Pushbuttons & Indicating Lights

Contents

Description	*Page*
Toggle Switches — E10 Series	47-2
Toggle Switches — E10E Series	47-7
Pushbutton Control Stations — Assembled — All Series	47-13
22.5 mm Heavy-Duty Watertight/Oiltight — E22 and EM22 Series	47-28
30.5 mm Square Multifunction Watertight/Oiltight — E30 Series	47-99
30.5 mm Heavy-Duty Watertight/Oiltight — 10250T Series	47-115
30.5 mm Corrosion Resistant Watertight/Oiltight — E34 Series	47-166
30.5 mm Watertight/Oiltight — HT800 Series	47-195
30.5 mm Class I Division 2 Hazardous Locations — 10250T/E34 Series	47-215
Ratings	47-243

HT800 Series

Contents

Description	*Page*
Product Description	**47-2**
Standards and Certifications	**47-2**
Technical Data and Specifications	
Toggle Switches	**47-2**
Hesitation Switches	**47-2**
Pushbutton Actuators	**47-2**
Product Selection	
Toggle Switches	**47-3**
Hesitation Switches	**47-4**
Pushbutton Actuators	**47-4**
Circuit Arrangements	**47-4**
Accessories	**47-5**
Dimensions	**47-6**
Catalog Number Structure	**47-6**

Toggle Switch

Pushbutton Actuator

Hesitation Switch

Product Description

Cutler-Hammer® E10 switches from Eaton's electrical business are intended for general purpose light industrial use. Designed for retrofit and OEM applications, the one-hole mounted units feature a bright nickel plated lever and a 0.468"-32 diameter threaded bushing with a 0.068 x 0.035 inch (1.7 x 0.9 mm) deep keyway for anti-rotation. Mounting hardware, consisting of one hexagonal locknut, one knurled or hexagonal face nut, and #6-32 x 3/16" (where applicable) binding head terminal screw. All are furnished unassembled in individually sealed poly bags, packed 10 per carton.

Standards and Certifications

- UL Recognized — File No. 2702
- CSA — File No. LR40068

Technical Data and Specifications

Toggle Switches

- AC Ratings:
  6 – 20A, 125V AC
  3 – 10A, 250V AC
  Max. 3/4 hp @ 250V AC
- DC Ratings:
  6 – 20A, 28V DC
- Electrical Life: 6,000 cycles make/break at switch ampere rating
- Operation:
  - Slow make/slow break mechanism with butt action for AC and low voltage DC applications
  - Maintained and momentary contacts
- Poles/Throws: 1 through 4, single and double throw
- Mounting:
  - One hole with threaded 0.468"-32 bushing and 0.068 x 0.035 inch (1.7 x 0.9 mm) deep keyway that serves as anti-rotational feature
- Lever Lengths: 0.563 inch (14.3 mm) or 0.688 inch (17.5 mm), bright nickel plated
- Terminals: Screw, 0.250 inch (6.4 mm) spade and solder lug

Hesitation Switches

- Operation:
  - Slow make/slow break mechanism with butt action for AC and low voltage DC applications; maintained contacts; ideal for reversing motor applications; patented interlock mechanism prevents operation of lever through center position until manual pressure is momentarily relieved.
- AC Ratings:
  15A, 125V AC
  10A, 250V AC
  Max. 3/4 hp at 250V AC
- DC Ratings:
  15A, 28V DC
- Poles/Throws: 2, 3 and 4, double throw only
- Mounting:
  - One pole with threaded 0.468"-32 bushing and 0.068 x 0.049 inch (1.7 x 1.2 mm) deep keyway
- Lever Length: 0.687 inch (17.4 mm), stainless steel
- Terminals: Screw

Pushbutton Actuators

- AC Ratings:
  6 – 15A, 125V AC (NO)
  3 – 10A, 250V AC (NO)
  Max. 1/3 hp @ 125/250V AC
- Operation:
  - Slow make/slow break mechanism
  - Normally open contacts
- Poles/Throws: Single, single and double throw
- Mounting:
  - One hole with 0.468"-32 threaded bushing and 0.068 x 0.035 inch (1.7 x 0.9 mm) deep keyway
  - Two bushing heights: 11/16 inch (17.5 mm) and 11/32 inch (8.7 mm)
- Button Extensions: 17/32 inch (13.5 mm) and 1/4 inch (6.4 mm), bright nickel plated
- Terminals: Screw

Product Selection

Toggle Switches

Table 47-1. Toggle Switches — AC Rated — Minimum Order Quantity 10 Pieces

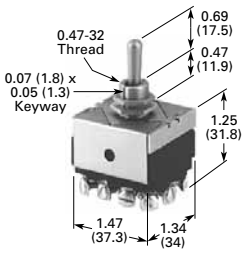
	Nominal AC Ratings			Poles and Throw ①	Function — Circuit with Lever In ②			Screw Terminal		0.250 Inch (6.4 mm) Spade Terminal		Solder Lug	
	Amperes		hp		UP Position	CENTER Position	DOWN Position — Keyway	Catalog Number	Price U.S. $	Catalog Number	Price U.S. $	Catalog Number	Price U.S. $
	125V	250V	250V										
1-Pole	**1-Pole**												
	6 15 20	3 10 10	— 3/4 3/4	1 P.S.T.	ON	None	OFF	**E10T106AS** **E10T115AS** **E10E120AS**		**E10T106AP** **E10T115AP** **E10E120AP**		**E10T106AL** **E10T115AL** **E10E120AL**	
	6 15 20	3 10 10	— 3/4 3/4	1 P.D.T.	ON	OFF	ON	**E10T106DS** **E10T115DS** **E10E120DS**		**E10T106DP** **E10T115DP** **—**		**—** **E10T115DL** **—**	
	6 15 20	3 10 10	— 3/4 3/4	1 P.D.T.	ON	None	ON	**E10T106ES** **E10T115ES** **E10E120ES**		**—** **E10T115EP** **—**		**—** **E10T115EL** **—**	
2-Pole	—	10	1/2	1 P.S.T. 1 P.D.T. 1 P.D.T. 1 P.D.T.	OFF ON ON (ON)	None OFF None OFF	(ON) (ON) (ON) (ON)	**E10T115BS** **E10T115FS** **E10T115HS** **E10T115GS**		**E10T115BP** **E10T115FP** **E10T115HP** **E10T115GP**		**—** **—** **—** **—**	
	2-Pole												
	6 15 20	3 10 10	— 3/4 3/4	2 P.S.T.	ON	None	OFF	**E10T206AS** **E10T215AS** **E10E220AS**		**E10T206AP** **E10T215AP** **E10E220AP**		**—** **E10T215AL** **E10E220AL**	
3-Pole	6 15 20	3 10 10	— 3/4 3/4	2. P.D.T.	ON	OFF	ON	**E10T206DS** **E10T215DS** **E10E220DS**		**E10T206DP** **E10T215DP** **E10E220DP**		**—** **E10T215DL** **—**	
	6 15 20	3 10 10	— 3/4 3/4	2 P.D.T.	ON	None	ON	**E10T206ES** **E10T215ES** **E10E220ES**		**—** **E10T215EP** **—**		**—** **E10T215EL** **—**	
	15	10	1/2	2 P.S.T. 2 P.D.T. 2 P.D.T.	OFF ON (ON)	None None OFF	(ON) (ON) (ON)	**E10T215BS** **E10T215HS** **E10T215GS**		**—** **E10T215HP** **E10T215GP**		**—** **—** **—**	
4-Pole	**3-Pole**												
	15	10	3/4	3 P.S.T. 3 P.D.T. 3 P.D.T.	ON ON ON	None OFF None	OFF ON ON	**E10E315AS** **E10E315DS** **E10E315ES**		**E10E315AP** **E10E315DP** **E10E315EP**		**—** **E10E315DL** **E10E315EL**	
	4-Pole												
	15	10	3/4	4 P.S.T. 4 P.D.T. 4 P.D.T.	ON ON ON	None OFF None	OFF ON ON	**E10E415AS** **E10E415DS** **E10E415ES**		**—** **—** **—**		**E10E415AL** **E10E415DL** **E10E415EL**	

① See **Figure 47-1** Circuit Arrangements on **Page 47-4**.
② ( ) = Momentary contacts, spring return action.

Discount Symbol **1CD1**

Hesitation Switches

Table 47-2. Hesitation Switches — Special Purpose — Minimum Order Quantity 10 Pieces

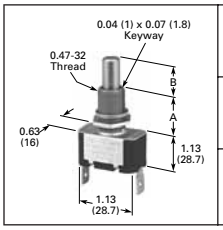
Approximate Dimensions in Inches (mm)	Nominal Ratings				Operation	Function — Circuit with Lever In…			Poles and Throw ①	Screw Terminal	
	Amperes			hp		UP Position	CENTER Position	DOWN Position — Keyway		Catalog Number	Price U.S. $
	28V DC	125V AC	250V AC	250V AC							
	15	15	10	3/4	Maintained	ON	OFF	ON	2 P.D.T. 3 P.D.T. 4 P.D.T.	**E10E215SS** **E10E315SS** **E10E415SS**	

① See **Figure 47-1** Circuit Arrangements below.

Note: Interlock mechanism prevents operation of lever through the center position until pressure is momentarily relieved. Designed for control and protection of reversing motors.

Pushbutton Actuators

Table 47-3. Pushbutton Actuators — Minimum Order Quantity 10 Pieces

Approximate Dimensions in Inches (mm)	Nominal Ratings					Poles and Throw ②	Contacts	Bushing Length Inches (mm) Dim. "A"	Button Extension Inches (mm) Dim. "B"	Typical Maximum Operating Force	Screw Terminal		Spade Terminal 0.250 Inch (6.4 mm)	
	Amperes AC				hp						Catalog Number	Price U.S. $	Catalog Number	Price U.S. $
	125V		250V		125 – 250V									
	NO	NC	NO	NC										
	6	—	3	—	—	1 P.S.T.	NO	0.69 (17.5) 0.34 (8.6)	0.53 (13.5) 0.25 (6.4)	0.9 lbs.	**E10P106RS** **E10P106JS**		**E10P106RP** **—**	
	15	—	10	—	1/3	1 P.S.T.	NO	0.69 (17.5) 0.34 (8.6)	0.53 (13.5) 0.25 (6.4)	0.9 lbs.	**E10P115RS** **E10P115JS**		**E10P115RP** **—**	
	15	10	10	5	1/4 ③	1 P.D.T.	NO, NC	0.69 (17.5)	0.53 (13.5)	1.0 lbs.	**E10P115LS**		**—**	

② See **Figure 47-1** Circuit Arrangements below.
③ Rated 1/4 hp at 125V, 1/2 hp at 250V.

Circuit Arrangements

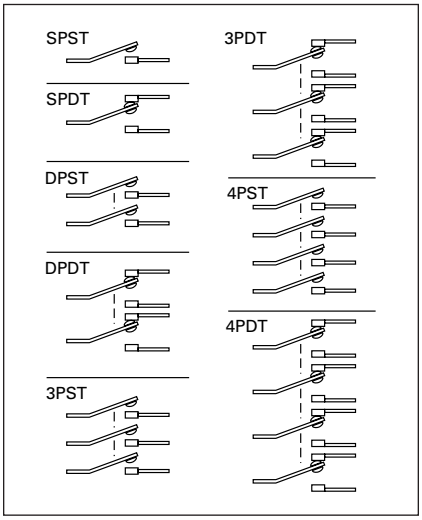
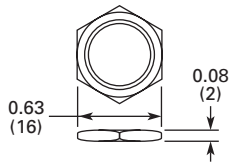
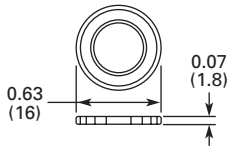
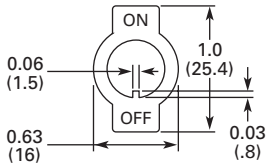
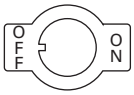


Figure 47-1. Circuit Arrangements

Discount Symbol **1CD1**

Accessories

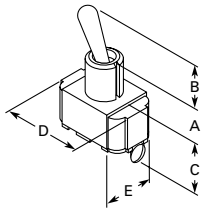
Table 47-4. Accessories — Minimum Order Quantity 100 Pieces

Description	Material/Notes	Catalog Number	Price U.S. $	Approximate Dimensions in Inches (mm)
Hexagon Locknut	Zinc-Chromate Treated Steel	**E10TA101**		
Knurled Face Nut	Zinc-Chromate Treated Steel	**E10TA102**		
Internal Tooth Lockwasher	Cadmium Plated Steel	**E10TA103**		
Terminal Screws	#6-32 x 3/16" Binding Head	**E10TA201**		
Spade Terminal Adapter — 0.250 inch (6.4 mm)	Assembles to Screw Terminals	**E10TA202**		
ON-OFF Indicating Plate — Vertical Orientation	Burnished Nickel Finish Steel	**E10TA301**		
OFF-ON Indicating Plate — Horizontal Orientation	Burnished Nickel Finish Steel	**E10TA302**		
Flip-Up Guard for Toggle Switches		**E10TA104**		
Fixed Shroud for Toggle Switches		**E10TA105**		

Discount Symbol **1CD1**

Dimensions

Table 47-5. Toggle Switch — Approximate Dimensions

	No. of Poles	Operation	Approximate Dimensions in Inches (mm)										
			Bushing Length A	Lever Length B	Screw Terminals			Spade Terminals			Solder Lug		
					C	D	E	C	D	E	C	D	E
	1	Momentary & Maintained	0.47 (11.9)	0.56 (14.2)	1.00 (25.4)	1.17 (29.7)	0.63 (16.0)	1.13 (28.7)	1.13 (28.7)	0.63 (16.0)	1.00 (25.4)	1.13 (28.7)	0.63 (16.0)
	2	Maintained	0.47 (11.9)	0.56 (14.2)	1.06 (26.9)	1.31 (33.3)	0.75 (19.1)	1.19 (30.2)	1.31 (33.3)	0.75 (19.1)	1.06 (26.9)	1.31 (33.3)	0.75 (19.1)
		Momentary	0.47 (11.9)	0.56 (14.2)	1.25 (31.8)			1.31 (33.3)			1.25 (31.8)		
	3	Maintained	0.47 (11.9)	0.69 (17.5)	1.27 (32.3)	1.34 (34.0)	1.44 (36.6)	1.37 (34.8)	1.34 (34.0)	1.44 (36.6)	1.23 (31.2)	1.34 (34.0)	1.44 (36.6)
	4	Maintained	0.47 (11.9)	0.69 (17.5)	1.20 (30.5)	1.30 (33.0)	1.40 (35.6)	1.30 (33.0)	1.34 (34.0)	1.40 (35.6)	1.23 (31.2)	1.34 (34.0)	1.44 (36.6)

Note: Spade terminal adapters are used on 6 ampere, 20 ampere and momentary screw terminal switches, adding 0.42 (10.7) to dimension C.

Catalog Number Structure

Table 47-6. E10 Catalog Numbering System — Not to be used for ordering purposes

E10 T 1 06 A S = E10T106AS

Series

Lever Length
T = 0.563 inch (14.3 mm) Lever
E = 0.688 inch (17.5 mm) Lever

Poles
1 = 1 Pole
2 = 2 Pole
3 = 3 Pole
4 = 4 Pole

Ratings — 125V
06 = 6 Amperes
15 = 15 Amperes
20 = 20 Amperes

Function ①
A = ON - None - OFF
B = OFF - None - (ON)
D = ON - OFF - ON
E = ON - None - ON
F = ON - OFF - (ON)
G = (ON) - OFF - (ON)
H = ON - None - (ON)

Termination
S = Screw
L = Solder Lug
P = Spade

Complete Cat. No.
0.563 inch (14.3 mm)
1-Pole
6 Amperes
ON - None - OFF
Screw Terminal

① ( ) = Momentary contacts, spring return action.

Contents

Description *Page*

Environmentally Sealed Toggle Switches

Molded-In Screw Terminal E10E Series **47-7**

Econoswitch E10E Series . **47-9**

Switch Guard **47-12**

One-Pole and Two-Pole Molded-In Screw Terminal

Features

- Completely sealed against dust, moisture and other contaminants
- One-hole mounted bushing for easy installation
- Multi-circuits offered
- 2- and 3-position with maintained and momentary action
- Molded-in terminal inserts and terminals numbers
- 1- and 2-pole circuitry

Options

Note: Contact your local Eaton Sales Representative for more information.

- Non-UL Recognized devices
  - Alternate toggle levers
  - Locking toggle levers
  - Rocker buttons
- Special mounting hardware
- Mounting hardware furnished assembled
- Terminal screws furnished assembled
- Special circuits
- Panel seal, part number 32-341
- Spade terminal adapters available

Standards and Certifications

- UL — File number E15346; Guide card number is WOYR2
- CSA — LR40068, class number 6241

Technical Data and Specifications

- Watertight seal per MIL-STD-108E and designed to meet IP68
- Thermoset molding materials meet flame retardant requirements
- Temperature Range: -50° to 150°F (-46° to 66°C)
- Life: 20,000 operations at rated load; 40,000 operations mechanical life; 6,000 operations at hp ratings per UL and CSA requirements
- Bushings: 15/32" – 32 thread

Product Selection

Table 47-7. Molded-In Screw Terminal E10E Series Toggle Switch Product Selection

Nominal AC Ratings					Circuit with Lever Position			Catalog Number	Price U.S. $
Amperes		1-Phase hp		3-Phase hp	Up	Center	Down (Keyway)		
125V	250V	125V	250V	125/250V					
One-Pole									
18	9	1/4	1/2	—	ON ON ON	OFF NONE NONE	ON OFF ON	**E10E118DM** **E10E118AM** **E10E118EM**	
Two-Pole									
18	9	1/2	1	—	ON ON ON	OFF NONE NONE	ON OFF ON	**E10E218DM** **E10E218AM** **E10E218EM**	

Discount Symbol **1CD1**

Dimensions

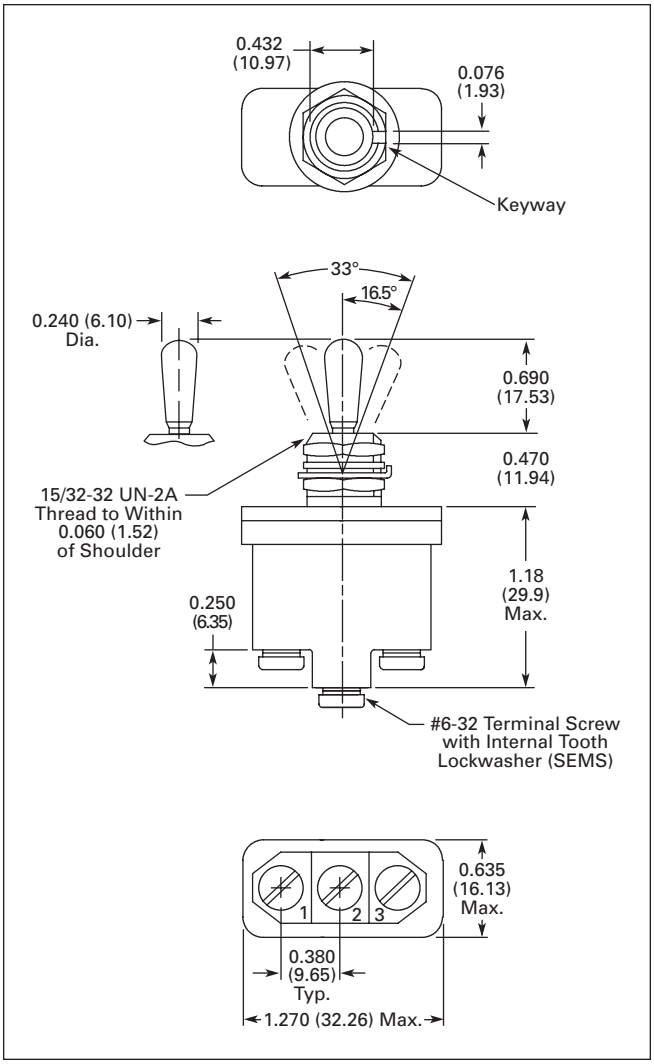


Figure 47-2. One-Pole Molded-In Screw Terminal E10E Series Toggle Switches — Approximate Dimensions in Inches (mm)

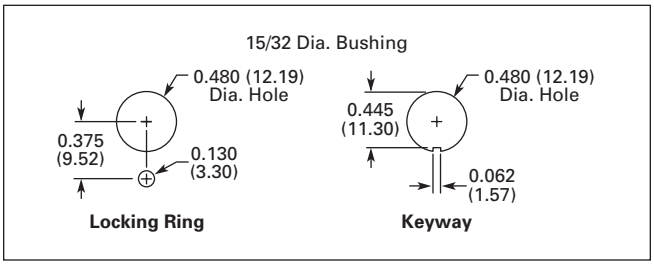


Figure 47-3. Toggle Switch Panel Cutout Dimensions in Inches (mm)

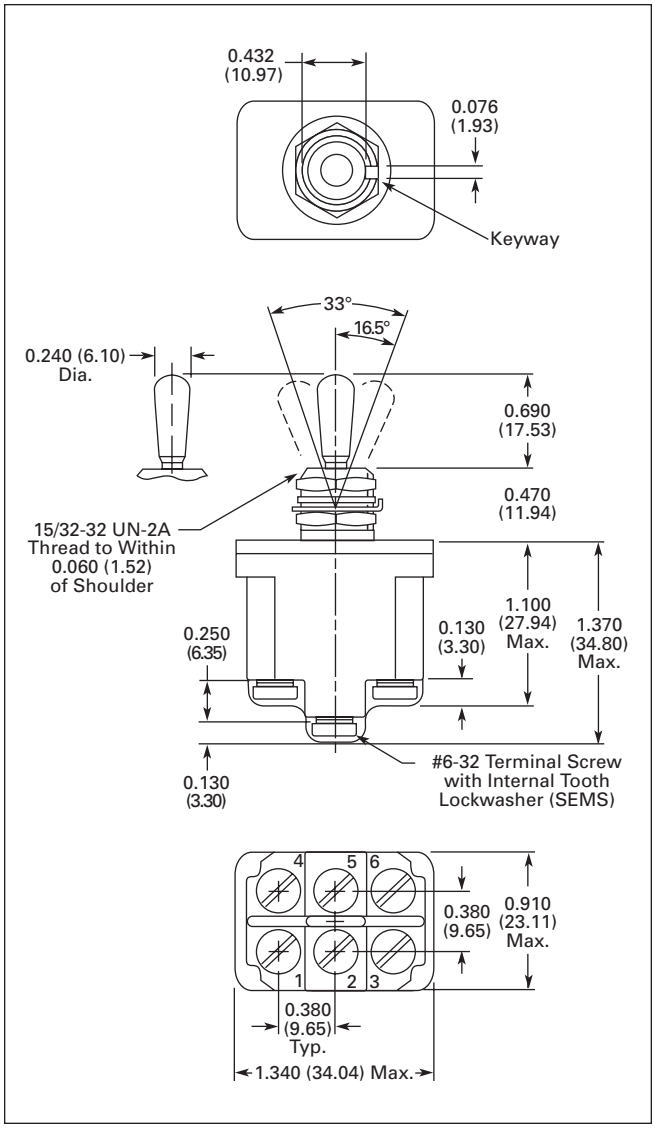


Figure 47-4. Two-Pole Molded-In Screw Terminal E10E Series — Approximate Dimensions in Inches (mm)

One-Pole and Two-Pole Econoswitch E10E Series Toggle Switches

Standards and Certifications

- UL — File number E15346; Guide card number is WOYR2
- CSA — LR40068, class number 6241

Table 47-9. UL and CSA Nominal Ratings

Catalog Number	Amperes		1-Phase hp		3-Phase hp
	125V AC	250V AC	125V AC	250V AC	125/250V AC
E10E118xx	18	9	1/4	1/2	—
E10E218xx	18	9	1/2	1	—

Features

- Environmentally sealed
- 1- and 2-pole circuitry
- One-hole mounting for easy installation
- Multi-circuits
- 2- and 3-position with maintained and momentary action
- Three types of termination offered as standard

Technical Data and Specifications

- Watertight seal per MIL-STD-108E and designed to meet IP68
- Three standard types of terminals:
  Screws — 6-32 UNC-22A
  Solder lug — 0.125 (3.17) dia. hole
  Spade — 0.250 (6.35) x 0.032 (0.81) thick
- Life: 50,000 operations at rated load; 100,000 operations mechanical life
- Temperature Range: -50° to 150°F (-46° to 66°C)

Product Selection

Table 47-8. Econoswitch E10E Series Toggle Switch Product Selection

Type of Operation	Current Ratings — Amperes						Circuit with Lever Position			Screw Terminals		Solder Lug Terminals		Spade Terminals	
	28V DC			115V AC, 60 or 400 Hz			Up	Center	Down (Keyway)	Catalog Number	Price U.S. $	Catalog Number	Price U.S. $	Catalog Number	Price U.S. $
	Lamp Load	Resistive Load	Inductive Load	Lamp Load	Resistive Load	Inductive Load									
One-Pole															
Maintained	5	20	15	3	15	10	ON	OFF	ON	**E10E118DS**		**E10E118DL**		**E10E118DP**	
Maintained	5	20	15	3	15	10	ON	NONE	OFF	**E10E118AS**		**E10E118AL**		**E10E118AP**	
Maintained	5	20	15	3	15	10	ON	NONE	ON	**E10E118ES**		**E10E118EL**		**E10E118EP**	
Momentary	4	15	10	2	15	7	ON ①	OFF	ON ①	**E10E118GS**		**E10E118GL**		**E10E118GP**	
Momentary	4	15	10	2	15	7	OFF	NONE	ON ①	**E10E118BS**		**E10E118BL**		**E10E118BP**	
Two-Pole															
Maintained	7	20	15	4	15	15	ON	OFF	ON	**E10E218DS**		**E10E218DL**		**E10E218DP**	
Maintained	7	20	15	4	15	15	ON	NONE	OFF	**E10E218AS**		**E10E218AL**		**E10E218AP**	
Maintained	7	20	15	4	15	15	ON	NONE	ON	**E10E218ES**		**E10E218EL**		**E10E218EP**	
Momentary	5	18	10	2	11	8	ON ①	OFF	ON ①	**E10E218GS**		**E10E218GL**		**E10E218GP**	
Momentary	5	18	10	2	11	8	OFF	NONE	ON ①	**E10E218BS**		**E10E218BL**		**E10E218BP**	

① Momentary contact.

Discount Symbol **1CD1**

Dimensions

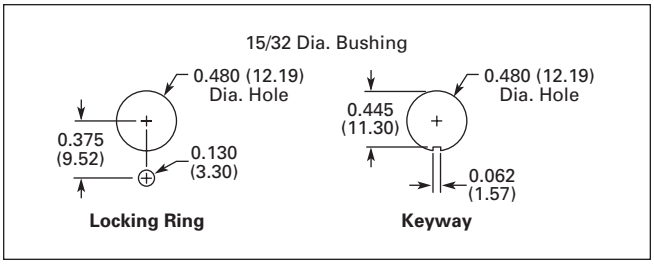


Figure 47-5. Toggle Switch Panel Cutout Dimensions in Inches (mm)

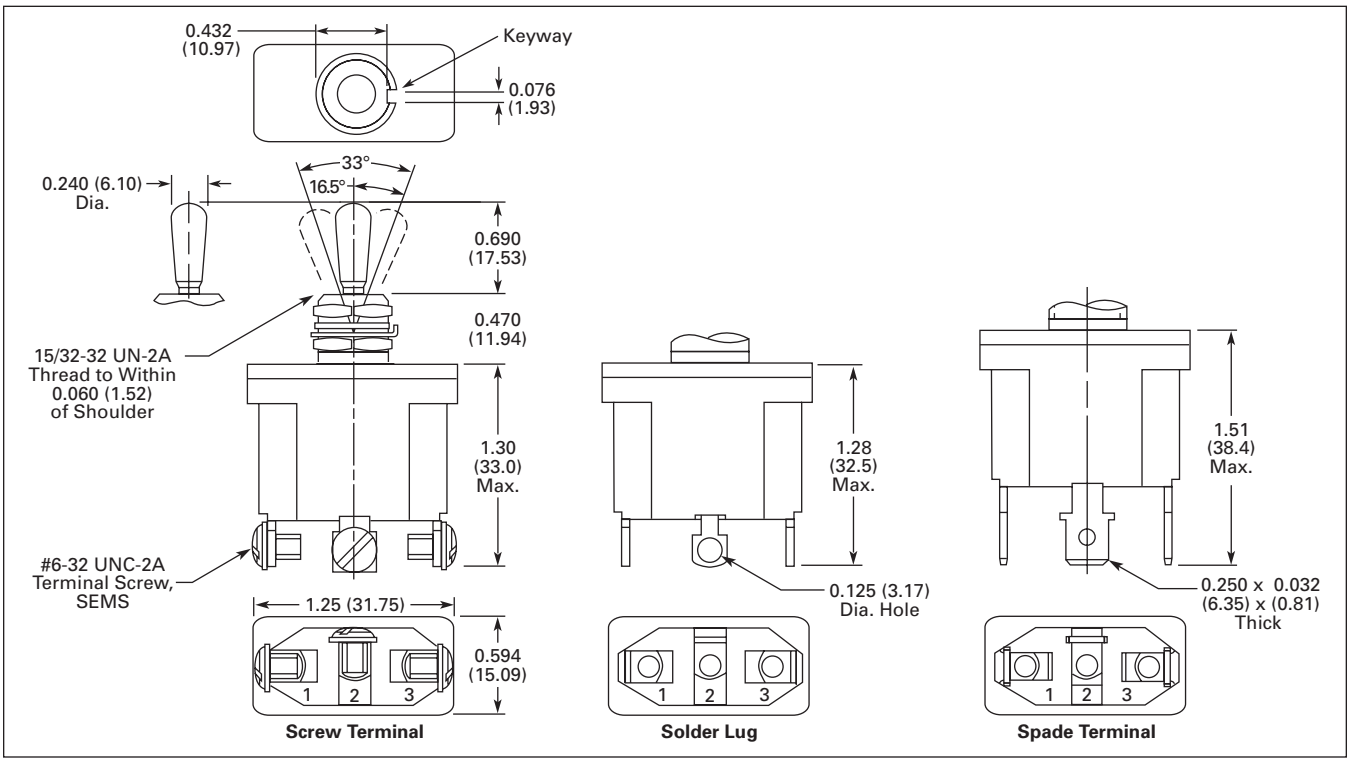


Figure 47-6. One-Pole Econoswitch E10E Series Toggle Switches — Approximate Dimensions in Inches (mm)

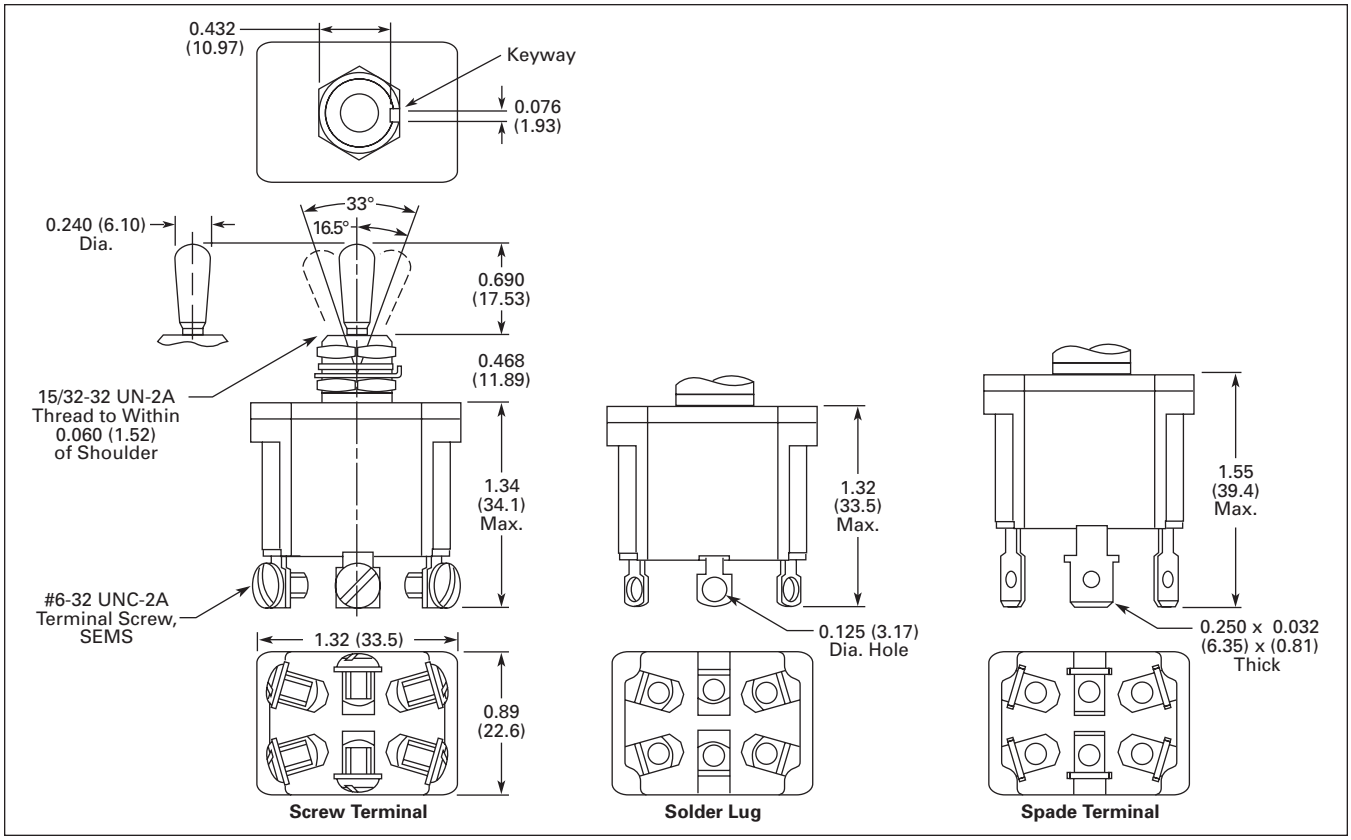


Figure 47-7. Two-Pole Econoswitch E10E Series Toggle Switches — Approximate Dimensions in Inches (mm)

Switch Guard

Features

- For use with 2-position switch
- Cover closure transfers switch toggle lever to OFF position
- One-hole mounted mounting style
- Cover is molded out of red thermoset molding material
- Guard cover is spring-loaded to either close or lock in open position
- Prevents accidental operation at switches

Product Selection

Table 47-10. Switch Guard Product Selection

	Catalog Number	Price U.S. $
Switch Guard	**E10TA104**	

Dimensions

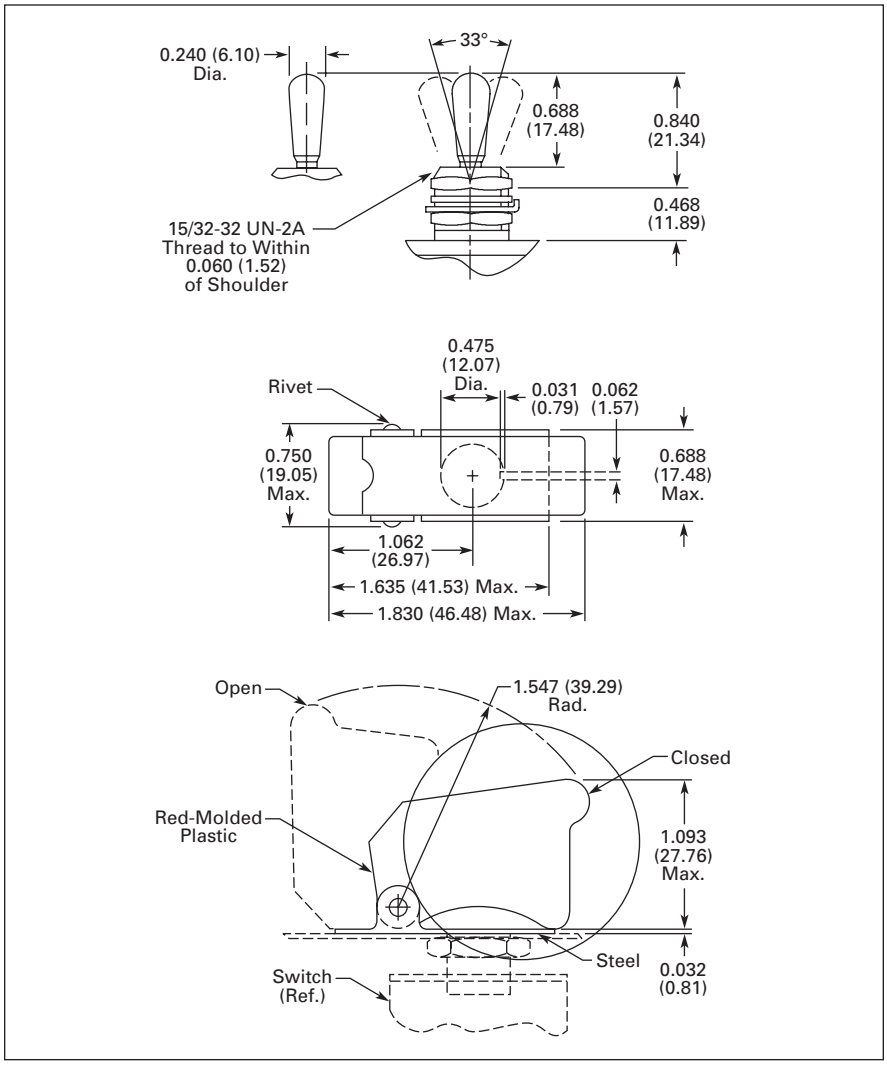


Figure 47-8. Switch Guard— Approximate Dimensions in Inches (mm)

Discount Symbol **1CD1**

Contents

Description	*Page*
Assembled Control Stations	
Features	**47-13**
E22 Control Stations	**47-14**
General Purpose Control Stations	**47-16**
Special Purpose Control Stations	**47-18**
Heavy-Duty Control Stations	**47-19**
10250T Control Stations	**47-20**
10250T Class I Division 2 Control Stations	**47-21**
E34 Class I Division 2 Corrosion Resistant Control Stations	**47-22**
Dimensions	**47-23**
Custom Assembled Stations	**47-24**
Renewal Parts	**47-26**

Features

E22 Control Stations

Cat. No. E22AS204

- 22.5 mm operators
- Industrial grade
- Impact resistant polycarbonate enclosures
- Compact wall mount
- Optional yellow covers
- Popular with OEMs
- UL (NEMA) Type 4, 4X, 12, 13

General Purpose Control Stations

Cat. No. 10250H5200

- Construction grade
- General purpose wall mount
- Popular with contractors
- UL (NEMA) Type 1

Special Purpose Control Stations

Cat. No. 10250H364

- Standard grade
- Polyester enclosure
- UL (NEMA) Type 3, 3R, 4, 4X, 13

Heavy-Duty Control Stations

Cat. No. 10250H1913

- Industrial grade
- Extra heavy-duty
- Polyester enclosure
- Booted buttons
- Outdoor installation
- UL (NEMA) Type 3, 3R, 3S, 4, 4X, 12, 13

10250T Control Stations

Cat. No. 10250T3525

- 30.5 mm operators
- Industrial grade
- Zinc die cast enclosure
- Popular with industrial end users
- UL (NEMA) Type 4, 4X, 12, 13

Class I Division 2 Control Stations

Cat. No. E34EX7023P

- Available with 10250T or E34 30.5 mm operators
- Zinc die cast, polyester or stainless steel enclosures
- Factory-sealed contact blocks
- Popular with industrial end users
- UL (NEMA) Type 4, 4X, 12, 13
- NEC Class I Division 2 Groups B, C and D

Emergency Stop Station

Assembled E-Stop Stations

Product Description

- Safety-yellow cover and light gray base enclosures
- Polycarbonate enclosures
- Single 21 mm diameter hole for cable entry

Table 47-11. Product Selection — Emergency Stop Stations — UL (NEMA) Type 4, 4X, 12, 13

Operator	Contact Symbol	Button Type/Color	Legend Marking	Catalog Number	Price U.S. $
Cat. No. E22AT111	1NC	40 mm Latching Trigger Action/Red	EMERGENCY STOP Round Yellow Nameplate	**E22AT111** ①	
		40 mm Latching Trigger Action/Red	EMERGENCY STOP Safety Yellow Guard	**E22AT112** ①	
		40 mm Latching Trigger Action/Red	EMO Safety Yellow Cover	**E22AT113** ①	
		40 mm Latching Trigger Action/Red	EMO Safety Yellow Guard	**E22AT114** ①	
Cat. No. E22AT111C	1NO 1NC	40 mm Latching Trigger Action/Red	EMERGENCY STOP Round Yellow Nameplate	**E22AT111C** ①	
		40 mm Latching Trigger Action/Red	EMERGENCY STOP Safety Yellow Guard	**E22AT112C** ①	
		40 mm Latching Trigger Action/Red	EMO Safety Yellow Cover	**E22AT113C** ①	
		40 mm Latching Trigger Action/Red	EMO Safety Yellow Guard	**E22AT114C** ①	
Cat. No. E22AT111E	1NO 1NO	40 mm Latching Trigger Action/Red	EMERGENCY STOP Round Yellow Nameplate	**E22AT111E** ①	
		40 mm Latching Trigger Action/Red	EMERGENCY STOP Safety Yellow Guard	**E22AT112E** ①	
		40 mm Latching Trigger Action/Red	EMO Safety Yellow Cover	**E22AT113E** ①	
		40 mm Latching Trigger Action/Red	EMO Safety Yellow Guard	**E22AT114E** ①	
Cat. No. E22ASB106	1NC	40 mm Mushroom, Momentary Action/Red	EMERGENCY STOP Yellow Cover	**E22ASB105** ②	
		40 mm Latch in Twist-to-Release/Red	EMERGENCY STOP Yellow Cover	**E22ASB106** ②	

① Compliant with EN418 Safety of Machinery Standard.
② Non-compliant with EN418 requirements.

Dimensions . . . . . **Page 47-23**
Custom Stations . . . . . **Pages 47-24 – 47-25**
Discount Symbol **1CD1C**

E-Stop Control Station

Assembled E22 Pushbutton Stations

Product Description

- E22 Series black bezel pushbuttons
- Light gray polycarbonate enclosures
- Single 21 mm diameter hole for cable entry

Note: For Custom Stations, see **Pages 47-24 – 47-25.**

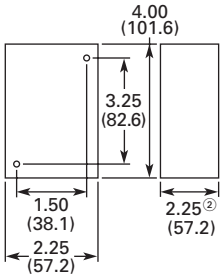
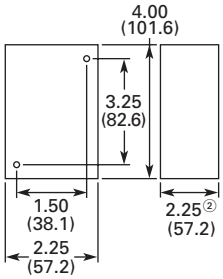
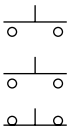
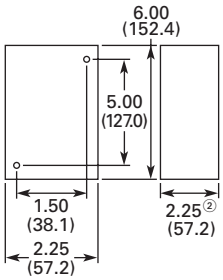
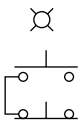
Table 47-12. Product Selection — Assembled Control Stations — UL (NEMA) Type 4, 4X, 12, 13

Operator	Contact Symbol	Button Type/Color	Legend Marking	Catalog Number Chrome Bezels	Catalog Number Black Bezels	Price U.S. $
One Pushbutton *Cat. No. E22ASB109*	1NC	Extended/Red	STOP	**E22AS109**	**E22ASB109**	
	1NO	Flush/Green	START	**E22AS108**	**E22ASB108**	
Two Pushbuttons *Cat. No. E22AS204*	1NO 1NC	Flush/Green Extended/Red	START STOP	**E22AS204**	**E22ASB204**	
		Flush/Green Mushroom/Red	START STOP	**E22AS205**	**E22ASB205**	
		Flush/Green Latch-In Twist-to-Release/Red	START STOP	**E22AS206**	**E22ASB206**	
Three Pushbuttons *Cat. No. E22AS304*	1NO 1NC 1NO	Flush/Black Extended/Red Flush/Black	FOR STOP REV	**E22AS304**	**E22ASB304**	
		Flush/Black Extended/Red Flush/Black	CLOSE STOP OPEN	**E22AS305**	**E22ASB305**	
		Flush/Black Extended/Red Flush/Black	UP STOP DOWN	**E22AS306**	**E22ASB306**	

Dimensions. . . . . **Page 47-23**
Custom Stations . . . . . **Pages 47-24 – 47-25**
Discount Symbol **1CD1C**

General Purpose Type N Control Stations

Table 47-13. Product Selection — Type N Control Stations – UL (NEMA) Type 1

Enclosure Type	Contact Symbol	Button Type/Color	Legends	Catalog Number	Price U.S. $	Approximate Dimensions in Inches (mm)
One Element						
Single Button with Padlock Attachment Accessory		Flush/Green	START	**10250H5100**		
		Flush/Red	STOP	**10250H5101**		
		Extended/Red	STOP	**10250H5104**		
		Palm Operated/Black	None	**10250H89** ①		
Selector Switch		3-Position Selector Switch/Black Knob	RUN/OFF/AUTO	**10250H289** ①		
Two Element						
Two Button Station		Flush/Red	START/STOP	**10250H5200**		
		Flush/Green Extended/Red	START/STOP	**10250H5207**		
		Flush/Black (All)	RAISE/LOWER FOR/REV OPEN/CLOSE UP/DOWN HIGH/LOW FAST/SLOW	**10250H5201** **10250H5202** **10250H5203** **10250H5204** **10250H5205** **10250H5208**		
Three Element						
Three Button Stations		Flush/Black (All)	FOR/REV/STOP UP/DOWN/STOP RAISE/LOWER/STOP OPEN/CLOSE/STOP FAST/SLOW/STOP	**10250H5300** **10250H5301** **10250H5302** **10250H5303** **10250H5304**		
Three Button with Indicating Light		110/220V Neon Indicating Light Clear — Flush/Green; Flush/Red Red — Flush/Green; Flush/Red Amber — Flush/Green; Flush/Red	START/STOP	**10250H5310** **10250ED853** **10250ED853-2**		

① Round button.
② 2.38 (60.5) for neon indicating light.

Renewal Parts ..... **Page 47-26**
Accessories ..... **Page 47-17**
Discount Symbol **1CD1C**

General Purpose Type N Open Type Assemblies

Table 47-14. Product Selection — Type N — Open Type Construction (No Cover)

Enclosure Type	Contact Symbol	Button Type/Color	Legends	Catalog Number	Price U.S. $
One Element					
Selector Switch		3-Position Selector Switch/Black Knob	RUN/OFF/AUTO	**10250H2538**	
Two Element					
Two Button Station		Flush/Green	START/STOP	**10250H2747**	
Mechanically Inter-locked Pushbuttons		Flush/Black (All) Mech. Interlocked	None ①	**10250H2544**	

① No legend on buttons. Specify any standard legend.

Table 47-15. Accessories for Type N Control Stations

	Description	Catalog Number	Price U.S. $
	Padlock Attachment — For field assembly on square button type (except extended button types)	**10250H5110**	

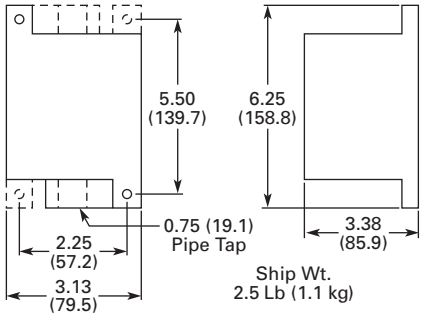
Table 47-16. Maximum Ampere Ratings for Type N Control Stations

Voltage	AC				DC		
	110V	220V	440V	550V	120V	240V	600V
Make and Emergency Interrupt Capacity	30	15	7.5	6	1.0	0.5	0.1
Normal Load Break	3	1.5	0.75	0.6	1.0	0.5	0.1
Continuous Current	10	10	10	10	10	10	10

Renewal Parts ..... **Page 47-26**
Discount Symbol **1CD1C**

Special Purpose Control Stations

Table 47-17. Product Selection — Special Purpose Control Stations — UL (NEMA) Type 3, 3R, 4, 4X, 13

	Type	Feature	Symbol	Legends	Catalog Number	Price U.S. $	Approximate Dimensions in Inches (mm)
One Element Pushbutton Station	One Element Push-button	Flush		START	**10250H2738**		
				STOP	**10250H658**		
		With Lock Hasp		STOP	**10250H665**		
Two Element Pushbutton Station *Cat. No. 10250H364*	Two Element Push-button	Flush		START/STOP	**10250H364**		
		With Lock Hasp		START/STOP	**10250H671**		
		Buttons Interlocked		FAST/SLOW FOR/REV UP/DOWN OPN/CLOSE	**10250ED664** **10250H2740** **10250H2741** **10250H2742**		

Renewal Parts . . . . . **Page 47-26**
Discount Symbol **1CD1C**

Heavy-Duty Type H Control Stations

Product Description

- 10250T Series operators
- Dark brown polyester enclosure
- Protective rubber gaskets provide NEMA 3S rating on pushbuttons
- Top and bottom 3/4-inch NPT conduit entrances
- Includes alternate legend plates and spare mounting screws

Table 47-18. Product Selection — Type H Control Stations — UL (NEMA) Type 3, 3S, 4, 4X, 12, 13

	Type of Element	Feature	Circuit	Assembled Legend Plate	Unassembled Alternate Legend Plates	Catalog Number	Price U.S. $
One Element							
	Pushbuttons	Without Padlock Hasp	1NO-1NC	JOG	START STOP RUN	**10250H1881**	
		With Padlock Hasp	1NC	STOP	—	**10250H4239**	
	Knob Selector Switch	2-Position 3-Position	1NO-1NC 1NO-1NC	OFF/ON MAN/OFF/AUTO	— —	**10250H4526** **10250H4527**	
Two Element							
	Pushbuttons	Standard	1NO-2NC	START/STOP	—	**10250H1884**	
			2NO-2NC	RAISE/LOWER	FORWARD REVERSE OPEN CLOSE	**10250H1885**	
		Standard and Standard w/ Padlock Hasp	1NO-2NC	START/STOP	—	**10250H4240**	
Three Element							
Cat. No. 10250H1913	Pushbuttons	Standard 2 Standard and Standard w/ Padlock Hasp	2NO-3NC 2NO-3NC	FOR/REV/STOP FOR/REV/STOP	START JOG RAISE LOWER	OPEN CLOSE FAST SLOW	**10250H1890** **10250H4241**
	Indicating Light and Push-buttons — 120V	Light-Red Lens and 2 Plain	1NO-2NC	MOTOR RUNNING START/STOP	—		**10250H1913**

Table 47-19. Approximate Dimensions in Inches (mm)

NEMA Type	No. of Elements	Dimensions		
		Wide	High	Deep
3, 3R, 3S, 4, 4X, 13	1 and 2	4.50 (114.3)	8.25 (209.6)	4.50 (114.3)
	3	4.50 (114.3)	10.75 (273.1)	4.25 (108.0)

Table 47-20. Maximum Ampere Ratings

Description	Volts AC 50/60 Hz				Volts DC	
	120	240	480	600	125	250
Make and Emerg. Inter. Capacity	60	30	15	12	1.1	0.55
Normal Load Break	6	3	1.5	1.2	1.1	0.55
Continuous Amperes	10	10	10	10	10	10
Voltamperes —						
Make and Emerg. Inter. Cap.	7200	7200	7200	7200	138	138
Normal Load Break	720	720	720	720	138	138

Renewal Parts . . . . . **Page 47-27**
Discount Symbol **1CD1C**

10250T Heavy-Duty 30.5 mm Control Stations

Product Description

- 10250T Series operators
- ASA 61 gray die-cast zinc enclosures
- Surface or flush mounting
- Single 3/4-inch NPT conduit entrance on one and two element stations
- Single 1-inch NPT conduit entrance on three element stations

Table 47-21. Product Selection — Complete Assembled Stations — UL (NEMA) Type 4, 4X, 12, 13

Number of Elements	Type of Elements ②	Features	Contact Block(s)	Legend	Surface Mounting		Flush Mounting ④	
					Catalog Number	Price U.S. $	Catalog Number	Price U.S. $
Break Glass Station	Break Glass Station ①	Gray Enclosure Red Enclosure	NC (Logic Level)	EMERG. OFF EMERG. OFF	**10250TGS** **10250TGR**		— —	
One Element	Pushbutton	Standard	NO-NC NC NO-NC	START STOP None	**10250T3516** **10250T3518** **10250T3540**		**10250T3573** **10250T3575** **10250T3597**	
		Mushroom Head	NO-NC NC	START STOP	**10250T3517** **10250T3519**		**10250T3574** **10250T3576**	
		With Lock Hasp ⑤	NC	STOP	**10250T3520**		**10250T3577**	
	Selector Switch	2-Position Black Knob	NO-NC	OFF/ON	**10250T3523**		**10250T3580**	
		3-Position Black Knob	2NO	MAN/OFF/AUTO	**10250T3524**		**10250T3581**	
	Push-Pull 3-Position	Momentary Red Button	2NC	START/STOP	**10250T3545**		**10250T3602**	
Two Element	Pushbuttons	Standard	1NO-2NC 2NO-2NC 2NO-2NC	START/STOP RAISE/LOWER None	**10250T3525** **10250T3672** **10250T3541**		**10250T3582** **10250T3673** **10250T3598**	
		With Lock Hasp ⑤	1NO-2NC	START/STOP	**10250T3542**		**10250T3599**	
		Standard and Mushroom Head	1NO-2NC	START/STOP	**10250T3526**		**10250T3583**	
		Standard with Maintained Contact ③	NO-NC Plus NC	START/STOP	**10250T3528**		**10250T3585**	
Three Element	Pushbuttons	Standard	2NO-3NC 2NO-3NC 2NO-3NC 2NO-3NC	FOR, REV, STOP UP, DOWN, STOP OPEN, CLOSE, STOP None, None, STOP	**10250T3532** **10250T3615** **10250T3614** **10250T3543**		**10250T3589** — — **10250T3600**	
		2 Standard and with Lock Hasp	2NO-3NC	None, None, STOP	**10250T3544**		**10250T3601**	
	Indicating Light (Transformer Type) and Pushbuttons	Red Lens — 120V Red Lens — 240V Red Lens — 480V Red Lens — 600V	1NO-2NC	MOTOR RUN, START/STOP	**10250T3536** **10250T3537** **10250T3538** **10250T3539**		**10250T3593** **10250T3594** **10250T3595** **10250T3596**	

① Breaking glass closes contact.
② Stop buttons are red — all others are black.
③ Uses deep cover instead of shallow cover. Switch component is 10250TA67.
④ NEMA 4 – 13, if properly mounted on a flat surface. Consists of front plate, legend, operator and contact blocks.
⑤ Lock is 10250TA2.

Break Glass Operator Shown Assembled to Contact Block (Contact Block Supplied Separately)

Table 47-22. Break Glass Kit

Description	Catalog Number	Price U.S. $
Operator with Hammer and 5 Glass Discs	**10250TBG**	
Glass Discs Only (5)	**10250TGL**	

Custom Stations . . . . . **Pages 47-24 – 47-25**
Dimensions . . . . . **Pages 47-160 – 47-162**
Renewal Parts . . . . . **Pages 47-157 – 47-158**
Discount Symbol **1CD1C**

Class I Division 2 10250T Heavy-Duty 30.5 mm Control Stations

Product Description

- 10250T Series operators
- Factory sealed contact blocks
- Die-cast, polyester or stainless steel enclosures
- Approved for NEC Class I Division 2, Groups B, C and D or Class I Zone 2 Group IIB plus Hydrogen type hazardous locations

Die Cast Enclosure with One Pushbutton — Aluminum Jumbo Mushroom Red-Engraved EMER. STOP Catalog Number 10250T7007

Polyester Enclosure with Two Pushbuttons — Flush Green and Extended Red Catalog Number 10250T7023P

Stainless Steel Enclosure with One Red Pilot and Two Pushbuttons — Flush Green and Extended Red Catalog Number 10250T7033S

Table 47-23. Product Selection — Complete 10250T Assembled Stations — UL (NEMA) Type 4, 4X, 12, 13; NEC Class I Division 2, Groups B, C and D

Operator	Contact Symbol	Button Type/Color	Legend Marking	Die Cast Enclosure		Polyester Molded Enclosure		Stainless Steel Enclosure	
				Catalog Number	Price U.S. $	Catalog Number	Price U.S. $	Catalog Number	Price U.S. $
One Pushbutton	1NO 1NC	Flush/Green	START	**10250T7003**		**10250T7003P**		**10250T7003S**	
		Extended/Red	STOP	**10250T7005**		**10250T7005P**		**10250T7005S**	
		Alum. Jumbo Mushroom/Red	EMER. STOP (Engraved Button)	**10250T7007**		**10250T7007P**		**10250T7007S**	
		Flush/Black	No Legend	**10250T7009**		**10250T7009P**		**10250T7009S**	
Two Pushbuttons	1NO 1NC Each Button	Flush/Green Extended/Red	START STOP	**10250T7023**		**10250T7023P**		**10250T7023S**	
		Flush/Black Flush/Black	No Legend No Legend	**10250T7025**		**10250T7025P**		**10250T7025S**	
One Pilot Light Two Pushbuttons	1NO 1NC Each Button	120V AC Red Flush/Green Extended/Red	No Legend START STOP	**10250T7033**		**10250T7033P**		**10250T7033S**	
		120V AC Red Flush/Black Flush/Black	No Legend	**10250T7035**		**10250T7035P**		**10250T7035S**	
3-Position Selector Switch	2NO 2NC	Maintained Knob/Black	HAND/OFF/AUTO	**10250T7011**		**10250T7011P**		**10250T7011S**	
		Maintained Knob/Black	No Legend	**10250T7013**		**10250T7013P**		**10250T7013S**	
One Pushbutton Maintained	Pull Push O X 1NO X O 1NC	Push-Pull w/Jumbo Mushroom/Red	EMER. STOP (Engraved Button)	**10250T7019**		**10250T7019P**		**10250T7019S**	

Custom Stations . . . . . **Pages 47-24 – 47-25**
Enclosure Dimensions . . . . **Page 47-23**
Operator Dimensions . . . . . **Pages 47-160 – 47-162**
Discount Symbol **1CD1C**

Class I Division 2 E34 Corrosion Resistant 30.5 mm Control Stations

Product Description

- E34 Series operators
- Factory sealed contact blocks
- Die-cast, polyester or stainless steel enclosures
- Approved for NEC Class I Division 2 Groups B, C and D or Class I Zone 2 Group IIB plus Hydrogen type hazardous locations

Polyester Enclosure with Two Pushbuttons — Flush Green and Extended Red, Catalog Number E34EX7023P

Table 47-24. Product Selection — Complete E34 Assembled Stations — UL (NEMA) Type 4, 4X, 12, 13; NEC Class I Division 2, Groups B, C and D

Operator	Contact Symbol	Button Type/Color	Legend Marking	Die Cast Enclosure		Polyester Molded Enclosure		Stainless Steel Enclosure	
				Catalog Number	Price U.S. $	Catalog Number	Price U.S. $	Catalog Number	Price U.S. $
One Pushbutton	1NO 1NC	Flush/Green	START	**E34EX7003**		**E34EX7003P**		**E34EX7003S**	
		Extended/Red	STOP	**E34EX7005**		**E34EX7005P**		**E34EX7005S**	
		Alum. Jumbo Mushroom/Red	EMER. STOP (Engraved Button)	**E34EX7007**		**E34EX7007P**		**E34EX7007S**	
		Flush/Black	No Legend	**E34EX7009**		**E34EX7009P**		**E34EX7009S**	
Two Pushbuttons	1NO 1NC Each Button	Flush/Green Extended/Red	START STOP	**E34EX7023**		**E34EX7023P**		**E34EX7023S**	
		Flush/Black Flush/Black	No Legend No Legend	**E34EX7025**		**E34EX7025P**		**E34EX7025S**	
3-Position Selector Switch	2NO 2NC	Maintained Knob/Black	HAND/OFF/AUTO	**E34EX7011**		**E34EX7011P**		**E34EX7011S**	
		Maintained Knob/Black	No Legend	**E34EX7013**		**E34EX7013P**		**E34EX7013S**	
One Pushbutton Maintained	Pull Push O X 1NO X O 1NC	Push-Pull w/Jumbo Mushroom/Red	EMER. STOP (Engraved Button)	**E34EX7019**		**E34EX7019P**		**E34EX7019S**	

Note: Use NEMA 4X 10250T operators where exposed to ultraviolet light, see **Page 47-21**.

Custom Pushbutton Stations . . . . . **Pages 47-24 – 47-25**
Enclosure Dimensions . . . . . **Page 47-23**
Operator Dimensions . . . . . **Page 47-191**
Discount Symbol **1CD1C**

Dimensions

E22

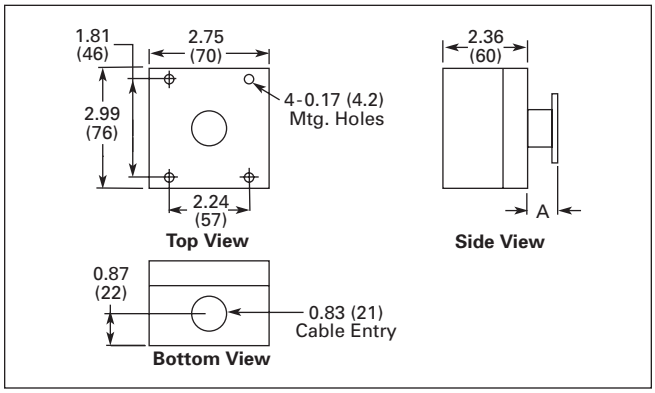


Figure 47-9. One-Element — Approximate Dimensions in Inches (mm)

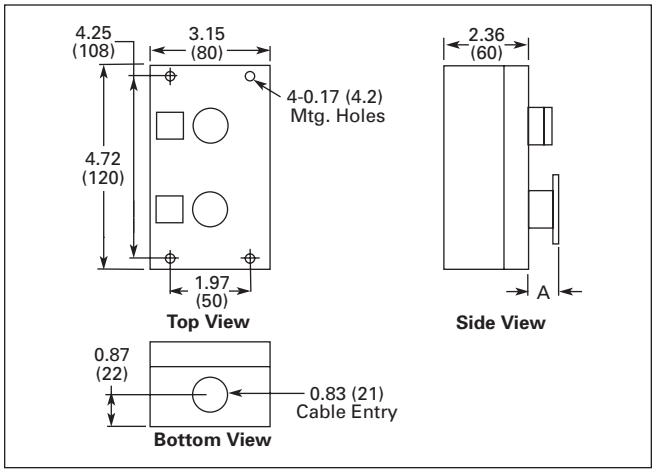


Figure 47-10. Two-Element — Approximate Dimensions in Inches (mm)

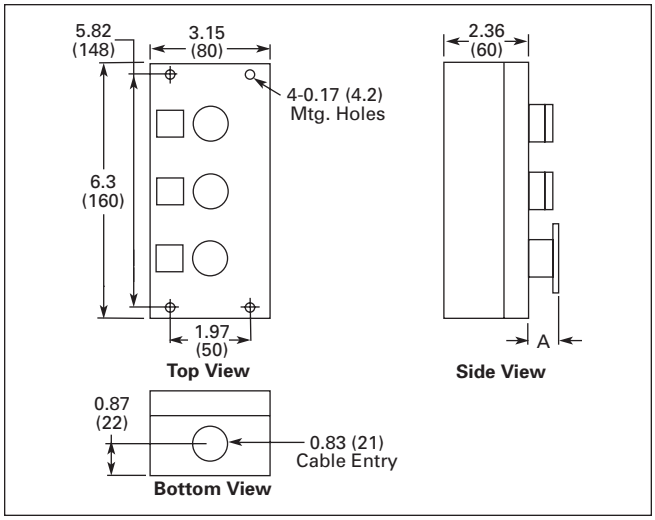


Figure 47-11. Three-Element — Approximate Dimensions in Inches (mm)

Table 47-25. E22 One-Element, Two-Element and Three-Element Approximate Dimensions

Catalog Number	Dimension A in Inches (mm)	Catalog Number	Dimension A in Inches (mm)
E22ASB105	0.87 (22.0)	**E22ASB304**	0.65 (16.4)
E22ASB106	0.87 (22.0)	**E22ASB305**	0.65 (16.4)
E22ASB108	0.57 (14.4)	**E22ASB306**	0.65 (16.4)
E22ASB109	0.65 (16.4)	**E22AT111**	1.32 (33.5)
E22ASB204	0.65 (16.4)	**E22AT112**	1.32 (33.5)
E22ASB205	0.87 (22.0)	**E22AT113**	1.32 (33.5)
E22ASB206	0.87 (22.0)		

10250T and E34

Table 47-26. Approximate Enclosure Dimensions

Number of Elements	Surface Mounting					Conduit Entrance
	Dimensions in Inches (mm)					
	Wide A	High B	Deep C	Mounting D	Mounting E	
Cast						
1	3.88 (98.6)	4.0 (101.6)	3.0 (76.3)	2.69 (68.3)	3.25 (82.6)	3/4
2	3.88 (98.6)	5.88 (149.4)	3.0 (76.3)	2.69 (68.3)	5.13 (130.3)	3/4
3	3.88 (98.6)	7.75 (196.9)	3.0 (76.3)	2.69 (68.3)	7.0 (177.8)	1
4	3.88 (98.6)	9.63 (244.6)	3.0 (76.3)	2.69 (68.3)	8.88 (225.6)	1
Polyester						
1	3.81 (96.8)	6.63 (168.4)	3.38 (85.9)	2.94 (74.7)	4.88 (124.0)	①
2	3.81 (96.8)	6.63 (168.4)	3.38 (85.9)	2.94 (74.7)	4.88 (124.0)	
3	3.81 (96.8)	8.88 (225.6)	3.38 (85.9)	2.94 (74.7)	7.13 (181.1)	
4	3.81 (96.8)	11.13 (282.7)	3.38 (85.9)	2.94 (74.7)	9.38 (238.3)	
Stainless Steel						
1	3.00 (76.2)	3.50 (88.9)	3.00 (76.2)	1.50 (38.1)	4.25 (108.0)	①
2	3.50 (88.9)	6.75 (171.5)	3.00 (76.2)	1.50 (38.1)	7.50 (190.5)	
3	3.50 (88.9)	9.00 (228.6)	3.00 (76.2)	1.50 (38.1)	9.00 (228.6)	
4	3.50 (88.9)	11.25 (285.8)	3.00 (76.2)	1.50 (38.1)	12.00 (304.8)	

① No conduit entrance holes provided. Drill as required.

