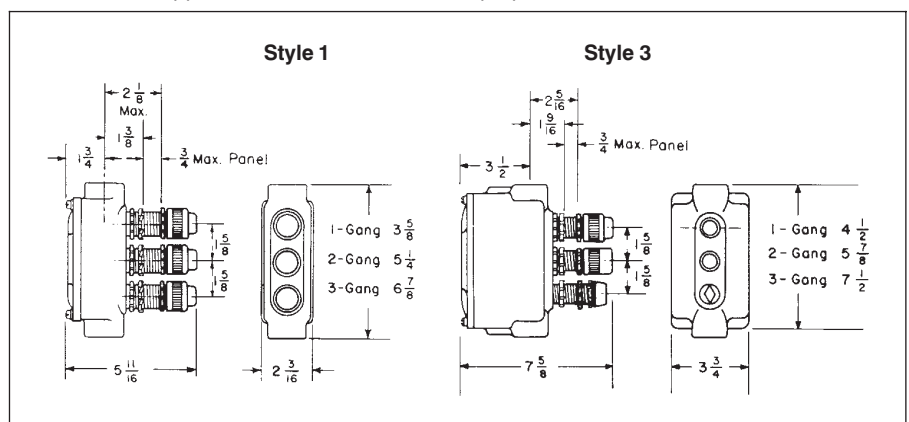
- The following special options are available from factory by adding suffix to Cat. No.:

### Description

	Suffix to be Added to Encl. Cat. #
Lockout on single pushbutton operator only. Locks normally closed contacts in open position .....	S153
Three-position selector switches with modified operation:	
Momentary contact clockwise operation, spring return to center, maintained contact counter-clockwise operation .....	S634
Momentary contact counter-clockwise operation, spring return to center, maintained contact clockwise operation .....	S635
Pilot lights for circuit voltages up to 600 volts maximum (standard voltage range 110-125) .....	See Listings
Combination of devices other than those listed can be supplied .....	Specify
LED pilot lights in place of standard incandescent pilot lamps .....	LED

### Dimensions (inches)

Dimensions are approximate, not for construction purposes.



# EMP Panel Mounted Push Button Stations Selector Switches, Pilot Lights and Combinations

Factory Sealed, 600 VAC Heavy Duty

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4C Control Stations

## Push Buttons

No. and Type of Push Buttons ♦	Body Style	Gang	Diagram	Hub Size	Cat. #
1 (ED38)	3	Single		1	EMP41‡
1 (ED35)	3	Single		1	EMP42‡
2 (ED35)	3	Single		1	EMP43‡
2 (ED38)	3	Two		1	EMP511‡
3 (ED38)	3	Three		1	EMP9111‡

## Push Button with Pilot Lights\*

No. and Type of Push Buttons ♦	No. Pilot Lights and Nominal Voltage	Body Style	Gang	Diagram	Hub Size	Cat. #
1 (ED38)	1 (120V)	3	Two		1	EMP501-†‡
1 (ED35)	1 (120V)	3	Two		1	EMP502-†‡
1 (ED35)	1 (120V)	3	Two		1	EMP503-†‡
1 (ED38)	2 (120V)	3	Three		1	EMP9001-†‡
1 (ED35)	2 (120V)	3	Three		1	EMP9002-†‡
2 (ED38)	1 (120V)	3	Three		1	EMP9011-†‡
1 (ED35)	2 (120V)	3	Three		1	EMP9030-†‡
2 (ED38)	1 (120V)	3	Three		1	EMP9101-†‡

## Push Buttons with Selector Switches

No. and Type of Push Buttons ♦	No. of Selector Switches	Body Style	Gang	Diagram			Hub Size	Cat. #
				Pos. 1	Pos. 2	Pos. 3		
1 (ED38)	1 (ED38)	3	Two				1	EMP516‡
2 (ED38)	1 (ED38)	3	Three				1	EMP9116‡

## Selector Switch Marking

### Two-Position

RUN, JOG  
 HAND, AUTOMATIC  
 FORWARD, REVERSE  
 ON, OFF

FAST, SLOW  
 OPEN, CLOSE  
 UP, DOWN

IN-OUT  
 RAISE-LOWER  
 START-STOP

### Three-Position

RUN, OFF, JOG  
 HAND, OFF, AUTOMATIC  
 FORWARD, OFF, REVERSE  
 FAST, OFF, SLOW

1, OFF, 2  
 OPEN, OFF, CLOSE  
 UP, OFF, DOWN

† Add color symbol for each pilot light from table below.