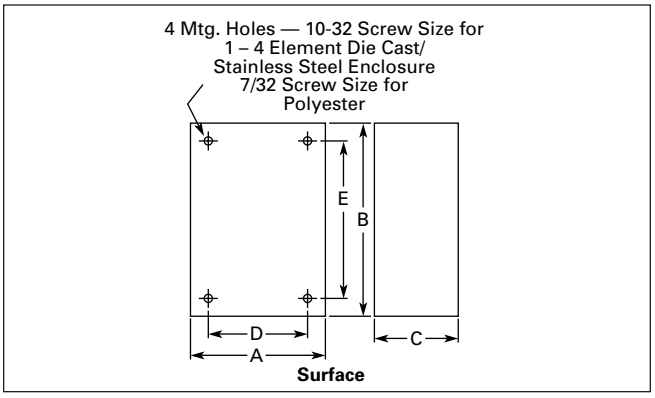


Figure 47-12. Approximate Enclosure Dimensions

Custom Assembled Stations Specification Form

Ordering Instructions

Step 1) Copy this ordering guide from catalog.

Step 2) Specify 10250T, E22 or E34 pushbutton lines in the corresponding box on the following page.

10250T	**Pages 47-115 – 47-165**
E22	**Pages 47-28 – 47-98**
E34	**Pages 47-166 – 47-189**
10250T & E34 Class I Div. 2	**Pages 47-215 – 47-242**

Step 3) Check back of panel dimensions — specify single or double depth enclosure in the corresponding box on the following page.

Step 4) Specify enclosure Catalog Number and price in the corresponding box on the following page. Enclosures can be found on **Pages 47-87 – 47-88** and **Pages 47-153 – 47-154**. For pricing, reference the most recent PAD or VISTA-line.

Step 5) Specify Catalog Numbers for desired operator, legend plate, light unit, accessory and contact block(s) for each location in the enclosure in the corresponding box on the following page. (See position locations below.)

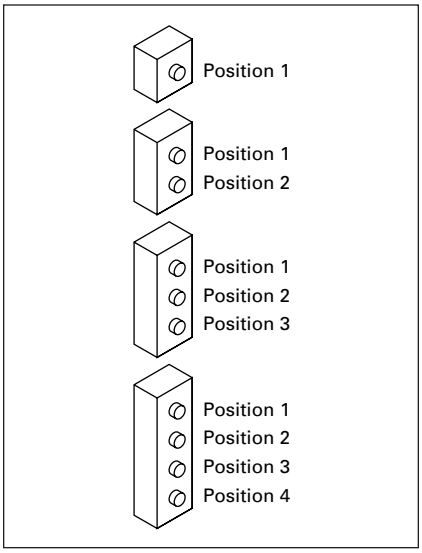
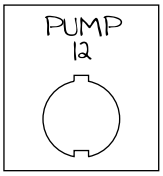


Figure 47-13. Position Locations

Step 6) For non-standard legends, specify legend desired, letter size and location on the layout sketches on the following page. For limitations see **Page 47-84** and **Page 47-152**. For pricing, use the blank legend Catalog Number and "STAMP" Suffix (Ex.: **10250TS36STAMP**) and reference the most recent PAD or VISTA-line.

Example: 10250TS36

Special Legend for Position #__1__



LETTER SIZE

3/32"	
1/8"	✔
3/16"	

Step 7) Fax Sheet 2 of this form to Eaton's TRC, Technical Resource Center, at 828-651-0549 to the attention of — **Custom Stations Order** or email to TRC@eaton.com.

Within a few days you will receive a confirmation fax with the custom station part number and price.

Step 8) Place your order over the VISTA System.

For Selector and Roto-Push Operators

10250T or E34

For single contact blocks or 1NO-1NC contact blocks, the mounting position of contacts must be specified. For example: If a 1NO-1NC contact block is required, specify if NO is to be mounted in Top A position or Bottom B position.

E22

For each contact block, specify if it is to be mounted in the left or right position. For example: If an E22B1 contact block is selected, specify if it is to be mounted on the left or right side of the mounting adapter as viewed from back of operator.

E22/10250T/E34 Series, Custom Assembled Stations — Specification Form

To — **Eaton's TRC, Custom Station Order**
(828) 651-0549 FAX, or email to TRC@eaton.com

From — Customer Name _____
Customer Contact _____
Phone Number _____
Fax Number _____
Email Address _____

FACTORY USE ONLY	
Part Number	
Product Code	
Suffix	
Date	
Engineer	

Step 2)

10250T ❑ **STD** ❑ **Class I Division 2**
E22 ❑ **STD**
E34 ❑ **STD** ❑ **Class I Division 2**

Step 3)

	✔
Single Depth Enclosure	
Double Depth Enclosure	

Step 4)

Enclosure Catalog Number	Price

Step 5)

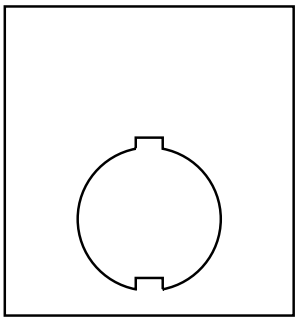
Position	Operator	Price U.S. $	Light Unit	Price U.S. $	Contact Block	Price U.S. $	A/L	B/R	Contact Block	Price U.S. $	A/L	B/R	Total Price
1													
2													
3													
4													

Position	Legend Plate	Price U.S. $	Lens or Caps	Price U.S. $	Accessory	Price U.S. $	Total Price
1							
2							
3							
4							

	Total:
10% Adder for Assembled Stations	

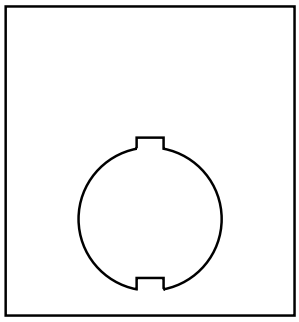
Step 6) Non-standard Legends

Special Legend for Position #_____



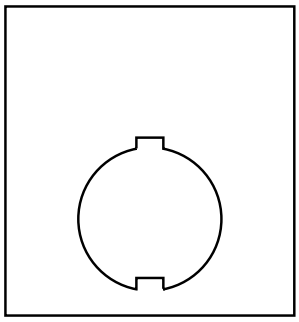
LETTER SIZE	✔
3/32 inch (2.4 mm)	
1/8 inch (3.2 mm)	
3/16 inch (4.8 mm)	

Special Legend for Position #_____



LETTER SIZE	✔
3/32 inch (2.4 mm)	
1/8 inch (3.2 mm)	
3/16 inch (4.8 mm)	

Special Legend for Position #_____



LETTER SIZE	✔
3/32 inch (2.4 mm)	
1/8 inch (3.2 mm)	
3/16 inch (4.8 mm)	

Renewal Parts

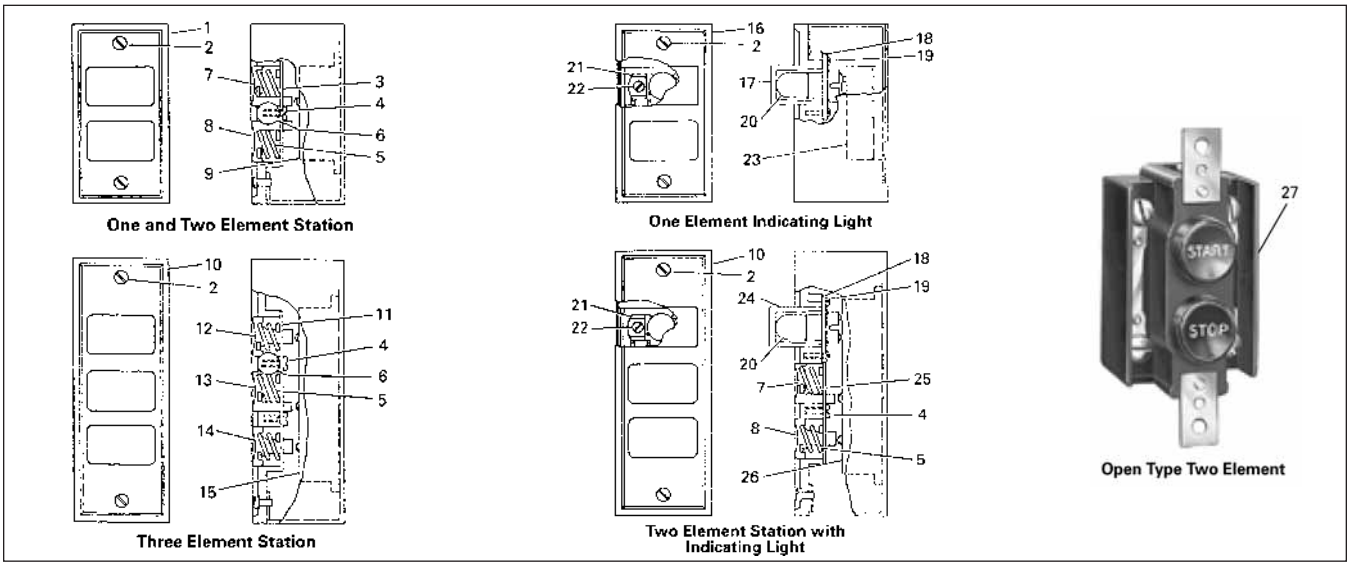


Figure 47-14. Type N Renewal Parts

Table 47-27. Assembled Stations — Type N Renewal Parts

Item No.	Description	No. Req.	Part Number	Price U.S. $
Type N — Square Buttons				
1	Cover 2 Element Single Element — Top Button Single Element — Bottom Button	1	 **49-3524** **49-3524-2** **49-3524-3**	
2	Cover Screw	2	**11-2168**	
3	Pushbutton Support Bracket	1	**79-6649**	
4	Pushbutton Support Bracket Screw	1	**11-2090**	
5	Pushbutton Spring	2	**69-2571**	
6	Disc (when used — 2 element assembly)	2	**16-1960**	
7	Pushbutton — Top Position START/Green RAISE/Black FORWARD/Black OPEN/Black UP/Black Blank/Green	1	 **53-1169-3** **53-1169-66** **53-1169-7** **53-1169-9** **53-1169-11** **53-1169**	
8	Pushbutton — Bottom Position STOP/Red Extended STOP/Red REVERSE/Black CLOSE/Black DOWN/Black LOWER/Black Blank/Red	1	 **53-1202-2** **53-1202-5** **53-1169-8** **53-1169-10** **53-1169-12** **53-1169-6** **53-1202**	
9	Pushbutton Element 1NO-1NC 2NO 1NO 1NC	1	 **86-2588** **86-2588-2** **86-2588-3** **86-2588-4**	
10	Cover	1	**49-3464**	
11	Pushbutton Support Bracket	1	**79-6650**	
12	Pushbutton — Top Position FORWARD/Black UP/Black RAISE/Black OPEN/Black FAST/Black	1	 **53-1170-7** **53-1170-4** **53-1170-5** **53-1170-9** **53-1170-6**	

Item No.	Description	No. Req.	Part Number	Price U.S. $
Type N — Square Buttons (Continued)				
13	Pushbutton Middle Position REVERSE/Black DOWN/Black LOWER/Black CLOSE/Black SLOW/Black	1	 **53-1169-15** **53-1169-18** **53-1169-16** **53-1169-17** **53-1169-13**	
14	Pushbutton — Bottom Position STOP/Red	1	 **53-1201-2**	
15	Pushbutton Element 2NO-3NC	1	 **86-2593**	
16	Cover	1	**49-3524-4**	
17	Lens Clear Red Amber	1	 **28-494** **28-887-2** **28-887-3**	
18	Shield	1	**73-1337**	
19	Shield Screws	4	**11-2012**	
20	Lamp (Neon NE48)	1	**28-494**	
21	Lamp Receptacle	1	**28-902**	
22	Lamp Receptacle Screw	1	**911-330F1**	
23	Pilot Light Terminal Base	1	**86-2586**	
24	Lens Clear Red Amber	1	 **28-887** **28-887-2** **28-887-3**	
25	Pushbutton Support Bracket	1	**79-6650-2**	
26	Pushbutton Element 1NO-1NC	1	**86-2594**	
Type N — Round Buttons				
Similar to 27	Pushbutton Assembly and Element for: 10250H289 10250H364 10250H685 10250H665 10250H671 10250H2738 10250H2740 10250H2741 10250H2742	 1 1 1 1 1 1 1 1 1	 **10250H2538** **86-353** **86-353-8** **86-353-8** **86-353** **86-353-3** **86-356** **86-356** **86-356**	

Discount Symbol **1CD1C**

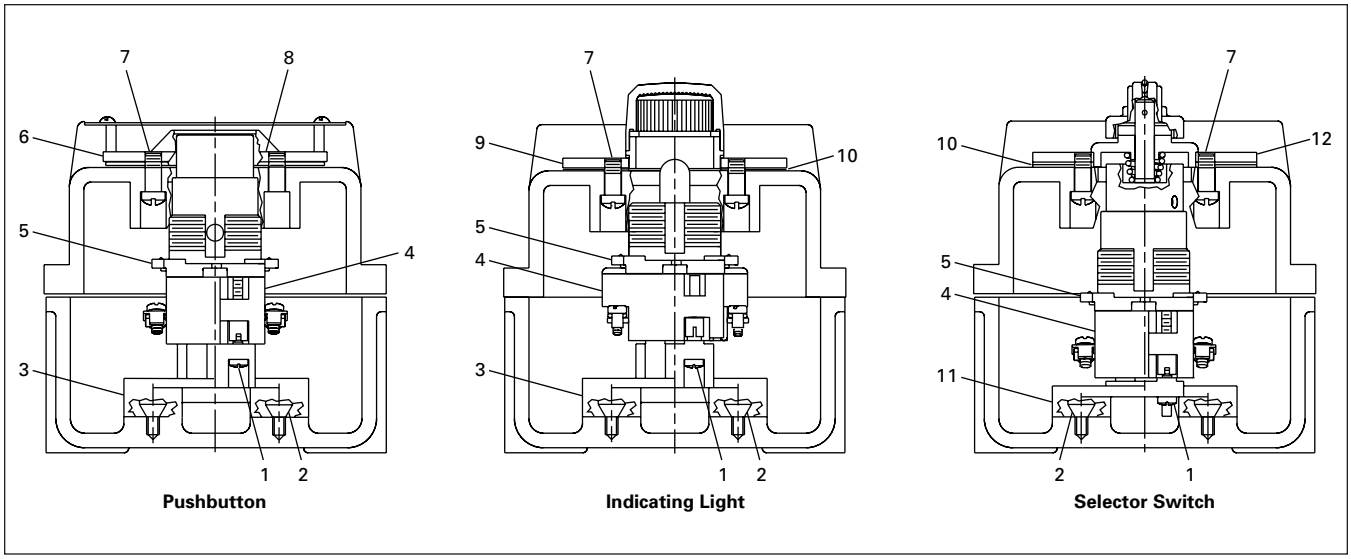


Figure 47-15. Type H Renewal Parts

Table 47-28. Assembled Stations — Type H Renewal Parts

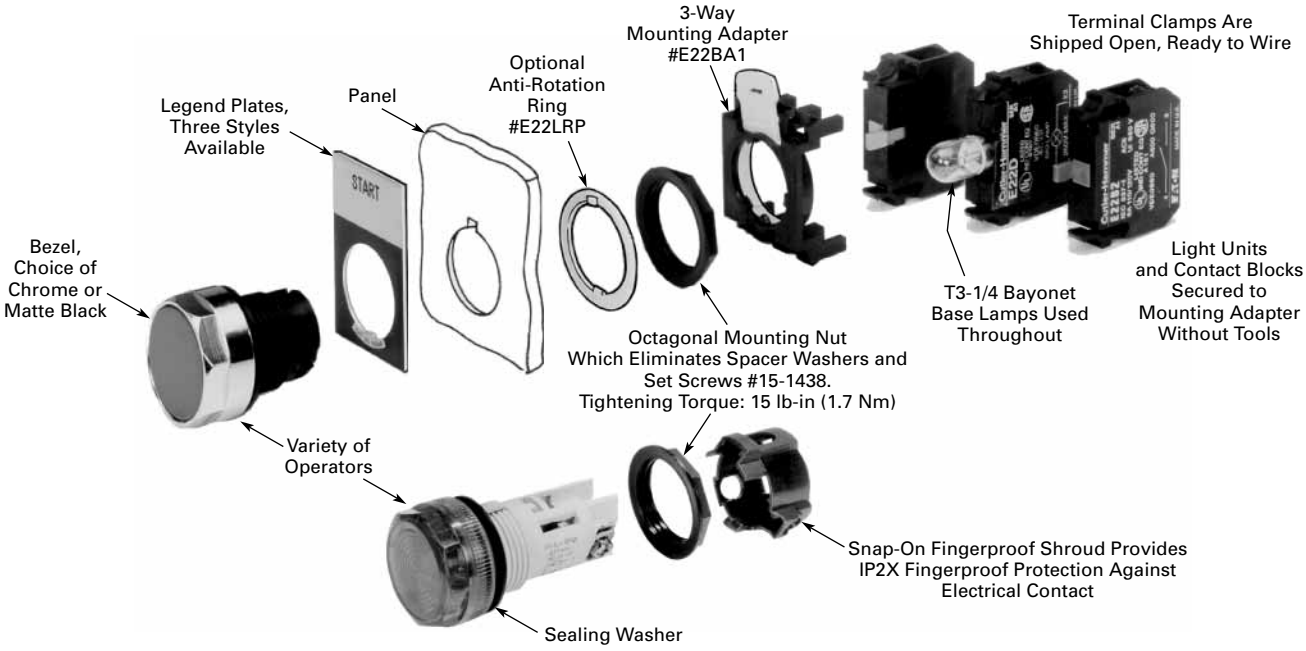
Item No.	Description	No. Req.	Part Number	Price U.S. $
Type H — Assembled Stations				
1	Screw	2	**11-4654**	
2	Screw	2	**11-5719**	
3	Base	1	**17-16560**	
4	Contact Blocks	See **Page 47-116**		
5	10250T Operator	See **Pages 47-119 – 47-147**		
6	Mounting Plate	1	**17-19524**	

Item No.	Description	No. Req.	Part Number	Price U.S. $
Type H — Assembled Stations (Continued)				
7	Screw	4	**11-953**	
8	Diaphragm	1	**32-253-2**	
9	Mounting Plate	1	**17-19522**	
10	Gasket	1	**32-254**	
11	Base	1	**17-16561**	
12	Mounting Plate	1	**17-19523**	

Discount Symbol **1CD1C**

Contents

Description	Page
Product Description	**47-29**
Features	**47-29**
Benefits	**47-29**
Contact Block Operation	**47-29**
Standards and Certifications	**47-29**
Technical Data and Specifications	**47-29**
Product Selection	
Pushbutton Units	**47-31**
Pushbuttons	**47-33**
Illuminated Momentary Pushbutton Units	**47-34**
Illuminated Pushbuttons	**47-36**
Push-Push Units	**47-37**
Push-Push	**47-39**
Maintained Emergency Stop Pushbutton Units	**47-41**
Emergency Stop	**47-42**
Twist-to-Release	**47-43**
Indicating Light Units	**47-44**
Indicating Lights	**47-47**
Product Selection (Continued)	
Push-Pull Units	**47-48**
Push-Pulls	**47-49**
Selector Switch Units	**47-51**
Selector Switches	**47-55**
Illuminated Selector Switches	**47-58**
Selector Switch Selection	**47-60**
Rotary Cam Selector Switch Units	**47-62**
Specialty Operators	**47-64**
Double Headed Pushbuttons	**47-65**
Joystick Units	**47-67**
Joysticks	**47-68**
Contact Blocks	**47-69**
Light Units and Lamps	**47-70**
Replacement LEDs and Bulbs	**47-72**
Accessories	**47-74**
5-Way Mounting Adapter	**47-77**
Replacement Parts	**47-78**
Options	
Legend Plates	**47-79**
Printed Legends	**47-85**
Selector Switch Legends	**47-86**
Enclosures	**47-87**
Dimensions	**47-89**
Mounting	**47-94**
Ordering Complete Devices	
Ordering Complete Devices Using Single Composite Cat. Number	**47-95**
Ordering Rotary Cam Selector Switches	**47-95**
Catalog Number Structure	**47-97**
Suffix Codes	**47-98**



E22 Series

Product Description

Eaton's Cutler-Hammer® 22.5 mm Industrial Heavy-Duty Pushbutton line offers a wide array of functional, smartly styled illuminated and non-illuminated pushbuttons, selector switches, push-pulls, alternate action and twist-to-release operators. The complete line also includes transformer, full voltage, resistor, LED or neon light units.

E22 operators are available with either a traditional chrome or matte black front-of-panel appearance. The space-saving design and modular construction of the E22 line makes on-the-job assembly fast and simplifies the stocking of both components and complete devices.

Eaton's Cutler-Hammer EM22 Metal Series is a rugged line of metal construction 22.5 mm pushbutton devices. They are an extension of the industrially proven E22 Heavy-Duty Double Insulated 22.5 mm pushbutton family.

EM22 operators are heavy-duty zinc die-cast construction plated with a corrosion resistant chromate finish. Operators are complete with a very durable chrome plated metal bezel. Indicating light units in the EM22 Series feature smartly styled round lenses that enhance their appearance and brightness.

All EM22 operators are compatible with existing E22 contact blocks, light units, accessories and enclosures.

EM22 metal operators and indicating lights are grounded when mounted to metal panels through the toothed mounting nut. They are not grounded when mounted to plastic panels.

Features

E22 Operators:

- Heavy-duty oiltight construction
- Chrome metal or black nylon bezels
- Snap-lock contact block mounting

EM22 Operators:

- Heavy-duty zinc die-cast construction
- Metal mounting nut doubles as grounding and anti-rotation device
- Chrome-plated metal bezel (matte black not available)

Common E22 & EM22 Features:

- Reliability nibs on contact blocks
- Plain or notched hole mounting
- Direct opening action ⊖ normally closed contacts
- Fingerproof terminals

Benefits

Plastic Devices

- Modular construction makes assembly fast and simplifies stocking of components and complete devices
- Reliability nibs provide positive contact through light, medium or heavy loads
- Chrome finish and plastic construction are corrosion resistant

Metal Devices

- EM22 is backwards compatible with E22 operators
- Metal mounting nut cuts through painted surfaces to provide proper grounding
- Hands-free front of panel mounting reduces installation cost
- Mounting flexibility reduces installation cost, time and inventory
- Stands up well in corrosive environments
- E22 and EM22 compatibility lowers parts count and inventory requirements

Contact Block Operation

Linear make and break. All normally closed (NC) contacts are Direct Opening Action, i.e., NC contacts are physically forced open by direct linkage with the pushbutton operator in the unlikely event of contact weld.

The contact block contacts are provided with "Reliability Nibs." The precisely shaped point of the nib, coined on the silver contact alloy, penetrates dust, film oxide layers and other contaminants. This improves contact reliability even under dry circuit and fine dust conditions.

Logic level contact blocks are available for low power switching — minimum 1 mA @ 5V DC.

Standards and Certifications

- CE EN 60947-5-1
- UL 508 — File No. E131568
- CSA — File No. LR68551

Additional Certifications for Trigger Action E-Stop Devices

- UL Listed E-Stop Device — File No. E217948
- Machinery Safety Directive — EN418
- Semiconductor Manufacturing Equipment — SEMI S2-0200
- DEMKO Third Party Certification — Certificate Nos. 129648-01 and 129648-02

Technical Data and Specifications

Ingress Protection

- UL (NEMA) Type 1, 2, 3, 3R, 4, 4X, 12 and 13
- IEC IP65

Note: Ratings apply when mounted in enclosures with the same ratings.

Mechanical Endurance Ratings

- Frequency of operation
  - Pushbuttons – 6,000 operations/hr
  - Push-Pulls – 3,000 operations/hr.
  - Push-Push – 1,800 cycles/hr.
  - Selector Switches – 3,000 operations/hr.
  - Trigger-Action E-Stop – 360 cycles/hr.
  - Twist-to-Release – 1,200 cycles/hr
- Mechanical Life
  - Contact Blocks – 3 million operations
  - Pushbuttons – 5 million operations
  - Push-Pulls – 300,000 operations
  - Push-Push – 300,000 operations
  - Selector Switches – 500,000 operations
  - Trigger-Action E-Stop – 100,000 operations
  - Twist-to-Release – 300,000 operations
  - Joysticks — 500,000 operations
- Vibration (IEC 68-2 [BS 2011])
  - Vibration – 5g/0.7 mm peak to peak, 10 sweeps, 10 – 500 Hz
  - Shock – 30g, 18 ms
  - Bump – 25g, 6 ms for 1,000 cycle

Environmental Conditions

- Operating temperature:
  -4° to +140°F (-20° to +60°C)
- Storage temperature:
  -40° to +176°F (-40° to +80°C)
- Altitude: Up to 6562 feet (2000m)
- Pollution degree (IEC 947-1): 3
- Humidity: Maximum 95% RH @ 60°C

Terminal Markings

All rear of panel devices are marked with the circuit configuration per CENELEC 50013 standards.

Table 47-29. Contact Blocks

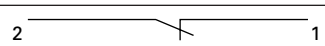
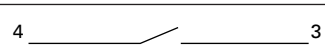
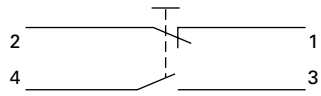
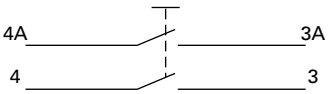
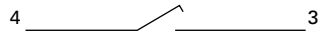
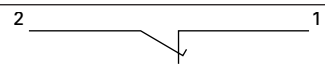
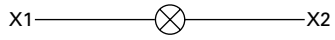
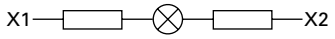
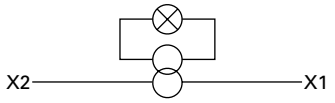
Circuit Configuration	Description	Plunger Color
	1NC	Red
	1NO	Green
	1NO-1NC	White
	2NO	Green
	1NO Early Make	Black
	1NC Late Break	Gray

Table 47-30. Lights Units

Circuit Configuration	Description
	Full Voltage
	Resistor
	Transformer

- E22CB1, E22CB11, E22CB1E, E22B1 and E22B11 contact blocks are marked with Direct Opening Action (DOA) Symbol "⊖" per IEC 60947-5-1, Annex K and NEMA ICS 5, Part 6. For Mechanical Operating Parameters, see **Page 47-69.**
- E22CB1, E22CB11 and E22CB1E contact blocks will be marked as Suitable for Isolation per IEC 60947-5-1.

Contact Block Terminal Clamps

- Clamp type: Self-lifting
- Screw type: Plus/minus, captive
- Wire range: 18 to 12 AWG (0.75 to 4.0 mm^2)
- Fingerproof protection: IP2X
- Tightening torque: 7 lb-in (0.8 Nm)

Electrical Ratings

Table 47-31. Contact Block ①

Meet or Exceed NEMA Contact Rating Designations A600 and Q600								
Description	A600 (AC) Volts				Q600 (DC) Volts			
	120	240	480	600	125	250	440	600
Make and emergency interrupting capacity (Amp)	60	30	15	12	0.55	0.27	0.1	0.1
Normal load break (Amp)	6	3	1.5	1.2	0.55	0.27	0.1	0.1
Thermal current (Amp)	10	10	10	10	2.5	2.5	2.5	2.5

① Ratings do not apply to rotary cam switches, see Ratings **Page 47-95.**

- A600, Q600 per UL 508
- AC15, DC13 per IEC 60947-5-1

Logic level contact blocks are UL A600, Q600 and IEC AC15, DC13 rated and also have a minimum rating of 1 mA @ 5V DC.

- Impulse withstand voltage (Uimp): 4 kV

Short Circuit Coordination to IEC/EN 60947-5-1

- Rated conditional short circuit current: 1 kA
- Fuse type: GE Power Controls TIA 10, Red Spot Type gG, 10A, 660V AC, 460V DC, BS88-2, IEC 60269-2-1

Electrical Life

- AC15 durability
  - 120V, 6A – 1 x 10^6 operations
- DC13 durability
  - 24V, 4A – 0.15 x 10^6 operations
  - 660V, 0.1A – 0.5 x 10^6 operations

Material

- Housing, bezel, mounting rings: Glass filled nylon
- Metal bezels: Chrome plated brass
- Internal seal: Nitrile rubber
- Panel gasket: Nitrile rubber
- Illuminated lenses: Polycarbonate
- Buttons: Polyester or polycarbonate
- Contacts: Silver
- Terminals: Brass

Product Selection

Pushbutton Units

- Non-illuminated
- Plastic or Metal Operators
- Black or Chrome Bezel
- Flush, Extended or Mushroom Head Operators

Description

Listed below are commonly ordered complete pushbutton devices including operator and contact block(s). These devices are shipped as unassembled components overpacked in a single bag. For instructions on how to order devices not listed below using a single composite Catalog Number, refer to **Page 47-95**.

Table 47-32. Pushbutton Units — UL (NEMA) Type 3, 3R, 4, 4X, 12, 13

	Button Color	Contact Block Circuit						
		NO	NC	Price U.S. $	NO-NC	2NO	2NC	Price U.S. $
		Catalog Number	Catalog Number		Catalog Number	Catalog Number	Catalog Number	
Plastic Operators — Black Bezel								
	Flush — Momentary							
	Black	**E22PB1A**	**E22PB1B**		**E22PB1C**	**E22PB1D**	**E22PB1E**	
	Red	**E22PB2A**	**E22PB2B**		**E22PB2C**	**E22PB2D**	**E22PB2E**	
	Green	**E22PB3A**	**E22PB3B**		**E22PB3C**	**E22PB3D**	**E22PB3E**	
	Extended — Momentary							
	Black	**E22EB1A**	**E22EB1B**		**E22EB1C**	**E22EB1D**	**E22EB1E**	
	Red	**E22EB2A**	**E22EB2B**		**E22EB2C**	**E22EB2D**	**E22EB2E**	
	Green	**E22EB3A**	**E22EB3B**		**E22EB3C**	**E22EB3D**	**E22EB3E**	
	40 mm Mushroom — Momentary							
	Black	**E22LB1A**	**E22LB1B**		**E22LB1C**	**E22LB1D**	**E22LB1E**	
	Red	**E22LB2A**	**E22LB2B**		**E22LB2C**	**E22LB2D**	**E22LB2E**	
	Green	**E22LB3A**	**E22LB3B**		**E22LB3C**	**E22LB3D**	**E22LB3E**	
	40 mm Twist-to-Release Mushroom — Latching							
	Black	**E22LLB1A**	**E22LLB1B**		**E22LLB1C**	**E22LLB1D**	**E22LLB1E**	
	Red	**E22LLB2A**	**E22LLB2B**		**E22LLB2C**	**E22LLB2D**	**E22LLB2E**	
	Green	**E22LLB3A**	**E22LLB3B**		**E22LLB3C**	**E22LLB3D**	**E22LLB3E**	
	50 mm Jumbo Mushroom — Momentary							
	Black	**E22JPB1A**	**E22JPB1B**		**E22JPB1C**	**E22JPB1D**	**E22JPB1E**	
	Red	**E22JPB2A**	**E22JPB2B**		**E22JPB2C**	**E22JPB2D**	**E22JPB2E**	
	Green	**E22JPB3A**	**E22JPB3B**		**E22JPB3C**	**E22JPB3D**	**E22JPB3E**	
	50 mm Jumbo Mushroom — Maintained							
	Red EMERGENCY STOP (Metal)	**E22JLB2N8A**	**E22JLB2N8B**		**E22JLB2N8C**	**E22JLB2N8D**	**E22JLB2N8E**	
Plastic Operators — Chrome Bezel								
	Flush — Momentary							
	Black	**E22P1A**	**E22P1B**		**E22P1C**	**E22P1D**	**E22P1E**	
	Red	**E22P2A**	**E22P2B**		**E22P2C**	**E22P2D**	**E22P2E**	
	Green	**E22P3A**	**E22P3B**		**E22P3C**	**E22P3D**	**E22P3E**	
	Extended — Momentary							
	Black	**E22E1A**	**E22E1B**		**E22E1C**	**E22E1D**	**E22E1E**	
	Red	**E22E2A**	**E22E2B**		**E22E2C**	**E22E2D**	**E22E2E**	
	Green	**E22E3A**	**E22E3B**		**E22E3C**	**E22E3D**	**E22E3E**	
	40 mm Mushroom — Momentary							
	Black	**E22L1A**	**E22L1B**		**E22L1C**	**E22L1D**	**E22L1E**	
	Red	**E22L2A**	**E22L2B**		**E22L2C**	**E22L2D**	**E22L2E**	
	Green	**E22L3A**	**E22L3B**		**E22L3C**	**E22L3D**	**E22L3E**	
	40 mm Twist-to-Release Mushroom — Latching							
	Black	**E22LL1A**	**E22LL1B**		**E22LL1C**	**E22LL1D**	**E22LL1E**	
	Red	**E22LL2A**	**E22LL2B**		**E22LL2C**	**E22LL2D**	**E22LL2E**	
	Green	**E22LL3A**	**E22LL3B**		**E22LL3C**	**E22LL3D**	**E22LL3E**	
	50 mm Jumbo Mushroom — Momentary							
	Black	**E22JP1A**	**E22JP1B**		**E22JP1C**	**E22JP1D**	**E22JP1E**	
	Red	**E22JP2A**	**E22JP2B**		**E22JP2C**	**E22JP2D**	**E22JP2E**	
	Green	**E22JP3A**	**E22JP3B**		**E22JP3C**	**E22JP3D**	**E22JP3E**	
	50 mm Jumbo Mushroom — Maintained							
	Red EMERGENCY STOP (Metal)	**E22JL2N8A**	**E22JL2N8B**		**E22JL2N8C**	**E22JL2N8D**	**E22JL2N8E**	

Dimensions ..... **Page 47-89**
Accessories ..... **Pages 47-74 – 47-78**
Enclosures ..... **Pages 47-87 – 47-88**
Legend Plates..... **Pages 47-79 – 47-85**
Discount Symbol **1CD1**

Table 47-32. Pushbutton Units — UL (NEMA) Type 3, 3R, 4, 4X, 12, 13 (Continued)

	Button Color	Contact Block Circuit						
		NO	NC	Price U.S. $	NO-NC	2NO	2NC	Price U.S. $
		Catalog Number	Catalog Number		Catalog Number	Catalog Number	Catalog Number	
Metal Operators — Chrome Bezel								
	Flush — Momentary							
	Black Red Green	**EM22P1A** **EM22P2A** **EM22P3A**	① **EM22P2B** ①		**EM22P1C** **EM22P2C** **EM22P3C**	**EM22P1D** ① **EM22P3D**	① **EM22P2E** ①	
	Extended — Momentary							
	Red	**EM22E2A**	**EM22E2B**		**EM22E2C**	①	**EM22E2E**	
	40 mm Mushroom — Momentary							
	Red	**EM22L2A**	**EM22L2B**		**EM22L2C**	①	**EM22L2E**	
	40 mm Twist-to-Release Mushroom — Latching							
	Red	**EM22LL2A**	**EM22LL2B**		**EM22LL2C**	①	**EM22LL2E**	
	50 mm Jumbo Mushroom — Momentary							
	Red	**EM22JP2A**	**EM22JP2B**		**EM22JP2C**	**EM22JP2D**	**EM22JP2E**	
	50 mm Jumbo Mushroom — Maintained							
	Red EMERGENCY STOP (Metal)	**EM22JL2N8A**	**EM22JL2N8B**		**EM22JL2N8C**	**EM22JL2N8D**	**EM22JL2N8E**	

① See **Page 47-95** for ordering other complete devices not shown.

Dimensions ..... **Page 47-89**
Accessories ..... **Pages 47-74 – 47-78**
Enclosures ..... **Pages 47-87 – 47-88**
Legend Plates..... **Pages 47-79 – 47-86**
Discount Symbol **1CD1**

Pushbutton Components

Table 47-33. Momentary Contact Pushbuttons, Non-illuminated — UL (NEMA) Type 3, 3R, 4, 4X, 12, 13

Will Accept Maximum of 3 Contact Blocks (6 Circuits) When Used with Supplied 3-Way Adapter and Optional Operator Plug.	Color	E22 Series — Plastic Operators				EM22 Series — Metal Operators	
		Black Bezel		Chrome Bezel		Chrome Bezel	
		Catalog Number	Price U.S. $	Catalog Number	Price U.S. $	Catalog Number	Price U.S. $
E22 Black E22 Chrome EM22 Chrome	**25 mm Diameter Flush Button**						
	Black	**E22PB1**		**E22P1**		**EM22P1**	
	Red	**E22PB2**		**E22P2**		**EM22P2**	
	Green	**E22PB3**		**E22P3**		**EM22P3**	
	Yellow	**E22PB4**		**E22P4**		**EM22P4**	
	White	**E22PB5**		**E22P5**		**EM22P5**	
	Blue	**E22PB6**		**E22P6**		**EM22P6**	
	Gray	**E22PB7**		**E22P7**		**EM22P7**	
	Orange	**E22PB8**		**E22P8**		**EM22P8**	
	25 mm Diameter Extended Button						
	Black	**E22EB1**		**E22E1**		**EM22E1**	
	Red	**E22EB2**		**E22E2**		**EM22E2**	
	Green	**E22EB3**		**E22E3**		**EM22E3**	
	Yellow	**E22EB4**		**E22E4**		**EM22E4**	
	White	**E22EB5**		**E22E5**		**EM22E5**	
	Blue	**E22EB6**		**E22E6**		**EM22E6**	
	Gray	**E22EB7**		**E22E7**		**EM22E7**	
	Orange	**E22EB8**		**E22E8**		**EM22E8**	
	25 mm Diameter with Full Shroud						
	Black	—		**E22PF1**		**EM22PF1**	
	Red	—		**E22PF2**		**EM22PF2**	
	Green	—		**E22PF3**		**EM22PF3**	
	Yellow	—		**E22PF4**		**EM22PF4**	
	White	—		**E22PF5**		**EM22PF5**	
	Blue	—		**E22PF6**		**EM22PF6**	
	Gray	—		**E22PF7**		**EM22PF7**	
	Orange	—		**E22PF8**		**EM22PF8**	
	28 mm Dia. Mushroom Head Button						
	Black	**E22MB1**		**E22M1**		**EM22M1**	
	Red	**E22MB2**		**E22M2**		**EM22M2**	
	Green	**E22MB3**		**E22M3**		**EM22M3**	
	Yellow	**E22MB4**		**E22M4**		**EM22M4**	
	Blue	**E22MB6**		**E22M6**		**EM22M6**	
	40 mm Dia. Mushroom Head Button						
	Black	**E22LB1**		**E22L1**		**EM22L1**	
	Red	**E22LB2**		**E22L2**		**EM22L2**	
	Green	**E22LB3**		**E22L3**		**EM22L3**	
	Yellow	**E22LB4**		**E22L4**		**EM22L4**	
	Blue	**E22LB6**		**E22L6**		**EM22L6**	
	50 mm Dia. Mushroom Head Button — Plastic						
	Black	**E22JPB1**		**E22JP1**		**EM22JP1**	
	Red	**E22JPB2**		**E22JP2**		**EM22JP2**	
	Green	**E22JPB3**		**E22JP3**		**EM22JP3**	
	Yellow	**E22JPB4**		**E22JP4**		**EM22JP4**	
	Blue	**E22JPB6**		**E22JP6**		**EM22JP6**	
	Red (Metal)	**E22JB2**		**E22J2**		**EM22J2**	
	Red (Metal) Engraved EMERGENCY STOP						
		E22JB2N8		**E22J2N8**		**EM22J2N8**	

Note: For Rear of Panel Extensions, see **Table 47-128** on **Page 47-94.**

Ordering Example *— A complete Pushbutton Unit consists of the following:*

Operator See Above

Operator Plug E22BA2 Required if 3rd Contact Block Is Used. See Page 47-75

Legend Plate or Print Option See Pages 47-79 – 47-85

Mounting Adapter E22BA1 (Supplied with Operator). For 5-Way Adapter, See Page 47-77

Contact Blocks See Page 47-69

Dimensions ..... **Page 47-89**
Suffix Codes ..... **Page 47-98**
Discount Symbol **1CD1**

Illuminated Momentary Pushbutton Units

- Plastic or Metal Operators
- Black or Chrome Bezel
- Extended Pushbuttons
- Full Voltage, Resistor or Transformer Light Units
- Plastic Lenses
- Metal Operators available with LED

Table 47-34. Plastic Illuminated Extended Pushbutton Units — UL (NEMA) Type 3, 3R, 4, 4X, 12, 13

Description	Button Color	NO Catalog Number	NC Catalog Number	Price U.S. $	NO-NC Catalog Number	2NO Catalog Number	2NC Catalog Number	Price U.S. $
Plastic Operators — Black Bezel								
	24V AC/DC Full Voltage							
	Red	E22TB2X4A	E22TB2X4B		E22TB2X4C	E22TB2X4D	E22TB2X4E	
	Green	E22TB3X4A	E22TB3X4B		E22TB3X4C	E22TB3X4D	E22TB3X4E	
	White	E22TB5X4A	E22TB5X4B		E22TB5X4C	E22TB5X4D	E22TB5X4E	
	Blue	E22TB6X4A	E22TB6X4B		E22TB6X4C	E22TB6X4D	E22TB6X4E	
	Amber	E22TB9X4A	E22TB9X4B		E22TB9X4C	E22TB9X4D	E22TB9X4E	
	Clear	E22TB0X4A	E22TB0X4B		E22TB0X4C	E22TB0X4D	E22TB0X4E	
	120V AC/DC Resistor Unit							
	Red	E22TB2X10A	E22TB2X10B		E22TB2X10C	E22TB2X10D	E22TB2X10E	
	Green	E22TB3X10A	E22TB3X10B		E22TB3X10C	E22TB3X10D	E22TB3X10E	
	White	E22TB5X10A	E22TB5X10B		E22TB5X10C	E22TB5X10D	E22TB5X10E	
	Blue	E22TB6X10A	E22TB6X10B		E22TB6X10C	E22TB6X10D	E22TB6X10E	
	Amber	E22TB9X10A	E22TB9X10B		E22TB9X10C	E22TB9X10D	E22TB9X10E	
	Clear	E22TB0X10A	E22TB0X10B		E22TB0X10C	E22TB0X10D	E22TB0X10E	
	120V Transformer AC — 50/60 Hz							
	Red	E22TB2X11A	E22TB2X11B		E22TB2X11C	E22TB2X11D	E22TB2X11E	
	Green	E22TB3X11A	E22TB3X11B		E22TB3X11C	E22TB3X11D	E22TB3X11E	
	White	E22TB5X11A	E22TB5X11B		E22TB5X11C	E22TB5X11D	E22TB5X11E	
	Blue	E22TB6X11A	E22TB6X11B		E22TB6X11C	E22TB6X11D	E22TB6X11E	
	Amber	E22TB9X11A	E22TB9X11B		E22TB9X11C	E22TB9X11D	E22TB9X11E	
	Clear	E22TB0X11A	E22TB0X11B		E22TB0X11C	E22TB0X11D	E22TB0X11E	
Plastic Operators — Chrome Bezel								
	24V AC/DC Full Voltage							
	Red	E22T2X4A	E22T2X4B		E22T2X4C	E22T2X4D	E22T2X4E	
	Green	E22T3X4A	E22T3X4B		E22T3X4C	E22T3X4D	E22T3X4E	
	White	E22T5X4A	E22T5X4B		E22T5X4C	E22T5X4D	E22T5X4E	
	Blue	E22T6X4A	E22T6X4B		E22T6X4C	E22T6X4D	E22T6X4E	
	Amber	E22T9X4A	E22T9X4B		E22T9X4C	E22T9X4D	E22T9X4E	
	Clear	E22T0X4A	E22T0X4B		E22T0X4C	E22T0X4D	E22T0X4E	
	120V AC/DC Resistor Unit							
	Red	E22T2X10A	E22T2X10B		E22T2X10C	E22T2X10D	E22T2X10E	
	Green	E22T3X10A	E22T3X10B		E22T3X10C	E22T3X10D	E22T3X10E	
	White	E22T5X10A	E22T5X10B		E22T5X10C	E22T5X10D	E22T5X10E	
	Blue	E22T6X10A	E22T6X10B		E22T6X10C	E22T6X10D	E22T6X10E	
	Amber	E22T9X10A	E22T9X10B		E22T9X10C	E22T9X10D	E22T9X10E	
	Clear	E22T0X10A	E22T0X10B		E22T0X10C	E22T0X10D	E22T0X10E	
	120V Transformer AC — 50/60 Hz							
	Red	E22T2X11A	E22T2X11B		E22T2X11C	E22T2X11D	E22T2X11E	
	Green	E22T3X11A	E22T3X11B		E22T3X11C	E22T3X11D	E22T3X11E	
	White	E22T5X11A	E22T5X11B		E22T5X11C	E22T5X11D	E22T5X11E	
	Blue	E22T6X11A	E22T6X11B		E22T6X11C	E22T6X11D	E22T6X11E	
	Amber	E22T9X11A	E22T9X11B		E22T9X11C	E22T9X11D	E22T9X11E	
	Clear	E22T0X11A	E22T0X11B		E22T0X11C	E22T0X11D	E22T0X11E	

Dimensions ..... **Page 47-89**
Accessories ..... **Pages 47-74 – 47-78**
Enclosures ..... **Pages 47-87 – 47-88**
Legend Plates..... **Pages 47-79 – 47-85**
Discount Symbol **1CD1**

Table 47-35. Metal Illuminated Pushbutton Units — UL (NEMA) Type 3, 3R, 4, 4X, 12, 13

	Button Color	NO Contact Block				NC Contact Block			
		Incandescent		LED		Incandescent		LED	
		Catalog Number	Price U.S. $	Catalog Number	Price U.S. $	Catalog Number	Price U.S. $	Catalog Number	Price U.S. $
Metal Operators — Chrome Bezel									
	24V AC/DC Full Voltage								
	Red	**EM22T2X4A**		**EM22T2X40A**		**EM22T2X4B**		**EM22T2X40B**	
	Green	**EM22T3X4A**		**EM22T3X41A**		**EM22T3X4B**		**EM22T3X41B**	
	White	**EM22T5X4A**		**EM22T5X90A**		**EM22T5X4B**		**EM22T5X90B**	
	Blue	**EM22T6X4A**		**EM22T6X52A**		**EM22T6X4B**		**EM22T6X52B**	
	Amber	**EM22T9X4A**		**EM22T9X95A**		**EM22T9X4B**		**EM22T9X95B**	
	Clear	**EM22T0X4A**		**EM22T0X90A**		**EM22T0X4B**		**EM22T0X90B**	
	120V AC Full Voltage								
	Red	**—**		**EM22T2X43A**		**—**		**EM22T2X43B**	
	Green	**—**		**EM22T3X44A**		**—**		**EM22T3X44B**	
	White	**—**		**EM22T5X92A**		**—**		**EM22T5X92B**	
	Blue	**—**		**EM22T6X61A**		**—**		**EM22T6X61B**	
	Amber	**—**		**EM22T9X96A**		**—**		**EM22T9X96B**	
	Clear	**—**		**EM22T0X92A**		**—**		**EM22T0X92B**	
	120V AC/DC Resistor Unit								
	Red	**EM22T2X10A**		**—**		**EM22T2X10B**		**—**	
	Green	**EM22T3X10A**		**—**		**EM22T3X10B**		**—**	
	White	**EM22T5X10A**		**—**		**EM22T5X10B**		**—**	
	Blue	**EM22T6X10A**		**—**		**EM22T6X10B**		**—**	
	Amber	**EM22T9X10A**		**—**		**EM22T9X10B**		**—**	
	Clear	**EM22T0X10A**		**—**		**EM22T0X10B**		**—**	
	120V AC Transformer — 50/60 Hz								
	Red	**EM22T2X11A**		**EM22T2X433A**		**EM22T2X11B**		**EM22T2X433B**	
	Green	**EM22T3X11A**		**EM22T3X444A**		**EM22T3X11B**		**EM22T3X444B**	
	White	**EM22T5X11A**		**EM22T5X922A**		**EM22T5X11B**		**EM22T5X922B**	
	Blue	**EM22T6X11A**		**EM22T6X611A**		**EM22T6X11B**		**EM22T6X611B**	
	Amber	**EM22T9X11A**		**EM22T9X966A**		**EM22T9X11B**		**EM22T9X966B**	
	Clear	**EM22T0X11A**		**EM22T0X922A**		**EM22T0X11B**		**EM22T0X922B**	

Dimensions ..... **Page 47-89**
Accessories ..... **Pages 47-74 – 47-78**
Enclosures ..... **Pages 47-87 – 47-88**
Legend Plates ..... **Pages 47-79 – 47-86**
Discount Symbol **1CD1**

Illuminated Pushbutton Components

Table 47-36. Illuminated Pushbutton and PresTest Indicating Light Operators — UL (NEMA) Type 3, 3R, 4, 4X, 12, 13

Will Accept Maximum of 2 Contact Blocks (4 Circuits) When Used with Supplied 3-Way Adapter	Color	E22 Series — Plastic Operators				EM22 Series — Metal Operators	
		Black Bezel		Chrome Bezel		Chrome Bezel	
		Catalog Number	Price U.S. $	Catalog Number	Price U.S. $	Catalog Number	Price U.S. $
E22 Black E22 Chrome EM22 Chrome	**25 mm Diameter Flush Lens**						
	Red	**E22NB2**		**E22N2**		**EM22N2**	
	Green	**E22NB3**		**E22N3**		**EM22N3**	
	Yellow	**E22NB4**		**E22N4**		**EM22N4**	
	White	**E22NB5**		**E22N5**		**EM22N5**	
	Blue	**E22NB6**		**E22N6**		**EM22N6**	
	Amber	**E22NB9**		**E22N9**		**EM22N9**	
	Clear	**E22NB0**		**E22N0**		**EM22N0**	
	25 mm Diameter Extended Lens						
	Red	**E22TB2**		**E22T2**		**EM22T2**	
	Green	**E22TB3**		**E22T3**		**EM22T3**	
	Yellow	**E22TB4**		**E22T4**		**EM22T4**	
	White	**E22TB5**		**E22T5**		**EM22T5**	
	Blue	**E22TB6**		**E22T6**		**EM22T6**	
	Amber	**E22TB9**		**E22T9**		**EM22T9**	
	Clear	**E22TB0**		**E22T0**		**EM22T0**	
	25 mm Dia. Extended ① Lens with Shroud						
	Red	**—**		**E22TX2**		**EM22TX2**	
	Green	**—**		**E22TX3**		**EM22TX3**	
	Yellow	**—**		**E22TX4**		**EM22TX4**	
	White	**—**		**E22TX5**		**EM22TX5**	
	Blue	**—**		**E22TX6**		**EM22TX6**	
	Amber	**—**		**E22TX9**		**EM22TX9**	
	Clear	**—**		**E22TX0**		**EM22TX0**	

① If a Flush Lens type is required instead of Extended, substitute **N** for **T** in listed Catalog Number.
Example: E22**N**X2 — Red flush illuminated pushbutton with full shroud. Chrome version only.

Note: For Rear of Panel Extensions, see **Table 47-128** on **Page 47-94.**

Dimensions . . . . . **Page 47-89**
Accessories . . . . . **Pages 47-74 – 47-78**
Contact Blocks. . . . . **Page 47-69**
Enclosures . . . . . **Pages 47-87 – 47-88**
Legend Plates. . . . . **Pages 47-79 – 47-85**
Light Units . . . . . **Pages 47-70 – 47-71**
Suffix Codes . . . . . **Page 47-98**
Discount Symbol **1CD1**

Alternate-Action (Push-Push) Pushbutton Units

- Non-illuminated or Illuminated
- Plastic or Metal Operators
- Black or Chrome Bezel
- Flush or Extended Operators

Description
Listed below are commonly ordered complete pushbutton devices including operator and contact block(s). These devices are shipped as unassembled components overpacked in a single bag. For instructions on how to order devices not listed below using a single composite Catalog Number, refer to **Page 47-95**.

Table 47-37. E22 and EM22 Series Non-illuminated Flush and Extended Alternate-Action Units — UL (NEMA) Type 3, 3R, 4, 4X, 12, 13

	Button Color	Contact Block Circuit						
		NO	NC	Price U.S. $	NO-NC	2NO	2NC	Price U.S. $
		Catalog Number	Catalog Number		Catalog Number	Catalog Number	Catalog Number	
E22 Series — Plastic Operators – Black Bezel								
	Flush							
	Black White Gray	**E22PPB1A** **E22PPB5A** **E22PPB7A**	**E22PPB1B** **E22PPB5B** **E22PPB7B**		**E22PPB1C** **E22PPB5C** **E22PPB7C**	**E22PPB1D** **E22PPB5D** **E22PPB7D**	**E22PPB1E** **E22PPB5E** **E22PPB7E**	
	Extended							
	Black White Gray	**E22EPB1A** **E22EPB5A** **E22EPB7A**	**E22EPB1B** **E22EPB5B** **E22EPB7B**		**E22EPB1C** **E22EPB5C** **E22EPB7C**	**E22EPB1D** **E22EPB5D** **E22EPB7D**	**E22EPB1E** **E22EPB5E** **E22EPB7E**	
E22 Series — Plastic Operators – Chrome Bezel								
	Flush							
	Black White Gray	**E22PP1A** **E22PP5A** **E22PP7A**	**E22PP1B** **E22PP5B** **E22PP7B**		**E22PP1C** **E22PP5C** **E22PP7C**	**E22PP1D** **E22PP5D** **E22PP7D**	**E22PP1E** **E22PP5E** **E22PP7E**	
	Extended							
	Black White Gray	**E22EP1A** **E22EP5A** **E22EP7A**	**E22EP1B** **E22EP5B** **E22EP7B**		**E22EP1C** **E22EP5C** **E22EP7C**	**E22EP1D** **E22EP5D** **E22EP7D**	**E22EP1E** **E22EP5E** **E22EP7E**	
EM22 Series — Metal Operators – Chrome Bezel								
	Flush							
	Black White Gray	**EM22PP1A** **EM22PP5A** **EM22PP7A**	**EM22PP1B** **EM22PP5B** **EM22PP7B**		**EM22PP1C** **EM22PP5C** **EM22PP7C**	**EM22PP1D** **EM22PP5D** **EM22PP7D**	**EM22PP1E** **EM22PP5E** **EM22PP7E**	
	Extended							
	Black White Gray	**EM22EP1A** **EM22EP5A** **EM22EP7A**	**EM22EP1B** **EM22EP5B** **EM22EP7B**		**EM22EP1C** **EM22EP5C** **EM22EP7C**	**EM22EP1D** **EM22EP5D** **EM22EP7D**	**EM22EP1E** **EM22EP5E** **EM22EP7E**	

Note: In order to comply with NFPA 79 and IEC 60204-1 requirements:

The colors black, white or gray shall be used for Push-Push operators which act alternately as START/ON and STOP/OFF pushbuttons.

Push-Push operators shall only be used for functions which can not result in a hazardous condition.

IEC 60204-1 recommends that Push-Push operators acting alternately as START/ON and STOP/OFF pushbuttons be marked with the printed legend N124.

Dimensions ..... **Page 47-89**
Accessories ..... **Pages 47-74 – 47-78**
Enclosures ..... **Pages 47-87 – 47-88**
Legend Plates ..... **Pages 47-79 – 47-85**
Discount Symbol **1CD1**

Table 47-38. Illuminated Bezel Flush Assembled Push-Push Units — UL (NEMA) Type 3, 3R, 4, 4X, 12, 13

	Button Color	Contact Block Circuit						
		NO	NC	Price U.S. $	NO-NC	2NO	2NC	Price U.S. $
		Catalog Number	Catalog Number		Catalog Number	Catalog Number	Catalog Number	
Plastic Operators — Chrome Bezel								
	24V AC/DC Full Voltage, Flush, Illuminated Bezel							
	Red	**E22TP2X4A**	**E22TP2X4B**		**E22TP2X4C**	**E22TP2X4D**	**E22TP2X4E**	
	Green	**E22TP3X4A**	**E22TP3X4B**		**E22TP3X4C**	**E22TP3X4D**	**E22TP3X4E**	
	White	**E22TP5X4A**	**E22TP5X4B**		**E22TP5X4C**	**E22TP5X4D**	**E22TP5X4E**	
	Blue	**E22TP6X4A**	**E22TP6X4B**		**E22TP6X4C**	**E22TP6X4D**	**E22TP6X4E**	
	Amber	**E22TP9X4A**	**E22TP9X4B**		**E22TP9X4C**	**E22TP9X4D**	**E22TP9X4E**	
	Clear	**E22TP0X4A**	**E22TP0X4B**		**E22TP0X4C**	**E22TP0X4D**	**E22TP0X4E**	
	120V AC/DC Resistor, Flush, Illuminated Bezel							
	Red	**E22TP2X10A**	**E22TP2X10B**		**E22TP2X10C**	**E22TP2X10D**	**E22TP2X10E**	
	Green	**E22TP3X10A**	**E22TP3X10B**		**E22TP3X10C**	**E22TP3X10D**	**E22TP3X10E**	
	White	**E22TP5X10A**	**E22TP5X10B**		**E22TP5X10C**	**E22TP5X10D**	**E22TP5X10E**	
	Blue	**E22TP6X10A**	**E22TP6X10B**		**E22TP6X10C**	**E22TP6X10D**	**E22TP6X10E**	
	Amber	**E22TP9X10A**	**E22TP9X10B**		**E22TP9X10C**	**E22TP9X10D**	**E22TP9X10E**	
	Clear	**E22TP0X10A**	**E22TP0X10B**		**E22TP0X10C**	**E22TP0X10D**	**E22TP0X10E**	
	120V AC Transformer — 50/60 Hz, Flush, Illuminated Bezel							
	Red	**E22TP2X11A**	**E22TP2X11B**		**E22TP2X11C**	**E22TP2X11D**	**E22TP2X11E**	
	Green	**E22TP3X11A**	**E22TP3X11B**		**E22TP3X11C**	**E22TP3X11D**	**E22TP3X11E**	
	White	**E22TP5X11A**	**E22TP5X11B**		**E22TP5X11C**	**E22TP5X11D**	**E22TP5X11E**	
	Blue	**E22TP6X11A**	**E22TP6X11B**		**E22TP6X11C**	**E22TP6X11D**	**E22TP6X11E**	
	Amber	**E22TP9X11A**	**E22TP9X11B**		**E22TP9X11C**	**E22TP9X11D**	**E22TP9X11E**	
	Clear	**E22TP0X11A**	**E22TP0X11B**		**E22TP0X11C**	**E22TP0X11D**	**E22TP0X11E**	
Metal Operators — Chrome Bezel								
	24V AC/DC Full Voltage Unit, Flush, Illuminated Bezel							
	Red	**EM22TP2X4A**	**EM22TP2X4B**		**EM22TP2X4C**	**EM22TP2X4D**	**EM22TP2X4E**	
	Green	**EM22TP3X4A**	**EM22TP3X4B**		**EM22TP3X4C**	**EM22TP3X4D**	**EM22TP3X4E**	
	White	**EM22TP5X4A**	**EM22TP5X4B**		**EM22TP5X4C**	**EM22TP5X4D**	**EM22TP5X4E**	
	Blue	**EM22TP6X4A**	**EM22TP6X4B**		**EM22TP6X4C**	**EM22TP6X4D**	**EM22TP6X4E**	
	Amber	**EM22TP9X4A**	**EM22TP9X4B**		**EM22TP9X4C**	**EM22TP9X4D**	**EM22TP9X4E**	
	Clear	**EM22TP0X4A**	**EM22TP0X4B**		**EM22TP0X4C**	**EM22TP0X4D**	**EM22TP0X4E**	
	120V AC/DC Resistor Unit, Flush, Illuminated Bezel							
	Red	**EM22TP2X10A**	**EM22TP2X10B**		**EM22TP2X10C**	**EM22TP2X10D**	**EM22TP2X10E**	
	Green	**EM22TP3X10A**	**EM22TP3X10B**		**EM22TP3X10C**	**EM22TP3X10D**	**EM22TP3X10E**	
	White	**EM22TP5X10A**	**EM22TP5X10B**		**EM22TP5X10C**	**EM22TP5X10D**	**EM22TP5X10E**	
	Blue	**EM22TP6X10A**	**EM22TP6X10B**		**EM22TP6X10C**	**EM22TP6X10D**	**EM22TP6X10E**	
	Amber	**EM22TP9X10A**	**EM22TP9X10B**		**EM22TP9X10C**	**EM22TP9X10D**	**EM22TP9X10E**	
	Clear	**EM22TP0X10A**	**EM22TP0X10B**		**EM22TP0X10C**	**EM22TP0X10D**	**EM22TP0X10E**	
	120V AC Transformer Unit, Flush, Illuminated Bezel							
	Red	**EM22TP2X11A**	**EM22TP2X11B**		**EM22TP2X11C**	**EM22TP2X11D**	**EM22TP2X11E**	
	Green	**EM22TP3X11A**	**EM22TP3X11B**		**EM22TP3X11C**	**EM22TP3X11D**	**EM22TP3X11E**	
	White	**EM22TP5X11A**	**EM22TP5X11B**		**EM22TP5X11C**	**EM22TP5X11D**	**EM22TP5X11E**	
	Blue	**EM22TP6X11A**	**EM22TP6X11B**		**EM22TP6X11C**	**EM22TP6X11D**	**EM22TP6X11E**	
	Amber	**EM22TP9X11A**	**EM22TP9X11B**		**EM22TP9X11C**	**EM22TP9X11D**	**EM22TP9X11E**	
	Clear	**EM22TP0X11A**	**EM22TP0X11B**		**EM22TP0X11C**	**EM22TP0X11D**	**EM22TP0X11E**	

Note: In order to comply with NFPA 79 and IEC 60204-1 requirements:

The colors black, white or gray shall be used for Push-Push operators which act alternately as START/ON and STOP/OFF pushbuttons. White shall be used for illuminated Push-Push operators.

Push-Push operators shall only be used for functions which can not result in a hazardous condition.

IEC 60204-1 recommends that Push-Push operators acting alternately as START/ON and STOP/OFF pushbuttons be marked with the printed legend N124.

Dimensions ..... **Page 47-89**
Accessories ..... **Pages 47-74 – 47-78**
Enclosures ..... **Pages 47-87 – 47-88**
Legend Plates..... **Pages 47-79 – 47-85**
Discount Symbol **1CD1**

Alternate Action (Push-Push) Components

Non-illuminated and Illuminated Push-Push Operators

Note: Will accept a maximum of 2 contact blocks when used with supplied 3-way adapter, 5-way mounting adapters are not to be used.

Table 47-39. Push-Push Operators — UL (NEMA) Type 3, 3R, 4, 4X, 12, 13

	E22 Series — Plastic Operators				EM22 Series — Metal Operators	
	Black Bezel		Chrome Bezel		Chrome Bezel	
Flush, Non-illuminated						
Color	**Catalog Number**	**Price U.S. $**	**Catalog Number**	**Price U.S. $**	**Catalog Number**	**Price U.S. $**
Black White Gray	**E22PPB1** **E22PPB5** **E22PPB7**		**E22PP1** **E22PP5** **E22PP7**		**EM22PP1** **EM22PP5** **EM22PP7**	
Extended, Non-illuminated						
Color	**Catalog Number**	**Price U.S. $**	**Catalog Number**	**Price U.S. $**	**Catalog Number**	**Price U.S. $**
Black White Gray	**E22EPB1** **E22EPB5** **E22EPB7**		**E22EP1** **E22EP5** **E22EP7**		**EM22EP1** **EM22EP5** **EM22EP7**	
Flush, Illuminated						
Color	**Catalog Number**	**Price U.S. $**	**Catalog Number**	**Price U.S. $**	**Catalog Number**	**Price U.S. $**
White Clear Red Green Blue Amber	**E22NPB5** **E22NPB0** **E22NPB2** **E22NPB3** **E22NPB6** **E22NPB9**		**E22NP5** **E22NP0** **E22NP2** **E22NP3** **E22NP6** **E22NP9**		**EM22NP5** **EM22NP0** **EM22NP2** **EM22NP3** **EM22NP6** **EM22NP9**	
Flush, Illuminated with Lens Guard						
Color	**Catalog Number**	**Price U.S. $**	**Catalog Number**	**Price U.S. $**	**Catalog Number**	**Price U.S. $**
White Clear Red Green Blue Amber	— — — — — —		**E22TP5** **E22TP0** **E22TP2** **E22TP3** **E22TP6** **E22TP9**		**EM22TP5** **EM22TP0** **EM22TP2** **EM22TP3** **EM22TP6** **EM22TP9**	

Note: In order to comply with NFPA 79 and IEC 60204-1 requirements:

The colors black, white or gray shall be used for Push-Push operators which act alternately as START/ON and STOP/OFF pushbuttons. White shall be used for illuminated Push-Push operators.

Push-Push operators shall only be used for functions which cannot result in a hazardous condition.

IEC 60204-1 recommends that Push-Push operators acting alternately as START/ON and STOP/OFF pushbuttons be marked with the IEC symbol for Push-Push pushbuttons. To order with legend, add Suffix **N124** to operator Catalog Number. Example: E22PPB1**N124**

Note: For Rear of Panel Extensions, see **Table 47-128** on **Page 47-94**.

Dimensions ..... **Page 47-89**
Accessories ..... **Pages 47-74 – 47-78**
Enclosures ..... **Pages 47-87 – 47-88**
Legend Plates ..... **Pages 47-79 – 47-85**
Light Units ..... **Pages 47-70 – 47-71**
Suffix Codes ..... **Page 47-98**
Discount Symbol **1CD1**

Alternate Action (Push-Push) Components (Continued)

Contact Block Selection/Application

Non-illuminated Push-Push operators will accept a maximum of 2 contact blocks (singles or duals). 5-way mounting adapters are not suitable with Push-Push operators. Illuminated Push-Push operators will accept a maximum of 2 contact blocks (singles or duals) and one light unit.

Table 47-40. Push-Push Operators

Contact Block Required			Circuit	Circuit Operation ①	
Suffix Code	Catalog Number	Price U.S. $		Push-ON	Push-OFF
B	**E22B1**		1NC	O	X
A	**E22B2**		1NO	X	O
W	**E22B11**		1NO-1NC	X O	O X
V	**E22B20**		2NO	X X	O O

① X = Closed Circuit
O = Open Circuit

Note: Add Contact Block Suffix Code from tables above to operator Catalog Number to order as a complete device. Example: E22EP1**B** = chrome bezel, Black button Push-Push with 1NC contact block.

Accessories ..... **Pages 47-74 – 47-78**
Enclosures..... **Pages 47-87 – 47-88**
Legend Plates..... **Pages 47-79 – 47-85**
Light Units ..... **Pages 47-70 – 47-71**
Suffix Codes ..... **Page 47-98**
Discount Symbol **1CD1**

Trigger Action Emergency Stop Pushbutton Units — EN 418 Compliant

The European Machinery Safety Directive EN 418 requires all emergency OFF devices to be self-latching types and to have positive (direct) opening operation. Devices have to be manually reset. Actuators shall be mushroom head type and colored RED. The background immediately around the device actuator should be colored YELLOW. See **Page 47-42** for yellow guard.

The new E22 trigger action operators in conjunction with yellow nameplates and DOA (Direct Opening Action) contact blocks are fully compliant with this safety directive.

Features

- Safety interlock against inadvertent operation
- Stop command and latching occur simultaneously
- Contacts cannot be "teased" open
- Direct Opening Action (DOA) contact blocks
- Resetable by rotation of actuator

Periodic Inspection

Industrial control equipment should be periodically inspected. Eaton recommends inspection of Emergency Stop devices for proper mechanical operation after every 500 hours of elapsed time. See National Electrical Manufacturers Association (NEMA) Standard No. ICS 1.3, *Preventive Maintenance of Industrial Control and Systems Equipment*, for guidelines in setting up a maintenance program.

Table 47-41. Trigger Action Emergency OFF Switch Units — UL (NEMA) Type 3, 3R, 4, 4X, 12, 13

Action	Color	Legend/ Engraving	Contact Block Circuit						
			1NC		2NC	1NC-1NO		2NC-1NO	
			Catalog Number	Price U.S. $	Catalog Number	Catalog Number	Price U.S. $	Catalog Number	Price U.S. $
40 mm Trigger Action Twist-to-Release ①									
	Red	(Red)	E22LTA2QB		E22LTA2QE	E22LTA2QW		E22LTA2QWB	
40 mm Trigger Action Twist-to-Release EMO (Emergency Machine OFF) ②									
	Red	(White) ③	E22LTA2N123QB		E22LTA2N123QE	E22LTA2N123QW		E22LTA2N123QWB	

① Third party certified by DEMKO. For specification drawing, request A70-8530 from the Cutler-Hammer TRC — call 1-800-809-2772.
② Third party certified by DEMKO and GS3 to SEMI S2-0200 specifications. For specification drawing, request A70-8508 from the Cutler-Hammer TRC — call 1-800-809-2772.
③ EMO (Emergency Machine OFF) marking per SEMI S2 requirement.

Table 47-42. Two-Position Push-Pull Emergency Stop Pushbutton Units — UL (NEMA) Type 3, 3R, 4, 4X, 12, 13

Action	Color	Legend/ Engraving	Contact Block Circuit				
			1NC		2NC	1NC-1NO	
			Catalog Number	Price U.S. $	Catalog Number	Catalog Number	Price U.S. $
40 mm Mushroom							
	Red	None	E22LPB2B		E22LPB2E	E22LPB2C	
	Red	④	E22LPB2N125B		E22LPB2N125E	E22LPB2N125C	

④ IEC Symbol for Emergency Stop.

Direct Opening Action (DOA) for IEC 60947-5-1 (Annex K) and NEMA ICS 5 (Part 6) Compliance

Table 47-43. Mechanical Operating Parameters of Operators with E22CB1 and E22CB11 (NC Contacts Only)

DOA Operating Parameters	Latching Trigger Action E-Stop		2-Position Push-Pull	
	E-Stop + E22CB1	E-Stop + E22CB11	2-Pos. Push-Pull + E22CB1	2-Pos. Push-Pull + E22CB11
Min. Travel to Open Contact — Inches (mm)	0.24 (6.1)	0.24 (6.1)	0.08 (2.1)	0.08 (2.1)
Min. Force to Open Contact — lb (N)	5.00 (22.24)	5.00 (22.24)	0	0
Total Travel — Inches (mm)	0.29 (7.4)	0.29 (7.4)	0.23 (5.8)	0.23 (5.8)

Discount Symbol **1CD1**

Emergency Stop Components

Table 47-44. Standard Emergency Stop and Emergency OFF Operators — UL (NEMA) Type 3, 3R, 4, 4X, 12, 13

All Shown with Chrome Bezel	Action	Color	Button Diameter/ Material	Legend/ Engraving	Plastic — Black Bezel		Plastic — Chrome Bezel	
					Catalog Number	Price U.S. $	Catalog Number	Price U.S. $
Maximum of 2 Contact Blocks (4 Circuits) When Used with Supplied 3-Way Adapter (Unless Otherwise Noted)								
	Maintained Trigger Action Twist-to-Release	Red	40 mm/Plastic		**E22LTA2** ①		—	
	Maintained Trigger Action Twist-to-Release	Red	40 mm/Plastic	EMO	**E22LTA2N123** ①		—	
	Momentary ③	Red	40 mm/Plastic		**E22LB2**		**E22L2**	
			50 mm/Plastic		**E22JPB2**		**E22JP2**	
			50 mm/Alum.		**E22JB2**		**E22J2**	
				EMERG. STOP	**E22JB2N8**		**E22J2N8**	
	Maintained — 2-Position Push-Pull ③	Red	40 mm/Plastic		**E22LPB2** ①		**E22LP2** ①	
	Maintained — 2-Position Push-Pull ③	Red	50 mm/Plastic		**E22JPLB2** ①		**E22JPL2** ①	
			50 mm/Alum.		**E22JLB2** ①		**E22JL2** ①	
				EMERG. STOP	**E22JLB2N8** ①		**E22JL2N8** ①	
	Maintained — 2-Position Push-Pull ③	Red	40 mm/Plastic		**E22EDB2** ①		**E22ED2** ①	
				EMERG. STOP	**E22EDB2N8** ①		**E22ED2N8** ①	
				EMERG. STOP	**E22EDB2N796** ①②		**E22ED2N796** ①②	
	Maintained — 2-Position Push-Pull ③	Red	40 mm/Plastic Illuminated		**E22GDB2** ①		**E22GD2** ①	
				EMERG. STOP	**E22GDB2N8** ①		**E22GD2N8** ①	
				EMERG. STOP	**E22GDB2N796** ①②		**E22GD2N796** ①②	
	Maintained — Twist-to-Release	Red	40 mm/Plastic	(White)	**E22LLB2**		**E22LL2**	
				EMERGENCY OFF (White)	**E22LLB2N886**		**E22LL2N886**	
	Maintained — Key Release	Red	40 mm/Plastic		**E22GB2**		**E22G2**	

① Compliant with EN418 Machinery Safety Directive.
② Yellow field — red letters.
③ Maximum of 3 contact blocks allowable (6 circuits) when optional operator plug is used.

Table 47-45. EN418 Compliant Safety Yellow Guard

	Description	Color	Catalog Number	Price U.S. $
	Mushroom Guard for 40 mm Trigger Action Switch — To be used with E22LTA2 and E22LTA2N123 operators.	Safety Yellow	**E22MGTA**	

Periodic Inspection

Industrial control equipment should be periodically inspected. Eaton recommends inspection of Emergency Stop devices for proper mechanical operation after every 500 hours of elapsed time. See National Electrical Manufacturers Association (NEMA) Standard No. ICS 1.3, *Preventive Maintenance of Industrial Control and Systems Equipment*, for guidelines in setting up a maintenance program.

Contact Blocks..... **Page 47-69**
Enclosures ..... **Pages 47-87 – 47-88**
5-Way Adapter..... **Page 47-77**
Legend Plates..... **Pages 47-79 – 47-85**
Suffix Codes ..... **Page 47-98**
Discount Symbol **1CD1**

Twist-to-Release, Push-Pull and Key Release Components

Table 47-46. Maintained Contact Mushroom Head Operators, Non-illuminated — UL (NEMA) Type 3, 3R, 4, 4X, 12, 13

Will Accept Maximum of 2 Contact Blocks (4 Circuits) When Used with Supplied 3-Way Adapter.	E22 Series — Plastic Operators					EM22 Series — Metal Operators		
	Color	Black Bezel		Chrome Bezel		Color	Chrome Bezel	
		Catalog Number	Price U.S. $	Catalog Number	Price U.S. $		Catalog Number	Price U.S. $
E22 Black E22 Chrome EM22 Chrome	**Twist-to-Release — 28 mm Diameter Button (Push to Latch — Twist to Release)**							
	Black	**E22MLB1**		**E22ML1**		Black	**EM22ML1**	
	Red	**E22MLB2**		**E22ML2**		Red	**EM22ML2**	
	Green	**E22MLB3**		**E22ML3**		Green	**EM22ML3**	
	Yellow	**E22MLB4**		**E22ML4**		Yellow	**EM22ML4**	
	Blue	**E22MLB6**		**E22ML6**		Blue	**EM22ML6**	
	Twist-to-Release — 40 mm Diameter Button (Push to Latch — Twist to Release)							
	Black	**E22LLB1**		**E22LL1**		Black	**EM22LL1**	
	Red	**E22LLB2**		**E22LL2**		Red	**EM22LL2**	
	Green	**E22LLB3**		**E22LL3**		Green	**EM22LL3**	
	Yellow	**E22LLB4**		**E22LL4**		Yellow	**EM22LL4**	
	Blue	**E22LLB6**		**E22LL6**		Blue	**EM22LL6**	
	Push-Pull — 40 mm Diameter Button (Push to Latch — Pull to Release)							
	Black	**E22LPB1**		**E22LP1**		Black	**EM22LP1**	
	Red	**E22LPB2**		**E22LP2**		Red	**EM22LP2**	
	Green	**E22LPB3**		**E22LP3**		Green	**EM22LP3**	
	Yellow	**E22LPB4**		**E22LP4**		Yellow	**EM22LP4**	
	Blue	**E22LPB6**		**E22LP6**		Blue	**EM22LP6**	
	Push-Pull — 50 mm Diameter Button (Push to Latch — Pull to Release)							
	Black	**E22JPLB1**		**E22JPL1**		Black	**EM22JPL1**	
	Red	**E22JPLB2**		**E22JPL2**		Red	**EM22JPL2**	
	Green	**E22JPLB3**		**E22JPL3**		Green	**EM22JPL3**	
	Yellow	**E22JPLB4**		**E22JPL4**		Yellow	**EM22JPL4**	
	Blue	**E22JPLB6**		**E22JPL6**		Blue	**EM22JPL6**	
	Red (Metal)	**E22JLB2**		**E22JL2**		Red (Metal)	**EM22JL2**	
	Red (Metal) EMERGENCY STOP							
		E22JLB2N8		**E22JL2N8**			**EM22JL2N8**	
	Key Release — 40 mm Diameter Button (Push to Latch — Turn Key to Release) ① ②							
	Black	**E22GB1**		**E22G1**		Black	**EM22G1**	
	Red	**E22GB2**		**E22G2**		Red	**EM22G2**	
	Green	**E22GB3**		**E22G3**		Green	**EM22G3**	

① For legend plates, use oversize plates, Catalog Numbers E22VA1, VA2 or VA8 listed on **Page 47-74**.
② To order a different key and lock assembly, add suffix **B1**, **C1**, **D1**, **E1** or **F1** to the end of the Catalog Number.
Note: For Rear of Panel Extensions, see **Table 47-128** on **Page 47-94**.

Dimensions ..... **Page 47-89**
Suffix Codes ..... **Page 47-98**
Discount Symbol **1CD1**

Indicating Light Units — Modular

- Standard and PresTest Types
- Plastic or Metal Operators
- Full Voltage LED Light Units or
- Full Voltage, Resistor or Transformer Incandescent Light Units
- Plastic Lenses

PresTest — This device incorporates a press-to-test feature whereby depressing the lens disconnects the light from the source being monitored and connects the lamp to a continuously energized circuit for immediate test for a faulty lamp.

Table 47-47. Indicating and PresTest Light Units — UL (NEMA) Type 3, 3R, 4, 4X, 12, 13

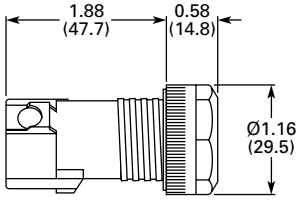
	Color	Indicating Light				PresTest	
		LED		Incandescent		Incandescent	
		Catalog Number	Price U.S. $	Catalog Number	Price U.S. $	Catalog Number	Price U.S. $
Plastic Operators							
	24V AC/DC Full Voltage						
	Red	E22H2X40		E22H2X4		E22T2X20	
	Green	E22H3X41		E22H3X4		E22T3X20	
	White	E22H5X90		E22H5X4		E22T5X20	
	Blue	E22H6X52		E22H6X4		E22T6X20	
	Amber	E22H9X95		E22H9X4		E22T9X20	
	Clear	E22H0X90		E22H0X4		E22T0X20	
	120V AC Full Voltage			**120V AC/DC Resistor**			
	Red	E22H2X43		E22H2X10		E22T2X26	
	Green	E22H3X44		E22H3X10		E22T3X26	
	White	E22H5X92		E22H5X10		E22T5X26	
	Blue	E22H6X61		E22H6X10		E22T6X26	
	Amber	E22H9X96		E22H9X10		E22T9X26	
	Clear	E22H0X92		E22H0X10		E22T0X26	
	120V AC Transformer						
	Red	—		E22H2X11		E22T2X27	
	Green	—		E22H3X11		E22T3X27	
	White	—		E22H5X11		E22T5X27	
	Blue	—		E22H6X11		E22T6X27	
	Amber	—		E22H9X11		E22T9X27	
	Clear	—		E22H0X11		E22T0X27	
Metal Operators							
	24V AC/DC Full Voltage						
	Red	EM22H2X40		EM22H2X4		EM22T2X20	
	Green	EM22H3X41		EM22H3X4		EM22T3X20	
	White	EM22H5X90		EM22H5X4		EM22T5X20	
	Blue	EM22H6X52		EM22H6X4		EM22T6X20	
	Amber	EM22H9X95		EM22H9X4		EM22T9X20	
	Clear	EM22H0X90		EM22H0X4		EM22T0X20	
	120V AC Full Voltage					**120V AC/DC Resistor Unit**	
	Red	EM22H2X43		EM22H2X8		EM22T2X26	
	Green	EM22H3X44		EM22H3X8		EM22T3X26	
	White	EM22H5X92		EM22H5X8		EM22T5X26	
	Blue	EM22H6X61		EM22H6X8		EM22T6X26	
	Amber	EM22H9X96		EM22H9X8		EM22T9X26	
	Clear	EM22H0X92		EM22H0X8		EM22T0X26	
	120V AC Transformer — 50/60 Hz						
	Red	EM22H2X433		EM22H2X11		EM22T2X27	
	Green	EM22H3X444		EM22H3X11		EM22T3X27	
	White	EM22H5X922		EM22H5X11		EM22T5X27	
	Blue	EM22H6X611		EM22H6X11		EM22T6X27	
	Amber	EM22H9X966		EM22H9X11		EM22T9X27	
	Clear	EM22H0X922		EM22H0X11		EM22T0X27	

Dimensions ..... **Page 47-89**
Accessories ..... **Pages 47-74 – 47-78**
Enclosures ..... **Pages 47-87 – 47-88**
Legend Plates..... **Pages 47-79 – 47-85**
Discount Symbol **1CD1**

Indicating Light Units — One-Piece LED

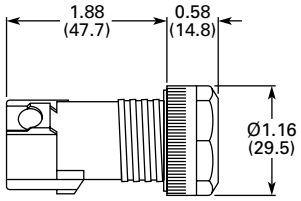
- One-Piece Body Style
- Plastic Operators
- Full Voltage LEDs
- Cluster-Style Integrated LED (non-removable) or
- Standard Bayonet Base LED
- Plastic Lenses

Table 47-48. Cluster LED Type Indicating Lights — Non-removable LEDs — UL (NEMA) Type 3, 3R, 4, 4X, 12, 13

Product Description		Supply Voltage	LED Color	Lamp Life ①	Catalog Number	Price U.S. $	Dimensions in Inches (mm)
Non-removable LED	Includes permanently attached lens and board mounted, cluster style LEDs	24V AC/DC	Red Green Amber	100,000	**E22HL2X4** **E22HL3X4** **E22HL9X4**		
		48V AC/DC	Red Green Amber	100,000	**E22HL2X6** **E22HL3X6** **E22HL9X6**		
		110/120V AC/DC	Red Green Amber	100,000	**E22HL2X8** **E22HL3X8** **E22HL9X8**		

① Published theoretical lamp lives are based on ideal laboratory conditions and should be used for comparison only. Actual life may be shorter due to application conditions.

Table 47-49. Standard LED Type Indicating Lights — Replaceable bayonet base LEDs — UL (NEMA) Type 3, 3R, 4, 4X, 12, 13

Product Description		Supply Voltage	Color	Lamp Life ②	Catalog Number	Price U.S. $	Dimensions in Inches (mm)
	Includes lens and T 3-1/4 bayonet base LED	12V AC/DC	Clear Red Green Yellow White Blue Amber	100,000	**E22HV0X89** **E22HV2X37** **E22HV3X38** **E22HV4X39** **E22HV5X89** **E22HV6X51** **E22HV9X94**		
		24V AC/DC	Clear Red Green Yellow White Blue Amber		**E22HV0X90** **E22HV2X40** **E22HV3X41** **E22HV4X42** **E22HV5X90** **E22HV6X52** **E22HV9X95**		
		48V AC/DC	Clear Red Green Yellow White Blue Amber		**E22HV0X91** **E22HV2X53** **E22HV3X54** **E22HV4X55** **E22HV5X91** **E22HV6X56** **E22HV9X87**		
		60V AC/DC	Clear Red Green Yellow White Blue Amber		**E22HV0X97** **E22HV2X57** **E22HV3X58** **E22HV4X59** **E22HV5X97** **E22HV6X60** **E22HV9X98**		
		120V AC	Clear Red Green Yellow White Blue Amber		**E22HV0X92** **E22HV2X43** **E22HV3X44** **E22HV4X45** **E22HV5X92** **E22HV6X61** **E22HV9X96**		

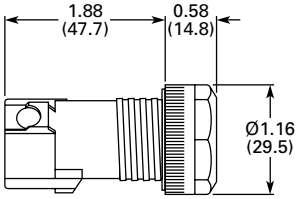
② Published theoretical lamp lives are based on ideal laboratory conditions and should be used for comparison only. Actual life may be shorter due to application conditions.

Discount Symbol **1CD1**

Indicating Light Units — One-Piece Incandescent

- One-Piece Body Style
- Plastic Operators
- Full Voltage and Resistor Type
- Bayonet Base Incandescent Lamp
- Standard or Insert (with Printed Legends) Plastic Lenses

Table 47-50. Incandescent Standard Lens Type Indicating Lights — UL (NEMA) Type 3, 3R, 4, 4X, 12, 13

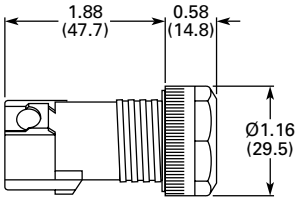
Product Description		Supply Voltage	Color	Lamp Life ①	Catalog Number	Price U.S. $	Dimensions in Inches (mm)
	Includes lens and T 3-1/4 bayonet base lamp	12V AC/DC #756 Lamp	Clear Red Green Yellow White Blue Amber	15,000	**E22HV0X3** **E22HV2X3** **E22HV3X3** **E22HV4X3** **E22HV5X3** **E22HV6X3** **E22HV9X3**		
		24V AC/DC #1819 Lamp	Clear Red Green Yellow White Blue Amber	2,500	**E22HV0X4** **E22HV2X4** **E22HV3X4** **E22HV4X4** **E22HV5X4** **E22HV6X4** **E22HV9X4**		
		110/120V AC/DC W1121 Lamp	Clear Red Green Yellow White Blue Amber	1,000	**E22HV0X8** **E22HV2X8** **E22HV3X8** **E22HV4X8** **E22HV5X8** **E22HV6X8** **E22HV9X8**		
		220/240V AC Resistor W1121 Lamp	Clear Red Green Yellow White Blue Amber	1,000	**E22HR0X8** **E22HR2X8** **E22HR3X8** **E22HR4X8** **E22HR5X8** **E22HR6X8** **E22HR9X8**		

① Published theoretical lamp lives are based on ideal laboratory conditions and should be used for comparison only. Actual life may be shorter due to application conditions.

Incandescent — Insert Lens with Printed Legends

Insert version indicating lights allow printed legends to be placed directly on the inside of the lens.
To specify lens insert with printed legends, add Suffix Code from table on **Page 47-85** to the end of the catalog number.

Table 47-51. Incandescent Insert Lens Type Indicating Lights — UL (NEMA) Type 3, 3R, 4, 4X, 12, 13

Product Description		Supply Voltage	Color	Lamp Life ②	Catalog Number	Price U.S. $	Dimensions in Inches (mm)
 Lens Insert with Printed Legend See **Page 47-85**.	Includes lens and T 3-1/4 bayonet base lamp	12V AC/DC #756 Lamp	Clear Red Green Yellow White Blue Amber	15,000	**E22HVA0X3** **E22HVA2X3** **E22HVA3X3** **E22HVA4X3** **E22HVA5X3** **E22HVA6X3** **E22HVA9X3**		
		24V AC/DC #1819 Lamp	Clear Red Green Yellow White Blue Amber	2,500	**E22HVA0X4** **E22HVA2X4** **E22HVA3X4** **E22HVA4X4** **E22HVA5X4** **E22HVA6X4** **E22HVA9X4**		
		110/120V AC/DC W1121 Lamp	Clear Red Green Yellow White Blue Amber	1,000	**E22HVA0X8** **E22HVA2X8** **E22HVA3X8** **E22HVA4X8** **E22HVA5X8** **E22HVA6X8** **E22HVA9X8**		

② Published theoretical lamp lives are based on ideal laboratory conditions and should be used for comparison only. Actual life may be shorter due to application conditions.

Discount Symbol **1CD1**

Indicating Light Components

Table 47-52. Indicating Lights — Without Light Unit — UL (NEMA) Type 3, 3R, 4, 4X, 12, 13

	Color	E22 Series — Plastic Operators		EM22 Series — Metal Operators	
		Catalog Number	Price U.S. $	Catalog Number	Price U.S. $
E22 EM22	**25 mm Dia. Standard Lens**				
	Red	**E22H2**		**EM22H2**	
	Green	**E22H3**		**EM22H3**	
	Yellow	**E22H4**		**EM22H4**	
	White	**E22H5**		**EM22H5**	
	Blue	**E22H6**		**EM22H6**	
	Amber	**E22H9**		**EM22H9**	
	Clear	**E22H0**		**EM22H0**	
	25 mm Dia. Lens — Insert Version (To Order with Printed Legend Insert, see Page 47-85.)				
	Red	**E22A2**		**EM22A2**	
	Green	**E22A3**		**EM22A3**	
	Yellow	**E22A4**		**EM22A4**	
	White	**E22A5**		**EM22A5**	
	Blue	**E22A6**		**EM22A6**	
	Amber	**E22A9**		**EM22A9**	
	Clear	**E22A0**		**EM22A0**	
Chrome Bezel	**25 mm Dia. Glass Lens — Rated 4 – 13 Only**				
	Red	**E22F2**		—	
	Green	**E22F3**		—	
	Yellow	**E22F4**		—	
	White	**E22F5**		—	
	Blue	**E22F6**		—	
	Amber	**E22F9**		—	
	Clear	**E22F0**		—	

Table 47-53. E22 Monoblock — Full Voltage Indicating Lights without Lamps ① — UL (NEMA) Type 3, 3R, 4, 4X, 12, 13

Description	Color	Catalog Number	Price U.S. $	Description	Color	Catalog Number	Price U.S. $
Optically Enhanced Style	Clear	**E22HV0**		Diffuser Style ② (Catalog Numbers are without legends) Lens Insert with Printed Legend	Clear	**E22HVA0**	
	Red	**E22HV2**			Red	**E22HVA2**	
	Green	**E22HV3**			Green	**E22HVA3**	
	Yellow	**E22HV4**			Yellow	**E22HVA4**	
	White	**E22HV5**			White	**E22HVA5**	
	Blue	**E22HV6**			Blue	**E22HVA6**	
	Amber	**E22HV9**			Amber	**E22HVA9**	

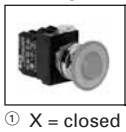
① For LED/incandescent lamps, see **Page 47-70 – 47-71**.
② For standard legends for diffuser, see **Page 47-85**.
Note: For Rear of Panel Extensions, see **Table 47-128** on **Page 47-94**.

Dimensions ..... **Page 47-89**
Accessories ..... **Pages 47-74 – 47-78**
Contact Blocks ..... **Page 47-69**
Enclosures ..... **Pages 47-87 – 47-88**
Legend Plates ..... **Pages 47-79 – 47-85**
Suffix Codes ..... **Page 47-98**
Discount Symbol **1CD1**

Push-Pull Units

- Plastic or Metal Operators
- Black or Chrome Bezel
- Two- and Three-Position
- Illuminated and Non-illuminated
- Incandescent Bayonet Base Lamps
- Transformer or Resistor Light Units

Table 47-54. Two-Position Push-Pull Units — UL (NEMA) Type 3, 3R, 4, 4X, 12, 13

	Operator Position ①		Non-illuminated			Illuminated – Tall Incandescent Bulb				
	Pull	Push	Button Color	Catalog Number	Price U.S. $	Lens Color	120V AC Transformer		120V AC/DC Resistor	
							Catalog Number	Price U.S. $	Catalog Number	Price U.S. $
Plastic Operators — Black Bezel										
	X	O	Black Red Green Red (Alum) — EMERG. STOP	**E22EDB1B** **E22EDB2B** **E22EDB3B** **E22EDB2N8B**		Red Green Amber Red (Alum) — EMERG. STOP	**E22GDB2X11B** **E22GDB3X11B** **E22GDB9X11B** **E22GDB2N8X11B**		**E22GDB2X10B** **E22GDB3X10B** **E22GDB9X10B** **E22GDB2N8X10B**	
Plastic Operators — Chrome Bezel										
	X	O	Black Red Green Red (Alum) — EMERG. STOP	**E22ED1B** **E22ED2B** **E22ED3B** **E22ED2N8B**		Red Green Amber Red (Alum) — EMERG. STOP	**E22GD2X11B** **E22GD3X11B** **E22GD9X11B** **E22GD2N8X11B**		**E22GD2X10B** **E22GD3X10B** **E22GD9X10B** **E22GD2N8X10B**	
Metal Operators — Chrome Bezel										
	X	O	Red Red – EMERG. STOP	**EM22ED2B** **EM22ED2N8B**		Red Red – EMERG. STOP	**EM22GD2X11B** **EM22GD2N8X11B**		**EM22GD2X10B** **EM22GD2N8X10B**	

① X = closed circuit, O = open circuit.

Table 47-55. Three-Position Push-Pull Units — UL (NEMA) Type 3, 3R, 4, 4X, 12, 13

	Operator Position ②			Non-illuminated			Illuminated – Tall Incandescent Bulb				
	Pull	Intermediate	Push	Button Color	Catalog Number	Price U.S. $	Lens Color	120V AC Transformer		120V AC/DC Resistor	
								Catalog Number	Price U.S. $	Catalog Number	Price U.S. $
Plastic Operators — Black Bezel											
	Momentary Push, Momentary Pull with 1NC and 1LONC Contact Blocks										
	X X	X O	O O	Black Red Green	**E22FDB1S** **E22FDB2S** **E22FDB3S**		Red Green Amber	**E22HDB2X11S** **E22HDB3X11S** **E22HDB9X11S**		**E22HDB2X10S** **E22HDB3X10S** **E22HDB9X10S**	
	Momentary Push, Momentary Pull with 1NC and 1ECNO Contact Blocks										
	X O	O O	O X	Black Red Green	**E22FDB1T** **E22FDB2T** **E22FDB3T**		Red Green Amber	**E22HDB2X11T** **E22HDB3X11T** **E22HDB9X11T**		**E22HDB2X10T** **E22HDB3X10T** **E22HDB9X10T**	
Plastic Operators — Chrome Bezel											
	Momentary Push, Momentary Pull with 1NC and 1LONC Contact Blocks										
	X X	X O	O O	Black Red Green	**E22FD1S** **E22FD2S** **E22FD3S**		Red Green Amber	**E22HD2X11S** **E22HD3X11S** **E22HD9X11S**		**E22HD2X10S** **E22HD3X10S** **E22HD9X10S**	
	Momentary Push, Momentary Pull with 1NC and 1ECNO Contact Blocks										
	X O	O O	O X	Black Red Green	**E22FD1T** **E22FD2T** **E22FD3T**		Red Green Amber	**E22HD2X11T** **E22HD3X11T** **E22HD9X11T**		**E22HD2X10T** **E22HD3X10T** **E22HD9X10T**	
Metal Operators — Chrome Bezel											
	3-Position Momentary Push and Pull — 1NC and 1LONO Contact Block										
	X O	O O	O X	Red	**EM22FD2T**		Red	**EM22HD2X11T**		**EM22HD2X10T**	
	3-Position Momentary Push and Pull — 1NC and IECNC Contact Block										
	X X	X O	O O	Red	**EM22FD2S**		Red	**EM22HD2X11S**		**EM22HD2X10S**	

② X = closed circuit, O = open circuit.

Dimensions ..... **Page 47-89**
Legend Plates ..... **Pages 47-79 – 47-85**
Accessories ..... **Pages 47-74 – 47-78**
Discount Symbol **1CD1**

Push-Pull Components — Non-illuminated Operators

Table 47-56. Non-illuminated Push-Pull Operators — UL (NEMA) Type 3, 3R, 4, 4X, 12, 13

	E22 Series — Plastic Operators					EM22 Series — Metal Operators		
	Color	Black Bezel		Chrome Bezel		Color	Chrome Bezel	
		Catalog Number	Price U.S. $	Catalog Number	Price U.S. $		Catalog Number	Price U.S. $
E22 Black E22 Chrome EM22 Chrome	**2-Position — 40 mm Dia. Button ① (Maintained)**							
	Black	**E22EDB1**		**E22ED1**		Red	**EM22ED2**	
	Red	**E22EDB2**		**E22ED2**		Green	**EM22ED3**	
	Green	**E22EDB3**		**E22ED3**				
	Yellow	**E22EDB4**		**E22ED4**				
	White	**E22EDB5**		**E22ED5**				
	Blue	**E22EDB6**		**E22ED6**				
	Gray	**E22EDB7**		**E22ED7**				
	Orange	**E22EDB8**		**E22ED8**				
	3-Position — 40 mm Dia. Button ① (Spring Return to Center)							
	Black	**E22FDB1**		**E22FD1**		Red	**EM22FD2**	
	Red	**E22FDB2**		**E22FD2**		Green	**EM22FD3**	
	Green	**E22FDB3**		**E22FD3**				
	Yellow	**E22FDB4**		**E22FD4**				
	White	**E22FDB5**		**E22FD5**				
	Blue	**E22FDB6**		**E22FD6**				
	Gray	**E22FDB7**		**E22FD7**				
	Orange	**E22FDB8**		**E22FD8**				
	3-Position — 40 mm Dia. Push-Pull Pushbutton ① (Spring Return to Center from Pulled Position)							
	Black	**E22FDMB1**		**E22FDM1**		Red	**EM22FDM2**	
	Red	**E22FDMB2**		**E22FDM2**		Green	**EM22FDM3**	
	Green	**E22FDMB3**		**E22FDM3**				
	Yellow	**E22FDMB4**		**E22FDM4**				
	White	**E22FDMB5**		**E22FDM5**				
	Blue	**E22FDMB6**		**E22FDM6**				
	Gray	**E22FDMB7**		**E22FDM7**				
	Orange	**E22FDMB8**		**E22FDM8**				

① These operators can be supplied with EMERGENCY STOP marking (decal) on face ring. To order, add Suffix **N8** to operator Catalog Number. Example: E22ED2**N8**. With Yellow field, Red letters, add **N796**.

Note: For Rear of Panel Extensions, see **Table 47-128** on **Page 47-94**.

Contact Block Selection/Application

Push-Pull operators will accept a maximum of 2 contact blocks (4 circuits, 2-position/2 circuits, 3-position). 5-way mounting adapters can only be used on 2-position Push-Pulls and are not suitable with 3-position Push-Pulls. See **Page 47-77**.

Table 47-57. 2-Position Push-Pull

Contact Block Required			Circuit	Maintained Circuit Operation ②	
Suffix Code	Catalog Number	Price U.S. $		Pulled	Pushed
B	**E22B1**		1NC	X	O
A	**E22B2**		1NO	O	X
W	**E22B11**		1NO-1NC	X O	O X
V	**E22B20**		2NO	O O	X X

② X = Closed Circuit O = Open Circuit

Table 47-58. 3-Position Push-Pull — E22B2, E22B11 and E22B20 Cannot Be Used

Contact Block Required			Circuit	Maintained Circuit Operation ③		
Suffix Code	Catalog Number	Price U.S. $		Pulled	Center	Pushed
S	**E22B1 and E22B4**		1NC 1NC	X X	O X	O O
T	**E22B1 and E22B5**		1NC 1NO	X O	O O	O X

③ X = Closed Circuit O = Open Circuit

Note: Add Contact Block Suffix Code from tables above to operator Catalog Number to order as a complete device.
Example: E22ED1**B** = 2-position chrome bezel, Black button Push-Pull with 1NC contact block.

Dimensions ..... **Page 47-89**
Accessories ..... **Pages 47-74 – 47-78**
Enclosures ..... **Pages 47-87 – 47-88**
Legend Plates..... **Pages 47-79 – 47-85**
Light Units ..... **Pages 47-70 – 47-73**
Suffix Codes ..... **Page 47-98**
Discount Symbol **1CD1**

Push-Pull Components — Illuminated Operators

Note: Will accept a maximum of 2 contact blocks when used with supplied 3-way adapter. 5-way mounting adapters are not to be used with 3-position operators, see **Page 47-77**.

Table 47-59. Illuminated Push-Pull Operators — UL (NEMA) Type 3, 3R, 4, 4X, 12, 13

	E22 Series — Plastic Operators					EM22 Series — Metal Operators		
	Color	Black Bezel		Chrome Bezel		Color	Chrome Bezel	
		Catalog Number	Price U.S. $	Catalog Number	Price U.S. $		Catalog Number	Price U.S. $
E22 Black E22 Chrome EM22 Chrome	**2-Position — 40 mm Diameter Lens ①② (Maintained)**							
	Red	**E22GDB2**		**E22GD2**		Red	**EM22GD2**	
	Green	**E22GDB3**		**E22GD3**		Green	**EM22GD3**	
	Yellow	**E22GDB4**		**E22GD4**		Amber	**EM22GD9**	
	White	**E22GDB5**		**E22GD5**				
	Blue	**E22GDB6**		**E22GD6**				
	Amber	**E22GDB9**		**E22GD9**				
	Clear	**E22GBD0**		**E22GD0**				
	3-Position — 40 mm Diameter Lens ①② (Spring Return to Center)							
	Red	**E22HDB2**		**E22HD2**		Red	**EM22HD2**	
	Green	**E22HDB3**		**E22HD3**		Green	**EM22HD3**	
	Yellow	**E22HDB4**		**E22HD4**		Amber	**EM22HD9**	
	White	**E22HDB5**		**E22HD5**				
	Blue	**E22HDB6**		**E22HD6**				
	Amber	**E22HDB9**		**E22HD9**				
	Clear	**E22HDB0**		**E22HD0**				
	3-Position — 40 mm Dia. Push-Pull Pushbutton ①② (Spring Return to Center from Pulled Position)							
	Red	**E22HDMB2**		**E22HDM2**		Red	**EM22HDM2**	
	Green	**E22HDMB3**		**E22HDM3**		Green	**EM22HDM3**	
	Yellow	**E22HDMB4**		**E22HDM4**		Amber	**EM22HDM9**	
	White	**E22HDMB5**		**E22HDM5**				
	Blue	**E22HDMB6**		**E22HDM6**				
	Amber	**E22HDMB9**		**E22HDM9**				
	Clear	**E22HDMB0**		**E22HDM0**				

① These operators can be supplied with EMERGENCY STOP marking (decal) on face ring. To order, add Suffix **N8** to operator Catalog Number. Example: E22ED2**N8**. With Yellow field, Red letters, add **N796**.

② All illuminated Push-Pull operators require tall incandescent bulbs or tall LEDs from **Table 47-103** or **Table 47-104** (**Page 47-73**).

47

29.5 mm Diameter Button — For Both Non-illuminated and Illuminated Push-Pull Operators

29.5 mm Diameter Button Operator

For Push-Pull operator with 29.5 mm diameter button, replace 5th digit (**D**) of the listed Catalog Number with letter **H**. Example: E22E**H**1, black, non-illuminated 2-position push-pull operator with 29.5 mm diameter button.

Note: Add Suffix Codes from the tables on **Page 47-69** (Contact Blocks) and **Pages 47-70 – 47-71** (Light Units) to operator Catalog Number to order as a complete device. Example: E22GD2**X4B** = 2-position chrome bezel, Red button lens, 24V light unit Push-Pull with 1NC contact block.

Note: For Rear of Panel Extensions, see **Table 47-128** on **Page 47-94**.

Dimensions ..... **Page 47-89**
Accessories ..... **Pages 47-74 – 47-78**
Enclosures ..... **Pages 47-87 – 47-88**
Legend Plates..... **Pages 47-79 – 47-85**
Light Units ..... **Pages 47-70 – 47-73**
Suffix Codes ..... **Page 47-98**
Discount Symbol **1CD1**

Selector Switch Units

- Plastic Operators
- Black or Chrome Bezel
- Two-Position
- 45° Throw
- Knob or Lever
- Non-illuminated

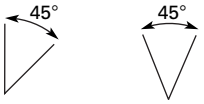


Table 47-60. Two-Position Selector Switch Units — 45° Throw — Cam 2 — UL (NEMA) Type 3, 3R, 4, 4X, 12, 13

	Operator Action ②	Operator Type	Operator Position ①					
			Cam — 2					
			O X		X O O X		O X X O O X X O	
			Catalog Number ③	Price U.S. $	Catalog Number ③	Price U.S. $	Catalog Number ③	Price U.S. $
Plastic Operator — Black Bezel								
	M M	Knob Lever	**E22XBF1A** **E22VBF1A**		**E22XBF1C** **E22VBF1C**		**E22XBF1WW** **E22VBF1WW**	
	M M	Knob Lever	**E22XB51A** **E22VB51A**		**E22XB51C** **E22VB51C**		**E22XB51WW** **E22VB51WW**	
	M S	Knob Lever	**E22XBE1A** **E22VBE1A**		**E22XBE1C** **E22VBE1C**		**E22XBE1WW** **E22VBE1WW**	
	M S	Knob Lever	**E22XB61A** **E22VB61A**		**E22XB61C** **E22VB61C**		**E22XB61WW** **E22VB61WW**	
Plastic Operator — Chrome Bezel								
	M M	Knob Lever	**E22XF1A** **E22VF1A**		**E22XF1C** **E22VF1C**		**E22XF1WW** **E22VF1WW**	
	M M	Knob Lever	**E22X51A** **E22V51A**		**E22X51C** **E22V51C**		**E22X51WW** **E22V51WW**	
	M S	Knob Lever	**E22XE1A** **E22VE1A**		**E22XE1C** **E22XE1C**		**E22XE1WW** **E22VE1WW**	
	M S	Knob Lever	**E22X61A** **E22V61A**		**E22X61C** **E22X61C**		**E22X61WW** **E22V61WW**	

① X = closed circuit, O = open circuit.
② M = Maintained. S = Spring return in direction of arrow (→).
③ To order with an alternate color, replace underlined digit (**1**) of listed Catalog Number with Code Number from table below.
Example: 2-position operator with Red knob, E22XBF**2**A

Color	Code	Color	Code	Color	Code	Color	Code	Color	Code	Color	Code	Color	Code	Color	Code
Black	**1**	Red	**2**	Green	**3**	Yellow	**4**	White	**5**	Blue	**6**	Gray	**7**	Orange	**8**

Dimensions ..... **Page 47-89**
Legend Plates ..... **Page 47-86**
Accessories ..... **Pages 47-74 – 47-78**
Discount Symbol **1CD1**

Selector Switch Units (Continued)

- Plastic or Metal Operators
- Black or Chrome Bezel
- Two-Position
- 60° Throw
- Knob or Lever
- Non-illuminated

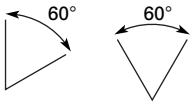


Table 47-61. Two-Position Selector Switch Units — 60° Throw — Cam 2 — UL (NEMA) Type 3, 3R, 4, 4X, 12, 13

	Operator Action ②	Operator Type	Operator Position ①							
			Cam — 2							
			O X		X O O X		O X O X		O X X O O X X O	
			Catalog Number ③	Price U.S. $	Catalog Number ③	Price U.S. $	Catalog Number ③	Price U.S. $	Catalog Number ③	Price U.S. $
Plastic Operator — Black Bezel										
	M M	Knob Lever	**E22XBF61A** **E22VBF61A**		**E22XBF61C** **E22VBF61C**		— —		**E22XBF61WW** **E22VBF61WW**	
	M M	Knob Lever	**E22XB561A** **E22VB561A**		**E22XB561C** **E22VB561C**		— —		**E22XB561WW** **E22VB561WW**	
	M S	Knob Lever	**E22XBE61A** **E22VBE61A**		**E22XBE61C** **E22VBE61C**		— —		**E22XBE61WW** **E22VBE61WW**	
	M S	Knob Lever	**E22XB661A** **E22VB661A**		**E22XB661C** **E22VB661C**		— —		**E22XB661WW** **E22VB661WW**	
Plastic Operator — Chrome Bezel										
	M M	Knob Lever	**E22XF61A** **E22VF61A**		**E22XF61C** **E22VF61C**		— —		**E22XF61WW** **E22VF61WW**	
	M M	Knob Lever	**E22X561A** **E22V561A**		**E22X561C** **E22V561C**		— —		**E22X561WW** **E22V561WW**	
	M S	Knob Lever	**E22XE61A** **E22VE61A**		**E22XE61C** **E22VE61C**		— —		**E22XE61WW** **E22VE61WW**	
	M S	Knob Lever	**E22X661A** **E22V661A**		**E22X661C** **E22V661C**		— —		**E22X661WW** **E22V661WW**	
Metal Operator — Chrome Bezel										
	M M	Knob Lever	**EM22X561A** **EM22V561A**		**EM22X561C** **EM22V561C**		**EM22X561D** **EM22V561D**		**EM22X561WW** **EM22V561WW**	
	M S	Knob Lever	**EM22X661A** **EM22V661A**		**EM22X661C** **EM22V661C**		**EM22X661D** **EM22V661D**		**EM22X661WW** **EM22V661WW**	
	M M	Knob Lever	**EM22XF61A** **EM22VF61A**		**EM22XF61C** **EM22VF61C**		**EM22XF61D** **EM22VF61D**		**EM22XF61WW** **EM22VF61WW**	
	M S	Knob Lever	**EM22XE61A** **EM22VE61A**		**EM22XE61C** **EM22VE61C**		**EM22XE61D** **EM22VE61D**		**EM22XE61WW** **EM22VE61WW**	

① X = closed circuit, O = open circuit.
② M = Maintained. S = Spring return in direction of arrow (→).
③ To order with an alternate color, replace underlined digit (**1**) of listed Catalog Number with Code Number from table below.
Example: 2-position operator with Red knob, E22XBF6**2**A

Color	Code	Color	Code	Color	Code	Color	Code	Color	Code	Color	Code	Color	Code	Color	Code
Black	**1**	Red	**2**	Green	**3**	Yellow	**4**	White	**5**	Blue	**6**	Gray	**7**	Orange	**8**

Dimensions . . . . . **Page 47-89**
Legend Plates . . . . . **Page 47-86**
Accessories . . . . . **Pages 47-74 – 47-78**
Discount Symbol **1CD1**

Selector Switch Units (Continued)

- Plastic Operators
- Black or Chrome Bezel
- Three-Position
- 45° Throw
- Knob or Lever
- Non-illuminated

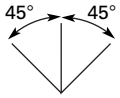


Table 47-62. Three-Position Selector Switch Units — 45° Throw — UL (NEMA) Type 3, 3R, 4, 4X, 12, 13

	Operator Action ②	Operator Type	Operator Position — Circuit ①					
			Cam 1		Cam 2		Cam 3	
			X O O O O X		X O X O O X		X O O O X O O O X	
			Catalog Number ③	Price U.S. $	Catalog Number ③	Price U.S. $	Catalog Number ③	Price U.S. $
Plastic Operator — Black Bezel								
	M M M	Knob Lever	**E22XBG1D** **E22VBG1D**		**E22XBH1D** **E22VBH1D**		**E22XBG1RR** **E22VBG1RR**	
	M M S	Knob Lever	**E22XBN1D** **E22VBN1D**		**E22XBP1D** **E22VBP1D**		**E22XBN1RR** **E22VBN1RR**	
	S M S	Knob Lever	**E22XBL1D** **E22VBL1D**		**E22XBM1D** **E22VBM1D**		**E22XBL1RR** **E22VBL1RR**	
	S M M	Knob Lever	**E22XBJ1D** **E22VBJ1D**		**E22XBK1D** **E22VBK1D**		**E22XBJ1RR** **E22VBJ1RR**	
Plastic Operator — Chrome Bezel								
	M M M	Knob Lever	**E22XG1D** **E22VG1D**		**E22XH1D** **E22VH1D**		**E22XG1RR** **E22VG1RR**	
	M M S	Knob Lever	**E22XN1D** **E22VN1D**		**E22XP1D** **E22VP1D**		**E22XN1RR** **E22VN1RR**	
	S M S	Knob Lever	**E22XL1D** **E22VL1D**		**E22XM1D** **E22VM1D**		**E22XL1RR** **E22VL1RR**	
	S M M	Knob Lever	**E22XJ1D** **E22VJ1D**		**E22XK1D** **E22VK1D**		**E22XJ1RR** **E22VJ1RR**	

① X = closed circuit, O = open circuit.
② M = Maintained. S = Spring return in direction of arrow (→).
③ To order with an alternate color, replace underlined digit (**1**) of listed Catalog Number with Code Number from table below.
Example: 3-position operator with Red knob, E22XBG**2**D

Color	Code	Color	Code	Color	Code	Color	Code	Color	Code	Color	Code	Color	Code	Color	Code
Black	**1**	Red	**2**	Green	**3**	Yellow	**4**	White	**5**	Blue	**6**	Gray	**7**	Orange	**8**

Dimensions ..... **Page 47-89**
Legend Plates ..... **Page 47-86**
Accessories ..... **Pages 47-74 – 47-78**
Discount Symbol **1CD1**

Selector Switch Units (Continued)

- Plastic or Metal Operators
- Black or Chrome Bezel
- Three-Position
- 60° Throw
- Knob or Lever
- Non-illuminated

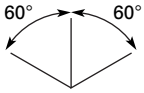


Table 47-63. Three-Position Selector Switch Units — 60° Throw — UL (NEMA) Type 3, 3R, 4, 4X, 12, 13

	Operator Action ②	Operator Type	Operator Position ①					
			Cam 1		Cam 2		Cam 3	
			X O O O O X		X O X O O X		X O O O X O O O X	
			Catalog Number ③	Price U.S. $	Catalog Number ③	Price U.S. $	Catalog Number ③	Price U.S. $
Plastic Operator — Black Bezel								
	M M M	Knob Lever	**E22XBG61D** **E22VBG61D**		**E22XBH61D** **E22VBH61D**		**E22XBG61RR** **E22VBG61RR**	
	M M S	Knob Lever	**E22XBN61D** **E22VBN61D**		**E22XBP61D** **E22VBP61D**		**E22XBN61RR** **E22VBN61RR**	
	M S S	Knob Lever	**E22XBL61D** **E22VBL61D**		**E22XBM61D** **E22VBM61D**		**E22XBL61RR** **E22VBL61RR**	
	M S M	Knob Lever	**E22XBJ61D** **E22VBJ61D**		**E22XBK61D** **E22VBK61D**		**E22XBJ61RR** **E22VBJ61RR**	
Plastic Operator — Chrome Bezel								
	M M M	Knob Lever	**E22XG61D** **E22VG61D**		**E22XH61D** **E22VH61D**		**E22XG61RR** **E22VG61RR**	
	M M S	Knob Lever	**E22XN61D** **E22VN61D**		**E22XP61D** **E22VP61D**		**E22XN61RR** **E22VN61RR**	
	M S S	Knob Lever	**E22XL61D** **E22VL61D**		**E22XM61D** **E22VM61D**		**E22XL61RR** **E22VL61RR**	
	M S M	Knob Lever	**E22XJ61D** **E22VJ61D**		**E22XK61D** **E22VK61D**		**E22XJ61RR** **E22VJ61RR**	
Metal Operator — Chrome Bezel								
	M M M	Knob Lever	**EM22XG61D** **EM22VG61D**		**EM22XH61D** **EM22VH61D**		**EM22XG61RR** **EM22VG61RR**	
	M M S	Knob Lever	**EM22XN61D** **EM22VN61D**		**EM22XP61D** **EM22VP61D**		**EM22XN61RR** **EM22VN61RR**	
	M S S	Knob Lever	**EM22XL61D** **EM22VL61D**		**EM22XM61D** **EM22VM61D**		**EM22XL61RR** **EM22VL61RR**	
	M S M	Knob Lever	**EM22XJ61D** **EM22VJ61D**		**EM22XK61D** **EM22VK61D**		**EM22XJ61RR** **EM22VJ61RR**	

① X = closed circuit, O = open circuit.
② M = Maintained. S = Spring return in direction of arrow (→).
③ To order with an alternate color, replace underlined digit (**1**) of listed Catalog Number with Code Number from table below.
Example: 3-position operator with Red knob, E22XBG62D

Color	Code	Color	Code	Color	Code	Color	Code	Color	Code	Color	Code	Color	Code	Color	Code
Black	**1**	Red	**2**	Green	**3**	Yellow	**4**	White	**5**	Blue	**6**	Gray	**7**	Orange	**8**

Dimensions . . . . . **Page 47-89**
Legend Plates . . . . . **Page 47-86**
Accessories . . . . . **Pages 47-74 – 47-78**
Discount Symbol **1CD1**

Selector Switches

45° Throw Non-illuminated Lever and Knob Operated Selector Switches — Plastic

Note: Will accept a maximum of 2 contact blocks (4 circuits) with supplied 3-way mounting adapter.
Optional 5-way adapter will accept a maximum of 5 contact blocks (10 circuits). See **Page 47-77**.

Table 47-64. 45° Throw Non-illuminated Lever and Knob Operated Selector Switches — UL (NEMA) Type 3, 3R, 4, 4X, 12, 13

	Operating Mode M = Maintained S = Momentary			Cam Code	Plastic — Black Bezel		Plastic — Chrome Bezel	
	Left	Center	Right		Catalog Number ①	Price U.S. $	Catalog Number ①	Price U.S. $
Black Bezel, Lever / Chrome Bezel, Lever	**2-Position — 45° Throw — Black Lever**							
	—	M	M	2	**E22VBF1**		**E22VF1**	
	M	—	M	2	**E22VB51**		**E22V51**	
	—	M	S	2	**E22VBE1**		**E22VE1**	
	M	—	S	2	**E22VB61**		**E22V61**	
	3-Position — 45° Throw — Black Lever							
	M	M	M	1	**E22VBG1**		**E22VG1**	
	M	M	M	2	**E22VBH1**		**E22VH1**	
	S	M	M	1	**E22VBJ1**		**E22VJ1**	
	S	M	M	2	**E22VBK1**		**E22VK1**	
	S	M	S	1	**E22VBL1**		**E22VL1**	
	S	M	S	2	**E22VBM1**		**E22VM1**	
	M	M	S	1	**E22VBN1**		**E22VN1**	
	M	M	S	2	**E22VBP1**		**E22VP1**	
Black Bezel, Lever / Chrome Bezel, Lever	**2-Position — 45° Throw — Black Knob**							
	—	M	M	2	**E22XBF1**		**E22XF1**	
	M	—	M	2	**E22XB51**		**E22X51**	
	—	M	S	2	**E22XBE1**		**E22XE1**	
	M	—	S	2	**E22XB61**		**E22X61**	
	3-Position — 45° Throw — Black Knob							
	M	M	M	1	**E22XBG1**		**E22XG1**	
	M	M	M	2	**E22XBH1**		**E22XH1**	
	S	M	M	1	**E22XBJ1**		**E22XJ1**	
	S	M	M	2	**E22XBK1**		**E22XK1**	
	S	M	S	1	**E22XBL1**		**E22XL1**	
	S	M	S	2	**E22XBM1**		**E22XM1**	
	M	M	S	1	**E22XBN1**		**E22XN1**	
	M	M	S	2	**E22XBP1**		**E22XP1**	

① Listed selector switches are supplied as standard with Black levers or knobs. To select an alternate color, change the last digit (underlined) in the listed Catalog Number using Code Number from following table. Example: E22VE**2** — Two-Position Selector Switch with Red Lever.

Color	Code	Color	Code	Color	Code	Color	Code	Color	Code	Color	Code	Color	Code	Color	Code
Black	**1**	Red	**2**	Green	**3**	Yellow	**4**	White	**5**	Blue	**6**	Gray	**7**	Orange	**8**

Note: For Rear of Panel Extensions, see **Table 47-128** on **Page 47-94**.

Ordering Example *— A complete Non-illuminated Selector Switch consists of the following:*

Operator See Above

Legend Plate See Page 47-86

Mounting Adapter (Supplied with Operator). For 5-Way Adapter, See Page 47-77

Contact Blocks See Page 47-69

Dimensions ..... **Page 47-89**
Accessories ..... **Pages 47-74 – 47-78**
Suffix Codes ..... **Page 47-98**
Discount Symbol **1CD1**

Selector Switches (Continued)

60° Throw Non-illuminated Lever and Knob Operated Selector Switches

Note: Will accept a maximum of 2 contact blocks (4 circuits) with supplied 3-way mounting adapter.
Optional 5-way adapter will accept a maximum of 5 contact blocks (10 circuits). See **Page 47-77**.

Table 47-65. 60° Throw Non-illuminated Lever and Knob Operated Selector Switches — UL (NEMA) Type 3, 3R, 4, 4X, 12, 13

	Operating Mode M = Maintained S = Momentary			Cam Code	E22 Series — Plastic Operators				EM22 Series — Metal Operators	
					Black Bezel		Chrome Bezel		Chrome Bezel	
	Left	Center	Right		Catalog Number ①	Price U.S. $	Catalog Number ①	Price U.S. $	Catalog Number ①	Price U.S. $
E22 Black Bezel, Lever E22 Chrome Bezel, Lever EM22 Black Lever	**2-Position — 60° Throw — Black Lever**									
	—	M	M	2	**E22VBF61**		**E22VF61**		**EM22VF61**	
	M	—	M	2	**E22VB561**		**E22V561**		**EM22V561**	
	—	M	S	2	**E22VBE61**		**E22VE61**		**EM22VE61**	
	M	—	S	2	**E22VB661**		**E22V661**		**EM22V661**	
	3-Position — 60° Throw — Black Lever									
	M	M	M	1	**E22VBG61**		**E22VG61**		**EM22VG61**	
	M	M	M	2	**E22VBH61**		**E22VH61**		**EM22VH61**	
	S	M	M	1	**E22VBJ61**		**E22VJ61**		**EM22VJ61**	
	S	M	M	2	**E22VBK61**		**E22VK61**		**EM22VK61**	
	S	M	S	1	**E22VBL61**		**E22VL61**		**EM22VL61**	
	S	M	S	2	**E22VBM61**		**E22VM61**		**EM22VM61**	
	M	M	S	1	**E22VBN61**		**E22VN61**		**EM22VN61**	
	M	M	S	2	**E22VBP61**		**E22VP61**		**EM22VP61**	
E22 Black Bezel, Knob E22 Chrome Bezel, Knob EM22 Black Knob	**2-Position — 60° Throw — Black Knob**									
	—	M	M	2	**E22XBF61**		**E22XF61**		**EM22XF61**	
	M	—	M	2	**E22XB561**		**E22X561**		**EM22X561**	
	—	M	S	2	**E22XBE61**		**E22XE61**		**EM22XE61**	
	M	—	S	2	**E22XB661**		**E22X661**		**EM22X661**	
	3-Position — 60° Throw — Black Knob									
	M	M	M	1	**E22XBG61**		**E22XG61**		**EM22XG61**	
	M	M	M	2	**E22XBH61**		**E22XH61**		**EM22XH61**	
	S	M	M	1	**E22XBJ61**		**E22XJ61**		**EM22XJ61**	
	S	M	M	2	**E22XBK61**		**E22XK61**		**EM22XK61**	
	S	M	S	1	**E22XBL61**		**E22XL61**		**EM22XL61**	
	S	M	S	2	**E22XBM61**		**E22XM61**		**EM22XM61**	
	M	M	S	1	**E22XBN61**		**E22XN61**		**EM22XN61**	
	M	M	S	2	**E22XBP61**		**E22XP61**		**EM22XP61**	

① Listed selector switches are supplied as standard with Black levers or knobs. To select an alternate color, change the last digit (underlined) in the listed Catalog Number using Code Number from following table. Example: E22VE6**2** — Two-Position Selector Switch with Red Lever.

Color	Code	Color	Code	Color	Code	Color	Code	Color	Code	Color	Code	Color	Code	Color	Code
Black	**1**	Red	**2**	Green	**3**	Yellow	**4**	White	**5**	Blue	**6**	Gray	**7**	Orange	**8**

Note: For Rear of Panel Extensions, see **Table 47-128** on **Page 47-94.**

Ordering Example *— A complete Non-illuminated Selector Switch consists of the following:*

Operator
See Above

Legend Plate
See Page 47-86

Mounting Adapter (Supplied with Operator). For 5-Way Adapter,
See Page 47-77

Contact Blocks
See Page 47-69

Dimensions . . . . . **Page 47-89**
Accessories . . . . . **Pages 47-74 – 47-78**
Suffix Codes . . . . . **Page 47-98**
Discount Symbol **1CD1**

Selector Switches (Continued)

Key Operated Selector Switches

Note: Key removal from maintained positions only — will accept a maximum of 2 contact blocks (4 circuits) with supplied 3-way mounting adapter. Optional 5-way adapter will accept a maximum of 5 contact blocks (10 circuits).

Table 47-66. Key Operated Selector Switches — UL (NEMA) Type 3, 3R, 4, 4X, 12, 13

	Operating Mode M = Maintained S = Momentary			Cam Code	E22 Series — Plastic Operators				EM22 Series — Metal Operators		Allowable Key Removal Positions ①②
					Black Bezel		Chrome Bezel		Chrome Bezel		
	Left	Center	Right		45° Catalog Number	Price U.S. $	45° Catalog Number	Price U.S. $	60° Catalog Number	Price U.S. $	
Plastic Black Bezel	**2-Position**										
	M	—	M	2	**E22KB53**		**E22K53**		—		**1, 2**
	M	—	S	2	**E22KB62**		**E22K62**		—		—
	—	M	M	2	**E22KBF5**		**E22KF5**		**EM22KF65**		**1, 4**
	—	M	S	2	**E22KBE4**		**E22KE4**		**EM22KE64**		—
Plastic Chrome Bezel	**3-Position**										
	M	M	M	1	**E22KBG7**		**E22KG7**		**EM22KG67**		**1 – 6**
	M	M	M	2	**E22KBH7**		**E22KH7**		**EM22KH67**		**1 – 6**
	S	M	M	1	**E22KBJ5**		**E22KJ5**		**EM22KJ65**		**1, 4**
	S	M	M	2	**E22KBK5**		**E22KK5**		**EM22KK65**		**1, 4**
Metal Chrome Bezel	S	M	S	1	**E22KBL4**		**E22KL4**		**EM22KL64**		—
	S	M	S	2	**E22KBM4**		**E22KM4**		**EM22KM64**		—
	M	M	S	1	**E22KBN6**		**E22KN6**		**EM22KN66**		**2, 4**
	M	M	S	2	**E22KBP6**		**E22KP6**		**EM22KP66**		**2, 4**

① To order operator with other than standard key removal position(s), select allowable option from table below and change last (underlined) digit of listed Catalog Number using Suffix Code shown. Example: E22KG6**6** — Three-Position Selector Switch with key removable from Left and Center positions.