Color	Symbol	Color	Symbol
Red	J1	Clear	J10
Green	J3	Blue	J11
Amber	J6		

‡ Specify indicating plate marking for each push button and selector switch. Standard markings available as follows:

### Push Button Station Marking

START	OFF	RESET	LIGHT ON	EMERGENCY	OPEN	DOWN	RAISE
STOP	RUN	TRIP	HAND	FORWARD	CLOSE	IN	LOWER
ON	JOG	TEST	AUTOMATIC	REVERSE	UP	OUT	

♦ See page 400 for listing of ED35 & ED38 replacement contact blocks.

\* LED pilot lights can be furnished in place of standard incandescent pilot lamps. Add suffix LED after last color symbol. See Options on page 409.

# 4C EMP and EMPS Barrel Assemblies

Dimensions Pg. 414

Cl. I, Div. 1 & 2, Groups B,C,D  
 Cl. II, Div. 1, Groups E,F,G  
 Cl. II, Div. 2, Groups F,G  
 Cl. III  
 NEMA 3,7BCD,9EFG

Explosionproof  
 Dust-Ignitionproof  
 Raintight  
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As indicated in the listings, certain of the barrel assemblies are the same as those used in complete EMP units and may be utilized as replacements.

The remainder are primarily for use with hazardous area boxes to assemble special control stations. For additional information, refer to page 415 describing custom-built control panels.

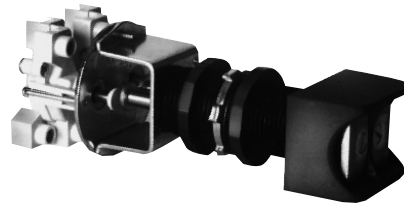
### Ordering Information:

Select the Cat. No. from the listings. For pilot lights and illuminated pushbuttons specify color of jewel using symbols from the table on page 411. For pushbuttons and selector switches specify markings from the tables on page 411.

### Group 1:

Standard assemblies are for replacement in complete EMP units or for custom-built control panels. Short assemblies are for custom-built control panels only. Both assemblies may be used with System 4 Control Stations.

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### Double pushbutton, double operator

Diagram	Short Assembly Cat. #	Standard Assembly Cat. #
	EMPS039	EMP039



### Two-position selector switch

Diagram		Short Assembly Cat. #	Standard Assembly Cat. #
<b>Position 1</b> A1 A2	<b>Position 2</b> A1 A2	EMPS049	EMP049
A1 A2	B1 B2	EMPS059	EMP059

### Three-position selector switch

Diagram			Short Assembly Cat. #	Standard Assembly Cat. #
<b>Position 1</b> A1 A2	<b>Position 2</b> A1 A2	<b>Position 3</b> A1 A2	EMPS069	EMP069
A1 A2	B1 B2	A1 A2	EMPS079	EMP079
A1 A2	B1 B2	A1 A2	EMPS089	EMP089



### Pilot light\*\*

Diagram	Standard Assembly Cat. #
	EMP009†

(120V)\* EMP009†



### Single pushbutton Double pushbutton, single operator

Diagram	Short Cat. #	Standard Cat. #
	EMPS019	EMP019
	EMPS029	EMP029

\* Other voltages available. See transformer suffix table on page 410. For 24 VDC operation, add suffix S300.

† Colors available: red, green, amber, clear, blue. See table on page 411.

\*\* LED pilot lights can be furnished in place of standard incandescent pilot lamps. Add suffix LED to catalog number after last color symbol. See Options page 409.