② To order a different key and lock assembly, add suffix **B1**, **C1**, **D1**, **E1** or **F1** to the end of the Catalog Number.

Note: For Rear of Panel Extensions, see **Table 47-128** on **Page 47-94**.

Table 47-67. Key Removal Options

Key Removal Position	Code Suffix	Key Removal Position	Code Suffix	Key Removal Position	Code Suffix
Right Only	**1**	Center Only	**4**	Right, Left and Center	**7**
Left Only	**2**	Right and Center	**5**		
Right and Left	**3**	Left and Center	**6**		

Table 47-68. Spare Keys

Description	Reference Number Stamped on Key	Catalog Number	Price U.S. $
Standard Lock	92239	**E22KS2**	
Master Key	For 95000 Series Locks	**E22KM95**	

Dimensions ..... **Page 47-89**
Contact Blocks..... **Page 47-69**
Suffix Codes ..... **Page 47-98**
Discount Symbol **1CD1**

Illuminated Selector Switches

45° Throw Illuminated Lever and Knob Operated Selector Switches — Plastic

Note: Will accept a maximum of 2 contact blocks (4 circuits) with supplied 3-way mounting adapter.
Optional 5-way adapter will accept a maximum of 4 contact blocks (8 circuits).

Table 47-69. 45° Throw Illuminated Lever and Knob Operated Selector Switches — UL (NEMA) Type 3, 3R, 4, 4X, 12, 13

	Operating Mode M = Maintained S = Momentary			Cam Code	E22 Series — Plastic Operators			
					Black Bezel		Chrome Bezel	
	Left	Center	Right		Catalog Number ①	Price U.S. $	Catalog Number ①	Price U.S. $
Black Bezel / Chrome Bezel	**2-Position — 45° Throw — Red Lever**							
	—	M	M	2	E22WBF2		E22WF2	
	M	—	M	2	E22WB52		E22W52	
	—	M	S	2	E22WBE2		E22WE2	
	M	—	S	2	E22WB62		E22W62	
	3-Position — 45° Throw — Red Lever							
	M	M	M	1	E22WBG2		E22WG2	
	M	M	M	2	E22WBH2		E22WH2	
	S	M	M	1	E22WBJ2		E22WJ2	
	S	M	M	2	E22WBK2		E22WK2	
	S	M	S	1	E22WBL2		E22WL2	
	S	M	S	2	E22WBM2		E22WM2	
	M	M	S	1	E22WBN2		E22WN2	
	M	M	S	2	E22WBP2		E22WP2	
Black Bezel / Chrome Bezel	**2-Position — 45° Throw — Red Knob**							
	—	M	M	2	E22SBF2		E22SF2	
	M	—	M	2	E22SB52		E22S52	
	—	M	S	2	E22SBE2		E22SE2	
	M	—	S	2	E22SB62		E22S62	
	3-Position — 45° Throw — Red Knob							
	M	M	M	1	E22SBG2		E22SG2	
	M	M	M	2	E22SBH2		E22SH2	
	S	M	M	1	E22SBJ2		E22SJ2	
	S	M	M	2	E22SBK2		E22SK2	
	S	M	S	1	E22SBL2		E22SL2	
	S	M	S	2	E22SBM2		E22SM2	
	M	M	S	1	E22SBN2		E22SN2	
	M	M	S	2	E22SBP2		E22SP2	

① Listed selector switches are supplied as standard with Red levers or knobs. To select an alternate color, change the last digit (underlined) in the listed Catalog Number using Code Number from following table. Example: E22WF**3** — Two-Position Selector Switch with Green Lever.

Color	Code	Color	Code	Color	Code	Color	Code	Color	Code	Color	Code	Color	Code
Red	**2**	Green	**3**	Yellow	**4**	White	**5**	Blue	**6**	Amber	**9**	Clear	**0**

Note: For Rear of Panel Extensions, see **Table 47-128** on **Page 47-94.**

Ordering Example *— A complete Illuminated Selector Switch consists of the following:*

Operator See Above

Legend Plate See Page 47-86

Mounting Adapter (Supplied with Operator). For 5-Way Adapter, See Page 47-77

Light Unit with Tall Incandescent Bulb/LED See Pages 47-70 – 47-71

Contact Blocks See Page 47-69

Dimensions . . . . . **Page 47-89**
Accessories . . . . . **Pages 47-74 – 47-78**
Suffix Codes . . . . . **Page 47-98**
Discount Symbol **1CD1**

Illuminated Selector Switches (Continued)

60° Throw Illuminated Lever and Knob Operated Selector Switches

Note: Will accept a maximum of 2 contact blocks (4 circuits) with standard mounting adapter supplied.
Optional 5-way adapter will accept a maximum of 4 contact blocks (8 circuits).

Table 47-70. 60° Throw Illuminated Lever and Knob Operated Selector Switches — UL (NEMA) Type 3, 3R, 4, 4X, 12, 13

	Operating Mode M = Maintained S = Momentary			Cam Code	E22 Series — Plastic Operators				E2M2 Series — Metal Operators	
					Black Bezel		Chrome Bezel		Chrome Bezel	
	Left	Center	Right		Catalog Number ①	Price U.S. $	Catalog Number ①	Price U.S. $	Catalog Number ①	Price U.S. $
E22 Black Bezel / E22 Chrome Bezel / EM22 Chrome Bezel	**2-Position — 60° Throw — Red Lever**									
	—	M	M	2	**E22WBF62**		**E22WF62**		**EM22WF62**	
	M	—	M	2	**E22WB562**		**E22W562**		**EM22W562**	
	—	M	S	2	**E22WBE62**		**E22WE62**		**EM22WE62**	
	M	—	S	2	**E22WB662**		**E22W662**		**EM22W662**	
	3-Position — 60° Throw — Red Lever									
	M	M	M	1	**E22WBG62**		**E22WG62**		**EM22WG62**	
	M	M	M	2	**E22WBH62**		**E22WH62**		**EM22WH62**	
	S	M	M	1	**E22WBJ62**		**E22WJ62**		**EM22WJ62**	
	S	M	M	2	**E22WBK62**		**E22WK62**		**EM22WK62**	
	S	M	S	1	**E22WBL62**		**E22WL62**		**EM22WL62**	
	S	M	S	2	**E22WBM62**		**E22WM62**		**EM22WM62**	
	M	M	S	1	**E22WBN62**		**E22WN62**		**EM22WN62**	
	M	M	S	2	**E22WBP62**		**E22WP62**		**EM22WP62**	
	2-Position — 60° Throw — Red Knob									
	—	M	M	2	**E22SBF62**		**E22SF62**		**EM22SF62**	
	M	—	M	2	**E22SB562**		**E22S562**		**EM22S562**	
	—	M	S	2	**E22SBE62**		**E22SE62**		**EM22SE62**	
	M	—	S	2	**E22SB662**		**E22S662**		**EM22S662**	
	3-Position — 60° Throw — Red Knob									
	M	M	M	1	**E22SBG62**		**E22SG62**		**EM22SG62**	
	M	M	M	2	**E22SBH62**		**E22SH62**		**EM22SH62**	
	S	M	M	1	**E22SBJ62**		**E22SJ62**		**EM22SJ62**	
	S	M	M	2	**E22SBK62**		**E22SK62**		**EM22SK62**	
	S	M	S	1	**E22SBL62**		**E22SL62**		**EM22SL62**	
	S	M	S	2	**E22SBM62**		**E22SM62**		**EM22SM62**	
	M	M	S	1	**E22SBN62**		**E22SN62**		**EM22SN62**	
	M	M	S	2	**E22SBP62**		**E22SP62**		**EM22SP62**	

① Listed selector switches are supplied as standard with Red levers or knobs. To select an alternate color, change the last digit (underlined) in the listed Catalog Number using Code Number from following table. Example: E22WF**63** — Two-Position Selector Switch with Green Lever.

Color	Code	Color	Code	Color	Code	Color	Code	Color	Code	Color	Code	Color	Code
Red	**2**	Green	**3**	Yellow	**4**	White	**5**	Blue	**6**	Amber	**9**	Clear	**0**

Note: For Rear of Panel Extensions, see **Table 47-128** on **Page 47-94**.

Ordering Example *— A complete Illuminated Selector Switch consists of the following:*

Operator See Above

Legend Plate See Page 47-86

Mounting Adapter (Supplied with Operator). For 5-Way Adapter, See Page 47-77

Light Unit with Tall Incandescent Bulb/LED See Pages 47-70 – 47-71

Contact Blocks See Page 47-69

Dimensions ..... **Page 47-89**
Accessories ..... **Pages 47-74 – 47-78**
Suffix Codes ..... **Page 47-98**
Discount Symbol **1CD1**

Selector Switch Selection

Cam and Contact Block Selection — For 2- and 3-Position Selector Switches

1. Develop a line circuit diagram required for each application. Then, by using the symbols "X" for contact closed and "O" for contact open, determine the contact state required in each selector switch position.
2. Visually locate the closure sequence in one of the 2- or 3-Position Selector Switch Combination tables on **Pages 47-60 – 47-61**.
3. Find the contact block(s), their Suffix Code letter(s) and their mounting location(s) required for that circuit configuration, by referring to the table next to the "X O" closure sequence that was selected.

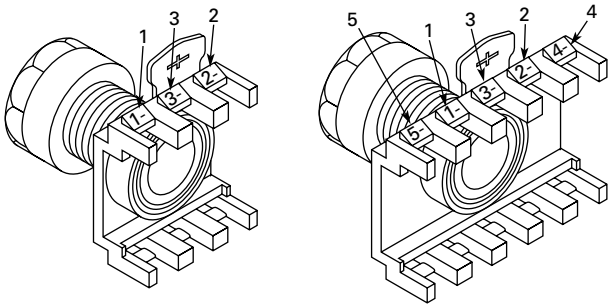
Note: Contact Blocks must be mounted in position indicated. Selector switches will not accept a contact block in position 3 of the mounting adapter. If more circuits and/or different circuit arrangements are required, see Rotary Cam Selector Switches listed on **Pages 47-62 – 47-63** and **47-95** – **47-96**.

Example: HAND-OFF-AUTO function, two circuits are required —

Circuit #1 — X O O
This can be achieved using Cam 1 with an E22B2 contact block mounted in the left (1-) position.

Circuit #2 — O O X
This can be achieved using Cam 1 with an E22B2 block mounted in the right (2-) position.

Order a 3-Position Selector Switch with Cam #1 —
Example: E22VG1, along with 2 E22B2 Contact Blocks.



1- 2- 3- Contact Block Mounting Position Numbers Molded in 3-Way Mounting Adapter

5- 1- 3- 2- 4- Contact Block Mounting Position Numbers Molded in 5-Way Mounting Adapter, See Accessories for 5-Way Adapter — Page 47-72

Figure 47-16. Contact Block Mounting

Cam and Contact Block Selection

Table 47-71. 2-Position Switches

Circuit ↖ ↗	Cam	Catalog Number of Contact Block(s)/ Mounting Position		Code Suffix
		1 & 5	2 & 4	
O X	2	**E22B2** or **E22B2**		**A**
X O	2	**E22B1** or **E22B1**		**B**
O X X O	2	**E22B11**	—	**W**
O X X O	2	**E22B2**	**E22B1**	**C**
O X O X	2	**E22B20**	—	**V**
O X O X	2	**E22B2**	**E22B2**	**D**
X O X O	2	**E22B1**	**E22B1**	**E**
O X O X O X	2	**E22B20**	**E22B2**	**VA**
X O O X X O	2	**E22B1**	**E22B11**	**WB**
X O O X O X	2	**E22B1**	**E22B20**	**VB**
O X X O O X	2	**E22B11**	**E22B2**	**WA**
O X O X O X O X	2	**E22B20**	**E22B20**	**VV**
O X O X O X X O	2	**E22B20**	**E22B11**	**VW**
O X X O O X X O	2	**E22B11**	**E22B11**	**WW**

Cam and Contact Block Selection (Continued)

Table 47-72. 3-Position Switches

Circuit ↖ ↑ ↗	Cam	Catalog Number of Contact Block(s) Mounting Position 1 & 5	2 & 4	Code Suffix
X O O	1	E22B2	—	A
O O X	1	—	E22B2	A
O X X	1	E22B1	—	B
X X O	1	—	E22B1	B
X O X	2	E22B2	—	A
O X O	2	E22B1	—	B
O O X	2	—	E22B2	A
X X O	2	—	E22B1	B
X O O O O X	1	E22B2	E22B2	D
X O O X X O	1	E22B2	E22B1	C
O X X O O X	1	E22B1	E22B2	C
O X X X X O	1	E22B1	E22B1	E
X O O O X X	1	E22B11	—	W
X O O X O O	1	E22B20	—	V
O O X X X O	1	—	E22B11	W
O O X O O X	1	—	E22B20	V
X O O O X O	1	E22B11	E22B1	PP
X O X O O X	2	E22B2	E22B2	D
X O X X X O	2	E22B2	E22B1	C
O X O O O X	2	E22B1	E22B2	C
O X O X X O	2	E22B1	E22B1	E
X O X O X O	2	E22B11	—	W
X O X X O X	2	E22B20	—	V
O O X X X O	2	E22B11	—	W
O O X O O X	2	—	E22B20	V

Table 47-72. 3-Position Switches (Continued)

Circuit ↖ ↑ ↗	Cam	Catalog Number of Contact Block(s) Mounting Position 1 & 5	2 & 4	Code Suffix
X O O O O X X X O	1	E22B2	E22B11	WA
X O O O O X O O X	1	E22B2	E22B20	VA
O X X O O X X X O	1	E22B1	E22B11	WB
O X X O O X O O X	1	E22B1	E22B20	VB
X O O O X X O O X	1	E22B11	E22B2	WA
X O O X O O O O X	1	E22B20	E22B2	VA
X O O O X X X X O	1	E22B11	E22B1	WB
X O O X O O X X O	1	E22B20	E22B1	VB
X O O O X O O O X	1	E22B11	E22B11	RR
X O X O O X X X O	2	E22B2	E22B11	WA
X O X O O X O O X	2	E22B2	E22B20	VA
O X O O O X X X O	2	E22B1	E22B11	WB
O X O O O X O O X	2	E22B1	E22B20	VB
X O X O X O O O X	2	E22B11	E22B2	WA
X O X X O X O O X	2	E22B20	E22B2	VA

Table 47-72. 3-Position Switches (Continued)

Circuit ↖ ↑ ↗	Cam	Catalog Number of Contact Block(s) Mounting Position 1 & 5	2 & 4	Code Suffix
X O X O X O X X O	2	E22B11	E22B1	WB
X O X X O X X X O	2	E22B20	E22B1	VB
X O O O X X O O X X X O	1	E22B11	E22B11	WW
X O O O X X O O X O O X	1	E22B11	E22B20	VW
X O O X O O O O X X X O	1	E22B20	E22B11	VW
X O O X O O O O X O O X	1	E22B20	E22B20	VV
X O X O X O O O X X X O	2	E22B11	E22B11	WW
X O X O X O O O X O O X	2	E22B11	E22B20	VW
X O X X O X O O X X X O	2	E22B20	E22B11	VW
X O X X O X O O X O O X	2	E22B20	E22B20	VV

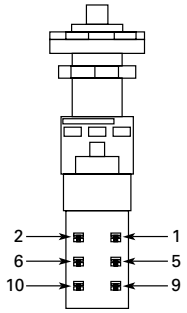
Rotary Cam Selector Switch Units

- Plastic Operator
- Black or Chrome Bezel
- Four- to Six-Position
- Knob, Lever or Key Version
- Non-illuminated

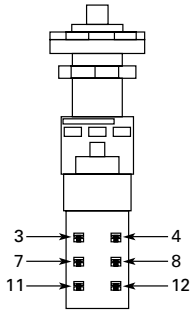
Table 47-73. Four- to Six-Position Selector Switch Units — UL (NEMA) Type 3, 3R, 4, 4X, 12, 13

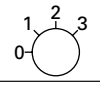
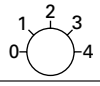
Terminal Locations

Top View



Bottom View



Contact block rating, see Page 47-95. Includes contact blocks. Components overpacked in a single carton.	Terminal Numbers	Contact Sequence O = Circuit Open; X = Circuit Closed							Switch Position (45° Throw Between Each Position — Except as Noted)	Operator Type	Black Bezel		Chrome Bezel	
											Catalog Number ①	Price U.S. $	Catalog Number ①	Price U.S. $
Four-Position Maintained														
		0	**1**	**2**	**3**	**4**			(60° Throw)					
1 - 2			X	O	O	O				Lever	**E22JDBN1**		**E22JDN1**	
5 - 6			O	X	O	O				Knob	**E22LDBN1**		**E22LDN1**	
7 - 8			O	O	X	O								
3 - 4			O	O	O	X								
1 - 2			X	O	O	O				Lever	**E22JDB4W1**		**E22JD4W1**	
5 - 6			O	X	O	O				Knob	**E22LDB4W1**		**E22LD4W1**	
3 - 4			O	O	X	O				Key ②	**E22KDB4W8**		**E22KD4W8**	
7 - 8			O	O	O	X								
1 - 2		O	X	O	O					Lever	**E22JDB4Y1**		**E22JD4Y1**	
5 - 6		O	O	X	O					Knob	**E22LDB4Y1**		**E22LD4Y1**	
3 - 4		O	O	O	X					Key ②	**E22KDB4Y8**		**E22KD4Y8**	
Five-Position Maintained														
		0	**1**	**2**	**3**	**4**	**5**							
1 - 2			X	O	O	O	O			Lever	**E22JDB5W1**		**E22JD5W1**	
5 - 6			O	X	O	O	O			Knob	**E22LDB5W1**		**E22LD5W1**	
9 - 10			O	O	X	O	O			Key ②	**E22KDB5W8**		**E22KD5W8**	
7 - 8			O	O	O	X	O							
3 - 4			O	O	O	O	X							
1 - 2		O	X	O	O	O				Lever	**E22JDB5Y1**		**E22JD5Y1**	
5 - 6		O	O	X	O	O				Knob	**E22LDB5Y1**		**E22LD5Y1**	
3 - 4		O	O	O	X	O				Key ②	**E22KDB5Y8**		**E22KD5Y8**	
7 - 8		O	O	O	O	X								
Six-Position Maintained														
		0	**1**	**2**	**3**	**4**	**5**	**6**						
1 - 2			X	O	O	O	O	O		Lever	**E22JDB6W1**		**E22JD6W1**	
5 - 6			O	X	O	O	O	O		Knob	**E22LDB6W1**		**E22LD6W1**	
9 - 10			O	O	X	O	O	O		Key ②	**E22KDB6W8**		**E22KD6W8**	
11 - 12			O	O	O	X	O	O						
3 - 4			O	O	O	O	X	O						
7 - 8			O	O	O	O	O	X						
1 - 2		O	X	O	O	O	O			Lever	**E22JDB6Y1**		**E22JD6Y1**	
5 - 6		O	O	X	O	O	O			Knob	**E22LDB6Y1**		**E22LD6Y1**	
7 - 8		O	O	O	X	O	O			Key ②	**E22KDB6Y8**		**E22KD6Y8**	
9 - 10		O	O	O	O	X	O							
3 - 4		O	O	O	O	O	X							

① Listed selector switches are supplied as standard with Black levers or knobs. To select an alternate color, change the last digit in the listed Catalog Number using Code Number from following table. Example: E22LDN**2** — four-position selector switch with Red knob.

② Key removable in all maintained positions (no alternates).

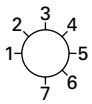
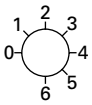
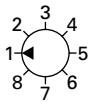
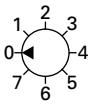
Color	Code	Color	Code	Color	Code	Color	Code	Color	Code	Color	Code	Color	Code	Color	Code
Black	**1**	Red	**2**	Green	**3**	Yellow	**4**	White	**5**	Blue	**6**	Gray	**7**	Orange	**8**

Dimensions ..... **Page 47-89**
Contact Block Ratings ..... **Page 47-95**
Custom Ordering ..... **Page 47-96**
Legend Plates and Dimensions .... **Page 47-86**
Discount Symbol **1CD1**

Rotary Cam Selector Switch Units (Continued)

- Plastic Operators
- Black or Chrome Bezel
- Seven- and Eight-Position
- Knob, Lever or Key Version
- Non-illuminated

Table 47-74. Seven- and Eight-Position Selector Switch Units — UL (NEMA) Type 3, 3R, 4, 4X, 12, 13

Contact block ratings, see Page 47-95. Includes contact blocks. Components overpacked in a single carton.	Terminal Numbers	Contact Sequence O = Circuit Open; X = Circuit Closed									Switch Position (45° Lever Throw Between Each Position)	Operator Type	Black Bezel		Chrome Bezel	
													Catalog Number ①	Price U.S. $	Catalog Number ①	Price U.S. $
	Seven-Position Maintained															
			0	**1**	**2**	**3**	**4**	**5**	**6**	**7**						
	1 - 2			X	O	O	O	O	O	O		Lever Knob Key ②	**E22JDB7W1** **E22LDB7W1** **E22KDB7W8**		**E22JD7W1** **E22LD7W1** **E22KD7W8**	
	5 - 6			O	X	O	O	O	O	O						
	9 - 10			O	O	X	O	O	O	O						
	13 - 14			O	O	O	X	O	O	O						
	3 - 4			O	O	O	O	X	O	O						
	7 - 8			O	O	O	O	O	X	O						
	11 - 12			O	O	O	O	O	O	X						
	1 - 2		O	X	O	O	O	O	O			Lever Knob Key ②	**E22JDB7Y1** **E22LDB7Y1** **E22KDB7Y8**		**E22JD7Y1** **E22LD7Y1** **E22KD7Y8**	
	5 - 6		O	O	X	O	O	O	O							
	9 - 10		O	O	O	X	O	O	O							
	11 - 12		O	O	O	O	X	O	O							
	3 - 4		O	O	O	O	O	X	O							
	7 - 8		O	O	O	O	O	O	X							
	Eight-Position Maintained															
		0	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**						
	1 - 2		X	O	O	O	O	O	O	O		Lever Knob Key ②	**E22JDB8W1** **E22LDB8W1** **E22KDB8W8**		**E22JD8W1** **E22LD8W1** **E22KD8W8**	
	5 - 6		O	X	O	O	O	O	O	O						
	9 - 10		O	O	X	O	O	O	O	O						
	13 - 14		O	O	O	X	O	O	O	O						
	3 - 4		O	O	O	O	X	O	O	O						
	7 - 8		O	O	O	O	O	X	O	O						
	11 - 12		O	O	O	O	O	O	X	O						
	15 - 16		O	O	O	O	O	O	O	X						
	1 - 2	O	X	O	O	O	O	O	O			Lever Knob Key ②	**E22JDB8Y1** **E22LDB8Y1** **E22KDB8Y8**		**E22JD8Y1** **E22LD8Y1** **E22KD8Y8**	
	5 - 6	O	O	X	O	O	O	O	O							
	9 - 10	O	O	O	X	O	O	O	O							
	13 - 14	O	O	O	O	X	O	O	O							
	3 - 4	O	O	O	O	O	X	O	O							
	7 - 8	O	O	O	O	O	O	X	O							
	11 - 12	O	O	O	O	O	O	O	X							

① Listed selector switches are supplied as standard with Black levers or knobs. To select an alternate color, change the last digit in the listed Catalog Number using Code Number from following table. Example: E22LDN**2** — four-position selector switch with Red knob.

② Key removable in all maintained positions (no alternates).

Color	Code	Color	Code	Color	Code	Color	Code	Color	Code	Color	Code	Color	Code	Color	Code
Black	**1**	Red	**2**	Green	**3**	Yellow	**4**	White	**5**	Blue	**6**	Gray	**7**	Orange	**8**

Contact Block Ratings . . . . . **Page 47-95**
Custom Ordering . . . . . **Page 47-96**
Discount Symbol **1CD1**

Specialty Operators

Table 47-75. Potentiometers with Knob Operator ① — UL (NEMA) Type 3, 3R, 4, 4X, 12, 13

	Ohms	0.5 Watt Max./120V Max.						2 Watt Max./120V Max.					
		E22 Plastic — Black Bezel		E22 Plastic — Chrome Bezel		EM22 Metal — Chrome Bezel		E22 Plastic — Black Bezel		E22 Plastic — Chrome Bezel		EM22 Metal — Chrome Bezel	
		Catalog Number	Price U.S. $	Catalog Number	Price U.S. $	Catalog Number	Price U.S. $	Catalog Number	Price U.S. $	Catalog Number	Price U.S. $	Catalog Number	Price U.S. $
Order Legend Plate from Below	1,000 2,500 5,000	E22PXB1C1 E22PXB1C2 E22PXB1C5		E22PX1C1 E22PX1C2 E22PX1C5		EM22PX1C1 EM22PX1C2 EM22PX1C5		E22PXB1F1 E22PXB1F2 E22PXB1F5		E22PX1F1 E22PX1F2 E22PX1F5		EM22PX1F1 EM22PX1F2 EM22PX1F5	
	10,000 25,000 50,000	E22PXB1C10 E22PXB1C25 E22PXB1C50		E22PX1C10 E22PX1C25 E22PX1C50		EM22PX1C10 EM22PX1C25 EM22PX1C50		E22PXB1F10 E22PXB1F25 E22PXB1F50		E22PX1F10 E22PX1F25 E22PX1F50		EM22PX1F10 EM22PX1F25 EM22PX1F50	
	Operator Only	E22PXB1C0		E22PX1C0		EM22PX1C0		E22PXB1F0		E22PX1F0		EM22PX1F0	

① Potentiometers are not IP1X or IP2X rated.

Table 47-76. Potentiometer Legend Plate

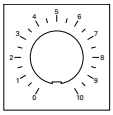
	Description	Catalog Number	Price U.S. $
	Potentiometer Legend Plate	E22NJP99	

Table 47-77. Flush Pushbutton Operators with Mechanical Push Rod — UL (NEMA) Type 3, 3R, 4, 4X, 12, 13

	Description	Color	Plastic — Black Bezel		Plastic — Chrome Bezel	
			Catalog Number	Price U.S. $	Catalog Number	Price U.S. $
	25 mm Diameter Flush Pushbutton Operators supplied with Mechanical Push Rod — Suitable for external mechanical reset of overload relays. Push rod must be cut to desired length.	Gray Blue Red Blue (RESET)	E22PB7L E22PB6L E22PB2L E22PB6N29L		E22P7L E22P6L E22P2L E22P6N29L	

Table 47-78. Wobble Stick Operator — UL (NEMA) 3, 3R, 4, 4X, 12, 13

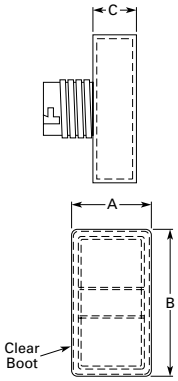
	Description	Catalog Number	Price U.S. $
E22 Series	**E22 Series — Plastic Wobble Stick** — Allows activation of controls by pushing stick in any direction.	E22WS	
EM22 Series	**EM22 Series — Metal Wobble Stick** — Allows activation of controls by pushing stick in any direction.	EM22WS	

Note: For Rear of Panel Extensions, see **Table 47-128** on **Page 47-94**.

Dimensions ..... **Page 47-89**
Contact Blocks..... **Page 47-69**
Enclosures ..... **Pages 47-87 – 47-88**
Legend Plates..... **Pages 47-79 – 47-85**
Suffix Codes ..... **Page 47-98**
Discount Symbol **1CD1**

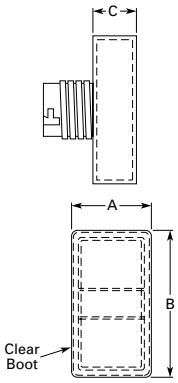
Double Headed Pushbuttons

Table 47-79. Illuminated and Non-illuminated Double Headed Pushbuttons — UL (NEMA) Type 1; IP40

	Description	Operator Colors	Marking	Plastic — Black Bezel		Dimensions
				Catalog Number	Price U.S. $	
	Non-illuminated Double Headed Pushbutton	Green — Red	Unmarked	**E22DB1A11**		
		Green — Red	I	**E22DB1A21**		
	Non-illuminated Double Headed Pushbutton with 1NO and 1NC Contact Block	Green — Red	Unmarked	**E22DB1A11C**		
		Green — Red	I	**E22DB1A21C**		
	Illuminated Double Headed Pushbutton with Clear Lens ①	Green — Red	Unmarked	**E22DB1A1<u>0</u>**		
		Green — Red	I	**E22DB1A2<u>0</u>**		
	Illuminated Double Headed Pushbutton with Clear Lens, ① and 120V Transformer Light Unit ②	Green — Red	Unmarked	**E22DB1A1<u>0</u>X11**		
		Green — Red	I	**E22DB1A2<u>0</u>X11**		
	Illuminated Double Headed Pushbutton with Clear Lens, ① 120V Transformer Light Unit ② and 1NO and 1NC Contact Block	Green — Red	Unmarked	**E22DB1A1<u>0</u>X11C**		
		Green — Red	I	**E22DB1A2<u>0</u>X11C**		

① For lens colors other than clear, replace the **<u>0</u>** above with the appropriate Color Code from **Table 47-83** on **Page 47-66**.
② For light units other than 120V transformer, replace the **X11** code above with the appropriate Suffix from **Table 47-81** on **Page 47-66**.

Table 47-80. Illuminated and Non-illuminated Double Headed Pushbuttons — UL (NEMA) Type 3, 3R, 4, 4X, 12, 13; IP65 ⑤

	Description	Operator Colors	Marking	Plastic — Black Bezel		Dimensions
				Catalog Number	Price U.S. $	
	Non-illuminated Double Headed Pushbutton	Green — Red	Unmarked	**E22DB1B11**		
		Green — Red	O	**E22DB1B21**		
	Non-illuminated Double Headed Pushbutton with 1NO and 1NC Contact Block	Green — Red	Unmarked	**E22DB1B11C**		
		Green — Red	O	**E22DB1B21C**		
	Illuminated Double Headed Pushbutton with Clear Lens ③	Green — Red	Unmarked	**E22DB1B1<u>0</u>**		
		Green — Red	O	**E22DB1B2<u>0</u>**		
	Illuminated Double Headed Pushbutton with Clear Lens, ③ and 120V Transformer Light Unit ②	Green — Red	Unmarked	**E22DB1B1<u>0</u>X11**		
		Green — Red	O	**E22DB1B2<u>0</u>X11**		
	Illuminated Double Headed Pushbutton with Clear Lens, ③ 120V Transformer Light Unit ④ and 1NO and 1NC Contact Block	Green — Red	Unmarked	**E22DB1B1<u>0</u>X11C**		
		Green — Red	O	**E22DB1B2<u>0</u>X11C**		

③ For lens colors other than clear, replace the **<u>0</u>** above with the appropriate Color Code from **Table 47-83** on **Page 47-66**.
④ For light units other than 120V transformer, replace the **X11** code above with the appropriate Suffix from **Table 47-81** on **Page 47-66**.
⑤ IP65 or UL (NEMA) Type 3, 3R, 4, 4X, 12, 13 versions include protective silicon boot E22DBB.

Note: Add Contact Block Suffix from table on **Page 47-98** to operator Catalog Number to order as a complete device. Example: E22DB1A11**B** = non-illuminated double headed pushbutton, unmarked, IP40 with 1NC contact block.

Contact Blocks ..... **Page 47-69**
Enclosures ..... **Pages 47-87 – 47-88**
Suffix Codes ..... **Page 47-98**
Discount Symbol **1CD1**

Double Headed Pushbuttons (Continued)

Table 47-81. Light Unit ①

Description	Suffix Code	Catalog Number	Price U.S. $
Direct Voltage Unit AC/DC			
Without Lamp	**X1**	**E22D**	
Without Lamp	**X1**	**E22DE**	
With 6V Lamp	**X2**	**E22D6**	
With 12V Lamp	**X3**	**E22D12**	
With 24V Lamp	**X4**	**E22D24**	
With 48V Lamp	**X6**	**E22D50**	
With 60V Lamp	**X7**	**E22D60**	
Resistor Type Unit AC/DC			
120V/60 Hz	**X10**	**E22R2**	
Transformer Unit AC Only			
120V/60 Hz	**X11**	**E22TL1**	
240V/60 Hz	**X12**	**E22TL2**	
480V/60 Hz	**X14**	**E22TL4**	
Silicon Boot for IP65 Ingress Protection	**—**	**E22DBB**	

① Additional light units — See **Pages 47-70 – 47-71**.

Table 47-82. Light Unit Specifications

Catalog Number	Function	Bulb Type	Max. Voltage
E22D	Indicating Light	Incandescent, LED or Neon	250V
	Illuminated Operator	Incandescent	60V
E22DE	Illuminated Operator	LED or Neon	120V

Table 47-83. Lens Color

Lens Color	Color Code
Clear	**0**
Red	**2**
Green	**3**
Yellow	**4**
White	**5**
Blue	**6**
Amber	**9**

Table 47-84. Overall Dimensions in Inches (mm)

	With Boot	Without Boot
Dimension A	1.19 (30.2)	1.11 (28.2)
Dimension B	2.28 (57.9)	2.20 (55.9)
Dimension C	0.68 (17.3)	0.48 (12.2)

Contact Blocks . . . . . **Page 47-69**
Enclosures . . . . . **Pages 47-87 – 47-88**
Suffix Codes . . . . . **Page 47-98**
Discount Symbol **1CD1**

Joystick Complete Devices

Momentary and Maintained Joystick Switches

Table 47-85. Joystick Switches — UL (NEMA) Type 1, 2, 3, 4, 4X, 12, 13

	Position	Description	Catalog Number	Price U.S. $
	2-Position	Momentary Joystick Switch Momentary Joystick Switch with Center Lock	**EM22JS2Y2X** **EM22JS2Y4X**	
		Maintained Joystick Switch Maintained Joystick Switch with Center Lock	**EM22JS2Y3X** **EM22JS2Y5X**	
	4-Position	Momentary Joystick Switch Momentary Joystick Switch with Center Lock	**EM22JS4Y2X** **EM22JS4Y4X**	
		Maintained Joystick Switch Maintained Joystick Switch with Center Lock	**EM22JS4Y3X** **EM22JS4Y5X**	

Note: Dimensions are listed on **Page 47-89.**

Table 47-86. Visual Aid Plates

Description	Catalog Number	Price U.S. $
70 mm Diameter Oval — Black (Blank)	**E22VA20**	
70 mm Diameter Oval — Black with 2 Arrows	**E22VA21**	
70 mm Diameter Round — Black (Blank)	**E22VA30**	
70 mm Diameter Round — Black with 2 Arrows	**E22VA31**	
70 mm Diameter Round — Black with 4 Arrows	**E22VA32**	

Table 47-87. Contact Sequence for Two-Position Joystick

	Contact Blocks			Joystick Operator Position (X = Closed, O = Open)		
	Circuit	Location	Term No.	Up	Center	Down
14/24 13/23	NO	Top	14 – 13	O	O	X
	NO	Bottom	24 – 23	X	O	O

Table 47-88. Contact Sequence for Four-Position Joystick

	Contact Blocks				Joystick Operator Position (X = Closed, O = Open)				
	Circuit	Position	Location	Term No.	Up	Left	Center	Down	Right
14/24 13/23	NO	Front	Top	14 – 13	O	O	O	X	O
	NO	Front	Bottom	24 – 23	O	O	O	O	X
34/44 33/43	NO	Back	Top	34 – 33	X	O	O	O	O
	NO	Back	Bottom	44 – 43	O	X	O	O	O

Discount Symbol **1CD1**

EM22 Series, Joystick Components

Momentary and Maintained Joystick Operators

Table 47-89. Joystick Operators — UL (NEMA) Type 1, 2, 3, 4, 4X, 12, 13

	Position	Description	Catalog Number	Price U.S. $
Standard *with Center Lock*	2-Position	Momentary Joystick Operator Momentary Joystick Operator with Center Lock	**EM22JS2Y2** **EM22JS2Y4**	
		Maintained Joystick Operator Maintained Joystick Operator with Center Lock	**EM22JS2Y3** **EM22JS2Y5**	
	4-Position	Momentary Joystick Operator Momentary Joystick Operator with Center Lock	**EM22JS4Y2** **EM22JS4Y4**	
		Maintained Joystick Operator Maintained Joystick Operator with Center Lock	**EM22JS4Y3** **EM22JS4Y5**	

Note: Dimensions are listed on **Page 47-89**. For Rear of Panel Extensions, see **Table 47-128** on **Page 47-94.**

Contact Block Selection/Application

Table 47-90. Joystick Operators

	Position	Description	Circuit	Catalog Number	Price U.S. $
	2-Position	Joystick Contact Block Assembly	2NO	**EM22JS2Y1**	
	4-Position	Joystick Contact Block Assembly	4NO	**EM22JS4Y1**	

Table 47-91. Contact Sequence for Two-Position Joystick

	Contact Blocks			Joystick Operator Position (X = Closed, O = Open)		
	Circuit	**Location**	**Term No.**	**Up**	**Center**	**Down**
14/24 13/23	NO	Top	14 – 13	O	O	X
	NO	Bottom	24 – 23	X	O	O

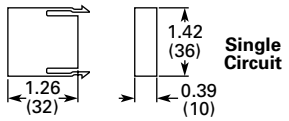
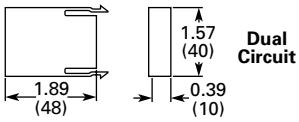
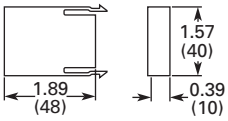
Table 47-92. Contact Sequence for Four-Position Joystick

	Contact Blocks				Joystick Operator Position (X = Closed, O = Open)				
	Circuit	**Position**	**Location**	**Term No.**	**Up**	**Left**	**Center**	**Down**	**Right**
14/24 13/23	NO	Front	Top	14 – 13	O	O	O	X	O
	NO	Front	Bottom	24 – 23	O	O	O	O	X
34/44 33/43	NO	Back	Top	34 – 33	X	O	O	O	O
	NO	Back	Bottom	44 – 43	O	X	O	O	O

Discount Symbol **1CD1**

Contact Blocks

Table 47-93. Contact Blocks

	Description	Suffix Code ①	Catalog Number	Price U.S. $	Approximate Dimensions in Inches (mm)
	1NC 1NO 1NO Early Make 1NC Late Break 1NC (Logic) 1NO (Logic) 1NC Added Spring Pressure	**B** **A** **—** **—** **—** **—** **—**	**E22B1** ④ **E22B2** **E22B3** **E22B4** ② **E22B1E** ③ **E22B2E** ③ **E22BR1**		
	1NO-1NC 2NO	**W** **V**	**E22B11** ④ **E22B20**		
	1 Self Monitoring 1NC	**—**	**E22CB1M** ④⑤		

① Add Suffix to operator Catalog Number to order as a complete device. Example E22PB1**B** = Flush Black pushbutton with 1NC contact block.
② E22B4 contact block not available for use with 5-way mounting adapter.
③ For low voltage applications.
④ Marked with Direct Opening Action (DOA) Symbol ⊖ per IEC 60947-5-1 (Annex K) and NEMA ICS 5 (Part 6).
⑤ For use with Trigger Action Emergency Stop (E22LTA2) Operators.

⊖ Direct Opening Action (DOA) for IEC 60947-5-1 (Annex K) and NEMA ICS 5 (Part 6) Compliance

Table 47-94. Mechanical Operating Parameters of Operators with E22B1 and E22B11 (NC Contacts Only)

DOA Operating Parameters	Latching Trigger Action E-Stop		Pushbuttons				2-Position Push-Pull		3-Position Push-Pull				Key, Lever and Knob Selector Switches			
	E-Stop + E22B1	E-Stop + E22B11	25 mm + E22B1	25 mm + E22B11	Mush-room + E22B1	Mush-room + E22B11	2-Pos. Push-Pull + E22B1	2-Pos. Push-Pull + E22B11	Push + E22B1	Push + E22B11	Pull + E22B1	Pull + E22B11	Spring Return + E22B1	Spring Return + E22B11	Main-tained + E22B1	Main-tained + E22B11
Min. Travel to Open Contact — Inches (mm)	0.24 (6.1)	0.24 (6.1)	0.08 (2.1)	0.08 (2.1)	0.08 (2.1)	0.08 (2.1)	0.08 (2.1)	0.08 (2.1)	0.08 (2.1)	0.08 (2.1)	0.08 (2.1)	0.08 (2.1)	0.08 (2.1)	0.08 (2.1)	0.08 (2.1)	0.08 (2.1)
Min. Force to Open Contact — lb (N)	5.00 (22.24)	5.00 (22.24)	0.74 (3.27)	0.90 (4.00)	0.84 (3.74)	1.00 (4.45)	0 0	0 0	2.09 (9.31)	2.25 (10.02)	3.01 (13.37)	3.17 (14.08)	0.29 (1.29)	0.45 (2.00)	0.30 (1.34)	0.46 (2.05)
Total Travel — Inches (mm)	0.29 (7.4)	0.29 (7.4)	0.23 (5.8)	0.23 (5.8)	0.23 (5.8)	0.23 (5.8)	0.23 (5.8)	0.23 (5.8)	0.23 (5.8)	0.23 (5.8)	0.23 (5.8)	0.23 (5.8)	0.23 (5.8)	0.23 (5.8)	0.23 (5.8)	0.23 (5.8)

Suffix Codes . . . . . **Page 47-98**
Discount Symbol **1CD1**

Light Units and Lamps

E22 light units consist of two versions — standard size LED lamps and tall LED lamps. Select the standard LED light units for all indicating lights, illuminated pushbuttons, push-push (alternate action) or double-headed pushbutton operators. Select the tall LED light units for all illuminated selector switches and push-pull operators.

LED Light Units

Table 47-95. LED Light Units — Includes a T3-1/4 (BA9) Bayonet Base LED

	Type	Supply Voltage	LED Color	Suffix Code	Standard LED ① Catalog Number	Tall LED ① Catalog Number	Price US $
Tall LED Light Unit *Standard LED Light Unit*	Full Voltage	Unit without Lamp	—	**X1**	**E22DE**	**E22DE**	
		6V – 12V AC/DC	Red	**X37**	**E22DL612R**	**E22DLT612R**	
			Green	**X38**	**E22DL612G**	**E22DLT612G**	
			Yellow	**X39**	**E22DL612Y**	**E22DLT612Y**	
			Blue	**X51**	**E22DL612B**	**E22DLT612B**	
			White	**X89**	**E22DL612W**	**E22DLT612W**	
			Orange	**X94**	**E22DL612O**	**E22DLT612O**	
		24V AC/DC	Red	**X40**	**E22DL24R**	**E22DLT24R**	
			Green	**X41**	**E22DL24G**	**E22DLT24G**	
			Yellow	**X42**	**E22DL24Y**	**E22DLT24Y**	
			Blue	**X52**	**E22DL24B**	**E22DLT24B**	
			White	**X90**	**E22DL24W**	**E22DLT24W**	
			Orange	**X95**	**E22DL24O**	**E22DLT24O**	
		48V AC/DC	Red	**X53**	**E22DL48R**	**E22DLT48R**	
			Green	**X54**	**E22DL48G**	**E22DLT48G**	
			Yellow	**X55**	**E22DL48Y**	**E22DLT48Y**	
			Blue	**X56**	**E22DL48B**	**E22DLT48B**	
			White	**X91**	**E22DL48W**	**E22DLT48W**	
			Orange	**X87**	**E22DL48O**	**E22DLT48O**	
		60V AC/DC	Red	**X57**	**E22DL60R**	**E22DLT60R**	
			Green	**X58**	**E22DL60G**	**E22DLT60G**	
			Yellow	**X59**	**E22DL60Y**	**E22DLT60Y**	
			Blue	**X60**	**E22DL60B**	**E22DLT60B**	
			White	**X97**	**E22DL60W**	**E22DLT60W**	
			Orange	**X98**	**E22DL60O**	**E22DLT60O**	
		120V AC/DC	Red	**X43**	**E22DL120R**	**E22DLT120R**	
			Green	**X44**	**E22DL120G**	**E22DLT120G**	
			Yellow	**X45**	**E22DL120Y**	**E22DLT120Y**	
			Blue	**X61**	**E22DL120B**	**E22DLT120B**	
			White	**X92**	**E22DL120W**	**E22DLT120W**	
			Orange	**X96**	**E22DL120O**	**E22DLT120O**	
Transformer Light Unit with Tall LED	Transformer AC Only	120V	Red	—	**E22TL1LR**	**E22TL1TLR**	
			Green	—	**E22TL1LG**	**E22TL1TLG**	
			Yellow	—	**E22TL1LY**	**E22TL1TLY**	
			Blue	—	**E22TL1LB**	**E22TL1TLB**	
			White	—	**E22TL1LW**	**E22TL1TLW**	
			Orange	—	**E22TL1LO**	**E22TL1TLO**	
		240V	Red	—	**E22TL2LR**	**E22TL2TLR**	
			Green	—	**E22TL2LG**	**E22TL2TLG**	
			Yellow	—	**E22TL2LY**	**E22TL2TLY**	
			Blue	—	**E22TL2LB**	**E22TL2TLB**	
			White	—	**E22TL2LW**	**E22TL2TLW**	
			Orange	—	**E22TL2LO**	**E22TL2TLO**	
		480V	Red	—	**E22TL4LR**	**E22TL4TLR**	
			Green	—	**E22TL4LG**	**E22TL4TLG**	
			Yellow	—	**E22TL4LY**	**E22TL4TLY**	
			Blue	—	**E22TL4LB**	**E22TL4TLB**	
			White	—	**E22TL4LW**	**E22TL4TLW**	
			Orange	—	**E22TL4LO**	**E22TL4TLO**	

① Select standard or tall LED based on **Table 47-96**.

Table 47-96. LED and Bulb Type Selection Chart

Illuminated Operator Type	Standard LED or Bulb	Tall LED or Bulb
Double-Headed Pushbuttons	✓	—
Indicating Lights	✓	—
Pushbuttons	✓	—
Push-Pull Operators	—	✓
Push-Push Pushbuttons	✓	—
Selector Switches	—	✓

Contact Blocks . . . . . **Page 47-69**
Suffix Codes . . . . . **Page 47-98**
Discount Symbol **1CD1**

Light Units and Lamps (Continued)

E22 light units consist of two versions — with standard bulb or with tall bulbs. Select the standard bulb light units for all indicating lights, illuminated pushbuttons, push-push (alternate action) or double-headed pushbutton operators. Select the tall bulb light units for all illuminated selector switches and push-pull operators.

Caution: Please note that 120V full voltage light units (E22D120) are only suitable for indicating light operators and will overheat in other operators.

Incandescent Light Units

Table 47-97. Incandescent Light Units — Includes a T3-1/4 (BA9) Bayonet Base Lamp (except when noted)

	Type	Supply Voltage 50/60 Hz	Lamp Voltage	Suffix Code	Standard Bulb ① Catalog Number	Tall Bulb ① Catalog Number	Price U.S. $
	Full Voltage AC/DC	Unit without Lamp	—	X1	E22D	E22D	
		6	6	X2	E22D6	E22DT6	
		12	12	X3	E22D12	E22DT12	
		24	24	X4	E22D24	E22DT24	
		48	48	X6	E22D50	E22DT50	
		60	60	X7	E22D60	E22DT60	
		120	120	X8	E22D120 ②	—	
	Resistor AC/DC	120	60	X10	E22R2	E22RT2	
	Transformer AC Only	120	6	X11	E22TL1	E22TL1T	
		240	6	X12	E22TL2	E22TL2T	
		380/415	6	X13	E22TL3	E22TL3T	
		480	6	X14	E22TL4	E22TL4T	

① Select standard or tall bulb based on **Table 47-98**.
② E22D120 light units are suitable for indicating light operators only.

Table 47-98. LED and Bulb Type Selection Chart

Illuminated Operator Type	Standard LED or Bulb	Tall LED or Bulb
Double-Headed Pushbuttons	✓	—
Indicating Lights	✓	—
Pushbuttons	✓	—
Push-Pull Operators	—	✓
Push-Push Pushbuttons	✓	—
Selector Switches	—	✓

Table 47-99. PresTest Units — Includes Pre-wired 1NO-1NC Contact Blocks

	Type	Supply Voltage 50/60 Hz	Lamp Voltage	Light Suffix Code	Standard Bulb ③ Catalog Number	Tall Bulb ③ Catalog Number	Price U.S. $
	Full Voltage AC/DC	Unit without Lamp	—	X17	E22D0C	E22D0C	
		24	24	X20	E22D24C	E22DT24C	
	Resistor AC/DC	120	60	X26	E22R2C	E22RT2C	
	Transformer AC Only	120	6	X27	E22TL1C	E22TLT1C	
		240	6	X28	E22TL2C	E22TLT2C	
		380/415	6	X29	E22TL3C	E22TLT3C	
		480	6	X30	E22TL4C	E22TLT4C	

③ Select standard or tall bulb based on **Table 47-98**.

Table 47-100. Master Packed Contact Blocks and Light Units

	Description	Catalog Number	Price U.S. $
	Contact Blocks or Light Units Master Packed in Quantities of 100 Only —		
	Contact Block 1NC (Available singly in Catalog as E22B1)	E22AA6	
	Contact Block 1NO (Available singly in Catalog as E22B2)	E22AA7	
	Light Unit without Lamp Full Voltage (Available singly in Catalog as E22D)	E22AA12	
	Light Unit Resistor Type 120V 60 Hz (Available singly in Catalog as E22R2)	E22AA24	
	Light Unit Transformer Type 120V 60 Hz (Available singly in Catalog as E22TL1)	E22AA11	

Contact Blocks ..... **Page 47-69**
Suffix Codes ..... **Page 47-98**
Discount Symbol **1CD1**

Replacement LEDs and Bulbs — Standard Size

Table 47-101. Replacement LEDs for Indicating Lights, Illuminated Pushbuttons, Illuminated Push-Push Operators and Double-Headed Pushbuttons

	Voltage	Color	Continuous		Flashing		
			AC/DC	Price U.S. $	AC	DC	Price U.S. $
			Catalog Number		Catalog Number	Catalog Number	
Standard LED Lamp	6V – 12V	Red	**E22LED612RN**		**E22LED006RAF**	**E22LED006RDF**	
		Orange	**E22LED612ON**		**E22LED006OAF**	**E22LED006ODF**	
		Yellow	**E22LED612YN**		**E22LED006YAF**	**E22LED006YDF**	
		Green	**E22LED612GN**		**E22LED006GAF**	**E22LED006GDF**	
		Blue	**E22LED612BN**		**E22LED006BAF**	**E22LED006BDF**	
		White	**E22LED612WN**		**E22LED006WAF**	**E22LED006WDF**	
	24V	Red	**E22LED024RN**		**E22LED024RAF**	**E22LED024RDF**	
		Orange	**E22LED024ON**		**E22LED024OAF**	**E22LED024ODF**	
		Yellow	**E22LED024YN**		**E22LED024YAF**	**E22LED024YDF**	
		Green	**E22LED024GN**		**E22LED024GAF**	**E22LED024GDF**	
		Blue	**E22LED024BN**		**E22LED024BAF**	**E22LED024BDF**	
		White	**E22LED024WN**		**E22LED024WAF**	**E22LED024WDF**	
	48V	Red	**E22LED048RN**		**E22LED048RAF**	**E22LED048RDF**	
		Orange	**E22LED048ON**		**E22LED048OAF**	**E22LED048ODF**	
		Yellow	**E22LED048YN**		**E22LED048YAF**	**E22LED048YDF**	
		Green	**E22LED048GN**		**E22LED048GAF**	**E22LED048GDF**	
		Blue	**E22LED048BN**		**E22LED048BAF**	**E22LED048BDF**	
		White	**E22LED048WN**		**E22LED048WAF**	**E22LED048WDF**	
	60V	Red	**E22LED060RN**		**E22LED060RAF**	**E22LED060RDF**	
		Orange	**E22LED060ON**		**E22LED060OAF**	**E22LED060ODF**	
		Yellow	**E22LED060YN**		**E22LED060YAF**	**E22LED060YDF**	
		Green	**E22LED060GN**		**E22LED060GAF**	**E22LED060GDF**	
		Blue	**E22LED060BN**		**E22LED060BAF**	**E22LED060BDF**	
		White	**E22LED060WN**		**E22LED060WAF**	**E22LED060WDF**	
	120V	Red	**E22LED120RN**		**E22LED120RAF**	**E22LED120RDF**	
		Orange	**E22LED120ON**		**E22LED120OAF**	**E22LED120ODF**	
		Yellow	**E22LED120YN**		**E22LED120YAF**	**E22LED120YDF**	
		Green	**E22LED120GN**		**E22LED120GAF**	**E22LED120GDF**	
		Blue	**E22LED120BN**		**E22LED120BAF**	**E22LED120BDF**	
		White	**E22LED120WN**		**E22LED120WAF**	**E22LED120WDF**	

Table 47-102. Replacement Bulbs — T3-1/4 (BA9) Bayonet Base Type for Indicating Lights, Illuminated Pushbuttons, Illuminated Push-Push Operators and Double-Headed Pushbuttons

Description	Mfg. Part Number	Operating Voltage (V)/ Wattage (W)	Catalog Number	Price U.S. $
Standard Incandescent Bulb	#755	6V (0.9W)	**28-2202**	
	#756	12V (1.2W)	**28-5184**	
	#1819	24V (1.2W)	**28-2468-24**	
	W1225	48/50V (1.0W)	**28-2468-19**	
	W1226	60V (1.2W)	**28-2468-20**	
	W1121	120V (2.4W)	**28-2468-7**	
Neon ①	NE51H-R22	120 (0.3W)	**28-3754**	
	NE51H-R68	240 (0.6W)	**28-3755**	

① Neon bulbs are suitable for use in indicating lights only. Not to be used with any operator.

Note: See **Page 47-73** for Replacement LEDs and bulbs for Push-Pulls and selector switches.

Discount Symbol **1CD1**

Replacement LEDs and Bulbs — Tall Size

Table 47-103. Replacement Tall LEDs for Illuminated Selector Switches and Push-Pull Operators ONLY

	Voltage	Color	Continuous		Flashing		
			AC/DC	Price U.S. $	AC	DC	Price U.S. $
			Catalog Number		Catalog Number	Catalog Number	
Tall LED Lamp	6V – 12V	Red	E22LEDT612RN		E22LEDT006RAF	E22LEDT006RDF	
		Orange	E22LEDT612ON		E22LEDT006OAF	E22LEDT006ODF	
		Yellow	E22LEDT612YN		E22LEDT006YAF	E22LEDT006YDF	
		Green	E22LEDT612GN		E22LEDT006GAF	E22LEDT006GDF	
		Blue	E22LEDT612BN		E22LEDT006BAF	E22LEDT006BDF	
		White	E22LEDT612WN		E22LEDT006WAF	E22LEDT006WDF	
	24V	Red	E22LEDT024RN		E22LEDT024RAF	E22LEDT024RDF	
		Orange	E22LEDT024ON		E22LEDT024OAF	E22LEDT024ODF	
		Yellow	E22LEDT024YN		E22LEDT024YAF	E22LEDT024YDF	
		Green	E22LEDT024GN		E22LEDT024GAF	E22LEDT024GDF	
		Blue	E22LEDT024BN		E22LEDT024BAF	E22LEDT024BDF	
		White	E22LEDT024WN		E22LEDT024WAF	E22LEDT024WDF	
	48V	Red	E22LEDT048RN		E22LEDT048RAF	E22LEDT048RDF	
		Orange	E22LEDT048ON		E22LEDT048OAF	E22LEDT048ODF	
		Yellow	E22LEDT048YN		E22LEDT048YAF	E22LEDT048YDF	
		Green	E22LEDT048GN		E22LEDT048GAF	E22LEDT048GDF	
		Blue	E22LEDT048BN		E22LEDT048BAF	E22LEDT048BDF	
		White	E22LEDT048WN		E22LEDT048WAF	E22LEDT048WDF	
	60V	Red	E22LEDT060RN		E22LEDT060RAF	E22LEDT060RDF	
		Orange	E22LEDT060ON		E22LEDT060OAF	E22LEDT060ODF	
		Yellow	E22LEDT060YN		E22LEDT060YAF	E22LEDT060YDF	
		Green	E22LEDT060GN		E22LEDT060GAF	E22LEDT060GDF	
		Blue	E22LEDT060BN		E22LEDT060BAF	E22LEDT060BDF	
		White	E22LEDT060WN		E22LEDT060WAF	E22LEDT060WDF	
	120V	Red	E22LEDT120RN		E22LEDT120RAF	E22LEDT120RDF	
		Orange	E22LEDT120ON		E22LEDT120OAF	E22LEDT120ODF	
		Yellow	E22LEDT120YN		E22LEDT120YAF	E22LEDT120YDF	
		Green	E22LEDT120GN		E22LEDT120GAF	E22LEDT120GDF	
		Blue	E22LEDT120BN		E22LEDT120BAF	E22LEDT120BDF	
		White	E22LEDT120WN		E22LEDT120WAF	E22LEDT120WDF	

Table 47-104. Replacement Tall Bulbs — T3-1/4 (BA9) Bayonet Base Type for Illuminated Selector Switches and Push-Pull Operators ONLY

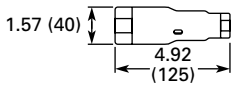
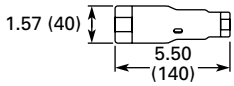
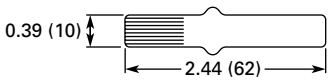
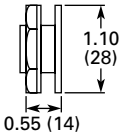
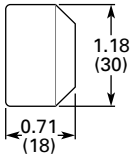
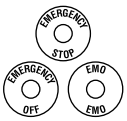
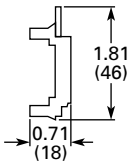
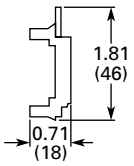
Description	Operating Voltage (V)/ Wattage (W)	Catalog Number	Price U.S. $
Tall Incandescent Bulb	6V (1.0W)	28-6731	
	12V (1.2W)	28-6731-2	
	24V (1.2W)	28-6731-3	
	32V (1.2W)	28-6731-7	
	48V (1.0W)	28-6731-4	
	60V (1.2W)	28-6731-5	
	120V (2.2W)	28-6731-6	

Note: See **Page 47-72** for Replacement LEDs and bulbs for indicating lights and pushbutton switches.

Discount Symbol **1CD1**

Accessories

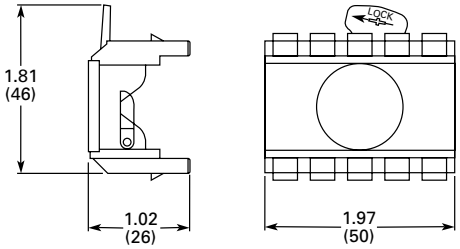
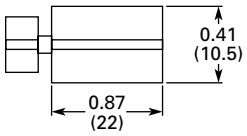
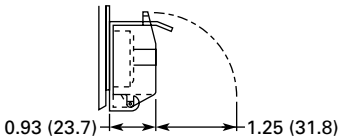
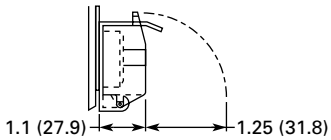
Table 47-105. EM22 and E22 Series Accessories

	Description	Catalog Number	Price U.S. $	Overall Dimensions Inches (mm)
	Octagonal Wrench — For easy tightening of back-of-panel mounting nut on E22 (plastic) operators	**E22CW**		
	Octagonal Wrench — For easy tightening of back-of-panel mounting nut on EM22 (metal) operators	**E22CWM**		
	Bulb Removal Tool — To facilitate bulb removal from front of panel on all illuminated operators	**E22BA3**		
	Hole Cutting Tool — For 22.5 mm Diameter mounting hole. Maximum Thickness: Steel — 16 SWG (1.63 mm) Aluminum — 14 SWG (2.03 mm)	**E22BA5**		
	Hole Plug — Forms oil- and watertight seal for unused panel holes — UL Listed Type 4-4X-13 Black Nylon Stainless Steel	 **E22BHP** **E22BA8**		
	Protective Boot — Silicon Rubber. For use with 25 mm Diameter Flush and Extended pushbutton operators only — Clear Red Green Black	 **E22BCM** **E22BRM** **E22BGM** **E22BBM**		
	**Oversize Yellow Legend Plates** ① — 1.77" (45 mm) Blank 1.77" (45 mm) Printed EMERGENCY STOP 2.56" (65 mm) Printed EMERGENCY STOP 2.56" (65 mm) Printed EMERGENCY OFF 2.56" (65 mm) Printed EMO 2.76" (70 mm) Blank 2.76" (70 mm) Printed EMERGENCY STOP 2.76" (70 mm) Printed EMERGENCY OFF 2.76" (70 mm) Printed EMO	 **E22VA2** **E22VA9** **E22VA7** **E22VA6** **E22VA3** **E22VA1** **E22VA8** **E22VA4** **E22VA5**		
	Mounting Adapter — Supplied as standard with E22 operators. Provides contact block and light unit mounting.	**E22BA1**		
	Mounting Adapter with Barrier — Supplied as standard with E22 Trigger Action Emergency Stop Operators. Provides contact block unit mounting only.	**E22BA7**		
	Auto Latch Mounting Adapter — Supplied as standard with EM22 operators. Provides contact block and light unit mounting.	**E22BA1A**		

① Yellow plates comply with EN418 Machine Safety Standard background requirements for E-Stops.

Discount Symbol **1CD1**

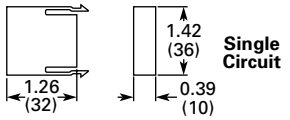
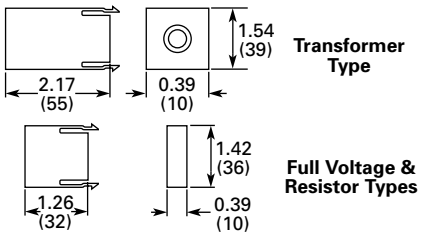
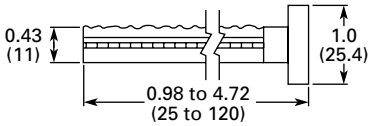
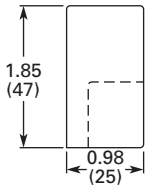
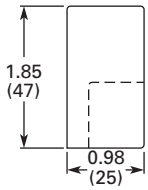
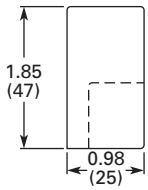
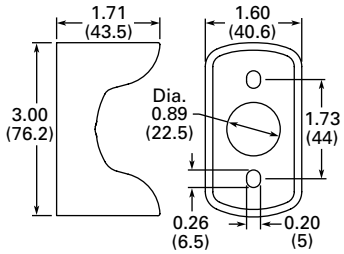
Table 47-105. EM22 and E22 Series Accessories (Continued)

	Description	Catalog Number	Price U.S. $	Overall Dimensions Inch (mm)
	Mounting Adapter with Barrier — Supplied as standard with EM22 Trigger Action Emergency Stop Operators. Provides contact block unit mounting only.	**E22BA7A**		
	5-Way Mounting Adapter ① — Provides contact block and light unit mounting for up to 10 circuits. The standard 3-way mounting adapter E22BA1 allows up to 6 circuits. For non-illuminated PBs and 2-position selector switches For illuminated PBs and 2-position selector switches For non-illuminated 3-position selector switches with Cam #1 For illuminated 3-position selector switches with Cam #1 Additional information – See **Page 47-77**	 **E22BA11** **E22BA11L** **E22BA12** **E22BA12L**		
	Operator Plug — Must be inserted into rear of momentary action pushbutton and mushroom head operators when 3rd Contact Block is installed in center position. Not to be used with maintained action or illuminated operators — minimum order quantity 10 pieces. To assemble, push plug into the rear of the operator. On mushroom operators, cut down the plug to 15.2 mm [0.62"] prior to assembly. Plug is notched to indicate cut down length.	**E22BA2**		
	Adapter Kit — Enables a 22.5 mm operator to be mounted in a 30.5 mm mounting hole — panel thickness from 1/16 to 7/32 inch (1.6 to 5.6 mm).	**E22ARK**		
	Locating Ring — Provides additional anti-rotation features when using optional panel mounting hole notch — minimum order quantity 10 pieces (metal)	**E22LRM**		
	Padlockable Transparent Cover — Suitable for use with 25 mm Flush and Extended Pushbutton operators only	**E22PCM**		
	Padlockable Transparent Cover — Suitable for use with 25 mm Extended Pushbutton operators only. Enables NC circuit to be held open.	**E22PCPM**		
	Padlockable Transparent Cover — Suitable for use with 28 mm Mushroom operators, Knob and Key Selector switches	**E22BA9**		
	Quick Connect Terminals — For easy installation of wired connections. 300V clearance. Minimum order quantity 10 pieces.	**E22AT**		

① 5-Way mounting adapters cannot be used with 3-position Push-Pull operators, Cam #2 3-position selector switches, trigger action E-Stops or E22B4/E22BF4 contact blocks.

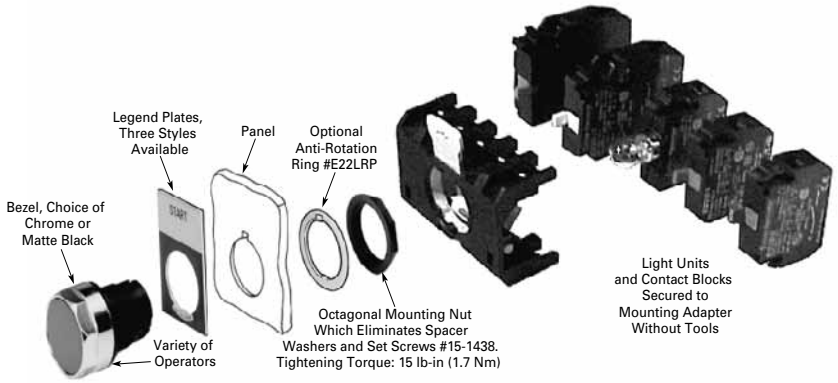
Discount Symbol **1CD1**

Table 47-105. EM22 and E22 Series Accessories (Continued)

	Description	Catalog Number	Price U.S. $	Overall Dimensions in Inches (mm)
	Contact Blocks with Quick Connect Terminal Assembled — 300V clearance — 1NC 1NO 1NO Early Make 1NC Late Break 1NO-1NC 2NO	 **E22BF1** **E22BF2** **E22BF3** **E22BF4** ① **E22BF11** **E22BF20**		
	Light Units with Quick Connect Terminals Assembled ② — 300V clearance — Transformer Type AC Only — 120/110V, 60/50 Hz Resistor/Diode AC 120/110V Full Voltage AC/DC 24V Without Bulb	 **E22TLF1** **E22RF2** **E22DF24** **E22DF**		
	Mechanical Push Rod — For use with all non-illuminated pushbutton and momentary mushroom head operators. Suitable for external mechanical reset of overload relays. Must be cut to proper length. Uncut — 4.72 inches (119.9 mm) long	**E22MRL**		
	Mushroom Shroud ③ — Protects against inadvertent operation. Chrome shroud (cut-away type for use with push/pull pushbuttons) Black shroud (cut-away type for use with push/pull pushbuttons)	**E22MSP** **E22MBSP**		
	Mushroom Shroud ③ — Protects against inadvertent operation. Chrome shroud (cut-away type) Black shroud (cut-away type)	**E22MS** **E22MBFS**		
	Mushroom Shroud ③ — Protects against inadvertent operation. Chrome shroud (full type) Black shroud (full type)	**E22MSF** **E22MBFSF**		
	Mushroom Guard — For 40 mm Trigger Action Switch — To be used with E22LTA2 and E22LTA2N123 operators.	**E22MGTA**		

① E22BF4 contact block not available for use with 5-way mounting adapters.
② For devices not listed, contact your Eaton Distributor or call our Customer Service Center 1-800-833-3927.
③ For use with 28 mm and 40 mm diameter mushroom pushbutton operators.

Discount Symbol **1CD1**



5-Way Mounting Adapter

Table 47-106. Minimum Spacing — Inches (mm)

Size/Type of Operator	Dimension A			Dimension B
	Mounting Adapter Type(s)			
	Two 3-Way	One 3-Way & One 5-Way	Two 5-Way	
All Types up to 1.18 in. (30 mm) Dia. Including Knob and Key Operated Selector Switches — except those listed below	1.18 (30)	1.58 (40)	1.97 (50)	1.97 (50)
Lever Operated Selector Switch Operators and 1.18 – 1.57 in. (30 – 40 mm) Diameter Operators	1.77 (45)	1.77 (45)	1.97 (50)	1.97 (50)
1.97 in. (50 mm) Diameter Operators	2.16 (55)	2.16 (55)	2.16 (55)	2.16 (55)
Large Yellow Round Legend Plate — 2.76 in. (70 mm) Diameter	2.95 (75)	2.95 (75)	2.95 (75)	2.95 (75)
Pushbutton Operators fitted with Rubber Boots or Padlockable Cover	1.38 (35)	1.58 (40)	1.97 (50)	1.97 (50)

Table 47-107. 5-Way Mounting Adapter

	Description	Catalog Number	Price U.S. $
	5-Way Mounting Adapter ① — Provides contact block and light unit mounting for up to 10 circuits. The standard 3-way mounting adapter E22BA1 allows up to 6 circuits.		
	For non-illuminated PBs, 2-position selector switches and 2-position Push-Pulls	**E22BA11**	
	For illuminated PBs, 2-position selector switches and 2-position Push-Pulls	**E22BA11L**	
	For non-illuminated 3-position selector switches with Cam #1	**E22BA12**	
	For illuminated 3-position selector switches with Cam #1	**E22BA12L**	

① Cannot be used with 3-position Push-Pull operators, Cam #2 3-position selector switches, push-push operators, trigger action pushbutton or E22B4/E22BF4 contact blocks. See **Table 47-108**.

Table 47-108. 5-Way Mounting Adapter Selection Chart

Front of Panel Devices	Back of Panel Options			
	Non-illuminated		Illuminated	
	E22BA11	E22BA12	E22BA11L	E22BA12L
Flush and Extended Pushbuttons	✓	—	✓ ②	—
28, 40, 50 mm Mushroom (Momentary)	✓	—	—	—
50 mm Mushroom Latch (Pull-to-Release)	✓	—	✓ ②	—
40 mm Mushroom Latch (Key Release)	✓ ②	—	—	—
28 and 40 mm Mushroom Latch (Twist-to-Release)	✓ ②	—	—	—
29.5 and 40 mm 2-Position Push-Pull	✓	—	✓ ②	—
29.5 and 40 mm 3-Position Push-Pull	—	—	—	—
Double Headed Pushbutton	—	—	—	—
2-Position Selector Switch — Cam 2	✓	—	✓ ②	—
3-Position Selector Switch — Cam 1	—	✓	—	✓ ②
3-Position Selector Switch — Cam 2	—	—	—	—
Trigger Action Pushbutton	—	—	—	—
Push-Push Operator	—	—	—	—

② Four single circuit contact blocks maximum.

5-Way Mounting Adapter

The E22 5-way mounting adapter listed below allows up to 5 single circuit or up to 5 double circuit contact blocks (10 total circuits) to be mounted behind a single operator.

Slightly more spacing (approximately 0.79 in. [20 mm]) is required for this mounting adapter as indicated in the Minimum Spacing table below.

For selector switch applications, the cam and contact blocks selection must be determined using the procedure and selection tables listed on **Pages 47-60 – 47-61**.

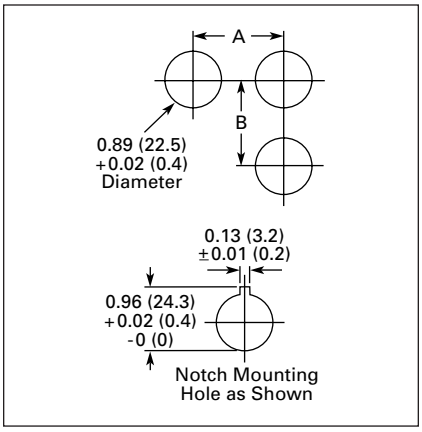


Figure 47-17. Minimum Spacing in Inches (mm)

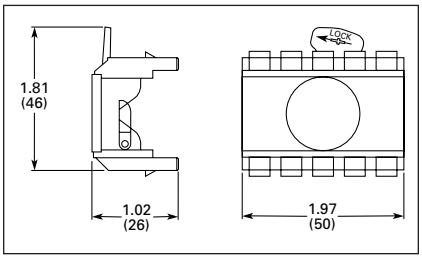


Figure 47-18. Overall Dimensions in Inches (mm)

47

Discount Symbol **1CD1**

Accessories (Continued)

Table 47-109. E22 Series Accessories (Continued)

Description			Catalog Number	Price U.S. $
Octagonal Mounting Nut			**15-1438**	
	Molded Black Bezel — For converting chrome bezel to black bezel — Suitable for Knob, Lever and Key Selector Switches		**E22AZB**	
	Chrome Bezel — Suitable for Knob, Lever and Key Selector Switches		**28-6028**	
Flush 25 mm Dia.	Lenses with Octagonal Bezel for 25 mm Diameter Flush Illuminated Pushbutton — 10 per package, minimum order 10.	Red Green Blue Clear Amber White Yellow	**E22ADR** **E22ADG** **E22ADV** **E22ADC** **E22ADA** **E22ADW** **E22ADY**	
Ext. 25 mm Dia.	Lenses with Octagonal Bezel for 25 mm Diameter Extended Illuminated Pushbuttons — 10 per package, minimum order 10.	Red Green Blue Clear Amber White Yellow	**E22AER** **E22AEG** **E22AEV** **E22AEC** **E22AEA** **E22AEW** **E22AEY**	
Std. Flush Button 25 mm Dia.	Color Caps with Octagonal Bezel for Standard Non-illuminated 25 mm Diameter Flush Push-buttons — 10 per package, minimum order 10.	Red Green Blue White Yellow Black Gray Orange	**E22ABR** **E22ABG** **E22ABV** **E22ABW** **E22ABY** **E22ABB** **E22ABE** **E22ABN**	
Std. Ext. Button 25 mm Dia.	Color Caps with Octagonal Bezel for Standard Non-illuminated 25 mm Diameter Extended Pushbuttons — 10 per package, minimum order 10.	Red Green Blue White Yellow Black Gray Orange	**E22ACR** **E22ACG** **E22ACV** **E22ACW** **E22ACY** **E22ACB** **E22ACE** **E22ACN**	

Replacement Parts

Table 47-110. Replacement Lenses — Indicating Lights

Color	Standard Indicating Light		For Use with Insert ①		Glass Lens	
	Catalog Number	**Price U.S. $**	**Catalog Number**	**Price U.S. $**	**Catalog Number**	**Price U.S. $**
Clear Red Green Yellow White	**E22AE0** **E22AE2** **E22AE3** **E22AE4** **E22AE5**		**E22AG0** **E22AG2** **E22AG3** **E22AG4** **E22AG5**		**E22AC0** **E22AC2** **E22AC3** **E22AC4** **E22AC5**	
Blue Amber	**E22AE6** **E22AE9**		**E22AG6** **E22AG9**		**E22AC6** **E22AC9**	

① Plastic indicating light lens with insert suitable for printed legends. For replacement Indicating Light Legend Inserts, order E22AL5. Minimum order quantity 10 pieces.

Table 47-111. Replacement Caps — Push-Pull

Description		1.16 Inches (29.5 mm)		1.57 Inches (40 mm)	
		Catalog Number	**Price U.S. $**	**Catalog Number**	**Price U.S. $**
Non-illuminated					
	Black Red Green Yellow White	**E22AHS1** **E22AHS2** **E22AHS3** **E22AHS4** **E22AHS5**		**E22AH1** **E22AH2** **E22AH3** **E22AH4** **E22AH5**	
	Blue Gray Amber Red EMERGENCY STOP	**E22AHS6** **E22AHS7** **E22AHS8** **—**		**E22AH6** **E22AH7** **E22AH8** **E22AH2N8**	
Illuminated					
	Clear Red Green Yellow White	**E22AFS0** **E22AFS2** **E22AFS3** **E22AFS4** **E22AFS5**		**E22AF0** **E22AF2** **E22AF3** **E22AF4** **E22AF5**	
	Blue Amber Red EMERGENCY STOP	**E22AFS6** **E22AFS9** **—**		**E22AF6** **E22AF9** **E22AF2N8**	

Table 47-112. Replacement Selector Switch Levers and Knobs

Color	Levers		Knobs		Price U.S. $
	Catalog Number	**Catalog Number**	**Catalog Number**	**Catalog Number**	
Non-illuminated — 45° Throw					
Black Red Green Yellow White Blue Gray Orange	**E22AV1** **E22AV2** **E22AV3** **E22AV4** **E22AV5** **E22AV6** **E22AV7** **E22AV8**	**E22AV21** **E22AV22** **E22AV23** **E22AV24** **E22AV25** **E22AV26** **E22AV27** **E22AV28**	**E22AX1** **E22AX2** **E22AX3** **E22AX4** **E22AX5** **E22AX6** **E22AX7** **E22AX8**	**E22AX21** **E22AX22** **E22AX23** **E22AX24** **E22AX25** **E22AX26** **E22AX27** **E22AX28**	
Illuminated — 45° Throw					
Clear Red Green Yellow White Blue Amber	**E22AW0** **E22AW2** **E22AW3** **E22AW4** **E22AW5** **E22AW6** **E22AW9**	**E22AW20** **E22AW22** **E22AW23** **E22AW24** **E22AW25** **E22AW26** **E22AW29**	**E22AR0** **E22AR2** **E22AR3** **E22AR4** **E22AR5** **E22AR6** **E22AR9**	**E22AR20** **E22AR22** **E22AR23** **E22AR24** **E22AR25** **E22AR26** **E22AR29**	
Non-illuminated — 60° Throw					
Black Red Green Yellow White Blue Gray Orange	**53-4122-36** **53-4122-31** **53-4122-32** **53-4122-34** **53-4122-35** **53-4122-33** **53-4122-37** **53-4122-38**	**53-4183-36** **53-4183-31** **53-4183-32** **53-4183-34** **53-4183-35** **53-4183-33** **53-4183-37** **53-4183-38**	**53-4185-36** **53-4185-31** **53-4185-32** **53-4185-34** **53-4185-35** **53-4185-33** **53-4185-37** **53-4185-38**	**53-4184-36** **53-4184-31** **53-4184-32** **53-4184-34** **53-4184-35** **53-4184-33** **53-4184-37** **53-4184-38**	
Illuminated — 60° Throw					
Clear Red Green Yellow White Blue Amber	**53-4122-26** **53-4122-21** **53-4122-22** **53-4122-24** **53-4122-25** **53-4122-23** **53-4122-27**	**53-4183-26** **53-4183-21** **53-4183-22** **53-4183-24** **53-4183-25** **53-4183-23** **53-4183-27**	**53-4185-26** **53-4185-21** **53-4185-22** **53-4185-24** **53-4185-25** **53-4185-23** **53-4185-27**	**53-4184-26** **53-4184-21** **53-4184-22** **53-4184-24** **53-4184-25** **53-4184-23** **53-4184-27**	
Four- to Eight-Position Selector Switches — Non-illuminated					
Black	**53-2617-16**		**53-2620-16**		

Discount Symbol **1CD1**

Options

Legend Plates

Engraved Legend Plates with Standard Markings — 1/8" High Character Size

Aluminum — Aluminum legend plates have a plastisol backing to help prevent rotation of the operator when installed in an unnotched hole. Operators installed with aluminum legend plates and legend plates with clip-in inserts maintain their UL Listed Type 4-4X-13 rating.

Plastic — Both the laminated plastic legend plates and legend plates with clip-in inserts offer the choice of four background colors. Either side of the legend plate or insert can be field engraved.

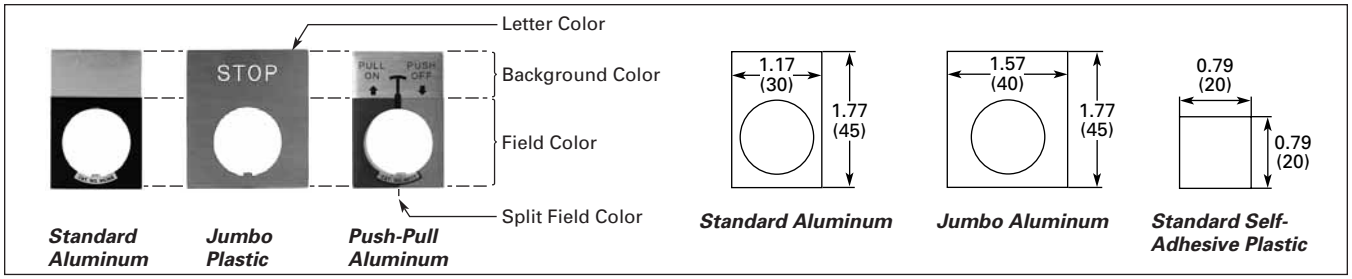


Figure 47-19. Color Diagram and Approximate Dimensions in Inches (mm)

Table 47-113. Engraved Legend Plates

Nameplate Type	Standard Aluminum with Plastisol Backing NEMA 3, 3R, 4, 4X, 12, 13 and Self-Adhesives used on Enclosures ①②		Standard Plastic, NEMA 1 Only ①			
Letter Color Background Color Field Color	Black Silver Black	Black Silver Red	White Black Black	White Red Red	Black White White	Black Silver Silver
Pushbutton						
	Price U.S $		Price U.S $			
(No Engraving) CLAMP CLOSE DOWN EMERG. STOP	E22NS36 E22NS90 E22NS11 E22NS12 —	E22NS37 — — — E22NS13	E22NSP77 E22NSP90 E22NSP11 E22NSP12 —	E22NSP77 E22NSP90R E22NSP11R E22NSP12R E22NSP13R	E22NSP76 E22NSP90W E22NSP11W E22NSP12W —	E22NSP76 E22NSP90S E22NSP11S E22NSP12S —
FAST FASTER FEEDER OFF FEEDER ON FOR	E22NS14 E22NS87 E22NS95 E22NS94 E22NS4	— — — — —	E22NSP14 E22NSP87 E22NSP95 E22NSP94 E22NSP4	E22NSP14R E22NSP87R E22NSP95R E22NSP94R E22NSP4R	E22NSP14W E22NSP87W E22NSP95W E22NSP94W E22NSP4W	E22NSP14S E22NSP87S E22NSP95S E22NSP94S E22NSP4S
FORWARD HIGH IN INCH JOG	E22NS15 E22NS16 E22NS17 E22NS18 E22NS19	— — — — —	E22NSP15 E22NSP16 E22NSP17 E22NSP18 E22NSP19	E22NSP15R E22NSP16R E22NSP17R E22NSP18R E22NSP19R	E22NSP15W E22NSP16W E22NSP17W E22NSP18W E22NSP19W	E22NSP15S E22NSP16S E22NSP17S E22NSP18S E22NSP19S

① To order Jumbo Legend Plates replace the 5th character with an **L**. For example E22N**L**87 is an aluminum, Jumbo Legend Plate marked "FASTER".
② To order self-adhesive legend plates replace the 5th character with a **C**. For example E22N**C**87 is a Self-Adhesive Legend Plate marked "FASTER".

Standard Size Aluminum

Jumbo Size Reversible Plastic

Standard Size Reversible Plastic

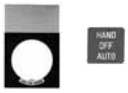
Self-Adhesive Plastic

Standard Size Plastic with Clip-In Insert

Push-Pull Operators

Discount Symbol **1CD1**

Table 47-113. Engraved Legend Plates (Continued)

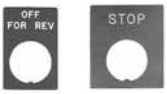
Nameplate Type	Standard Aluminum with Plastisol Backing NEMA 3, 3R, 4, 4X, 12, 13 and Self-Adhesives used on Enclosures ①② 		Standard Plastic, NEMA 1 Only ①			
Letter Color	Black	Black	White	White	Black	Black
Background Color	Silver	Silver	Black	Red	White	Silver
Field Color	Black	Red	Black	Red	White	Silver
Pushbutton (Cont.)						
	Price U.S $		Price U.S $			
JOG FOR	E22NS96	—	E22NSP96	E22NSP96R	E22NSP96W	E22NSP96S
JOG REV	E22NS21	—	E22NSP21	E22NSP21R	E22NSP21W	E22NSP21S
LEFT	E22NS10	—	E22NSP10	E22NSP10R	E22NSP10W	E22NSP10S
LOW	E22NS22	—	E22NSP22	E22NSP22R	E22NSP22W	E22NSP22S
LOWER	E22NS23	—	E22NSP23	E22NSP23R	E22NSP23W	E22NSP23S
LUBE FAIL	E22NS92	—	E22NSP92	E22NSP92R	E22NSP92W	E22NSP92S
MOTOR RUN	E22NS81	—	E22NSP81	E22NSP81R	E22NSP81W	E22NSP81S
MOTOR RUNNING	E22NS56	—	E22NSP56	E22NSP56R	E22NSP56W	E22NSP56S
MOTOR STOP	E22NS82	—	E22NSP82	E22NSP82R	E22NSP82W	E22NSP82S
MOTOR STOPPED	E22NS57	—	E22NSP57	E22NSP57R	E22NSP57W	E22NSP57S
O	—	E22NS64	—	E22NSP64R	—	—
OFF	—	E22NS24	—	E22NSP24R	—	—
ON	E22NS25	—	E22NSP25	E22NSP25R	E22NSP25W	E22NSP25S
I	E22NS65	—	E22NSP65	E22NSP65R	E22NSP65W	E22NSP65S
OPEN	E22NS26	—	E22NSP26	E22NSP26R	E22NSP26W	E22NSP26S
OUT	E22NS27	—	E22NSP27	E22NSP27R	E22NSP27W	E22NSP27S
OVERLOAD TRIPPED	E22NS98	—	E22NSP98	E22NSP98R	E22NSP98W	E22NSP98S
OVERLOAD RESET	E22NS100	—	E22NSP100	E22NSP100R	E22NSP100W	E22NSP100S
POWER ON	E22NS80	—	E22NSP80	E22NSP80R	E22NSP80W	E22NSP80S
RAISE	E22NS28	—	E22NSP28	E22NSP28R	E22NSP28W	E22NSP28S
READY	E22NS86	—	E22NSP86	E22NSP86R	E22NSP86W	E22NSP86S
RESET	E22NS29	—	E22NSP29	E22NSP29R	E22NSP29W	E22NSP29S
REV	E22NS5	—	E22NSP5	E22NSP5R	E22NSP5W	E22NSP5S
REVERSE	E22NS30	—	E22NSP30	E22NSP30R	E22NSP30W	E22NSP30S
RIGHT	E22NS79	—	E22NSP79	E22NSP79R	E22NSP79W	E22NSP79S
RUN	E22NS31	—	E22NSP31	E22NSP31R	E22NSP31W	E22NSP31S
SAFE	E22NS85	—	E22NSP85	E22NSP85R	E22NSP85W	E22NSP85S
SLOW	E22NS32	—	E22NSP32	E22NSP32R	E22NSP32W	E22NSP32S
SLOWER	E22NS88	—	E22NSP88	E22NSP88R	E22NSP88W	E22NSP88S
START	E22NS33	—	E22NSP33	E22NSP33R	E22NSP33W	E22NSP33S
STOP	—	E22NS34	—	E22NSP34R	—	—
SUPPLY ON	E22NS61	—	E22NSP61	E22NSP61R	E22NSP61W	E22NSP61S
TEST	E22NS83	—	E22NSP83	E22NSP83R	E22NSP83W	E22NSP83S
TRANSFER	E22NS93	—	E22NSP93	E22NSP93R	E22NSP93W	E22NSP93S
TRIP	E22NS84	—	E22NSP84	E22NSP84R	E22NSP84W	E22NSP84S
UNCLAMP	E22NS91	—	E22NSP91	E22NSP91R	E22NSP91W	E22NSP91S
UP	E22NS35	—	E22NSP35	E22NSP35R	E22NSP35W	E22NSP35S
2-Position Selector Switch						
INCH/REVERSE	E22NS59	—	E22NSP59	E22NSP59R	E22NSP59W	E22NSP59S
FOR/REV ↓	E22NS101	—	E22NSP101	E22NSP101R	E22NSP101W	E22NSP101S
FOR/REV ↘	E22NS38	—	E22NSP38	E22NSP38R	E22NSP38W	E22NSP38S
HAND/AUTO ↓	E22NS102	—	E22NSP102	E22NSP102R	E22NSP102W	E22NSP102S
HAND/AUTO ↘	E22NS39	—	E22NSP39	E22NSP39R	E22NSP39W	E22NSP39S
HIGH/LOW ↓	E22NS103	—	E22NSP103	E22NSP103R	E22NSP103W	E22NSP103S
HIGH/LOW ↘	E22NS40	—	E22NSP40	E22NSP40R	E22NSP40W	E22NSP40S
INCH/RUN ↓	E22NS114	—	E22NSP114	E22NSP114R	E22NSP114W	E22NSP114S
INCH/RUN ↘	E22NS60	—	E22NSP60	E22NSP60R	E22NSP60W	E22NSP60S
JOG/RUN ↓	E22NS104	—	E22NSP104	E22NSP104R	E22NSP104W	E22NSP104S
JOG/ RUN ↘	E22NS41	—	E22NSP41	E22NSP41R	E22NSP41W	E22NSP41S
LEFT/RIGHT ↓	E22NS117	—	E22NSP117	E22NSP117R	E22NSP117W	E22NSP117S
LEFT/RIGHT ↘	E22NS66	—	E22NSP66	E22NSP66R	E22NSP66W	E22NSP66S
LOC/REM ↓	E22NS116	—	E22NSP116	E22NSP116R	E22NSP116W	E22NSP116S
LOC/REMOTE ↘	E22NS63	—	E22NSP63	E22NSP63R	E22NSP63W	E22NSP63S

① To order Jumbo Legend Plates replace the 5th character with an **L**. For example E22N**L**87 is an aluminum, Jumbo Legend Plate marked "FASTER".
② To order self-adhesive legend plates replace the 5th character with a **C**. For example E22N**C**87 is a Self-Adhesive Legend Plate marked "FASTER".

↓ Center to Right Throw — 45° or 60° travel. ↘ Left to Right Throw — 45° or 60° travel.

Discount Symbol **1CD1**

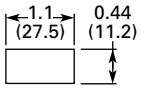
Table 47-113. Engraved Legend Plates (Continued)

Nameplate Type	Standard Aluminum with Plastisol Backing NEMA 3, 3R, 4, 4X, 12, 13 and Self-Adhesives used on Enclosures ①②		Standard Plastic, NEMA 1 Only ① 			
Letter Color **Background Color** **Field Color**	**Black** **Silver** **Black**	**Black** **Silver** **Red**	**White** **Black** **Black**	**White** **Red** **Red**	**Black** **White** **White**	**Black** **Silver** **Silver**
2-Position Selector Switch (Cont.)						
	Price U.S $		**Price U.S $**			
MAN/AUTO ⋁ MAN/AUTO ⋁ O/I ⋁ O/I ⋁ OFF/ON ⋁	**E22NS118** **E22NS67** **E22NS120** **E22NS122** **E22NS105**	**—** **—** **—** **—** **—**	**E22NSP118** **E22NSP67** **E22NSP120** **E22NSP122** **E22NSP105**	**E22NSP118R** **E22NSP67R** **E22NSP120R** **E22NSP122R** **E22NSP105R**	**E22NSP118W** **E22NSP67W** **E22NSP120W** **E22NSP122W** **E22NSP105W**	**E22NSP118S** **E22NSP67S** **E22NSP120S** **E22NSP122S** **E22NSP105S**
OFF/ON ⋁ OPEN/CLOSE ⋁ OPEN/CLOSE ⋁ RUN/JOG ⋁ RUN/JOG ⋁	**E22NS42** **E22NS106** **E22NS43** **E22NS107** **E22NS44**	**—** **—** **—** **—** **—**	**E22NSP42** **E22NSP106** **E22NSP43** **E22NSP107** **E22NSP44**	**E22NSP42R** **E22NSP106R** **E22NSP43R** **E22NSP107R** **E22NSP44R**	**E22NSP42W** **E22NSP106W** **E22NSP43W** **E22NSP107W** **E22NSP44W**	**E22NSP42S** **E22NSP106S** **E22NSP43S** **E22NSP107S** **E22NSP44S**
SAFE/RUN ⋁ SAFE/RUN ⋁ SEQ/TEST ⋁ SEQ/TEST ⋁ START/JOG ⋁	**E22NS108** **E22NS45** **E22NS115** **E22NS62** **E22NS109**	**—** **—** **—** **—** **—**	**E22NSP108** **E22NSP45** **E22NSP115** **E22NSP62** **E22NSP109**	**E22NSP108R** **E22NSP45R** **E22NSP115R** **E22NSP62R** **E22NSP109R**	**E22NSP108W** **E22NSP45W** **E22NSP115W** **E22NSP62W** **E22NSP109W**	**E22NSP108S** **E22NSP45S** **E22NSP115S** **E22NSP62S** **E22NSP109S**
START/JOG ⋁ START/STOP ⋁ START/STOP ⋁ STOP/RESET ⋁ STOP/RESET ⋁	**E22NS46** **E22NS110** **E22NS47** **—** **—**	**—** **—** **—** **E22NS112** **E22NS58**	**E22NSP46** **E22NSP110** **E22NSP47** **—** **—**	**E22NSP46R** **E22NSP110R** **E22NSP47R** **E22NSP112R** **E22NSP58R**	**E22NSP46W** **E22NSP110W** **E22NSP47W** **—** **—**	**E22NSP46S** **E22NSP110S** **E22NSP47S** **—** **—**
UP/DOWN ⋁ UP/DOWN ⋁	**E22NS111** **E22NS48**	**—** **—**	**E22NSP111** **E22NSP48**	**E22NSP111R** **E22NSP48R**	**E22NSP111W** **E22NSP48W**	**E22NSP111S** **E22NSP48S**
3-Position Selector Switch						
AUTO/OFF/HAND FOR/OFF/REV FOR/SAFE/REV HAND/OFF/AUTO I/O/II	**E22NS49** **E22NS50** **E22NS69** **E22NS51** **E22NS121**	**—** **—** **—** **—** **—**	**E22NSP49** **E22NSP50** **E22NSP69** **E22NSP51** **E22NSP121**	**E22NSP49R** **E22NSP50R** **E22NSP69R** **E22NSP51R** **E22NSP121R**	**E22NSP49W** **E22NSP50W** **E22NSP69W** **E22NSP51W** **E22NSP121W**	**E22NSP49S** **E22NSP50S** **E22NSP69S** **E22NSP51S** **E22NSP121S**
MAN/OFF/AUTO ON/STOP/SAFE OPEN/OFF/CLOSE RUN/SAFE/JOG UP/OFF/DOWN	**E22NS68** **—** **E22NS53** **E22NS70** **E22NS54**	**—** **E22NS71** **—** **—** **—**	**E22NSP68** **—** **E22NSP53** **E22NSP70** **E22NSP54**	**E22NSP68R** **E22NSP71R** **E22NSP53R** **E22NSP70R** **E22NSP54R**	**E22NSP68W** **—** **E22NSP53W** **E22NSP70W** **E22NSP54W**	**E22NSP68S** **—** **E22NSP53S** **E22NSP70S** **E22NSP54S**
Push-Pulls Only ③						
Pull-ON Push-OFF Pull-START Push-STOP	**—** **—**	**E22NS73** **E22NS75**	**E22NSP73** **E22NSP75**	**E22NSP73R** **E22NSP75R**	**E22NSP73W** **E22NSP75W**	**E22NSP73S** **E22NSP75S**

① To order Jumbo Legend Plates replace the 5th character with an **L**. For example E22N**L**87 is an aluminum, Jumbo Legend Plate marked "FASTER".
② To order self-adhesive legend plates replace the 5th character with a **C**. For example E22N**C**87 is a Self-Adhesive Legend Plate marked "FASTER".
③ Field Color is Split, green on the left side, red on the right side.

⋁ Center to Right Throw — 45° or 60° travel. ⋁ Left to Right Throw — 45° or 60° travel.

Discount Symbol **1CD1**



Standard

Figure 47-20. Approximate Dimensions in Inches (mm)

Table 47-114. Legend Plates and Legend Plate Carriers

Nameplate Type	Plastic with Clip-In Insert without Carrier NEMA 3, 3R, 4, 4X, 12, 13			
	Legend Plate Price U.S. $… Legend Plate Carrier Price U.S. $…			
Letter Color Background Color Field Color	White Black Black	White Red Red	Black White White	Black Silver Silver
Pushbutton				
Legend Plate Carrier ①	E22ND			
(No Engraving) CLAMP CLOSE DOWN EMERG. STOP	E22ND77 E22ND90 E22ND11 E22ND12 —	E22ND77 E22ND90R E22ND11R E22ND12R E22ND13R	E22ND76 E22ND90W E22ND11W E22ND12W —	E22ND76 E22ND90S E22ND11S E22ND12S —
FAST FASTER FEED OFF FEEDER ON FOR	E22ND14 E22ND87 E22ND95 E22ND94 E22ND4	E22ND14R E22ND87R E22ND95R E22ND94R E22ND4R	E22ND14W E22ND87W E22ND95W E22ND94W E22ND4W	E22ND14S E22ND87S E22ND95S E22ND94S E22ND4S
FORWARD HIGH IN INCH JOG	E22ND15 E22ND16 E22ND17 E22ND18 E22ND19	E22ND15R E22ND16R E22ND17R E22ND18R E22ND19R	E22ND15W E22ND16W E22ND17W E22ND18W E22ND19W	E22ND15S E22ND16S E22ND17S E22ND18S E22ND19S
JOG FOR JOG REV LEFT LOW LOWER	E22ND96 E22ND21 E22ND10 E22ND22 E22ND23	E22ND96R E22ND21R E22ND10R E22ND22R E22ND23R	E22ND96W E22ND21W E22ND10W E22ND22W E22ND23W	E22ND96S E22ND21S E22ND10S E22ND22S E22ND23S
LUBE FAIL MOTOR RUN MOTOR RUNNING MOTOR STOP MOTOR STOPPED	E22ND92 E22ND81 E22ND56 E22ND82 E22ND57	E22ND92R E22ND81R E22ND56R E22ND82R E22ND57R	E22ND92W E22ND81W E22ND56W E22ND82W E22ND57W	E22ND92S E22ND81S E22ND56S E22ND82S E22ND57S
O OFF ON I OPEN	— — E22ND25 E22ND65 E22ND26	E22ND64R E22ND24R E22ND25R E22ND65R E22ND26R	— — E22ND25W E22ND65W E22ND26W	— — E22ND25S E22ND65S E22ND26S
OUT OVERLOAD TRIPPED OVERLOAD RESET POWER ON RAISE	E22ND27 E22ND98 E22ND100 E22ND80 E22ND28	E22ND27R E22ND98R E22ND100R E22ND80R E22ND28R	E22ND27W E22ND98W E22ND100W E22ND80W E22ND28W	E22ND27S E22ND98S E22ND100S E22ND80S E22ND28S
READY RESET REV REVERSE RIGHT	E22ND86 E22ND29 E22ND5 E22ND30 E22ND79	E22ND86R E22ND29R E22ND5R E22ND30R E22ND79R	E22ND86W E22ND29W E22ND5W E22ND30W E22ND79W	E22ND86S E22ND29S E22ND5S E22ND30S E22ND79S
RUN SAFE SLOW SLOWER START	E22ND31 E22ND85 E22ND32 E22ND88 E22ND33	E22ND31R E22ND85R E22ND32R E22ND88R E22ND33R	E22ND31W E22ND85W E22ND32W E22ND88W E22ND33W	E22ND31S E22ND85S E22ND32S E22ND88S E22ND33S

① One carrier required for each clip-in insert.

Discount Symbol **1CD1**

Table 47-114. Legend Plates and Legend Plate Carriers (Continued)

Nameplate Type	Plastic with Clip-In Insert without Carrier NEMA 3, 3R, 4, 4X, 12, 13			
	Legend Plate Price U.S. $… Legend Plate Carrier Price U.S. $…			
Letter Color Background Color Field Color	White Black Black	White Red Red	Black White White	Black Silver Silver
Pushbutton (Cont.)				
STOP	—	E22ND34R	—	—
SUPPLY ON	E22ND61	E22ND61R	E22ND61W	E22ND61S
TEST	E22ND83	E22ND83R	E22ND83W	E22ND83S
TRANSFER	E22ND93	E22ND93R	E22ND93W	E22ND93S
TRIP	E22ND84	E22ND84R	E22ND84W	E22ND84S
UNCLAMP	E22ND91	E22ND91R	E22ND91W	E22ND91S
UP	E22ND35	E22ND35R	E22ND35W	E22ND35S
2-Position Selector Switch				
INCH/REVERSE	E22ND59	E22ND59R	E22ND59W	E22ND59S
FOR/REV ⋎	E22ND101	E22ND101R	E22ND101W	E22ND101S
FOR/REV ⋏	E22ND38	E22ND38R	E22ND38W	E22ND38S
HAND/AUTO ⋎	E22ND102	E22ND102R	E22ND102W	E22ND102S
HAND/AUTO ⋏	E22ND39	E22ND39R	E22ND39W	E22ND39S
HIGH/LOW ⋎	E22ND103	E22ND103R	E22ND103W	E22ND103S
HIGH/LOW ⋏	E22ND40	E22ND40R	E22ND40W	E22ND40S
INCH/RUN ⋎	E22ND114	E22ND114R	E22ND114W	E22ND114S
INCH/RUN ⋏	E22ND60	E22ND60R	E22ND60W	E22ND60S
JOG/RUN ⋎	E22ND104	E22ND104R	E22ND104W	E22ND104S
JOG/RUN ⋏	E22ND41	E22ND41R	E22ND41W	E22ND41S
LEFT/RIGHT ⋎	E22ND117	E22ND117R	E22ND117W	E22ND117S
LEFT/RIGHT ⋏	E22ND66	E22ND66R	E22ND66W	E22ND66S
LOC/REM ⋎	E22ND116	E22ND116R	E22ND116W	E22ND116S
LOC/REMOTE ⋏	E22ND63	E22ND63R	E22ND63W	E22ND63S
MAN/AUTO ⋎	E22ND118	E22ND118R	E22ND118W	E22ND118S
MAN/AUTO ⋏	E22ND67	E22ND67R	E22ND67W	E22ND67S
O/I ⋎	E22ND120	E22ND120R	E22ND120W	E22ND120S
O/I ⋏	E22ND122	E22ND122R	E22ND122W	E22ND122S
OFF/ON ⋎	E22ND105	E22ND105R	E22ND105W	E22ND105S
OFF/ON ⋏	E22ND42	E22ND42R	E22ND42W	E22ND42S
OPEN/CLOSE ⋎	E22ND106	E22ND106R	E22ND106W	E22ND106S
OPEN/CLOSE ⋏	E22ND43	E22ND43R	E22ND43W	E22ND43S
RUN/JOG ⋎	E22ND107	E22ND107R	E22ND107W	E22ND107S
RUN/JOG ⋏	E22ND44	E22ND44R	E22ND44W	E22ND44S
SAFE/RUN ⋎	E22ND108	E22ND108R	E22ND108W	E22ND108S
SAFE/RUN ⋏	E22ND45	E22ND45R	E22ND45W	E22ND45S
SEQ/TEST ⋎	E22ND115	E22ND115R	E22ND115W	E22ND115S
SEQ/TEST ⋏	E22ND62	E22ND62R	E22ND62W	E22ND62S
START/JOG ⋎	E22ND109	E22ND109R	E22ND109W	E22ND109S
START/JOG ⋏	E22ND46	E22ND46R	E22ND46W	E22ND46S
START/STOP ⋎	E22ND110	E22ND110R	E22ND110W	E22ND110S
START/STOP ⋏	E22ND47	E22ND47R	E22ND47W	E22ND47S
STOP/RESET ⋎	—	E22ND112R	—	—
STOP/RESET ⋏	—	E22ND58R	—	—
UP/DOWN ⋎	E22ND111	E22ND111R	E22ND111W	E22ND111S
UP/DOWN ⋏	E22ND48	E22ND48R	E22ND48W	E22ND48S
3-Position Selector Switch				
AUTO/OFF/HAND	E22ND49	E22ND49R	E22ND49W	E22ND49S
FOR/OFF/REV	E22ND50	E22ND50R	E22ND50W	E22ND50S
FOR/SAFE/REV	E22ND69	E22ND69R	E22ND69W	E22ND69S
HAND/OFF/AUTO	E22ND51	E22ND51R	E22ND51W	E22ND51S
I/O/II	E22ND121	E22ND121R	E22ND121W	E22ND121S
MAN/OFF/AUTO	E22ND68	E22ND68R	E22ND68W	E22ND68S
ON/STOP/SAFE	—	E22ND71R	—	—
OPEN/OFF/CLOSE	E22ND53	E22ND53R	E22ND53W	E22ND53S
RUN/SAFE/JOG	E22ND70	E22ND70R	E22ND70W	E22ND70S
UP/OFF/DOWN	E22ND54	E22ND54R	E22ND54W	E22ND54S

⋎ Center to Right Throw — 45° or 60° travel. ⋏ Left to Right Throw — 45° or 60° travel.

Discount Symbol **1CD1**

Legend Plates with Non-standard Markings

When Ordering Specify

- Catalog Number of Blank Legend Plate from previous page plus suffix "STAMP", and describe special engraving in Block Letters.
- Insert the following in Order Notes:
  - Character Size — 3/32, 1/8 or 3/16 inch (2.4, 3.2 or 4.8 mm)
  - Field Color of Plastic Legend Plates or Insert types.
  - Line location by Number(s) (1 – 17) and legend desired

Note: If legends are required in line locations not specified, drawing must be supplied with order.

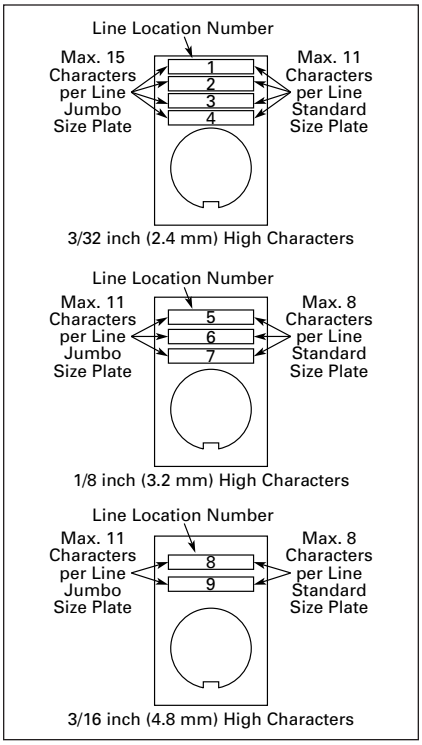


Figure 47-21. Aluminum and Plastic Legend Plates

Character Size (Height) Inches	Max. Number of Characters
1/8 Inch (3.2 mm)	6
3/16 Inch (4.8 mm)	5
3/32 Inch (2.4 mm)	8

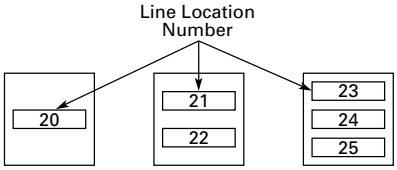


Figure 47-22. Enclosure Legend Plates — Self-Adhesive

Table 47-115. Ordering Examples

Description	Catalog Number	Price U.S. $
Aluminum		
Letter Size: 1/8 in. (3.2 mm) Location: 5 — POWER 6 — HOUSE 7 — PUMP	**E22NS36STAMP**	
Plastic		
Letter Size: 3/16 in. (4.8 mm) Field Color: White Location: 8 — FEEDER 9 — OPEN	**E22NLP76STAMP**	

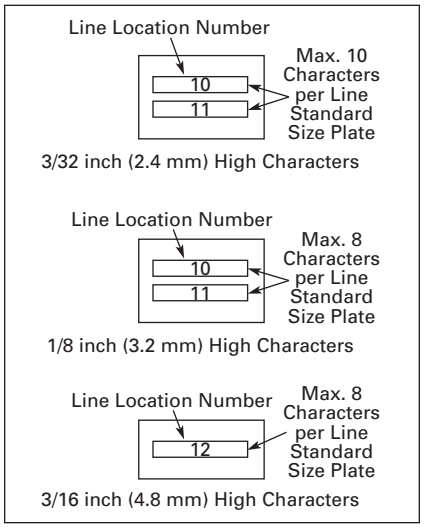


Figure 47-23. Insert Type Plates

Table 47-116. Type of Legend Plate (Used on Selector Switch)

Description	Character Size (Height)		
	3/32 Inch (2.4 mm)	1/8 Inch (3.2 mm)	3/16 Inch (4.8 mm)
Aluminum or Plastic			
Standard Size	5	3	3
Jumbo Size	7	5	5
Insert Type:			
Standard Size	5	3	—

Table 47-117. Legend Characters Available

ABCDEFGHIJKLMNOPQRSTUVWXYZ /-.,1234567890

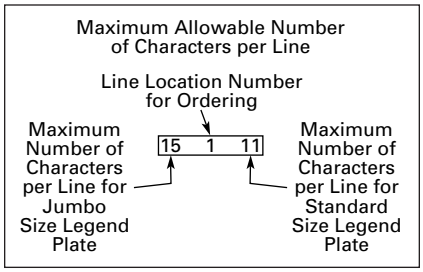


Figure 47-24. How to Use Illustrations

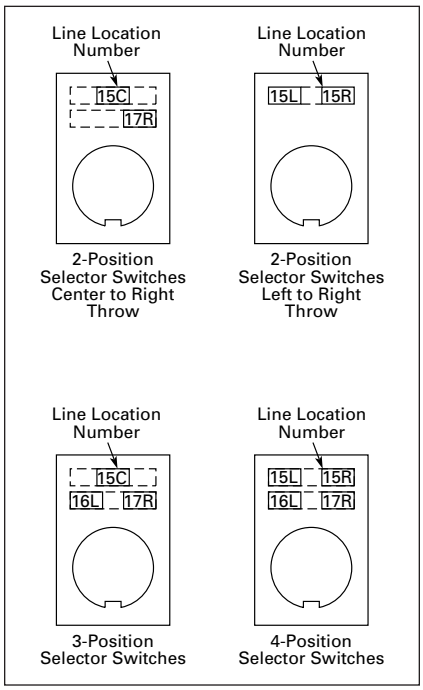


Figure 47-25. Selector Switch Legend Plates

Discount Symbol **1CD1**

Printed Legends

For Indicating Lights, Illuminated and Non-illuminated Pushbuttons, and 1.10, 1.57 and 1.97" (28, 40 and 50 mm) (Plastic) Diameter Mushroom Head Operators.

How To Order:

Select legend required from listing below and add Suffix Code Number to Catalog Number of operator. Example: E22A2**N25** — Red indicating light with insert printed "ON."

Price Adder:

U.S. $ —

Cat. No. E22A6N5

Cat. No. E22EB2N35

Table 47-118. Printed Legends

Legend ①	Suffix Code Number	Legend ①	Suffix Code Number	Legend ①	Suffix Code Number
FOR	N4	RESET	N29	*(Emergency Stop)*	N125
REV	N5	RUN	N31	*(Start)*	N887
↑	N6	START	N33	*(Stop)*	N888
→	N7	STOP	N34	*(Jog)*	N889
CLOSE	N11	UP	N35	*(Reset)*	N890
INCH	N18	O *(Off)*	N64	↑	N892
JOG	N19	I *(On)*	N65	↓	N893
OFF	N24	POWER ON	N80	→	N894
ON	N25	READY	N86	←	N895
OPEN	N26	I *(Push-Push)*	N124	↻	N896

① Additional legends and symbols are listed in **Table 47-113** on **Pages 47-79 – 47-81** — to order as printed legend, add prefix **N** to listed Code Number and follow instructions on how to order above. A one-time set-up charge will apply to all orders for non-listed, special legends.

Discount Symbol **1CD1**

Legend Plates for Selector Switches

Blank Plastic Legend Plates — Reversible

Legend plates without text. Black one side, red reverse side. White text.

Table 47-119. Blank and Custom Legend Plates

Size Inches (mm)	Catalog Number	Price U.S. $
Blank		
1.77 x 1.77 (45 x 45) 2.36 x 2.36 (60 x 60)	**E22NJP36** **E22NGP36**	
Custom Engraved ①		
1.77 x 1.77 (45 x 45) 2.36 x 2.36 (60 x 60)	**E22NJP36STAMP** **E22NGP36STAMP**	

① Custom Engraved Legend Plates have the Suffix **STAMP** added to the Catalog Number.

Non-standard Legends

To order custom engraved legend plates, specify field color, add suffix "**STAMP**" to Blank Plate Catalog Number and specify desired engraving for each position.
Example: E22NGP36**STAMP**, OFF - PUMP 1 - PUMP 2 - PUMP 3 - PUMP 4, Black field.

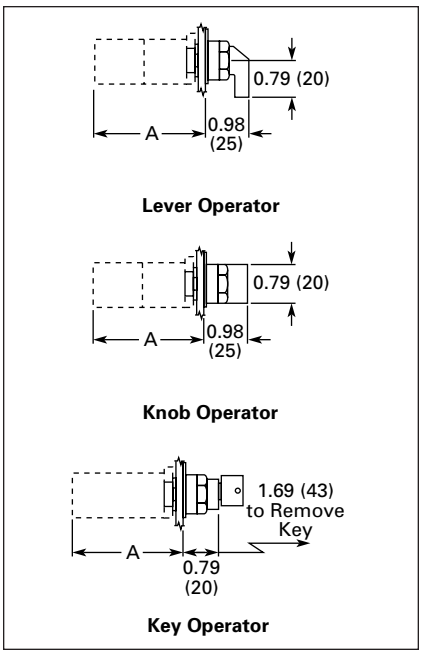


Figure 47-26. Approximate Dimensions in Inches (mm)

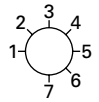
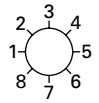
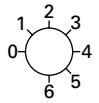
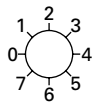
Table 47-120. Selector Switch Dimensions

Number of Circuits	Dimension A Inches (mm)
1 – 2	2.83 (72)
3 – 4	3.31 (84)
5 – 6	3.78 (96)
7 – 8	4.25 (108)

Legend Plates with Standard Text

Legend plates have a black background with white lettering.

Table 47-121. Legend Plates with Standard Text

Size Inches (mm)	Switch Positions	Catalog Number	Price U.S. $
1.77 x 1.77 (45 x 45) 2.36 x 2.36 (60 x 60)		**E22NJP215** **E22NGP215**	
1.77 x 1.77 (45 x 45) 2.36 x 2.36 (60 x 60)		**E22NJP216** **E22NGP216**	
1.77 x 1.77 (45 x 45) 2.36 x 2.36 (60 x 60)		**E22NJP217** **E22NGP217**	
1.77 x 1.77 (45 x 45) 2.36 x 2.36 (60 x 60)		**E22NJP218** **E22NGP218**	
1.77 x 1.77 (45 x 45) 2.36 x 2.36 (60 x 60)		**E22NJP219** **E22NGP219**	
1.77 x 1.77 (45 x 45) 2.36 x 2.36 (60 x 60)		**E22NJP210** **E22NGP210**	
1.77 x 1.77 (45 x 45) 2.36 x 2.36 (60 x 60)		**E22NJP211** **E22NGP211**	
1.77 x 1.77 (45 x 45) 2.36 x 2.36 (60 x 60)		**E22NJP212** **E22NGP212**	
1.77 x 1.77 (45 x 45) 2.36 x 2.36 (60 x 60)		**E22NJP213** **E22NGP213**	
1.77 x 1.77 (45 x 45) 2.36 x 2.36 (60 x 60)		**E22NJP214** **E22NGP214**	

Discount Symbol **1CD1**

Enclosures

These totally insulated, NEMA 4, 4X, 12, 13 rated polycarbonate enclosures are available in 1, 2, 3, 4, 6 and 9 hole configurations in single or double depth.

Note: For mounting dimensions and limitations see **Pages 47-88** and **47-94**.

Table 47-122. Enclosures — UL (NEMA) 4, 4X, 12, 13

Cover Holes, Centerlines and Legend Plate Selection		Usable Depth Inches (mm)	Catalog Number	Price U.S. $
	Will Accommodate 2.65 Inch (65 mm) Legend Plates Listed on **Page 47-74**	2.5 (64) 3.4 (87)	**E22CSP1** **E22CDP1**	
	With Conduit Opening in Rear of Enclosure		**E22CDP1R**	
	With Safety Yellow Cover	2.2 (57) 3.15 (80)	**E22CSP1Y** ① **E22CDP1Y** ①	
	With Conduit Opening in Rear of Enclosure		**E22CDP1RY**	
	1.42 inch (36 mm) Will Accommodate Self-Adhesive Legend Plates Listed on **Pages 47-79 – 47-81**	2.2 (57) 3.15 (80)	**E22CSP2** **E22CDP2**	
	1.42 inch (36 mm) Will Accommodate Self-Adhesive Legend Plates Listed on **Pages 47-79 – 47-81**	2.2 (57) 3.15 (80)	**E22CSP3** **E22CDP3**	
	1.18 inch (30 mm) Will Accommodate Self-Adhesive Legend Plates Listed on **Pages 47-79 – 47-81**	2.2 (57) 3.15 (80)	**E22CSP4** **E22CDP4**	
	Vertical 1.38 inch (35 mm) Horizontal 1.89 inch (48 mm) Will Accommodate Aluminum & Plastic Legend Plates Listed on **Pages 47-79 – 47-81**	3.15 (80)	**E22CDP6**	
	Vertical 1.97 inch (50 mm) Horizontal 1.38 inch (35 mm) Will Accommodate Aluminum & Plastic Legend Plates Listed on **Pages 47-79 – 47-81**	3.15 (80)	**E22CDP9**	

① Yellow covers comply with background requirements for EN418 Safety of Machinery Standard.

Discount Symbol **1CD1**

Table 47-123. Enclosure Approximate Dimensions in Inches (mm)

No. of Elements	Outside Dimension				Mounting	
	A	B	C	D	E	F
1	2.68 (68)	2.96 (75)	2.36 (60)	3.54 (90)	2.24 (57)	1.81 (46)
2	3.15 (80)	4.72 (120)	2.36 (60)	3.54 (90)	1.97 (50)	4.09 (108)
3 or 4	3.15 (80)	6.30 (160)	2.36 (60)	3.54 (90)	1.97 (50)	5.82 (148)
6	4.72 (120)	4.80 (122)	—	3.35 (85)	3.54 (90)	4.33 (110)
9	4.72 (120)	7.87 (200)	—	3.54 (90)	3.54 (90)	7.40 (188)

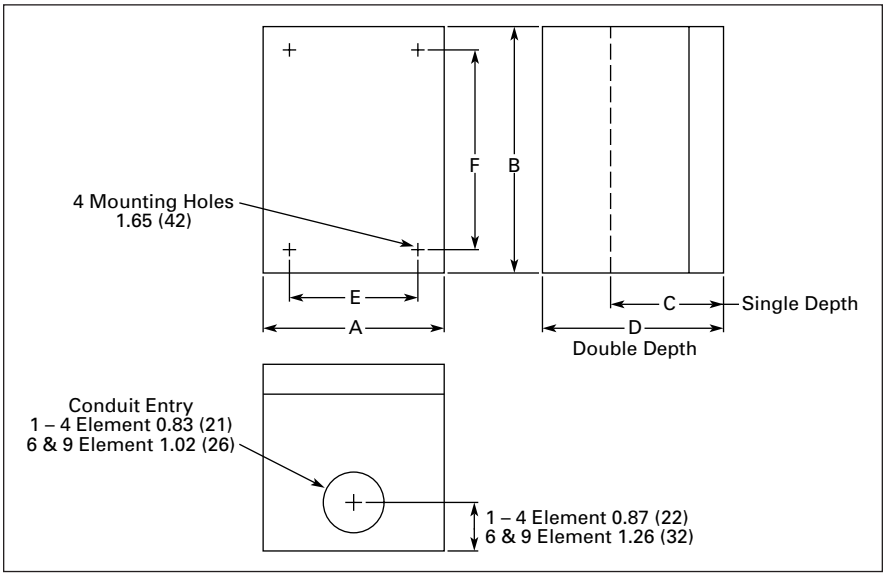


Figure 47-27. Enclosure Dimensions in Inches (mm)

Operator Mounting Dimensions

- Front of Panel — See *Product Selection — Components*
- Rear of Panel — See **Page 47-94**

Enclosure Component Application Table

Use the table below to determine which operators will or will not fit in a specific enclosure. For example, a 50 mm mushroom head pushbutton operator will only fit in a 1-hole Cutler-Hammer enclosure.

Table 47-124. Enclosure Component Application

	Number of Holes in Enclosure					
	1	2 ④	3 ④	4 ④	6 ④	9 ⑤
Mushroom Head Pushbuttons						
1.14 inch (29 mm)	Yes	Yes	Yes	Yes	Yes	Yes
1.57 inch (40 mm)	Yes	Yes ①	Yes ①	Yes ①	Yes ①	Yes ①
1.97 inch (50 mm)	Yes	No	No	No	No	No
Push-Pull Operators						
1.14 inch (29 mm)	Yes	Yes	Yes	Yes	Yes	Yes
1.57 inch (40 mm)	Yes	Yes ①	Yes ①	Yes ①	Yes ①	Yes ①
Selector Switch Operators						
Knob	Yes	Yes	Yes	Yes	Yes	Yes
Lever — Vertical ③	Yes	Yes ②	Yes ②	Yes ②	Yes ①	Yes ①
Lever — Horizontal ③	Yes	Yes ①	Yes ①	Yes ①	Yes ②	Yes ②
Key	Yes	Yes	Yes	Yes	Yes	Yes
Illuminated Operators						
With Transformer	No	No	No	No	No	No
5-Way Adapter	Yes	Yes	Yes	Yes	No	No
Over-Sized Yellow Legend Plate						
45 mm	Yes	No	No	No	No	No
70 mm	Yes	No	No	No	No	No

① When installed next to standard-sized operator only.
② When installed in the bottom position only.
③ With conduit entrance at bottom.
④ With components mounted horizontally.
⑤ With components mounted vertically.

Approximate Dimensions

Note: Approximate dimensions in Inches (mm). For Rear of Panel Extensions. See **Table 47-128** on **Page 47-94.**

Non-illuminated Pushbutton Components

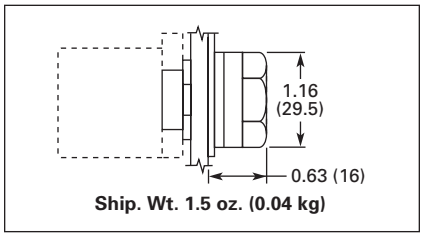


Figure 47-28. E22/EM22 Series 25 mm Dia. Flush Button

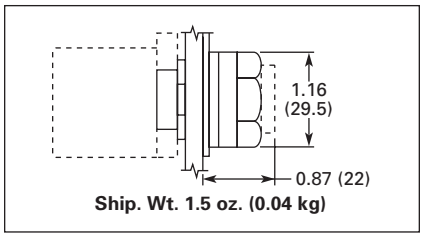


Figure 47-29. E22/EM22 Series 25 mm Dia. Extended Button

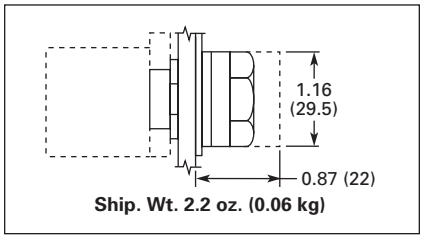


Figure 47-30. E22/EM22 Series 25 mm Dia. with Full Shroud

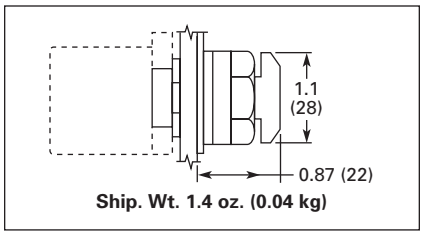


Figure 47-31. E22/EM22 Series 28 mm Dia. Mushroom Head Button

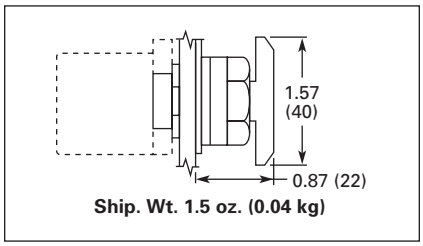


Figure 47-32. E22/EM22 Series 40 mm Dia. Mushroom Head Button

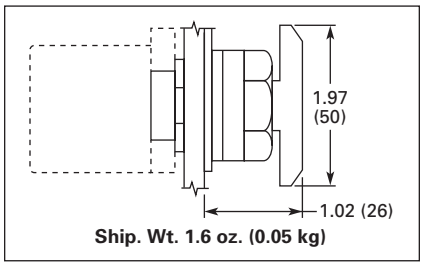


Figure 47-33. E22/EM22 Series 50 mm Dia. Mushroom Head Button

Illuminated Pushbutton Components

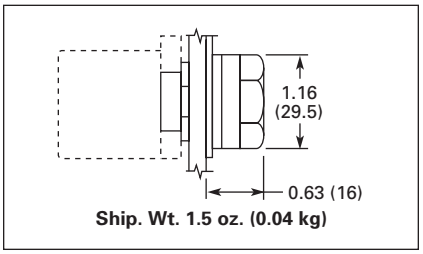


Figure 47-34. E22/EM22 Series 25 mm Dia. Flush Lens

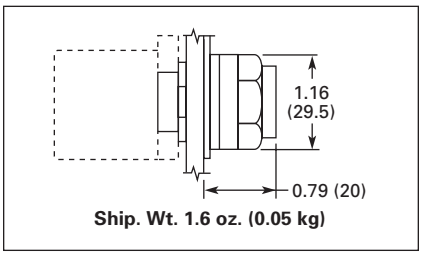


Figure 47-35. E22/EM22 Series 25 mm Dia. Extended Lens

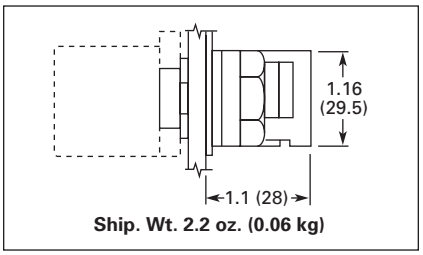


Figure 47-36. E22/EM22 Series 25 mm Dia. Extended Lens with Shroud

Alternate Action (Push-Push) Components

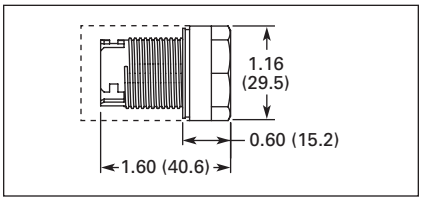


Figure 47-37. E22 Series Non-illuminated Flush Operator

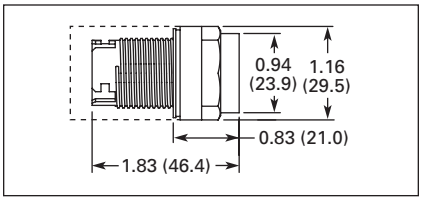


Figure 47-38. E22 Series Non-illuminated Extended Operator

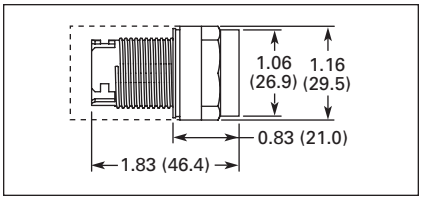


Figure 47-39. E22 Series Illuminated Flush Operator

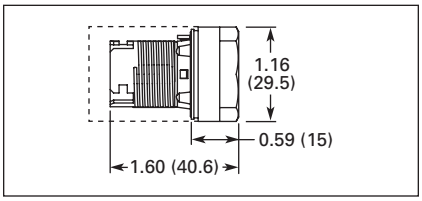


Figure 47-40. EM22 Series Non-illuminated Flush Operator

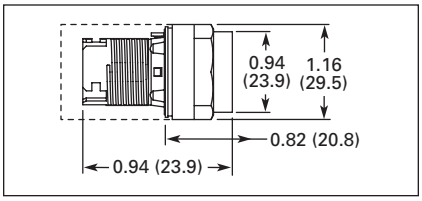


Figure 47-41. EM22 Series Non-illuminated Extended Operator

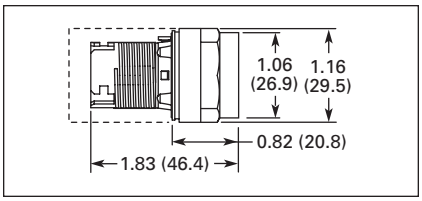
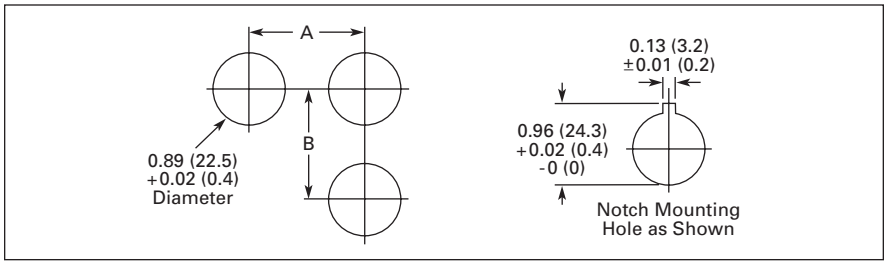


Figure 47-42. EM22 Series Illuminated Flush Operator

Table 47-125. Minimum Spacing in Inches (mm)

Size/Type of Operator	Dimensions	
	A ①	B
Push-Push Operators up to 1.18 (30) Dia. Including Knob and Key Operated Selector Switches — except those listed below 3-way adapter	1.18 (30)	1.97 (50)
Pushbutton Operators fitted with Rubber Boots or Padlockable Cover 3-way adapter	1.38 (35)	1.97 (50)

① Horizontal spacing for one 3-way mounting adapter.