# 4C EMP and EMPS Barrel Assemblies

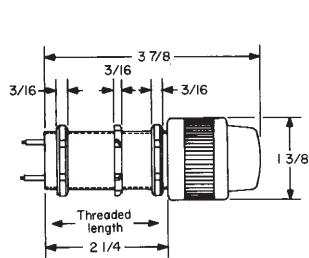
Dimensions (inches)\*

Cl. I, Div. 1 & 2, Groups B,C,D  
 Cl. II, Div. 2, Groups E,F,G  
 Cl. II, Div. 2, Groups F,G  
 Cl. III  
 NEMA 3,7BCD,9EFG

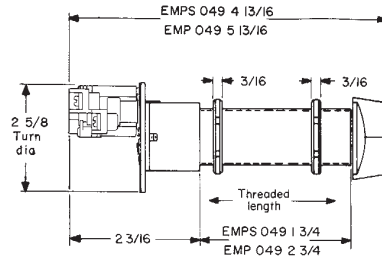
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NOTE: All barrel assemblies are 3/4"-14 NPSM thread size.

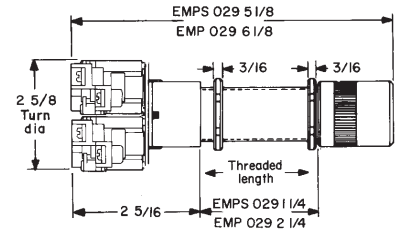
4C Control Stations



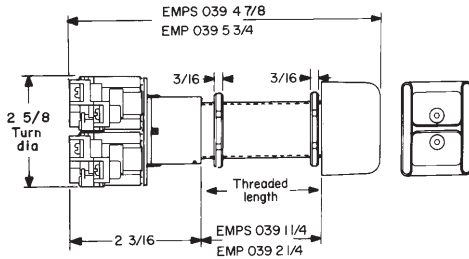
EMP009



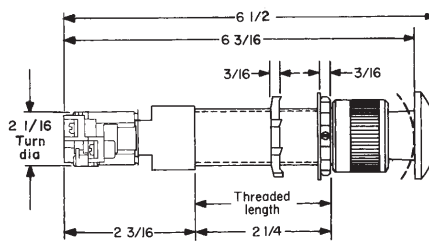
EMP-EMPS049, 059, 069, 079, 089



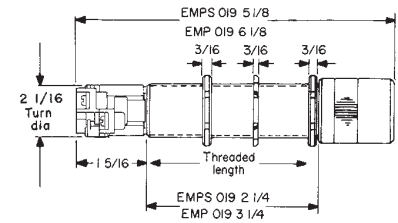
EMP-EMPS029



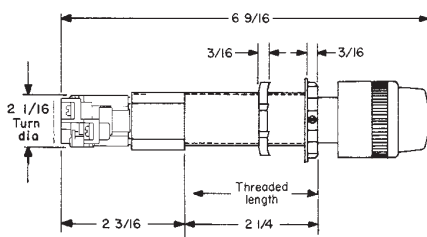
EMP-EMPS039



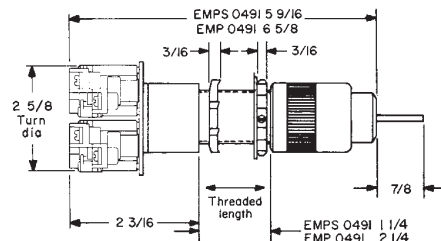
EMP098



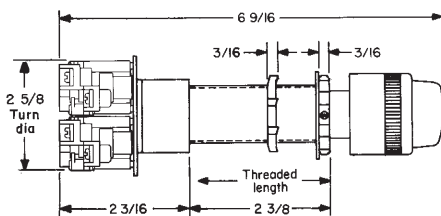
EMP-EMPS019



EMP0090



EMP-EMPS0491, 0591, 0691, 0791, 0891 Series



EMP0098

\* Dimensions are approximate, not for construction purposes.