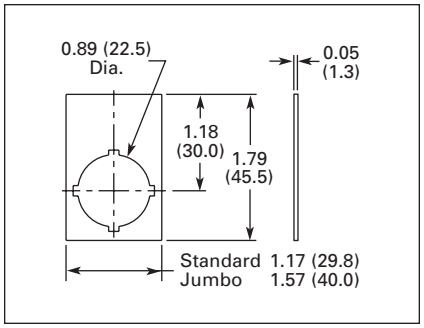


Figure 47-43. Push-Push Nameplate Dimensions

Twist-to-Release, Push-Pull and Key Release Components

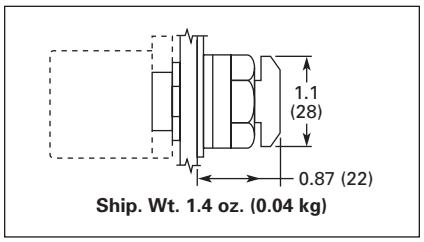


Figure 47-44. E22/EM22 Series 28 mm Diameter Twist-to-Release Button

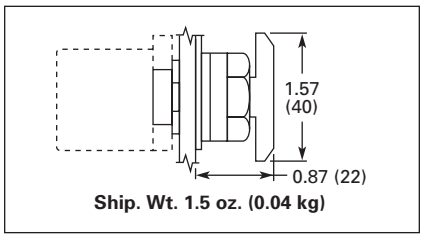


Figure 47-46. E22/EM22 Series 40 mm Dia. Push-Pull Button

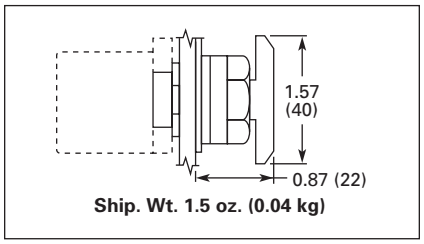


Figure 47-45. E22/EM22 Series 40 mm Dia. Twist-to-Release Button

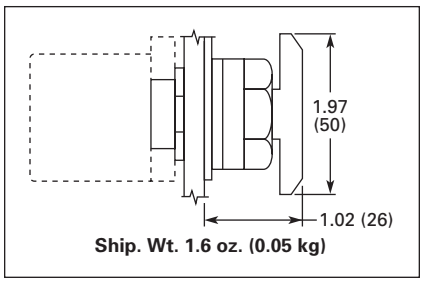


Figure 47-47. E22/EM22 Series 50 mm Dia. Push-Pull Button

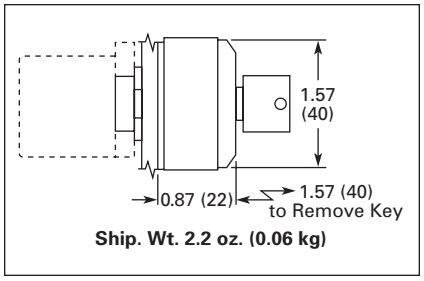


Figure 47-48. E22/EM22 Series 40 mm Dia. Key Release Button

Indicating Light Components

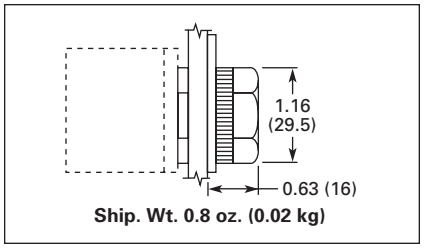


Figure 47-49. E22/EM22 Series 25 mm Dia. Standard Lens

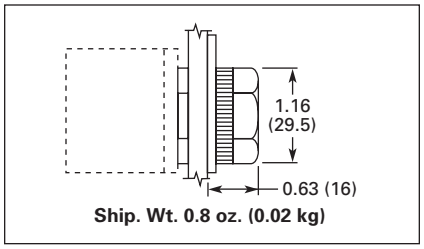


Figure 47-50. E22/EM22 Series 25 mm Dia. Lens Insert Version

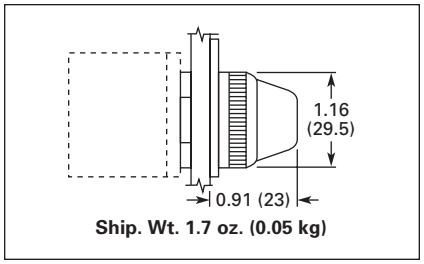


Figure 47-51. E22 Series 25 mm Dia. Glass Lens

Push-Pull Components — Non-illuminated Operators

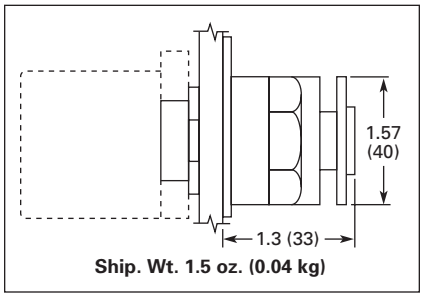


Figure 47-52. E22/EM22 Series 2-Position 40 mm Dia. Button (Maintained)

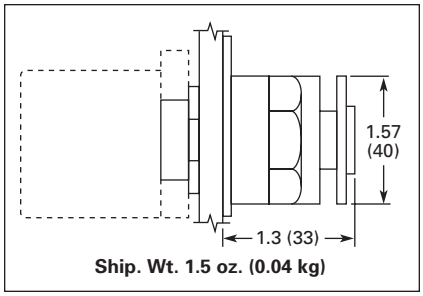


Figure 47-53. E22/EM22 Series 3-Position 40 mm Dia. Button (Spring Return to Center)

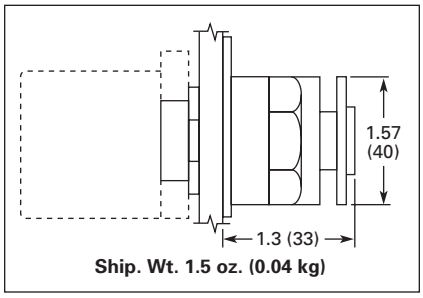


Figure 47-54. E22/EM22 Series 3-Position 40 mm Dia. Push-Pull Pushbutton (Spring Return to Center from Pulled Position)

Push-Pull Components — Illuminated Operators

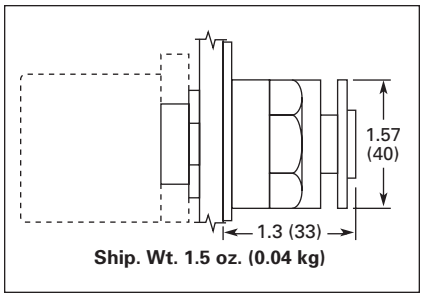


Figure 47-55. E22/EM22 Series 2-Position 40 mm Dia. Lens (Maintained)

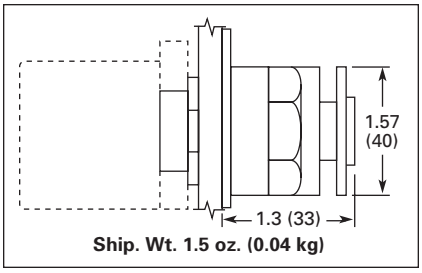


Figure 47-56. E22/EM22 Series 3-Position 40 mm Dia. Lens (Spring Return to Center)

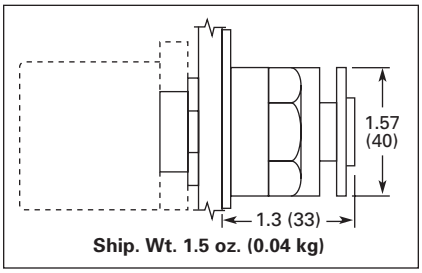


Figure 47-57. E22/EM22 Series 3-Position 40 mm Dia. Push-Pull Pushbutton (Spring Return to Center from Pulled Position)

Non-illuminated Selector Switches

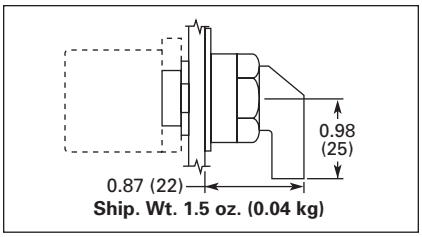


Figure 47-58. E22 Series 2-Position — 45° Throw — Lever

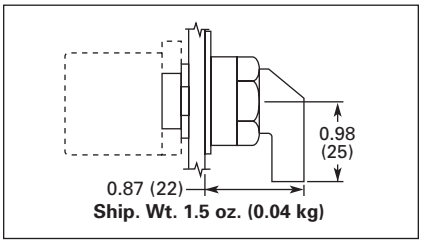


Figure 47-59. E22 Series 3-Position — 45° Throw — Lever

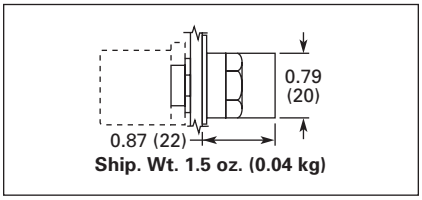


Figure 47-60. E22 Series 2-Position — 45° Throw — Knob

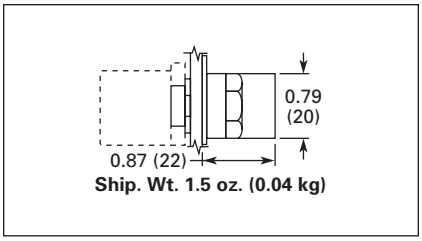


Figure 47-61. E22 Series 3-Position — 45° Throw — Knob

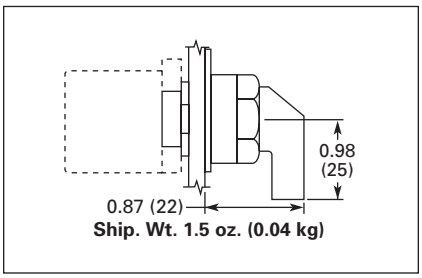


Figure 47-62. E22/EM22 Series 2-Position — 60° Throw — Lever

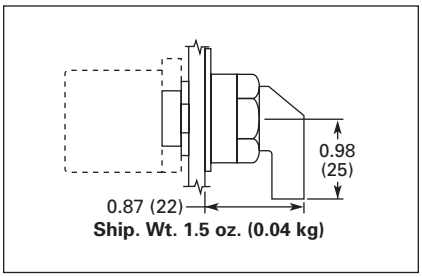


Figure 47-63. E22/EM22 Series 3-Position — 60° Throw — Lever

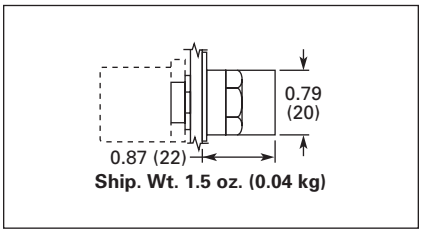


Figure 47-64. E22/EM22 Series 2-Position — 60° Throw — Knob

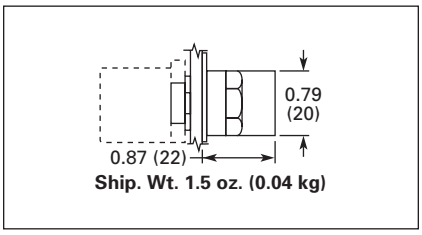


Figure 47-65. E22/EM22 Series 3-Position — 60° Throw — Knob

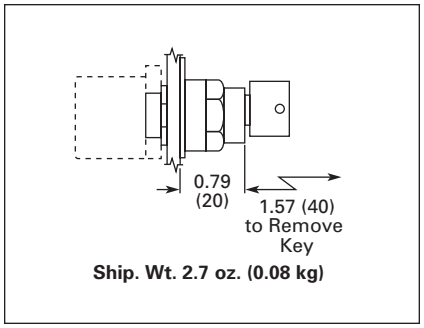


Figure 47-66. E22/EM22 Series Key Operated

Illuminated Selector Switches

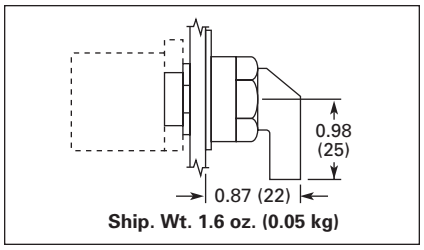


Figure 47-67. E22 Series 2-Position — 45° Throw — Lever

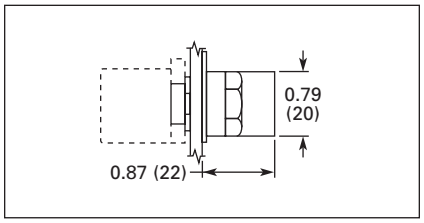


Figure 47-68. E22 Series 3-Position — 45° Throw — Knob

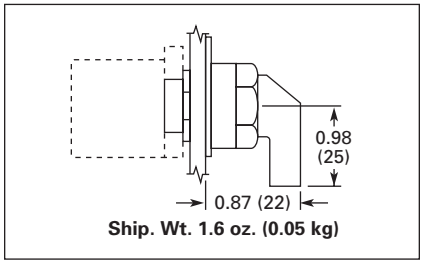


Figure 47-69. E22 Series 2-Position — 60° Throw — Lever

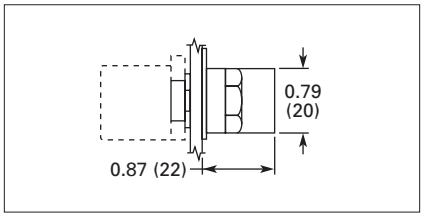


Figure 47-70. E22 Series 3-Position — 60° Throw — Knob

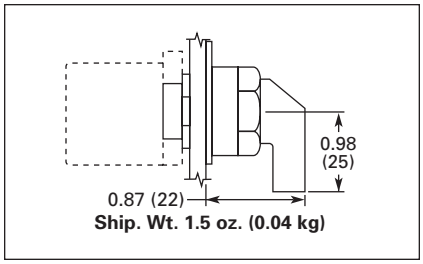


Figure 47-71. EM22 Series — 60° Throw — Lever

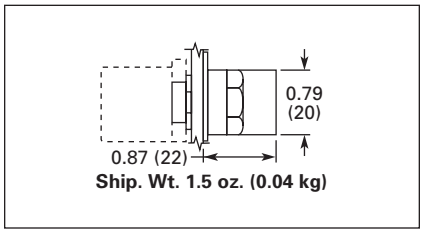


Figure 47-72. EM22 Series — 60° Throw — Knob

Rotary Cam Selector Switch

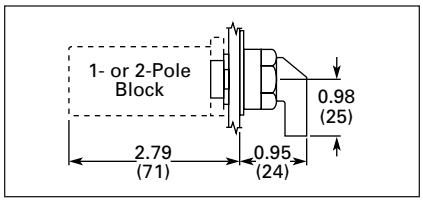


Figure 47-73. Rotary Cam Selector Switch
For each additional (1- or 2-pole) block add 0.47" (12 mm).

Specialty Operators

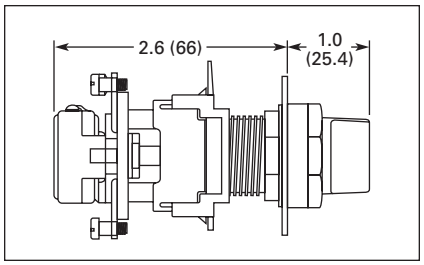


Figure 47-74. Potentiometer with Knob Operator

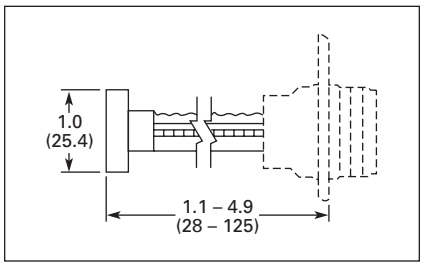


Figure 47-75. Flush Pushbutton Operator with Mechanical Push Rod

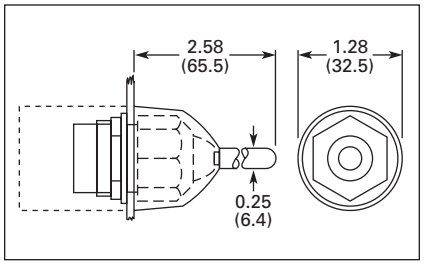


Figure 47-76. Wobble Stick Operator

Joystick

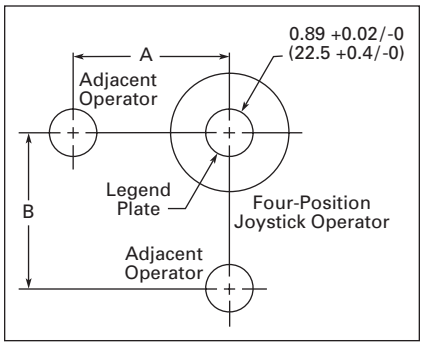


Figure 47-77. Joystick Mounting — Approximate Dimensions in Inches (mm)

Table 47-126. Minimum Panel Spacing Between 4-Position Joystick and Adjacent Operators in Inches (mm)

Size and Type of Adjacent Operator	A	B
All types except those listed below	2.56 (65)	2.56 (65)
Lever selector switches and 40 mm dia. operators	2.76 (70)	3.15 (80)
50 mm dia. operators	2.95 (75)	2.95 (75)
40 mm dia. emergency stop pushbutton	3.15 (80)	3.15 (80)
Operators with rubber boots or padlockable covers	2.76 (70)	3.35 (85)
40 mm dia. emergency stop pushbutton with 70 mm rectangular guard	3.15 (80)	3.54 (90)
Double head pushbutton	2.76 (70)	3.35 (85)
Four-position joystick operator	3.94 (100)	3.94 (100)

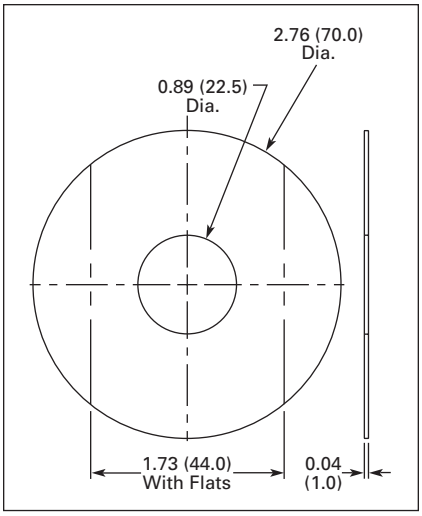


Figure 47-78. Joystick Nameplate Dimensions — Approximate Dimensions in Inches (mm)

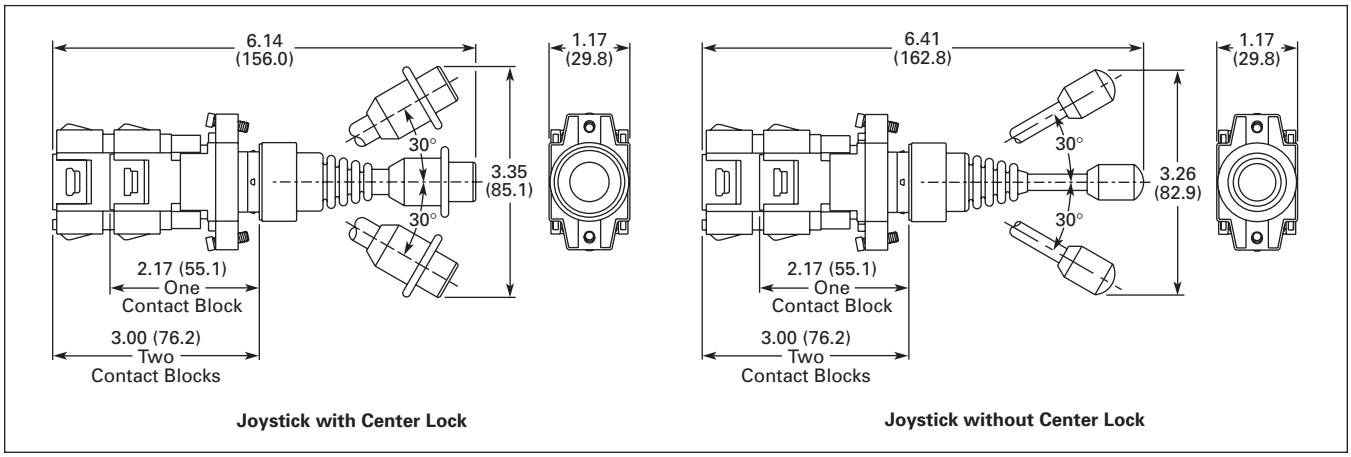


Figure 47-79. Joystick Operator Dimensions — Approximate Dimensions in Inches (mm)

Mounting

- **Panel thickness —** Inches (mm)
  - Nominal: 0.27 (6.8)
    - Legend plates, aluminum or plastic: 0.05 (1.3)
    - Locating ring: 0.06 (1.5)
    - Large yellow round legend plate: 0.04 (1.0)
    - Padlockable cover: 0.06 (1.6)
    - Rubber boot: 0.05 (1.3)
  - Minimum: 0.04 (1.0)

Note: Installation of certain accessories will increase the total (overall) panel thickness by the amount shown. The total panel thickness with all accessories installed cannot exceed the maximum allowable nominal dimension of 0.27 inch (6.8 mm).

Table 47-127. Minimum Spacing in Inches (mm)

Size/Type of Operator	Dimensions		
	A ①	A ②	B
All Types up to 1.18 (30) Dia. Including Knob and Key Operated Selector Switches — except those listed below			
3-way adapter	1.18 (30)	—	1.97 (50)
5-way adapter	1.58 (40)	1.97 (50)	1.97 (50)
Lever Operated Selector Switch Operators and 1.18 – 1.57 (30 – 40) Dia. Operators	1.77 (45)	1.97 (50)	1.97 (50)
1.97 (50) Dia. Operators	2.16 (55)	2.16 (55)	2.16 (55)
Large Yellow Round Legend Plate — 2.76 (70) Dia.	2.95 (75)	2.95 (75)	2.95 (75)
Pushbutton Operators fitted with Rubber Boots or Padlockable Cover			
3-way adapter	1.38 (35)	—	1.97 (50)
5-way adapter	1.58 (40)	1.97 (50)	1.97 (50)

① Horizontal spacing for one 3-way and one 5-way mounting adapter.
② Horizontal spacing for two 5-way mounting adapters.

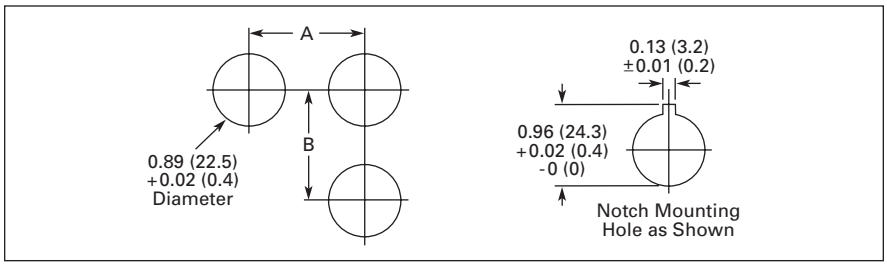


Figure 47-80. Minimum Spacing in Inches (mm)

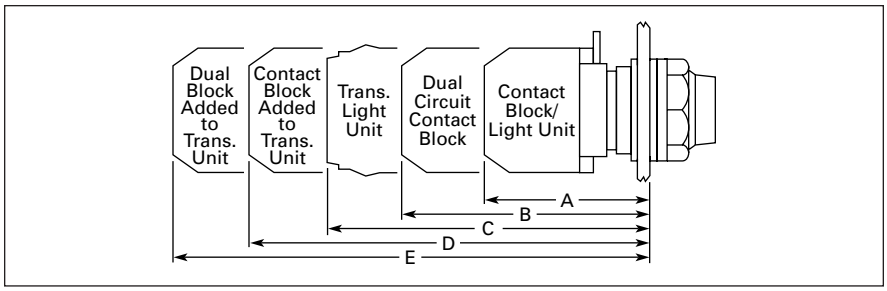


Figure 47-81. Rear of Panel Extensions

Table 47-128. Approximate Dimensions in Inches (mm)

A	B	C	D	E
Single Circuit Block — Full Voltage and Resistor Units	**Dual Circuit, Contact Block**	**Trans-former Light Unit**	**Trans. Light Unit and Single Circuit Contact Block**	**Trans. Light Unit and Dual Circuit Contact Block**
Pushbuttons All Types and Push-Pull				
2.0 (51)	2.6 (66)	2.91 (74)	3.7 (94)	4.3 (110)
Key, Lever and Knob Selector Switches				
2.22 (57)	2.83 (72)	3.15 (80)	3.9 (99)	4.5 (115)

Ordering Complete Devices

Ordering Complete Devices Using Single Composite Catalog Number

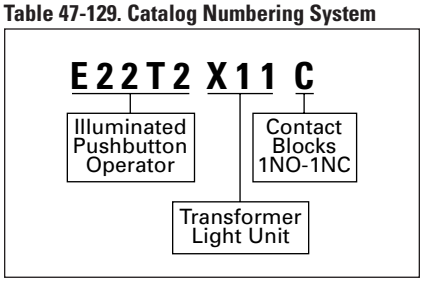
All Type E22 and EM22 Pushbuttons and Indicating Lights can be ordered as complete devices, with Light Units and/or Contact Blocks, using a single composite Catalog Number. The components including operator, Light Unit and/or Contact Blocks are shipped unassembled in an overpack bag. To order, select the required operator from the component listing on previous pages in this catalog and add Suffix Codes to the Catalog Number as listed on **Page 47-98**.

For illuminated operators, add Light Unit Suffix Code first, then the Contact Block Suffix (if required). For non-illuminated operators, simply add Contact Block Suffix Code to operator Catalog Number.

Ordering Example

Illuminated extended red pushbutton operator with 120V Transformer Type Light Unit and two contact blocks (1NO-1NC) is shown in **Table 47-129**.

Table 47-129. Catalog Numbering System



Example: Individually packaged components shipped in an overpack bag with single composite Catalog Number.

Operator
Cat. No. E22T2
from Page 47-36

Light Unit
Suffix Code X11
from Table on Page 47-98

Contact Blocks
Suffix Code C
from Table on Page 47-98

= ***Composite***
Cat. No. E22T2X11C

Ordering Rotary Cam Selector Switches

Custom Switch Ordering Instructions

To order a custom assembled Rotary Cam Selector Switch, construct a Catalog Number from **Table 47-133** using the adjacent example and the numbering guide at the bottom for reference. Switches will accept up to 12 Poles in any sequence. List the Code Letter or Numbers for the Circuit Combinations in the assembly sequence required — the first circuit designated will be assembled directly behind the operator and the remaining Circuit Combinations will be assembled in the order listed.

Specifications

- Rated 10A @ 300V AC
- Contacts: silver with gold plating
- DOL – motor rating: 120V 1/3 hp
- Mechanical Life: 5,000,000 operations
- IP65
- Wiring terminals rated IP2X
- Wiring terminals accept one or two 20 – 14 AWG (0.5 – 2.5 mm2) solid or stranded conductors. Torque wiring terminals to 5 lb-in (0.6 Nm).
- Rated insulation voltage (U_i) is 440V.
- Rated impulse withstand voltage (U_{imp}) is 4kV.

Approvals

- UL 508
- CSA C22.2 No. 14
- IEC 408

Table 47-130. Key Removal Code ①

Key Removal Position	Code
Right	**1**
Left	**2**
Right & Left	**3**
Center	**4**
Right & Center	**5**
Left & Center	**6**
All Positions	**7**

① From maintained position only.

Table 47-131. Maintained

Circuit Combinations	Lever/Knob Price U.S. $	Key Price U.S. $
Up to 3		
4		
5		
6		
7		
8		
9		
10		
11		
12		

Table 47-132. Spring Return

Circuit Combinations	Lever/Knob Price U.S. $	Key Price U.S. $
Up to 3		
4		
5		
6		
7		
8		
9		
10		
11		
12		

Dimensions..... **Page 47-92**
Discount Symbol..... **1CD1**

Ordering Example — Custom Order — Approx. 2 – 3 Weeks Delivery

Example: Three-Position Key Operated Selector Switch with Chrome Bezel, having 5 poles assembled in order as follows:

Key to be removable from center position only.

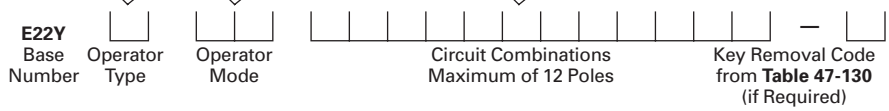
1.	X	X	O
2.	X	O	O
3.	X	X	O
4.	O	X	X
5.	X	O	O

Base Catalog Number	Operator Type	Operator Mode	Circuit Combinations	Key Removal Code		Complete Catalog Number
E22Y	D	30	D C D G C	-4	=	E22YD30DCDGC-4

Black levers and knobs are standard. For alternate color, insert Code Letter as sixth digit from left — Red "**R**", Green "**G**", Yellow "**Y**", White "**W**", Blue "**V**" — Example: E22YC**R**20AABBB

Table 47-133. Selection Table

Operator Type		Operator Mode		Circuit Combinations (Select Maximum of 12)				
Code Letter	Description	Code Number	Description	Code Letter	Circuit			
Black Bezel		**Two-Position Selector Switch**						
E	Lever Operated		2-Position Maintained		**Left**	**Center**	**Right**	
F	Knob Operated							
G	Key Operated							
		20	Center to Right	**A**	—	X	O	
				B	—	O	X	
		25	Left to Right	**A**	X	—	O	
				B	O	—	X	
Chrome Bezel		**Three-Position Selector Switch**						
B	Lever Operated				**Left**	**Center**	**Right**	
C	Knob Operated	**30**	3-Position Maintained					
D	Key Operated							
		31	Spring Return from Right and Left	**C**	X	O	O	
				D	X	X	O	
				E	X	O	X	
				F	O	O	X	
		32	Spring Return Left to Center	**G**	O	X	X	
				H	O	X	O	
		Four-Position Selector Switch						
					1	**2**	**3**	**4**
		40	4-Position Maintained	**J**	X	O	O	O
				K	O	X	O	O
				L	O	O	X	O
				M	O	O	O	X
				N	X	O	O	X
				P	O	X	X	O
				R	O	O	X	X
				S	X	X	O	O
				T	O	X	O	X
				V	X	O	X	O
				W	X	X	X	O
				4	O	X	X	X
				5	X	O	X	X
				6	X	X	O	X



Catalog Number Structure

Table 47-134. E22 Catalog Numbering System

E 2 2 P _ 2 N 2 9 X 4 C

Code	Series
E22	Plastic Operator
EM22	Metal Operator

Operator Code (1 to 3 Alphas)	
Code	Description
Non-illuminated, Momentary Pushbutton	
P	25 mm Flush Button
E	25 mm Extended Button
M	28 mm Mushroom Button
L	40 mm Mushroom Button
JP	P50 mm Mushroom (Plastic) Button
J	50 mm Mushroom (Aluminum) Button
Non-illuminated, Maintained (Latching) Pushbutton	
ML	28 mm Twist-to-Release
LL	40 mm Twist-to-Release
LTA	40 mm Trigger Action
JPL	50 mm Latch-In/Pull-to-Release (Plastic)
JL	50 mm Latch-In/Pull-to-Release (Aluminum)
G	40 mm Key Release Button
LTG	40 mm Keyed Trigger Action
Non-illuminated, Push-Pull Pushbutton	
EH	29.5 mm, 2-Position Maintained
FH	29.5 mm, 3-Position Spring Return Center
ED	40 mm, 2-Position Maintained
FD	40 mm, 3-Position Spring Return Center
Non-illuminated, Push-Push Pushbutton	
PP	25 mm Flush Button
EP	25 mm Extended Button
Non-illuminated, Selector Switches (Alpha + Digits)	
X _ _ _	Knob, 2- and 3-Position
V _ _ _	Lever, 2- and 3-Position
K _ _ _	Key, 2- and 3-Position

For Illuminated Devices Use These Operator Codes PLUS Use Code From Adjacent Chart	
Illuminated, Momentary Pushbuttons	
N	25 mm Flush Button
T	25 mm Extended Button
Illuminated, Push-Pull Pushbuttons	
GH	29.5 mm, 2-Position Maintained
HH	29.5 mm, 3-Position Spring Return Center
GD	40 mm, 2-Position Maintained
HD	40 mm, 3-Position Spring Return Center
Illuminated, Push-Push Pushbuttons	
NP	25 mm Flush Button
TP	25 mm Extended Button
Illuminated, Selector Switches (Alpha + Digits)	
S _ _ _	Knob, 2- and 3-Position
W _ _ _	Lever, 2- and 3-Position
Indicating Lights	
H	25 mm Standard Lens
A	25 mm Printable Lens
F	25 mm Glass Lens

Bezel Code (1 Alpha)	
Code	Description
(Blank)	Chrome
B	Black (E22 Only)
F	Full Shroud for Pushbutton
X	Full Shroud for Illuminated Pushbutton

Color Code – Non-illuminated Operators (1 Digit)	
Code	Description
1	Black
2	Red
3	Green
4	Yellow
5	White
6	Blue
7	Gray
8	Orange
Color Code – Illuminated Operators (1 to 2 Digits)	
Code	Description
0	Clear
2	Red
22	Red (LED)
3	Green
33	Green (LED)
4	Yellow
5	White
6	Blue
66	Blue (LED)
9	Amber

Legend Code (N + Digits)	
Code	Description
(Blank)	No Legend
N _ _ _	

Contact Code Alphas		
Single Blocks	Dual & Singles	Circuit Configuration
A	—	1NO
B	—	1NC
C	W	1NO/1NC
D	V	2NO
E	—	2NC
F	WA or VB	2NO/1NC
G	WB	1NO/2NC
H	VA	3NO
J	—	3NC
K	—	1NO/1NC Overlapping
S	—	1NO/1NC 3-Position Push-Pull
—	PP	1NO/2NC for Selector Switch
—	RR	2NO/2NC for Selector Switch
DD	VV	4NO
EE	—	4NC
CC	WW	2NO/2NC
CE	WE	1NO/3NC
DAB	VW	3NO/1NC
DDA	VVA	5NO
EEB	—	5NC
DEB	WWB	2NO/3NC
DAE	VWB	3NO/2NC
DDB	VVB	4NO/1NC
EEA	WEB	1NO/4NC

Dual & Single	Circuit Configuration	Dual & Single	Circuit Configuration
VVV	6NO	—	1NO/7NC
—	6NC	VVVVA	9NO
WWW	3NO/3NC	—	9NC
VWW	4NO/2NC	WWWWA	5NO/4NC
VVW	5NO/1NC	WWWWB	4NO/5NC
VVVA	7NO	VWWWA	6NO/3NC
—	7NC	—	3NO/6NC
WWWA	4NO/3NC	VVWWA	7NO/2NC
WWWB	3NO/4NC	—	2NO/7NC
WWWE	2NO/5NC	VVVVB	8NO/1NC
VWWA	5NO/2NC	—	1NO/8NC
VVVB	6NO/1NC	VVVVV	10NO
—	1NO/6NC	—	10NC
VVVV	8NO	WWWWW	5NO/5NC
—	8NC	—	6NO/4NC
WWWW	4NO/4NC	VVWWW	7NO/3NC
WWWF	3NO/5NC	—	3NO/7NC
VWWW	5NO/3NC	VVVWW	8NO/2NC
VVWW	6NO/2NC	—	2NO/8NC
—	2NO/6NC	VVVVW	9NO/1NC
VVVW	7NO/1NC	—	1NO/9NC

Light Source Code ② (X + Digits)					
Code	Description	Code	Description	Code	Description
X2	Direct Voltage w/6V Lamp	X29	PresTest 380V Transformer, Prewired 1NO/1NC	X55	48V Yellow LED
X3	Direct Voltage w/12V Lamp	X30	PresTest 440V Transformer, Prewired 1NO/1NC	X56	48V Blue LED
X4	Direct Voltage w/24V Lamp	X37	6-12V Red LED	X57	60V Red LED
X6	Direct Voltage w/48V Lamp	X38	6-12V Green LED	X58	60V Green LED
X7	Direct Voltage w/60V Lamp	X39	6-12V Yellow LED	X59	60V Yellow LED
X8	Direct Voltage w/120V Lamp ①	X40	24V Red LED	X60	60V Blue LED
X10	120V Resistor w/60V Lamp	X41	24V Green LED	X61	120V Blue LED
X11	120V Transformer w/6V Lamp	X42	24V Yellow LED	X87	48V Orange LED
X12	240V Transformer w/6V Lamp	X43	120V Red LED	X89	6-12V White LED
X13	415V Transformer w/6V Lamp	X44	120V Green LED	X90	24V White LED
X14	480V Transformer w/6V Lamp	X45	120V Yellow LED	X91	48V White LED
X20	PresTest 24V Direct, Prewired 1NO/1NC	X51	6-12V Blue LED	X92	120V White LED
X26	PresTest 120V Resistor, Prewired 1NO/1NC	X52	24V Blue LED	X94	6-12V Orange LED
X27	PresTest 120V Transformer, Prewired 1NO/1NC	X53	48V Red LED	X95	24V Orange LED
X28	PresTest 220V Transformer, Prewired 1NO/1NC	X54	48V Green LED	X96	120V Orange LED
				X97	60V White LED
				X98	60V Orange LED
Additional Units Available					

① For use with indicating lights only.
② Will have tall lamp/LED for selector switch and push-pull operators. Standard size lamp and LED for all other operators.

Suffix Codes

Table 47-135. Contact Blocks

Description	Suffix Code		Component Reference Cat. No.
	Single or Combination of Single Circuit Blocks	Dual or Combination of Dual with Single Circuit Blocks	
Standard Contact Blocks for All Operators Except 3-Position Push-Pull and Special Function			
1NO	A	—	E22B2
1NC	B	—	E22B1
1NO-1NC	C	—	E22B2 + B1
1NO-1NC	—	W	E22B11
2NO	D	—	E22B2 + B2
2NO	—	V	E22B20
2NC	E	—	E22B1 + B1
1NO-1NC overlapping	K	—	E22B3 + B4 ②
2NO-1NC ①③	F	—	E22B2 + B2 + B1
2NO-1NC ③	—	WA	E22B11 + B2
2NO-1NC ③	—	VB	E22B20 + B1
2NC-1NO ①③	G	—	E22B1 + B1 + B2
2NC-1NO ③	—	WB	E22B11 + B1
3NO ①③	H	—	E22B2 + B2 + B2
3NO ③	—	VA	E22B20 + B2
3NC ①③	J	—	E22B1 + B1 + B1
1NO-3NC ①④	—	WE	E22B11 + B1 + B1
2NO-2NC ④	—	WW	E22B11 + B11
3NO-1NC ④	—	VW	E22B20 + B11
4NO ④	—	VV	E22B20 + B20
Special Function Block Combination: For Use with 3-Position Push-Pulls			
1NO-1NC Late Break	S	—	E22B1 + B4 ②
1NO-1NO	T	—	E22B1 + B5
Special Function Block Combination: For Use on Selector Switches (supplied with external jumper)			
1NO-2NC	—	PP	E22B12
2NO-2NC	—	RR	E22B11 + B11
Special Function Block Combination: For Use on Trigger-Action Emergency Stop Pushbuttons			
1NC	QB	—	E22CB1
2NC	QE	—	E22CB1 + CB1
1NC-1NO	QC	—	E22CB11
2NC-1NO	QG	—	E22CB1 + CB1 + B2

① Can not be used with illuminated devices, push-pulls, twist-to-release operators or selector switches. Operator plug E22BA2 must be installed.
② E22B4 contact block not available for use with 5-way mounting adapter.
③ Can not be used with illuminated push-push devices. Operator plug E22BA2P must be installed with non-illuminated devices.
④ Can not be used on push-push devices.

Table 47-136. Light Units — Standard Size for all Operators Excluding Selector Switches and Push-Pull Units

Description	Suffix Code	Component Reference Cat. No.
Direct Voltage Light Unit AC/DC —		
Without Lamp	X1	E22D ⑥
With 6V Lamp	X2	E22D6
With 12V Lamp	X3	E22D12
With 24V Lamp	X4	E22D24
With 48V Lamp	X6	E22D50
With 60V Lamp	X7	E22D60
Direct Voltage Light Unit AC/DC — For Indicating Lights Only With 120V Lamp	X8	E22D120
Resistor Type Light Unit AC/DC ⑤ — 120V/60 Hz	X10	E22R2
Transformer Type Light Unit AC only ⑥ —		
120V/60 Hz	X11	E22TL1
240V/60 Hz	X12	E22TL2
480V/60 Hz	X14	E22TL4
Neon Light Unit AC only —		
120V with Lamp	X15	E22DN120
240V with Lamp	X16	E22DN240
PresTest Light Unit — Prewired with 1NO-1NC Contact Blocks — Transformer Type 120V/60 Hz	X27	E22TL1C ⑥
Direct Voltage without Lamp	X17	E22D0C ⑥
Direct Voltage with 24V Lamp	X20	E22D24C
Resistor Type — 120V	X26	E22R2C
LED Light Units — Direct Voltage	See **Page 47-70**	

⑤ Resistor unit is not available for use with LEDs, choose either transformer or full voltage LED style.
⑥ LED compatible.

Table 47-137. Light Units — For Selector Switch and Push-Pull Operators Only

Description	Suffix Code	Component Reference Cat. No.
Direct Voltage Light Unit AC/DC —		
Without Tall Lamp	X1	E22DE ⑧
With 6V Tall Lamp	X2	E22DT6
With 12V Tall Lamp	X3	E22DT12
With 24V Tall Lamp	X4	E22DT24
With 48V Tall Lamp	X6	E22DT50
With 60V Tall Lamp	X7	E22DT60
Direct Voltage Light Unit AC/DC — For Indicating Lights Only With 120V Lamp	X8	E22D120
Resistor Type Light Unit AC/DC ⑦ — 120V Tall Bulb/60 Hz	X10	E22RT2
Transformer Type Light Unit AC only ⑧ —		
120V Tall Bulb/60 Hz	X11	E22TL1T
240V Tall Bulb/60 Hz	X12	E22TL2T
480V Tall Bulb/60 Hz	X14	E22TL4T
PresTest Light Unit — Prewired with 1NO-1NC Contact Blocks — Transformer Type 120V Tall Bulb/60 Hz	X27	E22TLT1C ⑧
Direct Voltage without Tall Lamp	X17	E22DT0C ⑧
Direct Voltage with 24V Tall Lamp	X20	E22DT24C
Resistor Type — 120V Tall Lamp	X26	E22RT2C
LED Light Units — Direct Voltage	See **Page 47-70**	

⑦ Resistor unit is not available for use with LEDs, choose either transformer or full voltage LED style.
⑧ LED compatible.

Contents

Description	*Page*
Product Description	**47-99**
Features	**47-99**
Standards and Certifications	**47-99**
Technical Data and Specifications	**47-100**
Product Selection — Operators	
Square Multifunction Operators	**47-101**
Square Multifunction Operators and Indicating Lights	**47-102**
Product Selection — Operator Components	
Operating Buttons Only	**47-105**
Operating Buttons and Lens Only	**47-106**
Operator Lens Only	**47-107**
Contact Blocks	**47-108**
Options	
Markings and Legend Plates	**47-109**
Accessories	**47-112**
Replacement Parts	**47-113**
Dimensions	**47-114**

Product Description

The E30 industrial pushbutton and indicating light line from Eaton's electrical business features a wide selection of square, multifunction operators which conveniently mount in a standard 30.5 mm [1-13/64 inches] diameter panel hole. Up to six input and indicating functions can be grouped into a single operating head, saving valuable panel space. Attractive square operator styling, coupled with custom legending of colored buttons and lenses and many special function accessories, makes E30 components ideally suited for use on control consoles and for a variety of industrial OEM applications.

Features

Type E30 control units consist of a basic operator with one or more buttons and lenses and contact block selection dependent on the specific operator configuration.

- **Pushbutton operators** will accommodate up to four single depth stackable contact blocks behind each operating button, up to eight circuits maximum.
- **Indicating lights** are supplied complete with either a transformer light unit up to 600V AC supply line voltage or full voltage light unit up to 120V AC/DC supply line voltage.
- **Combination pushbutton with indicating light** operators are supplied complete with a transformer or full voltage unit. Contact blocks must be ordered separately, up to four circuits maximum.

Die Cast Construction

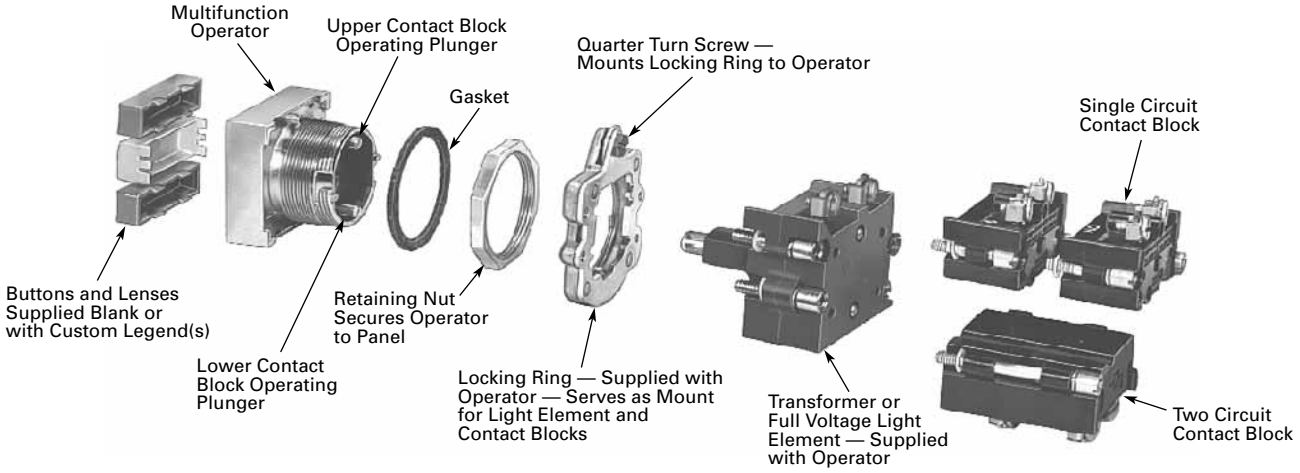
Each operator has high pressure type seals to prevent the passage of oil and other contaminants through the operator into the contact structure or panel interior. Each operator uses a Buna N cork gasket between the mounting flange on the operator and the panel to maintain oiltightness.

Standards and Certifications

- UL Listed — File No. E131568
- CSA Certified — File No. LR68551

Ingress Protection

- Single and Dual Indicating Lights
  - UL (NEMA) Type 1, 2, 3, 3R, 3S, 4, 4X, 12, 13
- All Other Operators
  - UL (NEMA) Type 3, 3R, 4, 4X, 12, 13



E30 Series

Technical Data and Specifications

Climate Conditions

- Operating: -20° to 150°F (-29° to 65°C)

Terminals

Light Units

- Terminals are saddle clamp type for 2 stranded or solid wires up to 12 AWG (4.0 mm^2)
- Torque — 7 lb-in (0.8 Nm)

Contact Block

- Terminals are saddle clamp type for 2 stranded or solid wires up to 12 AWG (4.0 mm^2)
- Torque — 7 lb-in (0.8 Nm)

Material

- Operator is a zinc base die casting with a copper-nickel-chrome plated finish. Withstands the 200 hr. salt spray test in accordance with MIL Spec. QQ-M-151A and NEMA 4X testing. All internal parts, including shafts, washers and springs, are made of stainless steel. The buttons and lenses are made of colorfast, wear resistant, molded acetal resin. The contact blocks are made of molded, heat resistant, mineral filled phenolic. The contact block plungers are molded of nylon filled phenolic. The contacts are silver.

Electrical Ratings

Table 47-138. Contact Block

Meet or Exceed NEMA Contact Rating Designation A600 and P300							
Description	A600 (AC)				P300 (DC)		
	120V	240V	480V	600V	24/28V	125V	250V
Make and Emergency Interrupting Capacity (Amps)	60	30	15	12	5.73	1.1	0.55
Normal Load Break (Amps)	6	3	1.5	1.2	5.73	1.1	0.55
Continuous Amperes	10				5		

- UL A600/P300 nominal connect 10A
- 1NO, 1NC, 2NO, 2NC, 1NO-1NC, early make, late break and overlapping configurations
- Mechanical positive drive operation on NC contacts
- Palladium alloy contact for logic level or highly corrosive environments

Reliability Nibs

These nibs combine a scrubbing action with high pressure density when the contacts are closed. They push through particles and films found on contact surfaces in industrial environments. The reliability nibs self-adjust to the application — dry circuit, normal or heavy-duty.

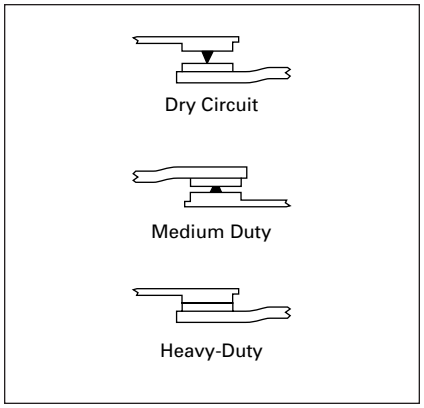


Figure 47-82. Reliability Nibs

Maximum Ratings for Logic Level and Hostile Atmosphere Applications

- Maximum amperes: 0.5A
- Maximum volts: 120V AC/DC

Light Unit

- Bulbs — average life:
  - Transformer type: 20,000 hrs.
  - Resistor/direct voltage type: 2,500 hrs. min. @ rated voltage
  - LED: 60,000 to 100,000 hrs.

Product Selection — Operators

When Ordering a Complete E30 Control Unit Specify

- Catalog Number of Operator
- Catalog Number of Button(s)
- Catalog Number of Contact Block(s)
- Catalog Number of Accessories (if required)

Ordering Example:

E30AB	
E30KB130	"START"
E30KB231	"STOP"
E30KLA1	1NO
E30KLA2	1NC

Square Multifunction Operators

Table 47-139. Single Button Operator/without Button — Order Buttons Separately — UL (NEMA) Type 3, 3R, 4, 4X, 12, 13

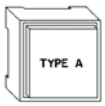
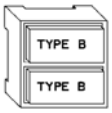
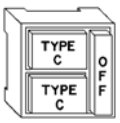
	Operation	Special Features	Catalog Number	Price U.S. $	Button Type
Single Button Operator shown with Extended Button	Momentary	—	**E30AA**		***Button Type Required***  Order from Table on **Page 47-105**

Table 47-140. Two Button Operator/without Buttons — Order Buttons Separately — UL (NEMA) Type 3, 3R, 4, 4X, 12, 13

	Operation		Special Features	Catalog Number	Price U.S. $	Button Type
	Top Button	Bottom Button				
Two Button Operator shown with Extended Buttons	Momentary	Momentary	—	**E30AB**		***Button Types Required***  Order from Table on **Page 47-105**
	Momentary	Momentary	With Mechanical Interlock	**E30AC**		
	Maintained (All Contacts)	Release (All Contacts)		**E30AD** ①		
	Maintained (All Contacts)	Release (All Contacts)	With Mechanical Interlock	**E30AP** ①②		

① Limited to two single circuit, one double circuit 600V or two 120V (E30KLA9) contact blocks behind each button.
② Buttons are interlocked so that one of the two is maintained at all times.
Depressing the other button releases the maintained button and maintains the depressed button.

Table 47-141. Two Button Operator with Long (OFF) Release Bar — Includes OFF Bar/Button — Order Other Buttons Separately — UL (NEMA) Type 3, 3R, 4, 4X, 12, 13

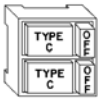
	Operation		Special Features	Catalog Number	Price U.S. $	Button Type
	Top Button	Bottom Button				
Two Button Operator shown with Long Release Bar	Maintained	Maintained	—	**E30AF**		***Button Types Required*** ③  Order from Table on **Page 47-105**
	Maintained	Maintained	With Mechanical Interlock	**E30AG**		
	Maintained	Momentary	With Mechanical Interlock	**E30AH**		
	Maintained (All Contacts)	Maintained (Bottom Contacts Only)	Top Button Operates Both Top and Bottom Contacts	**E30AK** ④		

③ Operators are supplied as standard with red extended bar(s) marked "OFF" as shown in sketch. For other colors or markings, contact your nearest Eaton Distributor or call our Customer Service Center 1-800-356-1243. For replacement of standard red release bar, order **E30KR100.**
④ Limited to two single circuit, one double circuit 600V or two 120V (E30KLA9) contact blocks behind each button.

Accessories ..... **Page 47-112**
Buttons ..... **Page 47-105**
Contact Blocks..... **Page 47-108**
Dimensions..... **Page 47-114**
Discount Symbol **1CD1C**

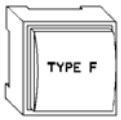
Square Multifunction Operators and Indicating Lights

Table 47-142. Two Button Operator with (OFF) Release — Includes OFF Bar/Button(s) — Order Other Buttons Separately — UL (NEMA) Type 3, 3R, 4, 4X, 12, 13

	Operation		Special Features	Catalog Number	Price U.S. $	Button Type
	Top Button	Bottom Button				
Two Button Operator shown with Release Bar for Top Button	Maintained	Momentary	Release Bar for Top Button	**E30AL**		***Button Types Required*** ① Order from Table on **Page 47-105**
Two Button Operator shown with Individual Release Bars for Each Button	Maintained	Maintained	Individual Release Bars for Each Button	**E30AN**		***Button Types Required*** ①  Order from Table on **Page 47-105**
	Maintained with Interlock	Maintained with Interlock	Individual Release Bars for Each Button	**E30AM**		

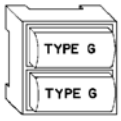
① Operators are supplied as standard with red extended release bar(s) marked "OFF" as shown in sketch. For other colors or markings, contact your nearest Eaton Distributor or call our Customer Service Center 1-800-356-1243. For replacement of standard red release bar, order **E30KR101**.

Table 47-143. Single Indicating Light Unit/without Lens — Order Lenses Separately — UL (NEMA) Type 3, 3R, 3S, 4, 4X, 12, 13

	Type of Light Element								Lens Type
	Transformer (60/50 Hertz AC)				Full Voltage (60/50 Hertz AC or DC)				
	Voltage	Lamp Number ②	Catalog Number	Price U.S. $	Voltage	Lamp Number ②	Catalog Number	Price U.S. $	
Single Indicating Light Unit shown with Lens	120	6PSB	**E30BA**		24 120	24PSB 120PSB	**E30BJ** **E30BM**		***Lens Type Required***  Order from Table on **Page 47-106**

② Light units will also accept LED lamps. For LED Part Numbers, see **Table 47-149** on **Page 47-104**.

Table 47-144. Dual Indicating Light Unit/without Lenses — Order Lenses Separately — UL (NEMA) Type 3, 3R, 3S, 4, 4X, 12, 13

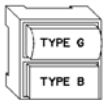
	Type of Light Element								Lens Type
	Transformer (60/50 Hertz AC)				Full Voltage (60/50 Hertz AC or DC)				
	Voltage	Lamp Number ③	Catalog Number	Price U.S. $	Voltage	Lamp Number ③	Catalog Number	Price U.S. $	
Dual Indicating Light Unit shown with Lens	120	6PSB	**E30CA**		24 120	24PSB 120PSB	**E30CJ** **E30CM**		***Lens Type Required***  Order from Table on **Page 47-107**

③ Light units will also accept LED lamps. For LED Part Numbers, see **Table 47-149** on **Page 47-104**.

Accessories . . . . . **Page 47-112**
Buttons and Lens. . . . . **Pages 47-105 – 47-107**
Contact Blocks. . . . . **Page 47-108**
Dimensions . . . . . **Page 47-114**
Replacement Lamps and
Lamp Receptacles . . . . . **Page 47-113**
Discount Symbol **1CD1C**

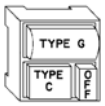
Square Multifunction Operators and Indicating Lights (Continued)

Table 47-145. Single Button Operator with Indicating Light/without Button or Lens — Order Button and Lenses Separately — UL (NEMA) Type 3, 3R, 4, 4X, 12, 13

	Operation (Bottom Button)	Type of Light Element								Button/Lens Type
		Transformer (60/50 Hertz AC)				Full Voltage (60/50 Hertz AC or DC)				
		Voltage	Lamp Number ①	Catalog Number	Price U.S. $	Voltage	Lamp Number ①	Catalog Number	Price U.S. $	
Single Button Operator and Indicating Light shown with Button & Lens	Momentary	120	6PSB	**E30DA**		24 120	24PSB 120PSB	**E30DX3** **E30DF**		***Button and Lens Types Required***  Order from Tables on **Pages 47-105** and **47-107**

① Light units will also accept LED lamps. For LED Part Numbers, see **Table 47-149** on **Page 47-104**.

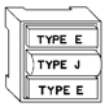
Table 47-146. Single Button Operator with (OFF) Release Bar and Indicating Light — Includes OFF Bar/Button — Order Other Button and Lens Separately — UL (NEMA) Type 3, 3R, 4, 4X, 12, 13

	Operation (Bottom Button)	Type of Light Element								Button/Lens Type
		Transformer (60/50 Hertz AC)				Full Voltage (60/50 Hertz AC or DC)				
		Voltage	Lamp Number ②	Catalog Number	Price U.S. $	Voltage	Lamp Number ②	Catalog Number	Price U.S. $	
Single Button Operator with Release Bar and Indicating Light shown with Button & Lens	Maintained	120	6PSB	**E30DG**		24 120	24PSB 120PSB	**E30DX13** **E30DM**		***Button and Lens Types Required*** ③  Order from Tables on **Pages 47-105** and **47-107**

② These operators are supplied as standard with red extended release bar(s) marked "OFF" as shown in sketch. For other colors or markings, contact your nearest Eaton Distributor or call our Customer Service Center 1-800-356-1243. For replacement of standard red release bar, order **E30KR101.**

③ Light units will also accept LED lamps. For LED Part Numbers, see **Table 47-149** on **Page 47-104**.

Table 47-147. Two Button Operator with Indicating Light/without Buttons or Lens — Order Buttons and Lenses Separately — UL (NEMA) Type 3, 3R, 4, 4X, 12, 13

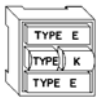
	Button Operation	Type of Light Element								Button/Lens Type
		Transformer (60/50 Hertz AC)				Full Voltage (60/50 Hertz AC or DC)				
		Voltage	Lamp Number ④	Catalog Number	Price U.S. $	Voltage	Lamp Number ④	Catalog Number	Price U.S. $	
Two Button Operator with Indicating Light shown with Button & Lens	Momentary	120	6PSB	**E30EA**		24 120	24PSB 120PSB	**E30EX3** **E30EF**		***Button and Lens Types Required***  Order from Tables on **Pages 47-106 – 47-107**
	Momentary with Interlock	120	6PSB	**E30EG**		24 120	24PSB 120PSB	**E30EX13** **E30EM**		

④ Light units will also accept LED lamps. For LED Part Numbers, see **Table 47-149** on **Page 47-104**.

Accessories . . . . . **Page 47-112**
Buttons and Lens . . . . . **Pages 47-105 – 47-107**
Contact Blocks . . . . . **Page 47-108**
Dimensions. . . . . **Page 47-114**
Replacement lamps and Lamp Receptacles . . . . **Page 47-113**
Discount Symbol **1CD1C**

Square Multifunction Operators and Indicating Lights (Continued)

Table 47-148. Two Button Operator with Dual Indicating Lights/without Buttons and Lenses — UL (NEMA) Type 3, 3R, 4, 4X, 12, 13

	Button Operation	Type of Light Element								Button/Lens Type
		Transformer (60/50 Hertz AC)				Full Voltage (60/50 Hertz AC or DC)				
		Voltage	Lamp No. ①	Catalog Number	Price U.S. $	Voltage	Lamp No. ①	Catalog Number	Price U.S. $	
Two Button Operator with Dual Indicating Lights shown with Button & Lens	Momentary	120	6PSB	**E30JA**		24 120	24PSB 120PSB	**E30JX3** **E30JF**		***Button and Lens Types Required***  Order from Tables on **Pages 47-106 – 47-107**

① Light units will also accept LED lamps. For LED Part Numbers, see **Table 47-149**.

Table 47-149. Replacement Lamps — Incandescent and LED

Lamp Voltage	Incandescent Lamps				LED Lamps				Price U.S. $
					Eaton's Cutler-Hammer Part Number				
	Manufacturers Part Number	Base Style	Eaton's Cutler-Hammer Part Number	Price U.S. $	Red	Green	Yellow	Blue ②	
6	6PSB	T2 Slide	**28-1022**		**35-1523**	**35-1523-2**	**35-1523-3**	**35-1523-17**	
12	12PSB	T2 Slide	**28-1025**		**35-1523-11**	**35-1523-12**	**35-1523-13**	**35-1523-18**	
24	24PSB	T2 Slide	**28-1026**		**35-1523-4**	**35-1523-5**	**35-1523-6**	**35-1523-19**	
28	28PSB	T2 Slide	**28-1027**		**35-1523-4**	**35-1523-5**	**35-1523-6**	**35-1523-19**	
48	48PSB	T2 Slide	**28-1028**		**35-1523-14**	**35-1523-15**	**35-1523-16**	**35-1523-20**	
120	120PSB	T2 Slide	**28-1029**		**35-1523-7**	**35-1523-8**	**35-1523-9**	**35-1523-21**	

② E30 blue LED bulbs may not provide sufficient intensity for some applications.

Accessories ..... **Page 47-112**
Buttons and Lens..... **Pages 47-105 – 47-107**
Contact Blocks..... **Page 47-108**
Dimensions ..... **Page 47-114**
Replacement Lamps and
Lamp Receptacles .... **Page 47-113**
Discount Symbol **1CD1C**

Product Selection — Operator Components

Operating Buttons Only

Table 47-150. Type A Buttons with Standard Markings

	Color	Marking	Extended Button		Short Button		Color	Marking	Extended Button		Short Button		Button Application
			Catalog Number	Price U.S. $	Catalog Number	Price U.S. $			Catalog Number	Price U.S. $	Catalog Number	Price U.S. $	
Type A Extended Button for Use with Operator E30AA, Legend Characters 3/16 Inch (4.8 mm) High	Black	Blank	**E30KA100**		**E30KA150**		Green	START	**E30KA330**		**E30KA380**		
	Black	START	**—**		**E30KA180**		Yellow	Blank	**E30KA400**		**E30KA450**		
	Red	Blank	**E30KA200**		**E30KA250**		White	Blank	**E30KA500**		**E30KA550**		
	Red	EMERG. STOP	**E30KA204**		**—**		Gray	Blank	**E30KA600**		**E30KA650**		
	Red	OFF	**E30KA218**		**E30KA268**		Brown	Blank	**E30KA700**		**E30KA750**		
	Red	STOP	**E30KA231**		**E30KA281**		Orange	Blank	**E30KA800**		**E30KA850**		
	Green	Blank	**E30KA300**		**E30KA350**		Blue	Blank	**E30KA900**		**E30KA950**		

Table 47-151. Type B Buttons with Standard Markings

	Color	Marking	Extended Button		Short Button		Color	Marking	Extended Button		Short Button		Button Application
			Catalog Number	Price U.S. $	Catalog Number	Price U.S. $			Catalog Number	Price U.S. $	Catalog Number	Price U.S. $	
Type B Extended Button for Use with Operators E30AB thru AE, AL and DA thru DF, Legend Characters 3/16 Inch (4.8 mm) High	Black	Blank	**E30KB100**		**E30KB150**		Black	REVERSE	**E30KB125**		**E30KB175**		
	Black	AUTO	**E30KB101**		**E30KB151**		Black	RUN	**E30KB126**		**E30KB176**		
	Black	CLOSE	**E30KB102**		**E30KB152**		Black	SLOW	**E30KB128**		**E30KB178**		
	Black	DOWN	**E30KB103**		**E30KB153**		Black	START	**E30KB130**		**E30KB180**		
	Black	FAST	**E30KB105**		**E30KB155**		Black	TEST	**E30KB132**		**E30KB182**		
	Black	FORWARD	**E30KB107**		**E30KB157**		Black	UP	**E30KB134**		**E30KB184**		
	Black	HIGH	**E30KB109**		**E30KB159**		Red	Blank	**E30KB200**		**E30KB250**		
	Black	IN	**E30KB110**		**E30KB160**		Red	EMER. STOP	**E30KB204**		**—**		
	Black	INCH	**E30KB111**		**E30KB161**		Red	OFF	**E30KB218**		**E30KB268**		
	Black	JOG	**E30KB112**		**E30KB162**		Red	STOP	**E30KB231**		**E30KB281**		
	Black	JOG FOR.	**E30KB113**		**E30KB163**		Green	Blank	**E30KB300**		**E30KB350**		
	Black	JOG REV.	**E30KB114**		**E30KB164**		Green	START	**E30KB330**		**E30KB380**		
	Black	LOW	**E30KB115**		**E30KB165**		Yellow	Blank	**E30KB400**		**E30KB450**		
	Black	LOWER	**E30KB116**		**E30KB166**		White	Blank	**E30KB500**		**E30KB550**		
	Black	MAN	**E30KB117**		**E30KB167**		White	AUTO	**E30KB501**		**—**		
	Black	ON	**E30KB119**		**E30KB169**		White	HAND	**E30KB508**		**—**		
	Black	OPEN	**E30KB120**		**E30KB170**		Gray	Blank	**E30KB600**		**E30KB650**		
	Black	OUT	**E30KB121**		**E30KB171**		Brown	Blank	**E30KB700**		**E30KB750**		
	Black	RAISE	**E30KB122**		**E30KB172**		Orange	Blank	**E30KB800**		**E30KB850**		
	Black	RESET	**E30KB124**		**E30KB174**		Blue	Blank	**E30KB900**		**E30KB950**		

Table 47-152. Type C Buttons with Standard Markings

	Color	Marking	Extended Button		Short Button		Color	Marking	Extended Button		Short Button		Button Application
			Catalog Number	Price U.S. $	Catalog Number	Price U.S. $			Catalog Number	Price U.S. $	Catalog Number	Price U.S. $	
Type C Extended Button for Use with Operators E30AF thru AK, AL thru AM and DG thru DM, Legend Characters 1/8 Inch (3.2 mm) High	Black	Blank	**E30KC100**		**E30KC150**		Black	RESET	**E30KC124**		**E30KC174**		
	Black	AUTO	**E30KC101**		**E30KC151**		Black	REVERSE	**E30KC125**		**E30KC175**		
	Black	CLOSE	**E30KC102**		**E30KC152**		Black	RUN	**E30KC126**		**E30KC176**		
	Black	DOWN	**E30KC103**		**E30KC153**		Black	SLOW	**E30KC128**		**E30KC178**		
	Black	FAST	**E30KC105**		**E30KC155**		Black	START	**E30KC130**		**E30KC180**		
	Black	FORWARD	**E30KC107**		**E30KC157**		Black	TEST	**E30KC132**		**E30KC182**		
	Black	HAND	**E30KC108**		**E30KC158**		Black	UP	**E30KC134**		**E30KC184**		
	Black	HIGH	**E30KC109**		**E30KC159**		Red	Blank	**E30KC200**		**E30KC250**		
	Black	IN	**E30KC110**		**E30KC160**		Red	OFF	**E30KC218**		**—**		
	Black	INCH	**E30KC111**		**E30KC161**		Red	STOP	**E30KC231**		**E30KC281**		
	Black	JOG	**E30KC112**		**E30KC162**		Green	Blank	**E30KC300**		**E30KC350**		
	Black	JOG FOR.	**E30KC113**		**E30KC163**		Green	START	**E30KC330**		**E30KC380**		
	Black	JOG REV.	**E30KC114**		**E30KC164**		Yellow	Blank	**E30KC400**		**E30KC450**		
	Black	LOW	**E30KC115**		**E30KC165**		White	Blank	**E30KC500**		**E30KC550**		
	Black	LOWER	**E30KC116**		**E30KC166**		Gray	Blank	**E30KC600**		**E30KC650**		
	Black	MAN	**E30KC117**		**E30KC167**		Brown	Blank	**E30KC700**		**E30KC750**		
	Black	ON	**E30KC119**		**E30KC169**		Orange	Blank	**E30KC800**		**E30KC850**		
	Black	OPEN	**E30KC120**		**E30KC170**		Blue	Blank	**E30KC900**		**E30KC950**		
	Black	OUT	**E30KC121**		**E30KC171**								
	Black	RAISE	**E30KC122**		**E30KC172**								

Accessories . . . . . **Page 47-112**
Contact Blocks . . . . . **Page 47-108**
Blank Lens/Buttons with Non-standard Markings. . . . . **Pages 47-109 – 47-111**
Dimensions. . . . . **Page 47-114**
Discount Symbol **1CD1C**

Operating Buttons and Lens Only

Standard Color Buttons and Lens Marking

BLACK LETTERING on — White, Amber, Yellow and Clear.
WHITE LETTERING on — Green, Red, Blue, Brown, Black, Orange and Gray.
For lenses with special markings or with standard markings but in a different color, refer to instructions on **Pages 47-109 – 47-111**.

Table 47-153. Type E Buttons with Standard Markings

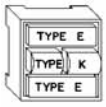
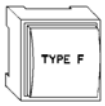
	Color	Marking	Extended Button Catalog Number	Extended Button Price U.S. $	Color	Marking	Extended Button Catalog Number	Extended Button Price U.S. $	Button Application
Type E Button for Use with Operators E30EA thru EM, FA thru FM and JA thru JM, Legend Characters 1/8 inch (3.2 mm) High	Black	Blank	**E30KE100**		Black	RESET	**E30KE124**		
	Black	CLOSE	**E30KE102**		Black	REVERSE	**E30KE125**		
	Black	DOWN	**E30KE103**		Black	RUN	**E30KE126**		
	Black	FAST	**E30KE105**		Black	SLOW	**E30KE128**		
	Black	FORWARD	**E30KE107**		Black	START	**E30KE130**		
	Black	HIGH	**E30KE109**		Black	TEST	**E30KE132**		
	Black	IN	**E30KE110**		Black	UP	**E30KE134**		
	Black	INCH	**E30KE111**		Red	Blank	**E30KE200**		
	Black	JOG	**E30KE112**		Red	OFF	**E30KE218**		
	Black	JOG FOR.	**E30KE113**		Red	STOP	**E30KE231**		
	Black	JOG REV.	**E30KE114**		Green	Blank	**E30KE300**		
	Black	LOW	**E30KE115**		Green	START	**E30KE330**		
	Black	LOWER	**E30KE116**		Yellow	Blank	**E30KE400**		
	Black	ON	**E30KE119**		White	Blank	**E30KE500**		
	Black	OPEN	**E30KE120**		Gray	Blank	**E30KE600**		
	Black	OUT	**E30KE121**		Brown	Blank	**E30KE700**		
	Black	PHASE	**E30KE122**		Orange	Blank	**E30KE800**		
					Blue	Blank	**E30KE900**		

Table 47-154. Type F Lenses with Standard Markings

	Color	Marking	Catalog Number	Price U.S. $	Color	Marking	Catalog Number	Price U.S. $	Lens Application
Type F Lens for Use with Operators E30BA thru BY, Legend Characters 3/16 inch (4.8 mm) High	Red	Blank	**E30KF10**		Green	OFF	**E30KF22**		
	Red	MOTOR RUN	**E30KF11**		Amber	Blank	**E30KF30**		
	Red	ON	**E30KF12**		Blue	Blank	**E30KF40**		
	Red	POWER ON	**E30KF13**		Clear	Blank	**E30KF50**		
	Green	Blank	**E30KF20**		White	Blank	**E30KF60**		
	Green	MOTOR STOP	**E30KF21**						
	Green	MOTOR RUN	**E30KF23**						

Accessories ..... **Page 47-112**
Contact Blocks..... **Page 47-108**
Dimensions..... **Page 47-114**
Discount Symbol **1CD1C**

Operator Lens Only

Standard Color Buttons and Lens Marking

BLACK LETTERING on — White, Amber, Yellow and Clear.
WHITE LETTERING on — Green, Red, Blue, Brown, Black, Orange and Gray.
For lenses with special markings or with standard markings but in a different color, refer to instructions on **Pages 47-109 – 47-111**.

Table 47-155. Type G Lenses with Standard Markings

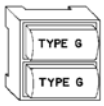
	Color	Marking	Catalog Number	Price U.S. $	Color	Marking	Catalog Number	Price U.S. $	Lens Application
Type G Lens for Use with Operators E30CA thru CM and DA thru DM, Legend Characters 3/16 inch (4.8 mm) High Except MOTOR RUN, POWER ON & MOTOR STOP are 1/8 inch (3.2 mm) High	Red	Blank	**E30KG10**		Green	OFF	**E30KG22**		
	Red	MOTOR RUN	**E30KG11**		Green	READY	**E30KG23**		
	Red	ON	**E30KG12**		Amber	Blank	**E30KG30**		
	Red	POWER ON	**E30KG13**		Blue	Blank	**E30KG40**		
	Green	Blank	**E30KG20**		Clear	Blank	**E30KG50**		
	Green	MOTOR RUN	**E30KG24**		White	Blank	**E30KG60**		
	Green	MOTOR STOP	**E30KG21**						

Table 47-156. Type J Lenses with Standard Markings

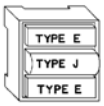
	Color	Marking	Catalog Number	Price U.S. $	Color	Marking	Catalog Number	Price U.S. $	Lens Application
Type J Lens for Use with Operators E30EA thru EM, FA thru FM and GA thru GM, Legend Characters 1/8 (3.2 mm) High	Red	Blank	**E30KJ10**		Green	OFF	**E30KJ22**		
	Red	MOTOR RUN	**E30KJ11**		Green	ON	**E30KJ24**		
	Red	ON	**E30KJ12**		Amber	Blank	**E30KJ30**		
	Red	POWER ON	**E30KJ13**		Blue	Blank	**E30KJ40**		
	Red	MOTOR STOP	**E30KJ14**		Clear	Blank	**E30KJ50**		
	Green	Blank	**E30KJ20**		White	Blank	**E30KJ60**		
	Green	MOTOR STOP	**E30KJ21**						
	Green	MOTOR RUN	**E30KJ23**						

Table 47-157. Type K Lenses with Standard Markings — Sold in pairs only

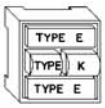
	Color		Marking		Catalog Number	Price U.S. $	Lens Application
	Left Hand Lens	Right Hand Lens	Left Hand Lens	Right Hand Lens			
Type K Lenses for Use with Operators E30JA thru JW, Legend Characters 1/8 inch (3.2 mm) High	Red	Red	ON	ON	**E30KK12**		
	Red	Green	ON	OFF	**E30KK13**		
	Green	Green	OFF	OFF	**E30KK22**		
	Green	Red	OFF	ON	**E30KK23**		

Table 47-158. Type K Lenses — Blank — Sold in pairs only

	Color		Catalog Number	Price U.S. $	Color		Catalog Number	Price U.S. $
	Left Hand Lens	Right Hand Lens			Left Hand Lens	Right Hand Lens		
	Red	Red	**E30KK10**		Blue	Red	**E30KK41**	
	Red	Green	**E30KK11**		Blue	Green	**E30KK42**	
	Red	Amber	**E30KK17**		Blue	Amber	**E30KK43**	
	Red	Blue	**E30KK14**		Blue	Blue	**E30KK40**	
	Red	Clear	**E30KK15**		Blue	Clear	**KE30K45**	
	Red	White	**E30KK16**		Blue	White	**E30KK46**	
	Green	Red	**E30KK21**		Clear	Red	**E30KK51**	
	Green	Green	**E30KK20**		Clear	Green	**E30KK52**	
	Green	Amber	**E30KK27**		Clear	Amber	**E30KK53**	
	Green	Blue	**E30KK24**		Clear	Blue	**E30KK54**	
	Green	Clear	**E30KK25**		Clear	Clear	**E30KK50**	
	Green	White	**E30KK26**		Clear	White	**E30KK56**	
	Amber	Red	**E30KK31**		White	Red	**E30KK61**	
	Amber	Green	**E30KK32**		White	Green	**E30KK62**	
	Amber	Amber	**E30KK30**		White	Amber	**E30KK63**	
	Amber	Blue	**E30KK34**		White	Blue	**E30KK64**	
	Amber	Clear	**E30KK35**		White	Clear	**E30KK65**	
	Amber	White	**E30KK36**		White	White	**E30KK60**	

Dimensions..... **Page 47-114**
Discount Symbol..... **1CD1C**

Contact Blocks

Standard Contact Blocks — Molded, phenolic construction. Enclosed silver contacts with reliability "nibs" that improve the reliability of switching performance under dry circuit, corrosive atmosphere and fine dust conditions. For more extreme conditions, the Logic Level contact blocks described below are recommended.

Table 47-159. Standard Contact Block Ratings — Maximum Amperes

Current	AC Volts A600				DC Volts P300		
	120	240	480	600	24/28	125	250
Make & Emergency Inter. Capacity	60	30	15	12	5.73	1.1	0.55
Normal Load Break	6	3	1.5	1.2	5.73	1.1	0.55
Continuous Current	10						

Logic Level Contact Blocks — Feature palladium contacts. Palladium, which is more inert than gold, is well suited for voltages and currents approaching zero. When mounted in an enclosure rated for highly corrosive environments, logic level contact blocks can be used where exposure to chemicals may cause failure to other types of materials.

Table 47-160. Maximum Ratings for Logic Level and Hostile Atmosphere Application ①

Maximum Amperes	0.5A ①
Maximum Volts	120V AC/DC

① Logic level contact blocks are UL A600/P500 rated per table above.

Mounting Limitations

Figure 47-83 and **Table 47-161** give the contact block mounting limitations for Type E30 pushbutton and combination pushbutton and light operators. Mounting positions 1 thru 8 indicate single depth contact blocks. Each of these positions can represent either a single circuit 600 volt block or a 2-circuit 120 volt block. The 2-circuit 600 volt block requires two of the numbered positions shown.

Table 47-161. Mounting Positions

Catalog Number of Operator	Contact Blocks Can Be Mounted in Positions Listed Below	
	Upper Stack	Lower Stack
E30AA thru **E30AM** ②	1-2-3-4	5-6-7-8
E30BA thru **E30CM**	None	None
E30DA thru **E30DM**	None	5-6-7-8
E30EA thru **E30GM**	2-3-4	6-7-8
E30JA thru **E30JM**	3-4	7-8

② Except Operator E30AD, AJ or AK which will accommodate contact blocks 1, 2, 5 and 6 only. (See figure below.)

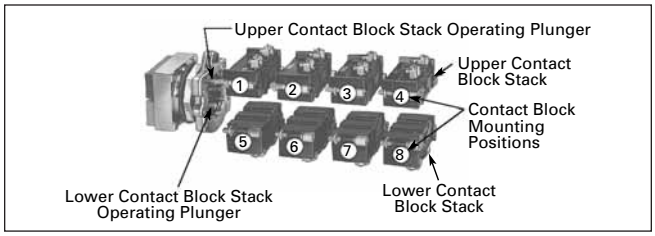


Figure 47-83. Mounting Positions

Table 47-162. Contact Block Selection Table

Contact Block Type ⑥	Circuit		Pressure Terminals				Quick Connect Terminals ⑤	
			STANDARD		LOGIC LEVEL		STANDARD	
			Catalog Number	Price U.S. $	Catalog Number	Price U.S. $	Catalog Number	Price U.S. $
		1NO	**600 Volt AC, 250 Volt DC — Single Circuit**					
			E30KLA1		**E30KLAE1**		**E30KLB1**	
		1NC	**E30KLA2**		**E30KLAE2**		**E30KLB2**	
Screw Terminals		1NO-1NC	**600 Volt AC, 250 Volt DC — Two Circuit**					
			E30KLA3		**E30KLAE3**		**E30KLB3**	
		2NO	**E30KLA4**		**E30KLAE4**		**E30KLB4**	
		2NC	**E30KLA5**		**E30KLAE5**		**E30KLB5**	
	Special Contact Operation		**E30KLA6** ③		—		**E30KLB6** ③	
Quick Connect Terminals		1NO-1NC Overlapping						
		2NO (One Early Closing)	**E30KLA7** ③		—		**E30KLB7** ③	
		2NC (One Late Opening)	**E30KLA8**		—		**E30KLB8**	
		1NO-1NC	**120 Volt AC Only — Two Circuit**					
			E30KLA9 ④		—		**E30KLB9** ④	

③ Do not use with maintained operators.
④ Contacts must be same polarity.
⑤ Supplied with non-stacking screws. Limited to 2 contact blocks mounted in positions 1 and 5.
⑥ Individually boxed contact blocks master packed 10 per carton.

Discount Symbol **1CD1C**

Options

Markings and Legend Plates

Buttons or Lenses with Non-standard Horizontal Markings

Markings not listed as STANDARD MARKINGS below are considered non-standard. If more than one marking is required on a button or lens, order non-standard markings.

Ordering Instructions

- Specify Catalog Number of blank button or lens of desired color, plus Suffix "STAMP" for Non-standard or "STD" for Standard markings in Order Notes. See **Pages 47-105 – 47-107**.
- Specify size, legend desired and location in Order Notes by alphas as shown in example.
- Do not exceed maximum number of legend characters per line.

Ordering Example:

Green Type B button to be marked with non-standard legend "ALL ELEVATORS DOWN."

Catalog No.:	**E30KB300STAMP**
Letter Size:	1/8"
Pos. A — ALL	
Pos. C — ELEVATORS	
Pos. F — DOWN	

Table 47-163. Button Markings

Description	Price Each U.S. $	Price Per Pair U.S. $
All Types except K		
Type K		

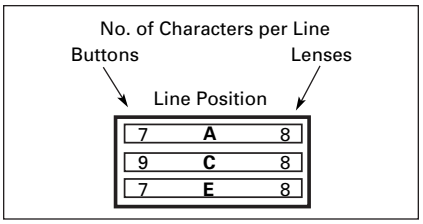


Figure 47-84. How to Use the Legend Location Figure

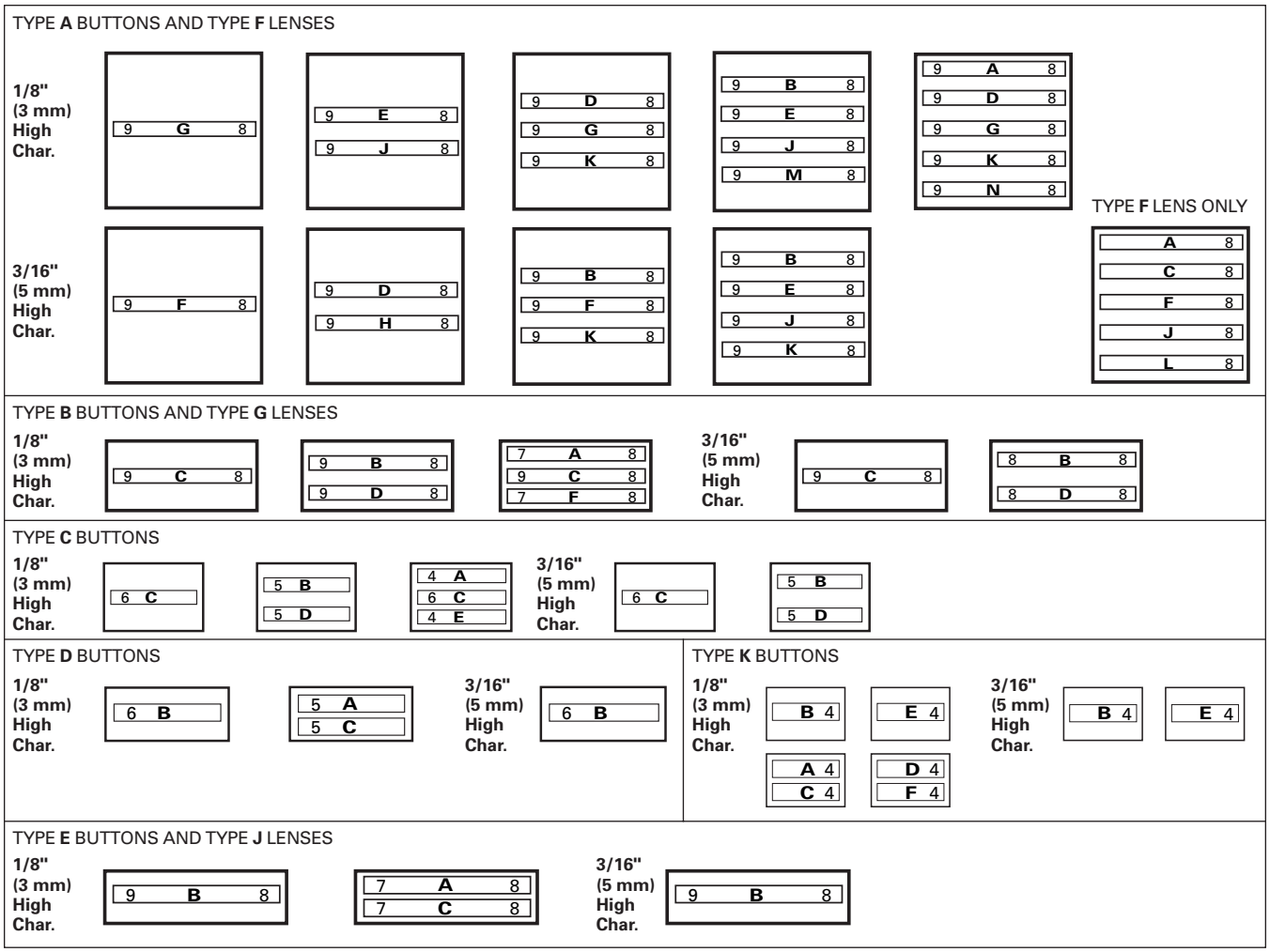


Figure 47-85. Legend Locations

Table 47-164. Standard Markings

AUTO	EMERG. STOP	HAND	INCH	JOG REV.	MAN.	OPEN	RESET	SLOW	TEST	MOTOR STOP
CLOSE	FAST	HIGH	JOG	LOW	OFF	OUT	REVERSE	START	UP	POWER ON
DOWN	FORWARD	IN	JOG FOR.	LOWER	ON	RAISE	RUN	STOP	MOTOR RUN	READY

Discount Symbol **1CD1C**

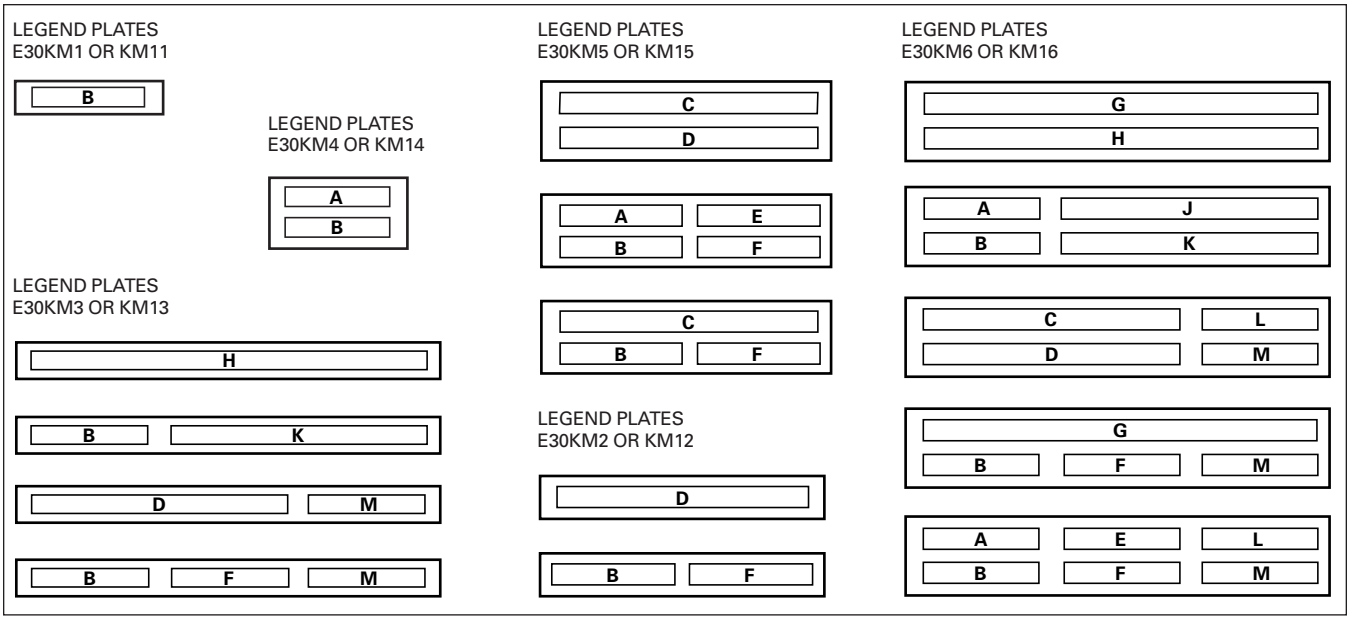
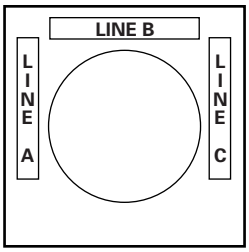


Figure 47-86. Legend Arrangements and Legend Locations



LEGEND PLATES
E30KN76 OR KN76B
1/8" character size only with a maximum of six characters.

Figure 47-87. Legend Plates E30KN76 or KN76B

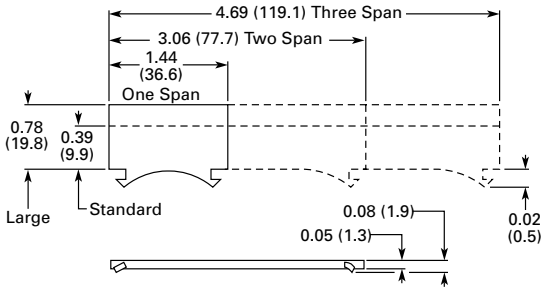


Figure 47-88. Approximate Dimensions in Inches (mm)

Table 47-165. Maximum Number and Size of Permissible Legend Characters of Custom Stamped Legend Plates

Type	No. of Lines	Size and Maximum Number of Characters Per Line								
		One Span			Two Span			Three Span		
		3/32" (2.5 mm)	1/8" (3 mm)	3/16" (5 mm)	3/32" (2.5 mm)	1/8" (3 mm)	3/16" (5 mm	3/32" (2.5 mm)	1/8" (3 mm)	3/16" (5 mm)
Standard	1	13	10	10	30	22	22	47	34	34
Large	1 2	13 13	10 10	10 10	30 30	23 23	23 23	47 47	36 36	36 36
CHARACTERS AVAILABLE FOR NON-STANDARD MARKINGS 3/32 Inch (2.5 mm) — 1/8 Inch (3 mm) — 3/16 Inch (5 mm)										
A B C D E F G H I J K L M N O P Q R S T U V W X Y Z . / — , 1 2 3 4 5 6 7 8 9 0										

Buttons or Lenses with Non-standard Vertical Markings

Ordering Instructions

- Specify Catalog Number of blank button or lens of desired color, selected from listings on **Pages 47-105 – 47-107**.
- Specify size, legend desired, location and state "vertically marked" in Order Notes.

Note: Specify either 1/8 or 3/16 inch (3.2 or 4.8 mm) character height. Do not exceed maximum number of characters as outlined in table below.

Ordering Example:

Green Type K button to be marked with "RUN" "ON."

Description	Price Ea.
Catalog No.: **E30KK20STAMP** Letter Size: 3/16 inch (4.8 mm) Vertically Marked Pos. B — RUN Pos. E — ON	

Table 47-166. Maximum Number of Characters

Description	Type	Maximum Number of Characters	
		1/8 Inch (3.2 mm)	3/16 Inch (4.8 mm)
Buttons	A	7	5
	B	7	5
	C	4	3
	D	5	3
	E	7	5
Lenses	F	7	5
	G	7	5
	J	7	5
	K	3	2

Legend Plates

Legend plates for Type E30 Compact Pushbutton and Indicating Light operators hook directly onto the operator and are clamped in place when the operator locking nut behind the panel is secured.

Two and three span plates are designed for use where two or more operators are mounted adjacent to each other **on minimum horizontal mounting centers.** These legend plates mount in the same manner as single span units.

Blank Legend Plates and Legend Plates with Markings

Standard — One Span

Large — One Span

When Ordering Legend Plates with Markings

- Catalog Number of Blank Legend Plate
- Insert the following in Order Notes:
  - Legends Required
  - Size of Characters — 3/32, 1/8, 3/16 inch (2.4, 3.2, 4.8 mm)
  - Positions of legends on one line Standard and two line Large legend plates by alphas as shown in sketches on following page.

Ordering Example:

Three span legend plate to be marked "MASTER CONTROL", "STATION A" and "STATION B."

Description	Price Ea.
Catalog No: **E30KM3STAMP** Letter Size: 1/8 inch (3.2 mm) Pos. C — MASTER CONTROL Pos. B — STATION A Pos. F — STATION B	

Table 47-167. Blank Legend Plate

Type	One Span	
	Catalog Number	Price U.S. $
Black		
Standard Large	**E30KM1** **E30KM4**	

Discount Symbol **1CD1C**

Accessories

Table 47-168. Accessories

Description		Color/Type	Catalog Number	Price U.S. $
	Collar — Snap on Mounting for assembly in the field. Permits color coding of operator heads. Size: 1-19/32 x 1-19/32 x 9/16".	Black Red Green Yellow White Gray Orange Blue Brown	**E30KR1** **E30KR2** **E30KR3** **E30KR4** **E30KR5** **E30KR6** **E30KR8** **E30KR9** **E30KR10**	
Full Shroud ***Half Shroud***	**Shroud —** Similar to collar above except for extension above the face of button to prevent accidental actuation of button. Half shroud with an extension on only half the collar may be positioned to protect top or bottom button.	Full Shroud (Gray) Half Shroud (Gray)	**E30KT6** **E30KT7**	
	Guard — Two collars deep, removable slide prevents accidental operation. White slide can be marked with grease pencil.	Red with White Slide Red with Clear Slide	**E30KR31** **E30KR32**	
	Terminal Block — 2 terminals, each will accommodate 2 wire terminations.		**E30KR30**	
	Padlock Attachment for locking single button and bottom button of multi-function operators in the depressed position. Locks NC contacts open or early closing NO contacts closed. Cannot be used in conjunction w/collar, shroud or boot.	Short Button Extended Button	**E30KT1** **E30KT2**	
	Transparent Boot — Guards against ingress of foreign material and freezing rain. **Note:** If this boot is used in conjunction with operator types AD or AE, an extended type button must be used in the top position and a short button in the lower position.		**E30KT3** ①	
	Square Hole Plug — Gray Enameled Stainless Steel		 **E30KT4** **E30KT5**	
	Lamp and Lens Removal Tool — Will not fit Cat. No. E30B Light Units listed on **Page 47-102**.		**E30KV1**	
	Octagonal Wrench for mounting operators to panel.		**E22CW**	
	Button and Lens Removal Tool		**E30KV2**	

① Color coordinating collars, padlock attachments or legend plates cannot be used with operators equipped with a transparent boot.

Dimensions . . . . . **Page 47-114**
Discount Symbol **1CD1C**

Replacement Parts

Table 47-169. Replacement Light Units for E30 Components

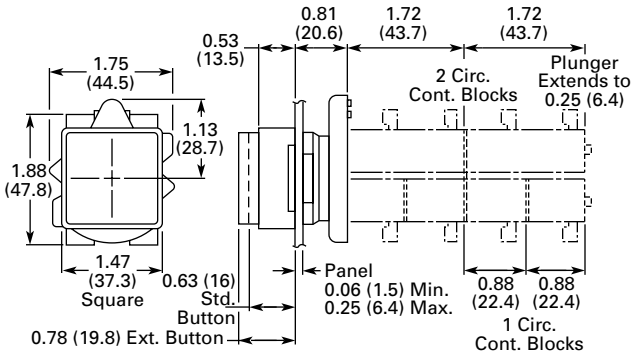
Voltage AC and DC	Part Numbers — Receptacles without Lamps									
	Single Indicating Light	Price U.S. $	Dual Indicating Light	Price U.S. $	Single Light Single Pushbutton	Price U.S. $	Single Light Dual Pushbutton	Price U.S. $	Dual Light Dual Pushbutton	Price U.S. $
Full Voltage Type										
6V	**57-2579-3A**		**57-2568A**		**57-2568A**		**57-2579-3A**		**57-2567A**	
12V	**57-2579-3A**		**57-2568A**		**57-2568A**		**57-2579-3A**		**57-2567A**	
18/24V	**57-2579-3A**		**57-2568A**		**57-2568A**		**57-2579-3A**		**57-2567A**	
28V	**57-2579-3A**		**57-2568A**		**57-2568A**		**57-2579-3A**		**57-2567A**	
32V	**57-2579-3A**		**57-2568-2A**		**57-2568-2A**		**—**		**57-2567A**	
48V	**57-2579-3A**		**57-2568A**		**57-2568A**		**57-2579-3A**		**57-2567A**	
120V	**57-2579-3A**		**57-2568A**		**57-2568A**		**57-2579-3A**		**57-2567A**	
Transformer Type										
120V	**42-2672A**		**42-2663A**		**42-2663A**		**42-2671A**		**42-2664A**	
208V	**42-2672-2A**		**42-2663-2A**		**42-2663-2A**		**42-2671-2A**		**42-2664-2A**	
240V	**42-2672-3A**		**42-2663-3A**		**42-2663-3A**		**42-2671-3A**		**42-2664-3A**	
380V	**42-2672-4A**		**42-2663-4A**		**42-2663-4A**		**42-2671-4A**		**42-2664-4A**	
480V	**42-2672-5A**		**42-2663-5A**		**42-2663-5A**		**42-2671-5A**		**42-2664-5A**	
600V	**42-2672-6A**		**42-2663-6A**		**42-2663-6A**		**42-2671-6A**		**42-2664-6A**	
Description and Part Numbers — Related Parts										
Inner Lens	**28-1008**		**28-1010**		**28-1010**		**28-1010**		**28-1010**	
Retaining Nut	**15-1885**		**15-1885**		**15-1885**		**15-1885**		**15-1885**	
Gasket	**16-2092**		**16-2092**		**16-2092**		**16-2092**		**16-2092**	
Locking Ring	**52-1116**		**52-1116**		**52-1116**		**52-1116**		**52-1116**	

Table 47-170. Replacement Lamps for E30 Illuminated Operators

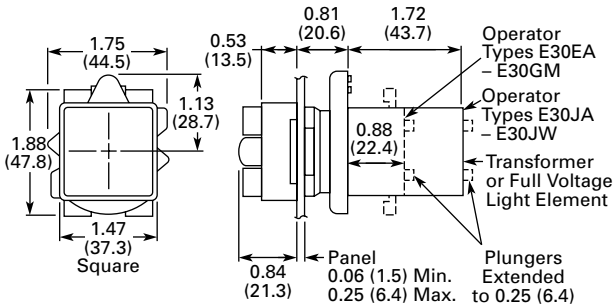
Mfg. Lamp Type	Voltage	Base Style	Application	Part Number	Price U.S. $
6PSB	6V	T2 Slide	E30 Transformer and Full Voltage	**28-1022**	
12PSB	12V	T2 Slide	E30 Full Voltage	**28-1025**	
24PSB	24V	T2 Slide	E30 Full Voltage	**28-1026**	
28PSB	28V	T2 Slide	E30 Full Voltage	**28-1027**	
48PSB	48V	T2 Slide	E30 Full Voltage	**28-1028**	
60PSB	60V	T2 Slide	E30 Full Voltage	**28-1598**	
120PSB	120V	T2 Slide	E30 Full Voltage	**28-1029**	
#259	6.3V	T3-1/4 Wedge	E30 Single Transformer	**28-949**	

Discount Symbol **1CD1C**

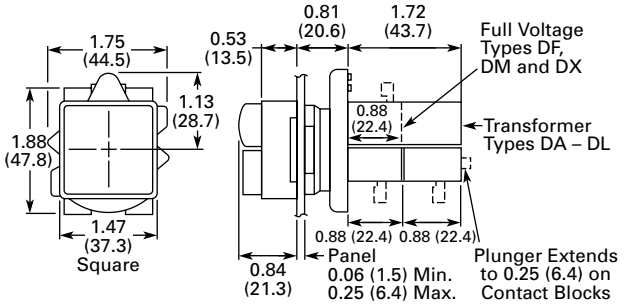
Dimensions



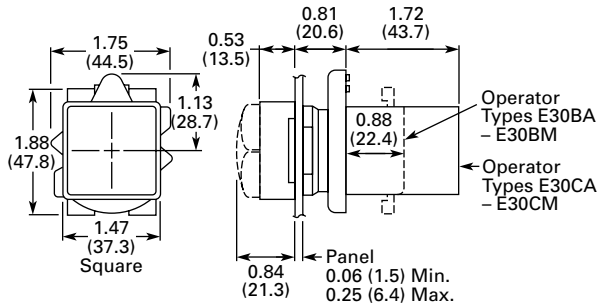
Pushbutton Operators



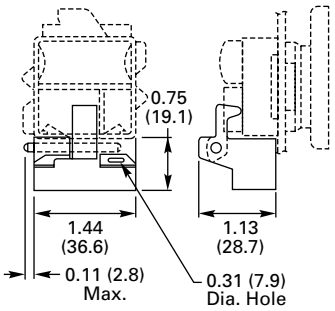
Combination Pushbutton & Indicating Light Operators



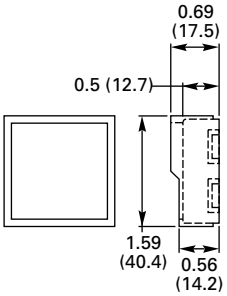
Combination Pushbutton & Indicating Light Operators



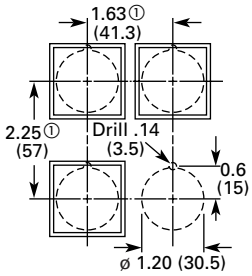
Indicating Light Operators



Padlocking Attachment



Half Shroud E30KT7



Drilling Dimensions – Minimum Spacing

Figure 47-89. Approximate Dimensions in Inches (mm)

Drilling Dimensions — Minimum Spacing

Dimensions shown allow adequate space for the addition of one or two high legend plates and color coordinating collars.

Note: Locating nib hole or notch is 0.136" (3.5 mm) drill. Alternate to drilling mounting holes use Greenlee Tool Co. punch (No. 730-S) to punch the hole and (No. 730-K) to punch the notch.

Contents

Description	*Page*
Product Description	**47-115**
Features	**47-116**
Benefits	**47-116**
Contact Operation	**47-116**
Standards and Certifications	**47-116**
Technical Data and Specifications	**47-116**
Point-of-Purchase Packaging	**47-117**
Product Selection	
Non-illuminated Momentary Pushbutton Units	**47-118**
Pushbuttons	**47-119**
Illuminated Momentary Pushbutton Units	**47-122**
Indicating Light Units	**47-123**
Illuminated Pushbuttons and Indicating Lights	**47-124**
Push-Pull Units	**47-125**
Illuminated Push-Pull Units	**47-126**
Potentiometers	**47-128**
Push-Pulls	**47-129**
Selector Switch Units	**47-132**
Selector Switch Selection	**47-133**
Selector Switch Operators	**47-135**
Illuminated Selector Switch Operators	**47-138**
Joysticks Units	**47-139**
Joystick	**47-139**
Roto-Push® Units	**47-142**
Roto-Push Operators	**47-143**
Contact Blocks	**47-148**
Options	
Legend Plates	**47-151**
Enclosures	**47-153**
Accessories	**47-155**
Renewal Parts	**47-157**
Mounting	**47-159**
Dimensions	**47-160**
Ordering Complete Devices	**47-163**
Catalog Number Structure	**47-164**

Product Description

The 30.5 mm pushbutton line features a zinc die cast construction with chrome-plated housing and mounting nut. The same durable construction is also available with the corrosive resistant E34 line of pushbuttons. See E34 section on **Pages 47-166 – 47-189**.

Reliability Nibs

Eaton's Cutler-Hammer® contact blocks feature enclosed silver contacts with pointed "reliability nibs" for reliable performance from logic level up to 600V. To ensure reliable switching, nibs bite through oxide which can form on silver contacts, eliminating the need for expensive logic level blocks for most applications.

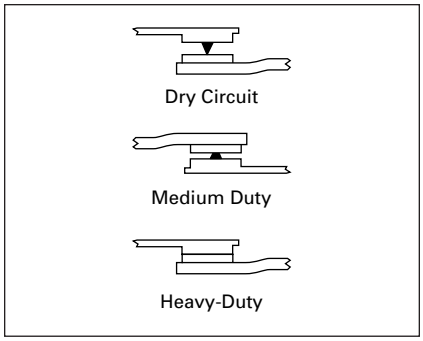


Figure 47-90. Reliability Nibs

Reliability nibs improve performance in dry circuit, corrosive, fine dust and other contaminated atmospheres. Under normal environmental conditions, the minimum operational voltage is 5V and the minimum operational current is 1 mA, AC/DC. For operation under a wider range of environmental conditions, logic level contact blocks with inert palladium tipped contacts are recommended.

Grounding Nibs

10250T line operators have "grounding nibs" — four metal points on the operator casting designed to bite through most paints and other coatings on metal panels to enhance the ground connection when the operator is securely tightened.

Grounding Nibs

Diaphragm Seal with Drainage Holes

Liquid Drainage

Eaton's Cutler-Hammer pushbutton operators offer front of panel drainage via holes in the operator bushing. Hidden from view by the mounting nut, these holes prevent buildup of liquid inside the operator, which can prevent operation in freezing environments. The holes also provide a route for escaping liquid in high pressure washdowns, effectively relieving pressure from the internal diaphragm seal, ensuring reliable sealing in applications even beyond NEMA 4.

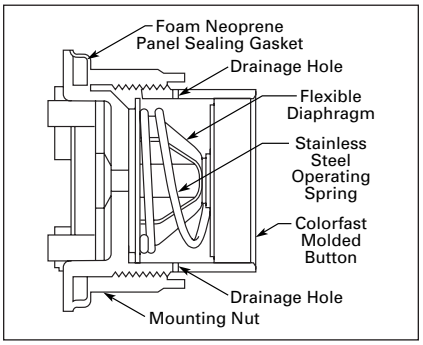
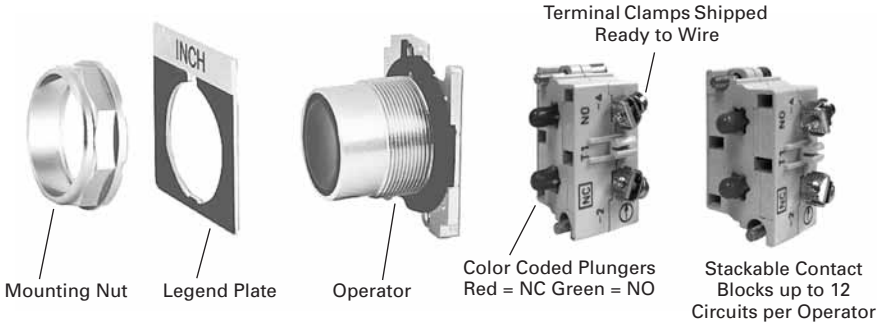


Figure 47-91. Diaphragm Seal



10250T Series

Features

- Heavy-duty zinc die cast construction
- Enclosed silver contacts with reliability nibs
- Diaphragm seals with drainage holes
- Grounding nibs on the operator casing

Benefits

- Reliability nibs improve contact reliability even under dry circuit and fine dust conditions
- Drainage holes prevent buildup of liquid inside the operator which can prevent operation in freezing environments
- Grounding nibs bit through paint and other coatings to provide secure ground

Contact Operation

Slow make and break. All normally closed contacts have positive opening operation, i.e., normally closed contacts are forced open in the event of contact weld or spring breakage.

Standards and Certifications

- CE EN60947-5-1
- UL 508 — File No. 131568
- CSA C22.2 No. 14 — File No. LR68551

Ingress Protection

When mounted in similarly rated enclosure —

- Standard Indicating Lights
  - UL (NEMA) Type 1, 2, 3, 3R, 3S, 4, 4X, 12, 13
  - IEC IP65
- All Other Operators
  - UL (NEMA) Type 1, 2, 3, 3R, 4, 4X, 12, 13
  - IEC IP65

Technical Data and Specifications

Mechanical Ratings

- Frequency of operation
  - All pushbuttons: 6000 operations/hr.
  - Key and lever selector switches: 3000 operations/hr.
  - Auto-latch devices: 1200 operations/hr.
- Life
  - Pushbuttons: 10 x 10^6 operations
  - Contact blocks: 10 x 10^6 operations
  - PresTest units: 10 x 10^6 operations
  - Lever and key selector switches: 0.25 x 10^6 operations
  - Twist to release pushbuttons: 0.3 x 10^6 operations
- Shock resistance
  - Duration: 20 mS ≥ 5g

Climate Conditions

- Operating Temperature: 1° to 150°F (-17° to 66°C)
- Storage Temperature: -40° to 176°F (-40° to 80°C)
- Altitude: 6,562 ft. (2,000m)
- Humidity: Max. 95% RH @ 60°C

Terminals

- Marking
  - NC-NO on the contact block to meet the NEMA requirements. Dual marking system 1 – 2 for normally closed, 3 – 4 for normally open to meet BS5472 (Cenelec EN50 005)
- Clamps
  - Terminals are saddle clamp type for 1 x 22 AWG (0.34 mm^2) to 2 x 14 AWG (2.5 mm^2) conductors
- Torque = 7 lb-in (0.8 Nm)
- Degree of protection against direct electrical contact: IP2X with fingerproof shroud

Light Units

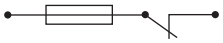
- Transformers: will withstand short circuit for 1 hour per IEC 60997-5-1
- Bulbs — average life
  - Transformer type: 20,000 hrs.
  - Resistor/direct voltage type: 2500 hrs. minimum @ rated V
  - LED: 60,000 to 100,000 hrs.

Electrical Ratings

- Insulation: Ui = 660V AC or DC
- Thermal: Ith = 10A

Short Circuit Coordination to IEC/EN 60947-5-1

- Rated conditional short circuit current: 1 kA
- Fuse type: GE Power Controls TIA 10, Red Spot Type gG, 10A, 660V AC, 460V DC, BS88-2, IEC 60269-2-1



Fuse

- UL rating: A600, P600
  - AC load life duty cycle 1200 operations/hour
    - 10A: 110V pf 0.4 – 1 x 10^6 operations
    - 5A: 250V pf 0.4 – 1 x 10^6 operations
    - 2A: 660V pf 0.4 – 1 x 10^6 operations
- Switching capacity
  - AC15 rated make/break (11 x Ie at 1.1 x Ue)
    - 6A: 120V pf 0.3
    - 4A: 240V pf 0.3
    - 2A: 660V pf 0.3
  - DC13 rated make/break (1.1 x Ie at 1.1 x Ue)
    - 1.0A: 125V L/R ≥ 0.95 at 300 mS
    - .55A: 250V L/R ≥ 0.95 at 300 mS
    - .1A: 660V L/R ≥ 0.95 at 300 mS
    - 10A: 110V pure resistive
- Maximum ratings for logic level and hostile atmosphere application
  - Maximum amperes: 0.5A
  - Maximum volts: 120V AC/DC

Table 47-171. Contact Block

Meet or Exceed NEMA Rating Designations A600, A300 and B300 for AC and P600 for DC							
Description	Volts AC 50 or 60 Hz				Volts DC		
	120	240	480	600	24/28	125	250
Make and Emerg. Interrupting Capacity (Amp)	60	30	15	12	5.7	1.1	0.55
Normal Load Break (Amp)	6	3	1.5	1.2	5.7	1.1	0.55
Thermal Current (Amp)	10	10	10	10	5.0	5.0	5.0
Voltamperes:							
Make and Emerg. Interrupting Capacity	7200	7200	7200	7200	138	138	138
Normal Load Break	720	720	720	720	138	138	138

Point-of-Purchase Packaged Pilot Devices

Table 47-172. 10250T Point-of-Purchase Packaged Pilot Devices

Product	Description	Catalog Number	Price U.S. $
Emergency Stop Operators			
Red Non-illuminated Push-Pull	1NO-1NC contact block. Also includes two square engraved legend plates: EMERG. STOP and STOP.	**10250T5B62-1-POP**	
Red Mushroom Pushbutton	1NO-1NC contact block. Also includes two square engraved legend plates: EMERG. STOP and STOP.	**10250T32R-POP**	
Red Jumbo Mushroom Pushbutton	Engraved EMERG. STOP with 1NO-1NC contact block.	**10250T33-POP**	
Momentary Pushbuttons			
Black Flush Pushbutton	1NO-1NC contact block. Also includes two square engraved legend plates: START and JOG.	**10250T30B-POP**	
Red Extended Pushbutton	1NO-1NC contact block. Also includes one square engraved legend plate: STOP.	**10250T31R-POP**	
Indicating Lights			
Red Indicating LIght	Full voltage 24V AC/DC with two extra lenses: Green and Amber. Also includes two square engraved legend plates: RUN and JOG.	**10250T206NC1N-POP**	
Red Indicating Light	Resistor 120V AC/DC with two extra lenses: Green and Amber. Also includes one square engraved legend plate: RUN and JOG.	**10250T34R-POP**	
Illuminated Pushbuttons			
Red Illuminating Pushbutton	Full voltage 24V AC/DC with 1NO-1NC contact block and two extra lenses: Green and Amber. Also includes one square engraved legend plate: POWER ON.	**10250T476C21-1-POP**	
Red Illuminating Pushbutton	Resistor 120V AC/DC with 1NO-1NC contact block and two extra lenses: Green and Amber. Also includes one square engraved legend plate: POWER ON.	**10250T411C21-1-POP**	
Selector Switches			
Black Knob Two-Position Selector Switch	1NO-1NC contact block. Also includes three square engraved legend plates: OFF/ON, HAND/AUTO and RUN/JOG.	**10250T20KB-POP**	
Black Knob Three-Position Selector Switch	1NO-1NC contact block. Also includes 1 square engraved legend plate: HAND/OFF/AUTO.	**10250T22KB-POP**	

Discount Symbol **1CD1C**

Product Selection

Non-illuminated Momentary Pushbutton Units

■ Flush, Extended, Mushroom Head or Jumbo Mushroom Head Operators

Table 47-173. Pushbutton Units — UL (NEMA) Type 3, 3R, 4, 4X, 12, 13

Contact Type	Button Color	Flush Button		Extended Button		Mushroom Button		Jumbo Mushroom ①	
		Flush Button — Black Cat. No. 10250T23B		Extended Button — Red Cat. No.10250T31R		Mushroom Button — Red Cat. No.10250T32R		Jumbo Mushroom — Red Cat. No.10250T17213-3	
		Catalog Number	**Price U.S. $**	**Catalog Number**	**Price U.S. $**	**Catalog Number**	**Price U.S. $**	**Catalog Number**	**Price U.S. $**
1NO	Black Red Green Yellow Red — Engraved EMERG. STOP	**10250T23B** **10250T23R** **10250T23G** **10250T23Y** **—**		**10250T25B** **10250T112-53** **10250T25G** **10250T25Y** **—**		**10250T26B** **10250T122-53** **10250T26G** **10250T26Y** **—**		**10250T27B** **10250T172-53** **10250T27G** **10250T27Y** **10250T17213-53**	
1NC	Black Red Green Yellow Red — Engraved EMERG. STOP	**10250T101-51** **10250T102-51** **10250T103-51** **10250T104-51** **—**		**10250T111-51** **10250T25R** **10250T113-51** **10250T120-51** **—**		**10250T121-51** **10250T26R** **10250T123-51** **10250T124-51** **—**		**10250T171-51** **10250T27R** **10250T173-51** **10250T174-51** **10250T29**	
1NO-1NC	Black Red Green Yellow Red — Engraved EMERG. STOP	**10250T30B** **10250T30R** **10250T30G** **10250T30Y** **—**		**10250T31B** **10250T31R** **10250T31G** **10250T31Y** **—**		**10250T32B** **10250T32R** **10250T32G** **10250T32Y** **—**		**10250T33B** **10250T33R** **10250T33G** **10250T33Y** **10250T33**	
2NO	Black Red Green Yellow Red — Engraved EMERG. STOP	**10250T101-2** **10250T102-2** **10250T103-2** **10250T104-2** **—**		**10250T111-2** **10250T112-2** **10250T113-2** **10250T120-2** **—**		**10250T121-2** **10250T122-2** **10250T123-2** **10250T124-2** **—**		**10250T171-2** **10250T172-2** **10250T173-2** **10250T174-2** **10250T17213-2**	
2NC	Black Red Green Yellow Red — Engraved EMERG. STOP	**10250T101-3** **10250T102-3** **10250T103-3** **10250T104-3** **—**		**10250T111-3** **10250T112-3** **10250T113-3** **10250T120-3** **—**		**10250T121-3** **10250T122-3** **10250T123-3** **10250T124-3** **—**		**10250T171-3** **10250T172-3** **10250T173-3** **10250T174-3** **10250T17213-3**	

① Anodized aluminum head is not suitable for use in ultraviolet light applications.

Accessories ..... **Pages 47-155 – 47-156**
Dimensions ..... **Pages 47-160 – 47-162**
Enclosures ..... **Pages 47-153 – 47-154**
Legend Plates..... **Pages 47-151 – 47-152**
Discount Symbol **1CD1C**

Pushbuttons

Table 47-174. Momentary Pushbutton Operators, Non-illuminated — UL (NEMA) Type 3, 3R, 4, 4X, 12, 13

	Color	Catalog Number		Price U.S. $
Flush Button ①				
	Black Red Green Yellow Gray White Blue Orange	**10250T101** **10250T102** **10250T103** **10250T104** **10250T105** **10250T106** **10250T108** **10250T109**		
Extended Button				
	Black Red Green Yellow White Blue Orange	**10250T111** **10250T112** **10250T113** **10250T120** **10250T116** **10250T118** **10250T119**		
Half Shrouded Button				
		Vertical	**Horizontal**	
	Black Red Green Yellow Gray White Blue Orange	**10250T501** **10250T502** **10250T503** **10250T504** **10250T505** **10250T506** **10250T508** **10250T509**	**10250T511** **10250T512** **10250T513** **10250T514** **10250T515** **10250T516** **10250T518** **10250T519**	
Mushroom Button				
	Black Red Green Yellow Blue	**10250T121** **10250T122** **10250T123** **10250T124** **10250T129**		
Jumbo Mushroom Button ②				
	Black Red Red (EMERG. STOP) Green Yellow	**10250T171** **10250T172** **10250T17213** **10250T173** **10250T174**		
Low Operating Force — Jumbo Mushroom ②③				
	Black Red Green Yellow Clear	**10250ED1164-2** **10250ED1164-3** **10250ED1164-4** **10250ED1164-5** **10250ED1164**		

① To order operator with factory assembled Extended Retaining Nut, **10250TA12**, for thick panel applications, add Suffix Letter **E** to listed Catalog Number. Example: 10250T101**E**
② Anodized aluminum head is not suitable for use in ultraviolet light applications.
③ Operating Force — Standard = 2.4 lb; Low Force = 1.6 lb.

Note: To order complete assembled unit using one composite Catalog Number, add Contact Block and Legend Plate Suffix to the end of Operator Catalog Number.
Example: 10250T101-**1TS33**

Operator 10250T101

+

Contact Block 10250T1

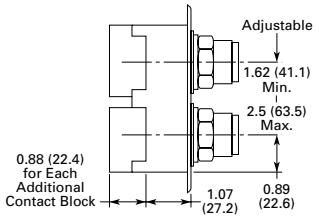
+

Legend Plate 10250TS33

Accessories . . . . . **Pages 47-155 – 47-156**
Contact Blocks . . . . . **Page 47-148**
Dimensions. . . . . **Pages 47-160 – 47-162**
Enclosures . . . . . **Pages 47-153 – 47-154**
Legend Plates . . . . . **Pages 47-151 – 47-152**
Discount Symbol **1CD1C**

Pushbuttons (Continued)

Table 47-175. Mechanically Interlocked Pushbutton Operators — UL (NEMA) Type 3, 3R, 4, 4X, 12, 13

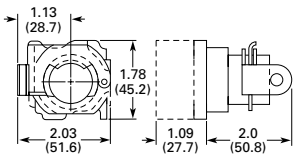
	Description	Catalog Number	Price U.S. $	Overall Dimensions in Inches (mm)
	Minimum hole centers 1.62", maximum 250". Mounts in extra deep enclosures only. Black flush and green flush Black flush and long red Black flush and red mushroom head Black flush and lock-down red mushroom head	 **10250TA66** **10250TA67** **10250TA68** **10250TA69** ①		
	Black flush and red jumbo mushroom head Green flush and long red Black long and long red Green flush and red mushroom head Green flush and black flush	**10250TA76** **10250TA72** **10250TA73** **10250TA77** **10250TA75**		

① NC contacts must be mounted behind lock-down mushroom head operator to ensure lockout.

Lockout Pushbutton Operators with Padlock Attachments

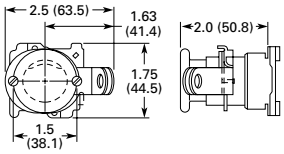
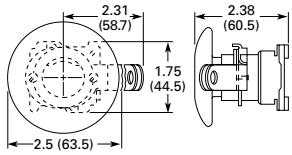
The following pushbutton and mushroom operators include an integral padlock attachment for applications requiring lockout/tagout of specific machine functions. They are available in styles which allow locking of a button in the down position (stopped position) or locking a button in the up position (to prevent starting). Select the **"Hand"** latch type which functions as a momentary pushbutton until the operator presses the button and moves the padlock attachment into position for locking, or choose the **"Spring Loaded"** latch type where the padlock attachment springs into place when the button is pressed. Units accept a customer supplied 1/4" padlock.

Table 47-176. Padlockable in the Down Position ② — UL (NEMA) Type 3, 3R, 4, 4X, 12, 13

	Operator Type	Color	Latch Type	Catalog Number	Price U.S. $	Overall Dimensions in Inches (mm)
	Flush Head	Red	Hand	**10250TA16**		
	Mushroom Head	Red Red	Hand Spring Loaded	**10250TA42** **10250TA45**		
	Jumbo Head ③	Red Red Red (EMERG. STOP)	Hand Spring Loaded Spring Loaded	**10250TA52** **10250TA55** **10250ED952**		

② Operators can be latched down without a padlock. Padlock not included.
③ Jumbo mushroom heads are not recommended for use in applications where exposure to ultraviolet light exists.

Table 47-177. Padlockable in the Up Position ④ — UL (NEMA) Type 3, 3R, 4, 4X, 12, 13

	Operator Type	Color	Latch Type	Catalog Number	Price U.S. $	Overall Dimensions in Inches (mm)
	Mushroom Head	Black Green	Hand Hand	**10250TA41** **10250TA43**		
	Jumbo Mushroom Head ⑤	Black Green Yellow	Hand Hand Hand	**10250TA51** **10250TA53** **10250TA54**		

④ Operators can be latched down without a padlock. Padlock not included.
⑤ Jumbo mushroom heads are not recommended for use in applications where exposure to ultraviolet light exists.

Note: Hand Attachment must be manually moved into place for locking. Spring Loaded: when operator is pressed — attachment springs into place. Must be moved manually to release button.

Contact Blocks . . . . . **Page 47-148**
Enclosures . . . . . **Pages 47-153 – 47-154**
Discount Symbol **1CD1C**

Pushbuttons (Continued)

Key Pushbutton Operator

These devices incorporate an integral locking mechanism which enables locking units in various positions (**Locked Down**), locking units to prevent operation (**Locked Up**) or setting unit to lock when the button is pressed (**Push to Lock**), requiring the key to be inserted to return to normal operation. With the key in the center position, these operators function as a normal momentary pushbutton (**Free**).

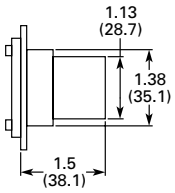
Replacement Keys or Dissimilar Locks for Key Operators Below

Listed operators have identical locks and keys (Key Code H661) Catalog Number 10250ED824. For dissimilar lock and key combinations, see listing on **Page 47-136.**

Table 47-178. Replacement Keys

Description	Catalog Number	Price U.S. $
Replacement Keys (Code H661)	**10250ED824**	

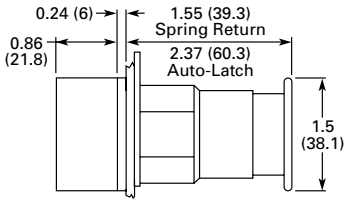
Table 47-179. Key Pushbutton Operator — UL (NEMA) Type 3, 3R, 4, 4X, 12, 13

	Key Position and Pushbutton Operations			Key Removal Positions	Vertical Mounting ①		Overall Dimensions in Inches (mm)
	↖	↑	↗		Catalog Number	Price U.S. $	
	3-Position						 **Key Operated Pushbutton**
	Lock Up	Free	Lock Down	All	**10250T430**		
	Lock Up	Free	Lock Down	L and R	**10250T431**		
	Lock Up	Free	Lock Down	C and R	**10250T432**		
	2-Position						
	Lock Up	Free	—	L and C	**10250T433**		
	Lock Up	Free	—	L	**10250T434**		
	—	Free	Lock Down	C and R	**10250T435**		
	—	Free	Lock Down	R	**10250T436**		
	—	Free	Push to Lock	C and R	**10250T437**		
	—	Free	Push to Lock	R	**10250T438**		

① Horizontal mounting available on request.

Latch-In, Twist-to-Release Operator

Table 47-180. Operator Only with Button — UL (NEMA) Type 3, 3R, 4, 4X, 12, 13

	Description	Catalog Number	Price U.S. $	Dimensions in Inches (mm)
	Latch-In, Twist-to-Release Operator with Red Mushroom Head Button	**10250ED1043-4**		

Accessories . . . . . **Pages 47-155 – 47-156**
Contact Blocks . . . . . **Page 47-148**
Dimensions. . . . . **Pages 47-160 – 47-162**
Enclosures . . . . . **Pages 47-153 – 47-154**
Legend Plates . . . . . **Pages 47-151 – 47-152**
Discount Symbol **1CD1C**

Illuminated Momentary Pushbutton Units

- LED or Incandescent
- Full Voltage, Resistor or Transformer Type
- Plastic Lenses

24V Full Voltage
Illuminated Pushbutton — Red
Catalog Number 10250T476C21-53

Table 47-181. Illuminated Pushbutton Units — UL (NEMA) Type 3, 3R, 4, 4X, 12, 13

Lamp	Type	Voltage	Color	Illuminated Pushbutton						LED/Lamp Number
				1NO		1NO-1NC		1NC		
				Catalog Number	Price U.S. $	Catalog Number	Price U.S. $	Catalog Number	Price U.S. $	
LED	Full Voltage	24V AC/DC	Red	**10250T397LRD24-53**		**10250T397LRD24-1**		**10250T397LRD24-51**		Bayonet Base
			Green	**10250T397LGD24-53**		**10250T397LGD24-1**		**10250T397LGD24-51**		
			Amber	**10250T397LAD24-53**		**10250T397LAD24-1**		**10250T397LAD24-51**		
			Yellow	**10250T397LYD24-53**		**10250T397LYD24-1**		**10250T397LYD24-51**		
			Blue	**10250T397LLD24-53**		**10250T397LLD24-1**		**10250T397LLD24-51**		
			White	**10250T397LWD24-53**		**10250T397LWD24-1**		**10250T397LWD24-51**		
		120V AC	Red	**10250T397LRD2A-53**		**10250T397LRD2A-1**		**10250T397LRD2A-51**		
			Green	**10250T397LGD2A-53**		**10250T397LGD2A-1**		**10250T397LGD2A-51**		
			Amber	**10250T397LAD2A-53**		**10250T397LAD2A-1**		**10250T397LAD2A-51**		
			Yellow	**10250T397LYD2A-53**		**10250T397LYD2A-2**		**10250T397LYD2A-51**		
			Blue	**10250T397LLD2A-53**		**10250T397LLD2A-1**		**10250T397LLD2A-51**		
			White	**10250T397LWD2A-53**		**10250T397LWD2A-1**		**10250T397LWD2A-51**		
	Trans-former	120V AC	Red	**10250T411LRD06-53**		**10250T411LRD06-1**		**10250T411LRD06-51**		
			Green	**10250T411LGD06-53**		**10250T411LGD06-1**		**10250T411LGD06-51**		
			Amber	**10250T411LAD06-53**		**10250T411LAD06-1**		**10250T411LAD06-51**		
			Yellow	**10250T411LYD06-53**		**10250T411LYD06-1**		**10250T411LYD06-51**		
			Blue	**10250T411LLD06-53**		**10250T411LLD06-1**		**10250T411LLD06-51**		
			White	**10250T411LWD06-53**		**10250T411LWD06-1**		**10250T411LWD06-51**		
Incandescent	Full Voltage	24V AC/DC	Red	**10250T476C21-53**		**10250T476C21-1**		**10250T476C21-51**		#757
			Green	**10250T476C22-53**		**10250T476C22-1**		**10250T476C22-51**		
			Amber	**10250T476C43-53**		**10250T476C43-1**		**10250T476C43-51**		
			Yellow	**10250T476C23-53**		**10250T476C23-1**		**10250T476C23-51**		
			Blue	**10250T476C24-53**		**10250T476C24-1**		**10250T476C24-51**		
			Clear	**10250T476C25-53**		**10250T476C25-1**		**10250T476C25-51**		
			White	**10250T476C26-53**		**10250T476C26-1**		**10250T476C26-51**		
	Resistor	120V AC/DC	Red	**10250T471C21-53**		**10250T471C21-1**		**10250T471C21-51**		120MB
			Green	**10250T471C22-53**		**10250T471C22-1**		**10250T471C22-51**		
			Amber	**10250T471C43-53**		**10250T471C43-1**		**10250T471C43-51**		
			Yellow	**10250T471C23-53**		**10250T471C23-1**		**10250T471C23-51**		
			Blue	**10250T471C24-53**		**10250T471C24-1**		**10250T471C24-51**		
			Clear	**10250T471C25-53**		**10250T471C25-1**		**10250T471C25-51**		
			White	**10250T471C26-53**		**10250T471C26-1**		**10250T471C26-51**		
	Trans-former	120 AC	Red	**10250T75R** ①		**10250T76R** ①		**10250T77R** ①		#755
			Green	**10250T75G** ①		**10250T76G** ①		**10250T77G** ①		
			Amber	**10250T75A** ①		**10250T76A** ①		**10250T77A** ①		
			Yellow	**10250T75Y** ①		**10250T76Y** ①		**10250T77Y** ①		
			Blue	**10250T75B** ①		**10250T76B** ①		**10250T77B** ①		
			Clear	**10250T75C** ①		**10250T76C** ①		**10250T77C** ①		
			White	**10250T75W** ①		**10250T76W** ①		**10250T77W** ①		

① For flashing module Catalog Number 10250TFL1, add Suffix Code **FM** to listed Catalog Number. Example: 10250T75R**FM**.

Accessories ..... **Pages 47-155 – 47-156**
Dimensions ..... **Pages 47-160 – 47-162**
Enclosures ..... **Pages 47-153 – 47-154**
Legend Plates..... **Pages 47-151 – 47-152**
Replacement
Lamps/LEDs ..... **Page 47-157**
Discount Symbol **1CD1C**

Indicating Light Units

- LED or Incandescent
- Full Voltage, Resistor or Transformer Type
- Standard and PresTest Types
- Plastic Lenses

PresTest — This device incorporates a press-to-test feature whereby depressing the lens disconnects the light from the source being monitored and connects the lamp to a continuously energized circuit for immediate detection of faulty lamps.

Table 47-182. Indicating Light Units — UL (NEMA) Type 3, 3R, 4, 4X, 12, 13 ①

Lamp	Type	Voltage	Color	Indicating Light		PresTest		LED/Lamp Number
				24V Full Voltage Indicating Light — Red Catalog Number 10250T206NC1N		120V AC Transformer PresTest — Green Catalog Number 10250T74NG		
				Catalog Number	**Price U.S. $**	**Catalog Number**	**Price U.S. $**	
LED	Full Voltage	24V AC/DC	Red	**10250T197LRP24**		**10250T297LRP24**		Bayonet Base
			Green	**10250T197LGP24**		**10250T297LGP24**		
			Amber	**10250T197LAP24**		**10250T297LAP24**		
			Yellow	**10250T197LYP24**		**10250T297LYP24**		
			Blue	**10250T197LLP24**		**10250T297LLP24**		
			White	**10250T197LWP24**		**10250T297LWP24**		
		120V AC	Red	**10250T197LRP2A**		**10250T297LRP2A**		
			Green	**10250T197LGP2A**		**10250T297LGP2A**		
			Amber	**10250T197LAP2A**		**10250T297LAP2A**		
			Yellow	**10250T197LYP2A**		**10250T297LYP2A**		
			Blue	**10250T197LLP2A**		**10250T297LLP2A**		
			White	**10250T197LWP2A**		**10250T297LWP2A**		
	Transformer	120V AC	Red	**10250T181LRP06**		**10250T221LRP06**		
			Green	**10250T181LGP06**		**10250T221LGP06**		
			Amber	**10250T181LAP06**		**10250T221LAP06**		
			Yellow	**10250T181LYP06**		**10250T221LYP06**		
			Blue	**10250T181LLP06**		**10250T221LLP06**		
			White	**10250T181LWP06**		**10250T221LWP06**		
Incandescent	Full Voltage	24V AC/DC	Red	**10250T206NC1N**		**10250T235NC21**		#757
			Green	**10250T206NC2N**		**10250T235NC22**		
			Amber	**10250T206NC19N**		**10250T235NC43**		
			Yellow	**10250T206NC3N**		**10250T235NC23**		
			Blue	**10250T206NC4N**		**10250T235NC24**		
			Clear	**10250T206NC5N**		**10250T235NC25**		
			White	**10250T206NC6N**		**10250T235NC26**		
	Resistor	120V AC/DC	Red	**10250T201NC1N**		**10250T231NC21**		120MB
			Green	**10250T201NC2N**		**10250T231NC22**		
			Amber	**10250T201NC19N**		**10250T231NC43**		
			Yellow	**10250T201NC3N**		**10250T231NC23**		
			Blue	**10250T201NC4N**		**10250T231NC24**		
			Clear	**10250T201NC5N**		**10250T231NC25**		
			White	**10250T201NC6N**		**10250T231NC26**		
	Transformer ②	120V AC	Red	**10250T34R**		**10250T74NR**		#755
			Green	**10250T34G**		**10250T74NG**		
			Amber	**10250T34A**		**10250T74NA**		
			Yellow	**10250T34Y**		**10250T74NY**		
			Blue	**10250T34B**		**10250T74NB**		
			Clear	**10250T34C**		**10250T74NC**		
			White	**10250T34W**		**10250T74NW**		

① Standard indicating lights are rated UL (NEMA) 3S as well.
② For flashing lamp add letter **F** to listed Catalog Number. Example: 10250T34R**F**.

Accessories ..... **Pages 47-155 – 47-156**
Dimensions ..... **Pages 47-160 – 47-162**
Enclosures ..... **Pages 47-153 – 47-154**
Legend Plates ..... **Pages 47-151 – 47-152**
Replacement Lamps/LEDs ..... **Page 47-157**
Discount Symbol **1CD1C**

Illuminated Pushbuttons and Indicating Lights

- LED or Incandescent
- Full Voltage, Resistor or Transformer Type

Table 47-183. Operators without Lens

Light Unit Type	Type	Voltage	Illuminated Pushbutton		Indicating Light		PresTest		Master Test		LED/Lamp Number
			Catalog Number	Price U.S. $	Catalog Number	Price U.S. $	Catalog Number	Price U.S. $	Catalog Number	Price U.S. $	
Incandescent	Full Voltage AC/DC	6	**10250T473**		**10250T203N**		**10250T232N**		—		#755
		12	**10250T474**		**10250T204N**		**10250T233N**		—		#756
		24	**10250T476**		**10250T206N**		**10250T235N**		—		#757
		32	**10250T477**		**10250T207N**		**10250T238N**		—		#1828
		48	**10250T478**		**10250T208N**		**10250T239N**		—		#1835
	Resistor ② AC/DC	120	**10250T471**		**10250T201N**		**10250T231N**		—		120MB
		240	**10250T472**		**10250T202N**		**10250T240N**		—		120MB
	Transformer AC Only ③	24	**10250T416**		—		—		—		#755
		120	**10250T411**		**10250T181N**		**10250T221N**		—		
		240	**10250T422**		**10250T182N**		**10250T222N**		—		
		277	**10250T419**		**10250T198N**		—		—		
		380	**10250T413**		**10250T183N**		**10250T223N**		—		
		480	**10250T414**		**10250T184N**		**10250T224N**		—		
		600	**10250T415**		**10250T185N**		**10250T225N**		—		
	Neon ④ AC/DC	120	—		**10250T226N**		—		—		NE51H-R22
		240	—		**10250T227N**		—		—		NE51H-R68
	Solid-State 50/60 Hz Only	120	—		—		—		**10250T189N**		120MB
LED (LEDs not included) ①	Full Voltage	—	**10250T397L**		**10250T197L**		**10250T297L**		—		Bayonet Base
	Transformer AC Only	24	**10250T416L**		—		—		—		
		120	**10250T411L**		**10250T181L**		**10250T221L**		—		
		240	**10250T412L**		**10250T182L**		**10250T222L**		—		
		277	**10250T419L**		**10250T198L**		—		—		
		380	**10250T413L**		**10250T183L**		**10250T223L**		—		
		480	**10250T414L**		**10250T184L**		**10250T224L**		—		
		600	**10250T415L**		**10250T185L**		**10250T225L**		—		

① These units do not include lamps. Order LED separately to match lens color. See **Page 47-157** for LED Selection and **Page 47-165** for Catalog Numbering System.
② Resistor units are not available for use with LEDs, choose either transformer or full voltage LED style.
③ For flashing lamp, add letter **F** to listed Catalog Number. Example: 10250T181N**F**.
④ Resistant to shock and vibration. For best illumination use amber, yellow or clear lens.

Table 47-184. Indicating and Master Test Lenses

	Color	Plastic		Glass	
		Catalog Number	Price U.S. $	Catalog Number	Price U.S. $
Plastic *Glass*	Red	**10250TC1N**		**10250TC7N**	
	Green	**10250TC2N**		**10250TC8N**	
	Amber	**10250TC19N**		**10250TC9N**	
	Yellow	**10250TC3N**		—	
	Blue	**10250TC4N**		**10250TC10N**	
	Clear	**10250TC5N**		**10250TC11N**	
	White	**10250TC6N**		**10250TC12N**	

Table 47-186. PresTest Lenses

	Color	Plastic		Glass	
		Catalog Number	Price U.S. $	Catalog Number	Price U.S. $
Plastic *Glass*	Red	**10250TC21**		**10250TC13N**	
	Green	**10250TC22**		**10250TC14N**	
	Amber	**10250TC43**		**10250TC15N**	
	Yellow	**10250TC23**		—	
	Blue	**10250TC24**		**10250TC16N**	
	Clear	**10250TC25**		**10250TC17N**	
	White	**10250TC26**		**10250TC18N**	

Table 47-185. Illuminated Pushbutton Lenses

	Color	Catalog Number	Price U.S. $
	Red	**10250TC21**	
	Green	**10250TC22**	
	Yellow	**10250TC23**	
	Amber	**10250TC43**	
	Blue	**10250TC24**	
	Clear	**10250TC25**	
	White	**10250TC26**	

Dimensions ..... **Pages 47-160 – 47-162**
Legend Plates ..... **Pages 47-151 – 47-152**
Replacement Lamps/LEDs ..... **Page 47-157**
Discount Symbol **1CD1C**

Push-Pull Units

- Two- and Three-Position
- Non-illuminated

Table 47-187. 2-Position Push-Pull Units — UL (NEMA) Type 3, 3R, 4, 4X, 12, 13

	Operator Position ①		Button Type/Color ②	Push-Pull		Contact Type	Mounting Location	
	Pull	Push		Catalog Number	Price U.S. $		A	B
2-Position Maintained Push, Maintained Pull								
	O X	X O	40 mm/Red	**10250T5B62-1X**		1NO 1NC		
	O X	X O	40 mm Engraved EMERG. STOP/Red	**10250T5B63-1X**		1NO 1NC		
	O X	X O	65 mm Alum. Engraved EMERG. STOP/Red	**10250T5J63-1X**		1NO 1NC		
	O X	X O	65 mm Alum. Engraved EMERG. STOP/Red Special Security Jumbo Mushroom Head	**10250ED1080-2**		1NO 1NC		

Table 47-188. 3-Position Pull-Pull Units — UL (NEMA) Type 3, 3R, 4, 4X, 12, 13

Operator Position ①			Button Type/Color ②	Push-Pull		Contact Type	Mounting Location	
Pull	Intermediate	Push		Catalog Number	Price U.S. $		A	B
3-Position Maintained Push, Momentary Pull								
X X	O X	O O	40 mm/ Black	**10250T9B60-3X**		1NC 1NC		
			40 mm/Red	**10250T9B62-3X**				
			40 mm Engraved EMERG. STOP/Red	**10250T9B63-3X**				
3-Position Momentary Push, Momentary Pull								
X X	O X	O O	40 mm/Black	**10250T4B60-3X**		1NC 1NC		
			40 mm/Red	**10250T4B62-3X**				
O X	O O	X O	40 mm/Black	**10250T10B60-1X**		1NO 1NC		
			40 mm/Red	**10250T10B62-1X**				

① X = closed circuit, O = open circuit.
② To order different type or color buttons, substitute the underlined characters with appropriate Suffix Code from the table below. Example: 10250T5**B64**-1X.

Table 47-189. Button and Color Selection Table

Standard — 40 mm	Color	Suffix Code	Catalog Number	Price U.S. $	Jumbo Mushroom Head ③ (Anodized) Aluminum — 65 mm	Color	Suffix Code	Catalog Number	Price U.S. $
	Red Red (EMERG. STOP) Green Black Blue	**B62** **B63** **B61** **B60** **B64**	**10250TB62** **10250TB63** **10250TB61** **10250TB60** **10250TB64**			Red Red (EMERG. STOP) Green Black Yellow	**J62** **J63** **J61** **J60** **J64**	**10250TJ62** **10250TJ63** **10250TJ61** **10250TJ60** **10250TJ64**	

③ Anodized aluminum head is not suitable for use in ultraviolet light applications.

Accessories ..... **Pages 47-155 – 47-156**
Dimensions ..... **Pages 47-160 – 47-162**
Enclosures ..... **Pages 47-153 – 47-154**
Legend Plates ..... **Pages 47-151 – 47-152**
Discount Symbol **1CD1C**

Illuminated Push-Pull Units

- LED or Incandescent
- Full Voltage, Resistor or Transformer Type
- Two-Position Maintained

2-Position Push-Pull Operator with Red Button (Standard) and Full Voltage Light Unit

Table 47-190. 2-Position Illuminated Maintained Push, Maintained Pull — UL (NEMA) Type 3, 3R, 4, 4X, 12, 13

Operator Position ①		Lamp	Type	Voltage	Red Standard Push-Pull ②		Contact Type	Mounting Location		LED/Lamp Number
Maintained — Pull	Maintained — Push				Catalog Number	Price U.S. $		A	B	
O	X	LED	Full Voltage	24V AC/DC	**10250T597LRD24-1X**		1NO 1NC			Bayonet Base
X	O			120V AC/DC	**10250T597LRD2A-1X**					
			Transformer	24V AC	**10250T589LRD06-1X**					
				120V AC	**10250T563LRD06-1X**					
O	X	Incandescent	Full Voltage	24V AC/DC	**10250T579C47-1X**		1NO 1NC			#757
X	O		Resistor	120V AC/DC	**10250T580C47-1X**					120MB
			Transformer	24V AC	**10250T589C47-1X**					#755
				120V AC	**10250T563C47-1X**					

① X = closed circuit, O = open circuit.

② To order different type or color lens, substitute the underlined characters with appropriate Suffix Code from table below. Example: 10250T579**C63**-1X. For LEDs with different voltages see ordering example on **Page 47-131**.

Table 47-191. Lens and Color Selection Table

Type	Lens Color	Incand. Suffix Code	LED Suffix Code	Catalog Number	Price U.S. $
Standard – 40 mm	Red	**C47**	**RD**	**10250TC47**	
	Red (EMERGENCY STOP)	**C53**	**ED**	**10250TC53**	
	Green	**C48**	**GD**	**10250TC48**	
	Blue	**C49**	**LD**	**10250TC49**	
	Amber	**C50**	**AD**	**10250TC50**	
	White	**C51**	**WD**	**10250TC51**	
	Clear	**C52**	**CD**	**10250TC52**	
Side-Lighted Aluminum – 40 mm ③	Red	**C57**	**RS**	**10250TC57**	
	Red (EMERGENCY STOP)	**C63**	**ES**	**10250TC63**	
	Green	**C58**	**GS**	**10250TC58**	
	Blue	**C59**	**LS**	**10250TC59**	
	Amber	**C64**	**AS**	**10250TC64**	
	Yellow	**C60**	**YS**	**10250TC60**	
	White	**C61**	**WS**	**10250TC61**	
	Clear	**C62**	**CS**	**10250TC62**	
Aluminum Transparent Center – 40 mm ③	Red	**C65**	**RH**	**10250TC65**	
	Green	**C66**	**GH**	**10250TC66**	
	Amber	**C67**	**AH**	**10250TC67**	

③ Clear anodized aluminum and colored lens.

Accessories ..... **Pages 47-155 – 47-156**
Additional Light Units .... **Page 47-131**
Dimensions ..... **Pages 47-160 – 47-162**
Enclosures ..... **Pages 47-153 – 47-154**
Legend Plates..... **Pages 47-151 – 47-152**
Replacement
Lamps/LEDs ..... **Page 47-157**
Discount Symbol **1CD1C**

Illuminated Push-Pull Units (Continued)

- LED or Incandescent
- Full Voltage, Resistor or Transformer Type
- Three-Position Momentary

3-Position Push-Pull Operator with Red Button (Standard) and Transformer Light Unit

Table 47-192. 3-Position Illuminated Momentary Push, Momentary Pull — UL (NEMA) Type 3, 3R, 4, 4X, 12, 13

Operator Position ①			Lamp	Type	Voltage	Red Standard Push-Pull ②		Contact Type	Mounting Location		LED/ Lamp Number
Momentary — Pull	Maintained — Intermediate	Momentary — Push				Catalog Number	Price U.S. $		A	B	
O X	O O	X O	LED	Full Voltage	24V AC/DC	**10250T1097LRD24-1X**		1NO 1NC			Bayonet Base
					120V AC	**10250T1097LRD2A-1X**					
				Trans-former	24V AC	**10250T1089LRD06-1X**					
					120V AC	**10250T1063LRD06-1X**					
X X	O X	O O		Full Voltage	24V AC/DC	**10250T497LRD24-3X**		1NC 1NC			Bayonet Base
					120V AC	**10250T497LRD2A-3X**					
				Trans-former	24V AC	**10250T489LRD06-3X**					
					120V AC	**10250T463LRD06-3X**					
O X	O O	X O	Incan-descent	Full Voltage	24V AC/DC	**10250T1079C47-1X**		1NO 1NC			#757
				Resistor	120V AC	**10250T1080C47-1X**					120MB
				Trans-former	24V AC	**10250T1089C47-1X**					#755
					120V AC	**10250T1063C47-1X**					
X X	O X	O O		Full Voltage	24V AC/DC	**10250T479C47-3X**		1NC 1NC			#757
				Resistor	120V AC	**10250T480C47-3X**					120MB
				Trans-former	24V AC	**10250T489C47-3X**					#755
					120V AC	**10250T463C47-3X**					

① X = closed circuit, O = open circuit.
② To order different type or color lens, substitute the underlined characters with appropriate Suffix Code from table on the bottom of **Page 47-126.** Example: 10250T1079**C53**-1X. For LEDs with different voltages see ordering example on **Page 47-131**.

Accessories . . . . . **Pages 47-155 – 47-156**
Additional Light Units . . . . **Page 47-131**
Dimensions. . . . . **Pages 47-160 – 47-162**
Enclosures . . . . . **Pages 47-153 – 47-154**
Legend Plates . . . . . **Pages 47-151 – 47-152**
Replacement
Lamps/LEDs . . . . . **Page 47-157**
Discount Symbol **1CD1C**

Illuminated Push-Pull Units (Continued)

- LED or Incandescent
- Full Voltage, Resistor or Transformer Type
- Three-Position — Maintained Push, Momentary Pull

3-Position Push-Pull Operator with Red Button (Standard) and Full Voltage Light Unit

Table 47-193. 3-Position Illuminated Maintained Push, Momentary Pull — UL (NEMA) Type 3, 3R, 4, 4X, 12, 13

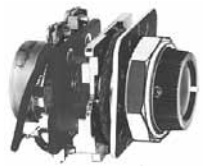
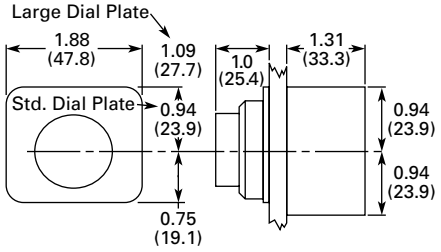
Operator Position ①			Lamp	Type	Voltage	Red Standard Push-Pull ②		Contact Type	Mounting Location		LED/ Lamp Number
Momentary — Pull	Maintained — Intermediate	Maintained — Push				Catalog Number	Price U.S. $		A	B	
X	O	O	LED	Full Voltage	24V AC/DC	**10250T997LRD24-3X**		1NC			Bayonet Base
X	X	O			120V AC	**10250T997LRD2A-3X**		1NC			
				Trans-former	24V AC	**10250T989LRD06-3X**					
					120V AC	**10250T963LRD06-3X**					
X	O	O	Incan-descent	Full Voltage	24V AC/DC	**10250T979C47-3X**		1NC			#757
X	X	O		Resistor	120V AC	**10250T980C47-3X**		1NC			120MB
				Trans-former	24V AC	**10250T989C47-3X**					#755
					120V AC	**10250T963C47-3X**					

① X = closed circuit, O = open circuit.

② To order different type or color lens, substitute the underlined characters with appropriate Suffix Code from table on the bottom of **Page 47-126**. Example: 10250T979**C53**-3X. For LEDs with different voltages see ordering example on **Page 47-131**.

Potentiometers

Table 47-194. Potentiometer with Knob and Standard Dial Plate — Linear Type ±10% — UL (NEMA) Type 3, 3R, 4, 12, 13

Vertical or Horizontal One-Hole Mounting	Potentiometer Ohms	2 Watt (60V Max.) Single Potentiometer with Standard Aluminum Dial Plate ③④		Dimensions in Inches (mm)
		Catalog Number	Price U.S. $	
 *With Standard Aluminum Dial Plate*	1000	**10250T331**		
	2500	**10250T332**		
	5000	**10250T338**		
	10000	**10250T333**		
	25000	**10250T334**		
	50000	**10250T335**		
	Operator Only ⑤	**10250T330**		
	Alternative — Black Plastic Large Legend with Standard Markings	**E34LP99**		

Potentiometer

③ Large dial plate with space for legend is available at no charge. To order, add suffix **36** to Catalog Number. Example: 10250T331**36**. To order separately, see footnote ④ below.

④ Large dial plate has space at top for 15 letters. 3/32 inch high. For custom stamped legend plates, order legend plate as separate item **10250TR30** and specify stamping.

⑤ For use with commercially purchased potentiometers having shaft dimensions per dimension drawing on **Page 47-161**.

Accessories ..... **Pages 47-155 – 47-156**
Additional Light Units .... **Page 47-131**
Dimensions ..... **Pages 47-160 – 47-162**
Enclosures ..... **Pages 47-153 – 47-154**
Legend Plates..... **Pages 47-151 – 47-152**
Replacement Lamps/LEDs ..... **Page 47-157**
Discount Symbol **1CD1C**

Push-Pull Operators

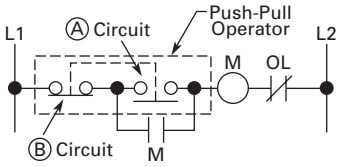
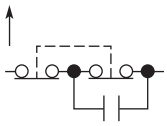
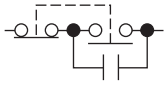
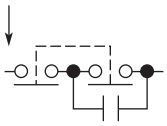
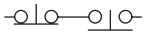
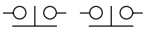
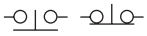
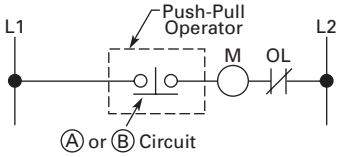
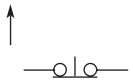
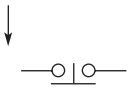
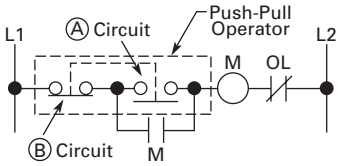
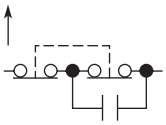
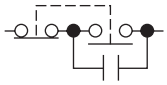
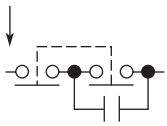
An illuminated Push-Pull pushbutton unit, arranged for one-hole mounting, can replace two pushbuttons and a pilot light or the non-illuminated form can replace two pushbuttons. These units are available in three basic types:

- **Maintained** — (Two-Position). Maintains in the pulled or pushed position until manually actuated to the opposite mode.
- **Momentary** — (Three-Position). Spring returns to an intermediate position when pulled or pushed and released.
- **Momentary Pull, Maintained Push** — (Three-Position). Spring returns to intermediate position when pulled. Maintains in pushed position until manually returned to intermediate (ready to reset) position. Maintained stop holds circuit open and will prevent other series connected operators from starting the system.

The Operators, Buttons, Contact Blocks, etc., are offered as building block components that can be intermixed to satisfy many requirements. This minimizes the need for a varied and costly inventory.

2-Position Maintained Push-Pull without Button on Lens Catalog Number 10250T5

Table 47-195. Typical Applications

Control	Line – Diagram	Operator	Circuits	Operator Mode		
3-Wire 3-Position Momentary		Momentary Push & Pull 10250T4	2NC Contact Block 10250T3	START (Mom.) 	Normal Pos. (Maint.) 	STOP (Mom.) 
		Momentary Push & Pull 10250T10	1NO-1NC Contact Block 10250T1			
2-Wire 2-Position Maintained		Maintained Push & Pull 10250T5	1NC Contact Block 10250T51	START (Maint.) 	No Intermediate Position	STOP (Maint.) 
3-Wire Momentary Pull Maintained Push		Maintained Push & Momentary Pull 10250T9	2NC Contact Block 10250T3	START (Mom.) 	Normal Pos. (Maint.) 	STOP (Maint.) 

Note: A and **B** circuits shown in the application illustrations are defined in the "Application Guide" on the following page.

Push-Pull Operators (Continued)

Application Guide

To assist in the selection of contact blocks, the sketch to the right shows pictorially by symbols **A** and **B** locations of contact circuits after assembly of contact blocks and adapter to the operator. The chart below shows the effect of the push and pull operations on either NO or NC contacts. (X = contact closed, O = contact open)

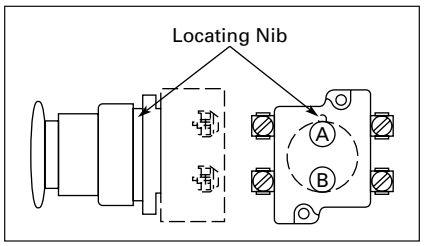


Figure 47-92. Contact Circuit Locations

Table 47-196. Push-Pull Operator Components

Type of Operator	Catalog Number	Price U.S. $	Contact Block — Max. of 2 Blocks, 4 Circuits ①	Operator Position and Circuit Arrangement					
				Out — Pull		Intermediate		In — Push	
				Contact Block Mounting Location					
				A	B	A	B	A	B
2-Position Operator without Lens									
Maintained Push-Pull	**10250T5**		1NO 1NC	O or X	O X	No Intermediate Position		X or O	X O
			2NO 2NC	O X	O X			X O	X O
Maintained Push-Pull with Anti-Theft Jumbo Mushroom	**10250ED1080**		1NO 1NC	O or X	O X	No Intermediate Position		X or O	X O
			2NO 2NC	O X	O X			X O	X O
3-Position Operator without Lens									
Momentary Push-Pull Maintained Push-Momentary Pull	**10250T4** ① **10250T9** ①		1NO 1NC	O or X	O X	O or O	O X	X or O	O O
			2NO 2NC	O X	O X	O O	O X	X O	O O
Momentary Push-Pull	**10250T10** ①		1NO 1NC	O or X	O X	O or O	O O	X or O	X O
			2NO 2NC	O X	O X	O O	O O	X O	X O

① Special function contact blocks shown on **Page 47-148** CANNOT be used with 3-position push-pull operators 10250T4, 10250T9 or 10250T10.

Button or Lens ..... **Page 47-131**
Contact Blocks..... **Page 47-148**
Dimensions..... **Pages 47-160 – 47-162**
Enclosures ..... **Pages 47-153 – 47-154**
Legend Plates..... **Pages 47-151 – 47-152**
Discount Symbol **1CD1C**

Push-Pull Operators (Continued)

Push-Pull Light Units, Lenses and Buttons

Table 47-197. Light Units for Illuminated Push-Pull Devices

Light Unit Type	Type	Voltage	Catalog Number	Price U.S. $	LED/Lamp Number
LED (LEDs not included) ①	Full Voltage	—	**10250T97L**		Bayonet Base
	Transformer AC Only 50/60 Hz	24	**10250T89L**		
		120	**10250T63L**		
		208	**10250T64L**		
		240	**10250T65L**		
		277	**10250T82L**		
		380	**10250T66L**		
		480	**10250T67L**		
		600	**10250T68L**		
Incandescent	Full Voltage AC or DC	6	**10250T69**		
		12	**10250T70**		
		24/28	**10250T79**		
		32	**10250T83**		
	Resistor AC or DC	120	**10250T80**		120MB
		240	**10250T81**		
	Transformer AC Only 50/60 Hz	24	**10250T89**		#755
		120	**10250T63**		
		208	**10250T64**		
		240	**10250T65**		
		277	**10250T82**		
		380	**10250T66**		
		480	**10250T67**		
		600	**10250T68**		

① These units do not include lamps. Order LED separately to match lens color, see **Page 47-157**.

Ordering example with one composite number:

Non-illuminated 10250T5 + 10250TB62 + 10250T1 =

10250T5B62-1X

Incandescent 10250T5 + 10250T79 + 10250TC47 + 10250T1 =

10250T579C47-1X

LED 10250T5 + 10250T97L + 10250TC47 + Voltage Code + 10250T1 =

10250T597LRD24-1X

06 — 6V AC/DC
12 — 12V AC/DC
24 — 24V AC/DC
48 — 48V AC/DC
60 — 60V AC/DC
2A — 120V AC
2D — 120V DC

Table 47-198. Alternate Lenses for Illuminated Push-Pull Devices

	Color	Incand. Suffix Code	LED ② Suffix Code	Catalog Number	Price U.S. $
	Standard				
	Red	**C47**	**RD**	**10250TC47**	
	Red (EMER. STOP)	**C53**	**ED**	**10250TC53**	
	Green	**C48**	**GD**	**10250TC48**	
	Blue	**C49**	**LD**	**10250TC49**	
	Amber	**C50**	**AD**	**10250TC50**	
	White	**C51**	**WD**	**10250TC51**	
	Clear	**C52**	—	**10250TC52**	
	Side-Lighted Anodized Aluminum Ring				
	Red	**C57**	**RS**	**10250TC57**	
	Red (EMER. STOP)	**C63**	**ES**	**10250TC63**	
	Green	**C58**	**GS**	**10250TC58**	
	Blue	**C59**	**LS**	**10250TC59**	
	Amber	**C64**	**AS**	**10250TC64**	
	Yellow	**C60**	**YS**	**10250TC60**	
	White	**C61**	**WS**	**10250TC61**	
	Clear	**C62**	—	**10250TC62**	
	Heavy-Duty Aluminum with Transparent Center				
	Red	**C65**	**RH**	**10250TC65**	
	Green	**C66**	**GH**	**10250TC66**	
	Amber	**C67**	**AH**	**10250TC67**	
	Blue	**C69**	—	**10250TC69**	
	White	**C68**	—	**10250TC68**	

② Suffix Codes should only be used for assembling composite Catalog Numbers. To order lens above, order by Catalog Number.

Table 47-199. Buttons for Non-illuminated Push-Pull Devices

	Color	Suffix Code	Catalog Number	Price U.S. $
	Standard			
	Red	**B62**	**10250TB62**	
	Red (EMER. STOP)	**B63**	**10250TB63**	
	Green	**B61**	**10250TB61**	
	Black	**B60**	**10250TB60**	
	Blue	**B64**	**10250TB64**	
	Jumbo Mushroom Head (Anodized) Aluminum ③			
	Red	**J62**	**10250TJ62**	
	Red (EMER. STOP)	**J63**	**10250TJ63**	
	Green	**J61**	**10250TJ61**	
	Black	**J60**	**10250TJ60**	
	Yellow	**J64**	**10250TJ64**	

③ Anodized aluminum head is not suitable for use in ultraviolet light applications.

Legend Plates

For a complete listing of available Legend Plates see **Pages 47-151 – 47-152**.

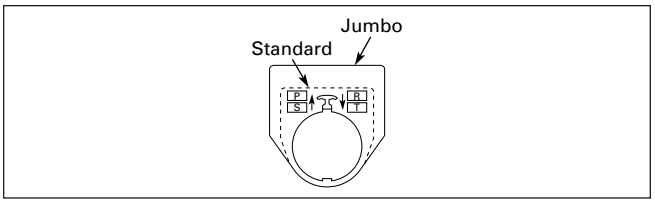


Figure 47-93. Legend Plates

Contact Blocks..... **Page 47-148**
Dimensions..... **Pages 47-160 – 47-162**
Enclosures ..... **Pages 47-153 – 47-154**
Legend Plates..... **Pages 47-151 – 47-152**
Discount Symbol **1CD1C**

Selector Switch Units

- Two-, Three- and Four-Position Maintained
- Non-illuminated and Illuminated

3-Position Maintained Switch Catalog Number 10250T21KB

3-Position Maintained Switch Catalog Number 10250T22KB

Table 47-200. 2-Position Selector Switch — UL (NEMA) Type 3, 3R, 4, 4X, 12, 13

Operator Position ①		Operator Action ②	Non-illuminated			Illuminated — 120V Transformer			Contact Type	Mounting Location	
			Black Knob ③ Catalog Number	Black Lever ③ Catalog Number	Price U.S. $	Red Knob ③ Catalog Number	Red Lever ③ Catalog Number	Price U.S. $		A	B
X O	O X	M M	10250T20K<u>B</u>	10250T20L<u>B</u>		10250ED1117-K<u>R</u>	10250ED1117-L<u>R</u>		1NC 1NO		

① X = closed circuit, O = open circuit.
② M = Maintained. S = Spring return in direction of arrow (→).
③ To order different type or color selector switch, substitute the underlined character with appropriate Suffix Code from the Color Selection table. Example: 10250T20K<u>G</u>.

Table 47-201. 3-Position Selector Switch — UL (NEMA) Type 3, 3R, 4, 4X, 12, 13

Operator Position ④			Operator Action ⑤	Non-illuminated			Illuminated — 120V Transformer			Contact Type	Mounting Location	
				Black Knob ⑥ Catalog Number	Black Lever ⑥ Catalog Number	Price U.S. $	Red Knob ⑥ Catalog Number	Red Lever ⑥ Catalog Number	Price U.S. $		A	B
X O	O O	O X	M M M	10250T21K<u>B</u>	10250T21L<u>B</u>		10250ED1117-2K<u>R</u>	10250ED1117-2L<u>R</u>		1NO 1NO		
X O O	O X O	O O X	M M M	10250T22K<u>B</u>	10250T22L<u>B</u>		10250ED1117-3K<u>R</u>	10250ED1117-3L<u>R</u>		1NO 2NC (Series) 1NO		

④ X = closed circuit, O = open circuit.
⑤ M = Maintained. S = Spring return in direction of arrow (→).
⑥ To order different type or color selector switch, substitute the underlined character with appropriate Suffix Code from the Color Selection table. Example: 10250T20K<u>G</u>.

47

Table 47-202. 4-Position Selector Switch — UL (NEMA) Type 3, 3R, 4, 4X, 12, 13

Operator Position ⑦				Operator Action ⑧	Non-illuminated			Illuminated — 120V Transformer			Contact Type	Mounting Location	
					Black Knob ⑨ Catalog Number	Black Lever ⑨ Catalog Number	Price U.S. $	Red Knob ⑨ Catalog Number	Red Lever ⑨ Catalog Number	Price U.S. $		A	B
X O O O	O X O O	O O X O	O O O X	M M M M	10250T46K<u>B</u>	10250T46L<u>B</u>		10250ED1117-4K<u>R</u>	10250ED1117-4L<u>R</u>		1NC 1NO 1NO 1NC		

⑦ X = closed circuit, O = open circuit.
⑧ M = Maintained. S = Spring return in direction of arrow (→).
⑨ To order different type or color selector switch, substitute the underlined character with appropriate Suffix Code from the Color Selection table. Example: 10250T20K<u>G</u>.

Table 47-203. Color Selection

Illuminated						Non-illuminated					
Color	Code Letter	Color	Code Letter	Color	Code Letter	Color	Code Letter	Color	Code Letter	Color	Code Letter
Red Green	**R** **G**	White Blue	**W** **B**	Amber Clear	**A** **C**	Black Red	**B** **R**	Green White	**G** **W**	Blue Orange	**L** **O**

Accessories ..... **Pages 47-155 – 47-156**
Additional Circuit Arrangements ..... **Pages 47-133 – 47-134**
Dimensions ..... **Pages 47-160 – 47-162**
Enclosures ..... **Pages 47-153 – 47-154**
Legend Plates..... **Pages 47-151 – 47-152**
Discount Symbol **1CD1C**

10250T Series

Selector Switch Selection

Cam and Contact Block Selection

Selector switches in their varied forms (2-position, 3-position and 4-position) are a big factor contributing to the great flexibility of control that a well rounded line of "pushbuttons" can achieve. Because of their flexibility, they tend to cause difficulty with product selection and application. The following systematic approach should simplify that task.

Cam and contact block selection is better understood if you:

- Work with each incoming and outgoing wire/circuit separately.
- Recognize the terms NO and NC only identify the type of contact by its mode before mounting to the operator. The "X-O" table (**Page 47-134**) shows how that contact will act after assembly to the operator with the selected cam shape. X = closed circuit, O = open circuit.
- Up to six NO or NC contacts may be mounted behind each plunger location for a total of twelve contacts. Single circuit contact blocks have only one plunger with the other side of the block "open." Therefore, single circuit contact blocks transmit motion to blocks behind them only for the position containing the circuit.
- Each cam has two separate lobes, each of which operates one of the two contact block plungers independently of each other. Those are identified as position A (locating nib side) and position B (opposite of locating nib). The position designations give direction in selecting and mounting of the contact blocks (see **Figure 47-94**).

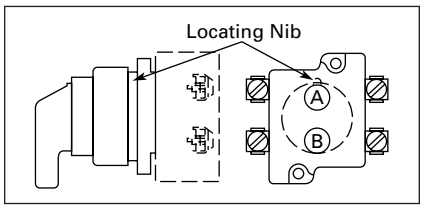
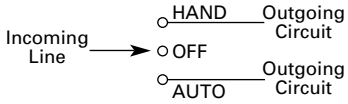


Figure 47-94. Contact Circuit Locations

Systematic Approach

Application: **HAND-OFF-AUTO** Selector Switch. In this circuit, one incoming line is distributed to two other outgoing circuits by the switch. The two circuits can be looked at individually.

Step 1: Elementary Diagram.
Construct on paper, or in your mind, a simple elementary diagram of the switching scheme as follows:



Step 2: "X-O" Pattern.
From the elementary diagram, you can construct an "X-O" diagram which describes when the contacts are to be closed (X) or open (O) in the various positions of the switch. The "X-O" for the **HAND** circuit looks like this:

HAND OFF AUTO
X O O

In this circuit, you want a contact closed on the left (HAND) but open in the center and right.

For the **AUTO** circuit, the "X-O" diagram would look like this:

HAND OFF AUTO
O O X

Putting them together, the complete "X-O" diagram is:

X O O
O O X

Once the "X-O" diagram has been generated, the next step is to select the cam and contact block, or blocks, needed to perform the desired "X-O" functions. The selection table on the following page lists the various types (shapes) of cams by number to choose from and the type of contact and position to achieve the function outlined in your "X-O" diagram.

Step 3: Cam Selection.
The cam you select determines the operation of all contact blocks mounted to the operator. It is selected on the basis that it provides the simplest circuitry for the desired "X-O" diagram. The selection tables of the following page show all the "X-O" combinations. For the purpose of this example, the applicable portion of those tables is shown in **Table 47-204**.

Table 47-204. Example Selection Table

No.	"X-O" Pattern	Cam Code #2		Cam Code #3	
		Top A	Bottom B	Top A	Bottom B
1	X O O	① NO NC		NO	
4	O O X		NO		NO

① Wired in series.

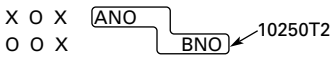
Now to make the cam selection, make a simple worksheet such as:

	Cam 2	Cam 3
X O O	(A)NO – (B)NC	**(A)NO**
O O X	(B)NO	**(B)NO**

It becomes immediately obvious that cam 3 is the better choice for two reasons, (1) the series combination can be avoided making it simpler to wire, (2) only two contacts are required, which is less expensive than the three contacts required by cam 2.

Step 4: Contact Block Selection.
Having selected the cam, contact block selection is simply a matter of gathering the A position and B position circuits into pairs which make up the most convenient contact block arrangement. If there is an imbalance in the number of circuits under A or B, then single circuit blocks must be selected for these leftover circuits.

Back to the worksheet, having selected cam 3 do this:



Step 5: Selector Switch Operator.
Lastly, you have to choose from the many types of operators — knob and lever in various colors or keyed. Also what combinations of maintained and spring return functions are required. Selection of these operators can be found on **Page 47-135**. For the above example you may want a 3-position maintained black knob, cam 3 — Catalog Number 10250T1323.

The Complete Switch: 10250T1323 with one 10250T2 or, for one composite catalog number, 10250T21KB found on **Page 47-132.**

Selector Switch Selection (Continued)

Table 47-205. 2-Position Selector Switch Contact Block Selection

No.	Desired Circuit and Operator Position		Contact Blocks Required to Accomplish Circuit Function	
			Top Plunger A	Bottom Plunger B
1	X	O	NC	NC
2	O	X	NO	NO

Diagrams

Circuits shown illustrate connections to obtain a selector switch circuit combination and are shown with their appropriate line diagrams. Field wiring of jumper connections required as shown.

X = Closed Circuit
O = Open Circuit

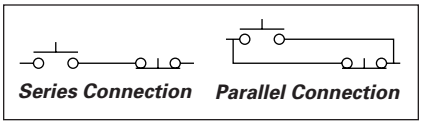


Figure 47-95. Wiring of Jumper Connections

Note: 4-Position Selector Switches limited to 4 contact blocks.

Contact Blocks

For selection and number of available contact blocks per operator, see **Page 47-148**.

Table 47-206. 3-Position Switch — Cam and Contact Block Selection

No.	Desired Circuit and Operator Position			Contact Blocks Required to Accomplish Circuit Function (Jumpers must be installed where indicated)			
				Operator with Cam Code #2		Operator with Cam Code #3	
				Mounting Location		Mounting Location	
				Top Plunger A	Bottom Plunger B	Top Plunger A	Bottom Plunger B
1	X	O	O	NO NC		NO	
2	X	X	O		NC		NC
3	X	O	X	NO		NO NO	
4	O	O	X		NO		NO
5	O	X	X	NC NO		NC	
6	O	X	O	NC		NC NC	

Table 47-207. 4-Position Switch — Contact Block Selection

No.	Desired Circuit and Operator Position				Contact Blocks Required to Accomplish Circuit Function		Combination No.	Desired Circuit and Operator Position				Contact Blocks Required to Accomplish Circuit Function	
					Mounting Location							Mounting Location	
					Top Plunger A	Bottom Plunger B						Top Plunger A	Bottom Plunger B
1	X	O	O	O	NC		10	X	O	X	O	NC NO	
2	O	X	O	O		NO							
3	O	O	X	O	NO		11	X	X	X	O	NC NO NO	
4	O	O	O	X		NC							
5	X	O	O	X	NC NC		12	O	X	X	X	NO NC NO	
6	O	X	X	O	NO NO								
7	O	O	X	X	NO NC		13	X	O	X	X	NO NC NC	
8	X	X	O	O	NC NO								
9	O	X	O	X		NO NC	14	X	X	O	X	NC NO NC	

Selector Switch Operators

2-Position Maintained Black Knob Selector Switch — Cam 1 Cat. No. 10250T1311

3-Position Maintained Black Lever Selector Switch — Cam 3 Cat. No. 10250T3023

2-Position Maintained Horizontal Mount, Key Removal #1 Keyed Selector Switch — Cam 1 Cat. No. 10250T16111

Selector Switch Operators with Caps

Table 47-208. Selector Switch Operators with Caps — UL (NEMA) Type 3, 3R, 4, 4X, 12, 13

Positions	Operator Action ①	Black Knob Selector Switch — Vertical Mounting ③			Black Lever Selector Switch — Vertical Mounting ③		
		Cam Code ②	Catalog Number	Price U.S. $	Cam Code ②	Catalog Number	Price U.S. $
2-Position — 60° Throw	M M	1	**10250T1311**		1	**10250T3011**	
	M S	1	**10250T1371**		1	**10250T3071**	
3-Position — 60° Throw	M M M	2 3	**10250T1322** **10250T1323**		2 3	**10250T3022** **10250T3023**	
	S M M	2 3	**10250T1332** **10250T1333**		2 3	**10250T3032** **10250T3033**	
	S M S	2 3	**10250T1342** **10250T1343**		2 3	**10250T3042** **10250T3043**	
	M M S	2 3	**10250T1352** **10250T1353**		2 3	**10250T3052** **10250T3053**	
4-Position — 40° Throw	M M M M	7	**10250T1367**		7	**10250T3067**	

① M = Maintained. S = Spring return in direction of arrow (→).
② For selection of the proper cam and contact block to obtain the proper circuit sequence, see selection instructions and table on **Pages 47-133 – 47-134**.
③ Field convertible to Horizontal Mounting or order operator only and separate operator cap.

Table 47-209. Key Operators with Cam — UL (NEMA) Type 3, 3R, 4, 4X, 12, 13

Positions	Operator Action ④	Cam Code ⑤	Optional Key Removal Positions ⑥	Vertical Mounting	Horizontal Mounting	Price U.S. $
				Catalog Number	Catalog Number	
2-Position — 60° Throw	M M	1	1, 2, 3	**10250T1511_**	**10250T1611_**	
	M S	1	2	**10250T1571_**	**10250T1581_**	
3-Position — 60° Throw	M M M	2 3	1 – 7	**10250T1522_** **10250T1523_**	**10250T1622_** **10250T1623_**	
	S M M	2 3	1, 4, 5	**10250T1532_** **10250T1533_**	**10250T1632_** **10250T1633_**	
	S M S	2 3	4	**10250T1542_** **10250T1543_**	**10250T1642_** **10250T1643_**	
	M M S	2 3	2, 4, 6	**10250T1652_** **10250T1653_**	**10250T1662_** **10250T1663_**	
4-Position — 40° Throw	M M M M	7	7	**10250T1677_**	**10250T1687_**	

④ M = Maintained. S = Spring return in direction of arrow (→).
⑤ For selection of the proper cam and contact block to obtain the proper circuit sequence, see selection instructions and table on **Pages 47-133 – 47-134**.
⑥ Choose key removal position required for application from **Table 47-210** on **Page 47-136**. Add key removal Code No. to listed Catalog Number. Example: 10250T1511**2**.

Accessories ..... **Pages 47-155 – 47-156**
Contact Blocks ..... **Page 47-148**
Dimensions..... **Pages 47-160 – 47-162**
Enclosures ..... **Pages 47-153 – 47-154**
Legend Plates ..... **Pages 47-151 – 47-152**
Discount Symbol **1CD1C**

Selector Switch Operators (Continued)

Table 47-210. Key Removal Positions

Code Suffix	Key Removal Positions	Code Suffix	Key Removal Positions
1	Right Only	5	Right & Center
2	Left Only	6	Left & Center
3	Right & Left	7	All Positions
4	Center Only		

Note: Key removal in "spring return from" positions not recommended.

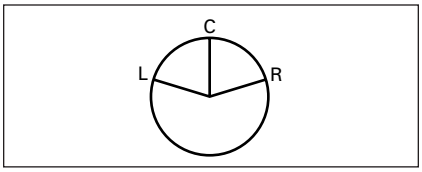


Figure 47-96. Key Removal Positions

Replacement Keys or Dissimilar Locks for Key Operators

Operators listed on **Page 47-135** have identical locks and keys (Key Code H661) Catalog Number 10250ED824. For dissimilar lock and key combinations, see listing at right.

Table 47-211. Replacement Key

Description	Catalog Number	Price U.S. $
Replacement Keys (Code H661)	**10250ED824**	

Selector Switch Operators with Dissimilar Locks and Keys — UL (NEMA) 4, 4X and 13

The locks in all key operators listed on **Pages 47-121, 47-135** and **47-180)** are identical and use key code number H661. Two keys are supplied with every lock. For additional code number H661 keys, order **Catalog Number 10250ED824**. For others, order 10250ED1130 and designate lock number. When dissimilar locks for each operator or each group of operators are required, select from the lock and key combination listed below. **When Ordering Operator Only** or a Complete Control Unit with a substitute lock, order from table below and add "except Lock and Key Code No. …"

Table 47-212. "H" Series Locks without Master Key — with Key Slot Cover

Lock and Key Code Numbers			Adder U.S. $
H501	H635	H663	
H620	H639	H675	
H621	H643	H683	
H634	H654	H688	

Table 47-213. "M" Series Locks with Master Key — with Key Slot Cover

Lock and Key Code Numbers				Adder U.S. $
MD1	MD14	ME8	MJ6	
MD2	MD15	ME11	MJ10	
MD3	MD16	ME16	MJ11	
MD4	MD19	ME17	MJ13	
MD5	MD20	ME18	MJ15	
MD7	ME2	ME19	MJ16	
MD9	ME3	MJ1	MD17	
MD10	ME5	MJ3		
MD11	ME6	MJ4		
MD13	ME7	MJ5		

Table 47-214. Master Keys for Above Locks

Application	Catalog Number	Price U.S. $
For Code:		
MD1 – MD20	10250ED825-3	
ME2 – ME18	10250ED825-4	
MJ1 – MJ16	10250ED825-5	

Selector Switch Operators (Continued)

Selector Switch Operators without Caps

Note: Operators below can be ordered with caps assembled to them by adding the Code Number from **Table 47-216** to the end of Catalog Number below.
Example: 10250T4011**KB**

2-Position Selector Switch Maintained, Cam Code 1 Catalog Number 10250T4011

Table 47-215. Selector Switch Operators without Caps

Positions	Operator Action ①	Cam Code ②	Catalog Number	Price U.S. $
2-Position — 60° Throw	M M	1	**10250T4011**	
	M S	1	**10250T4081**	
3-Position — 60° Throw	M M M	2 3	**10250T4022** **10250T4023**	
	M S M	2 3	**10250T4032** **10250T4033**	
	M S S	2 3	**10250T4042** **10250T4043**	
	M M S	2 3	**10250T4052** **10250T4053**	
4-Position — 40° Throw	M M M M	7	**10250T4067**	

① M = Maintained. S = Spring return in direction of arrow (→).
② For selection of the proper cam and contact block to obtain the proper circuit sequence, see selection instructions and table on **Pages 47-133 – 47-134**.

Table 47-216. Operating Caps

Color	Knob		Lever	
	Catalog and Code Number	**Price U.S. $**	**Catalog and Code Number**	**Price U.S. $**
Black	**10250TKB**		**10250TLB**	
Red	**10250TKR**		**10250TLR**	
Green	**10250TKG**		**10250TLG**	
Yellow	**10250TKY**		**10250TLY**	
White	**10250TKW**		**10250TLW**	
Gray	**10250TKA**		**10250TLA**	
Blue	**10250TKL**		**10250TLL**	
Orange	**10250TKO**		**10250TLO**	

Color	Lever ③		Coin Slot	
	Catalog and Code Number	**Price U.S. $**	**Catalog and Code Number**	**Price U.S. $**
Black	**10250TSB**		**10250TCB**	
Red	**10250TSR**		**10250TCR**	
Green	**10250TSG**		**10250TCG**	
Yellow	**10250TSY**		**10250TCY**	
White	**10250TSW**		**10250TCW**	
Gray	**10250TSA**		**10250TCA**	
Blue	**10250TSL**		**10250TCL**	
Orange	**10250TSO**		**10250TCO**	

③ Designed for added ingress protection. For use in maintained operators only.

Accessories . . . . . **Pages 47-155 – 47-156**
Contact Blocks . . . . . **Page 47-148**
Dimensions. . . . . **Pages 47-160 – 47-162**
Enclosures . . . . . **Pages 47-153 – 47-154**
Legend Plates . . . . . **Pages 47-151 – 47-152**
Discount Symbol **1CD1C**

Illuminated Selector Switch Operators

Illuminated Selector Switches without Caps

2-Position Maintained 120V AC Transformer Selector Switch, Cam Code 1 Catalog Number 10250T5971

Table 47-217. Operator without Knob or Lever

Positions	Operator Action ①	Transformer Type — 50/60 Hz 6 Volt #755 Lamp				Full Voltage Type — AC or DC ④ Lamps: 6V — #755, 12V — #756, 24V — #757, 48V — #1835, 120/240V — 120MB			
		Voltage	Catalog and Code Number ②	Cam Code ③	Price U.S. $	Voltage	Catalog and Code Number ②	Cam Code ③	Price U.S. $
2-Position – 60° Throw	M M	24 120 208 240 380 480 600	**10250T5961** **10250T5971** **10250T6511** **10250T5981** **10250T5991** **10250T6001** **10250T6011**	1		6 12 24 48 120 240 ⑤	**10250T6201** **10250T6211** **10250T6221** **10250T6231** **10250T6361** **10250T6371**	1	
3-Position – 60° Throw	M M M	24 120 208 240 380 480 600	**10250T602_** **10250T603_** **10250T652_** **10250T604_** **10250T605_** **10250T606_** **10250T607_**	+ 2 or 3		6 12 24 48 120 240 ⑤	**10250T624_** **10250T625_** **10250T626_** **10250T627_** **10250T638_** **10250T639_**	+ 2 or 3	
	M M S	24 120 208 240 380 480 600	**10250T654_** **10250T620_** **10250T655_** **10250T656_** **10250T657_** **10250T658_** **10250T659**	+ 2 or 3		6 12 24 48 120 240	**10250T612_** **10250T632_** **10250T642_** **10250T672_** **10250T622_** **10250T682_**	+ 2 or 3	
	M S M	24 120 208 240 380 480 600	**10250T660_** **10250T621_** **10250T661_** **10250T662_** **10250T663_** **10250T664_** **10250T665_**	+ 2 or 3		6 12 24 48 120 240	**10250T613_** **10250T633_** **10250T643_** **10250T673_** **10250T623_** **10250T683_**	+ 2 or 3	
	M S S	24 120 208 240 380 480 600	**10250T614_** **10250T615_** **10250T653_** **10250T616_** **10250T617_** **10250T618_** **10250T619_**	+ 2 or 3		6 12 24 48 120 240 ⑤	**10250T628_** **10250T629_** **10250T630_** **10250T631_** **10250T640_** **10250T641_**	+ 2 or 3	
4-Position – 40° Throw	M M M M	24 120 208 240 380 480 600	**10250T6087** **10250T6097** **10250T6547** **10250T6107** **10250T6117** **10250T6127** **10250T6137**	7		6 12 24 48 120 240 ⑤	**10250T6327** **10250T6337** **10250T6347** **10250T6357** **10250T6427** **10250T6437**	7	

① M = Maintained. S = Spring return in direction of arrow (→).
② Operator includes lens gasket and lens attachment screws.
③ For selection of the proper cam and contact block, to obtain the proper circuit sequence, see selection table on **Pages 47-133 – 47-134**.
④ Full voltage light units can be used at other than listed voltages by changing lamp. Replacement lamps are listed on **Page 47-157**.
⑤ Resistor type. May generate excess heat if used in high density.

Table 47-218. Illuminated Knobs and Levers

Color ⑥	Knob		Lever	
	Cat. and Code No.	Price U.S. $	Cat. and Code No.	Price U.S. $
Red Green Yellow Blue	**10250TER** **10250TEG** **10250TEA** **10250TEL**		**10250TFR** **10250TFG** **10250TFA** **10250TFL**	
Clear White Amber	**10250TEC** **10250TEW** **10250TEM**		**10250TFC** **10250TFW** **10250TFM**	

⑥ Amber, Clear and White lenses have a black arrow (pointer), Red, Green and Blue lenses have a white arrow (pointer).

Accessories ..... **Pages 47-155 – 47-156**
Contact Blocks ..... **Page 47-148**
Dimensions ..... **Pages 47-160 – 47-162**
Enclosures..... **Pages 47-153 – 47-154**
Legend Plates..... **Pages 47-151 – 47-152**
Discount Symbol **1CD1C**

Joystick Units

Table 47-219. Joystick Units — UL (NEMA) Type 3, 3R, 4, 4X, 12, 13

Two-Position	Operator Position ①			Operator Action ②	2-Position Assembled Unit		Contact Type	Mounting Location	
	Up	Center	Down		Catalog Number ③	Price U.S. $		A	B
	X O	O O	O X	M S S	10250T452-3X		1NC 1NC		

① X = closed circuit, O = open circuit.
② M = Maintained. S = Spring return in direction of arrow (→).
③ Field convertible momentary to maintained or vice versa.

Joysticks

Two-Position Joystick Operators

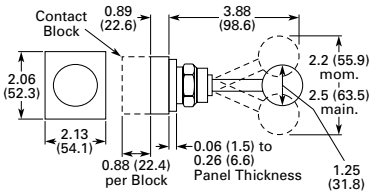
The device mounts in the standard 30.5 mm mounting hole. Allow sufficient panel space for lever movement.

The maximum travel of the knob operator (full up to full down) is 2.2" (24°) momentary, 2.5" (30°) maintained, but ample space for lever operation must be allowed. These operators are field convertible from momentary to maintained operation or vice versa.

The use of NC contacts is preferred because they provide positive drive contact opening and a direct relationship between lever movement and affected terminal, i.e., up movement affects the top terminals.

2-Position Joystick Operator

Table 47-220. 2-Position Joystick Operators — UL (NEMA) Type 3, 3R, 4, 4X, 12, 13

Contact Block Limitations	Description ④	Catalog Number	Price U.S. $	Overall Dimensions in Inches (mm)
Momentary Mode 4NC Contact Blocks Max. 3NO Contact Blocks Max. **Maintained Mode** 2 Contact Blocks Max.	**2-Position Operator Only — AC Applications Only**			
	Momentary Up and Down	**10250T452**		
	Maintained Up — Momentary Down	**10250T4521**		
	Maintained Down — Momentary Up	**10250T4522**		
	Maintained Up and Down	**10250T4525**		

④ Field convertible momentary to maintained or vice versa. To expedite shipment of maintained types, order momentary operator 10250T452 which is a stocked device.

Table 47-221. Contact Block Operation and Selection

Handle Position ⑤			Contact Block			Mounting Location ⑤⑥	
Up	Center	Down				Top	Bottom
			Catalog Number	Price U.S. $	Type ⑦	A	B
X	O	O	**10250T51**		1NC		
O	O	X	**10250T51**		1NC		
O	X	O	**10250T45**		2LONC (Series)		
X	O	O	**10250T3**		1NC		
O	O	X			1NC		
X	X	O	**10250T45**		1LONC		
O	X	X			1LONC		
X	O	O	**10250T44** ⑧		1NC		
O	O	X			1NO		
O	O	X			1NC		
X	O	O			1NO		

⑤ Bolded circuit corresponds to "X-O" circuit selection. X = closed circuit, O = open circuit.
⑥ See **Figure 47-97** for "A" and "B" mounting location.
⑦ NO = Normally Open, NC = Normally Closed, LONC = Late Opening Normally Closed.
⑧ Four circuits in single block depth — rated 300V max.

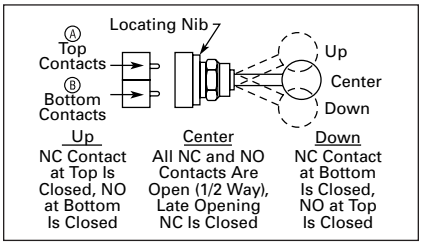


Figure 47-97. A and B Mounting Location

Application Caution

Joystick operators are not recommended on certain DC applications above 24V DC which may involve lightly engaging the contacts (teasing) to achieve speed control, positioning, jogging, etc. Excessive arcing and deterioration of the contacts will occur.

Contact Blocks ..... **Page 47-148**
Enclosures ..... **Pages 47-153 – 47-154**
Legend Plates ..... **Pages 47-151 – 47-152**
Discount Symbol **1CD1C**

Joysticks (Continued)

Four-Position Joystick Operators

The joystick operated control unit is intended for AC application only. For other use, see **Application Caution** on preceding page.

The panel area required for the 4-position operator is equivalent to two standard pushbutton operators.

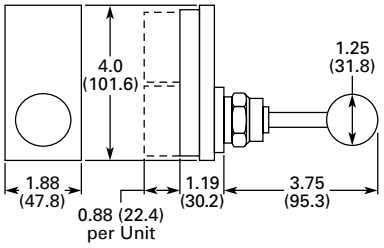
Note: The latch holds the lever in the center position. The trigger latch must be released before lever can moved into any position.

4-Position Joystick Operator

4-Position Joystick Operator with Latch

Table 47-222. 4-Position Joystick Operators — UL (NEMA) Type 3, 3R, 4, 4X, 12, 13

Contact Block Limitations	Description ①	Catalog Number	Price U.S. $	Overall Dimensions in Inches (mm)
4 Contact Blocks Max. — 2 in Each Position	**Operator Only — AC Application Only**			
	4-Position — without Latch 4-Position — with Latch	**10250T451_** **10250T461_**		
	Hole Plug			
	To plug unused hole	**10250TA7**		



① Momentary operators — spring return to center. For maintained operators add Suffix Code from **Table 47-223**.
Example: 10250T451**10**. Operator without latch, maintained in left and right positions.

Field Conversion — Gate

The factory assembled 4-position operator is assembled with a gate arranged for four handle positions.

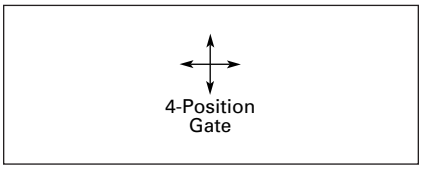


Figure 47-98. Handle Positions

Three additional gates, supplied with every operator, allow on the job conversion to 3- or 8-position operation as illustrated below.

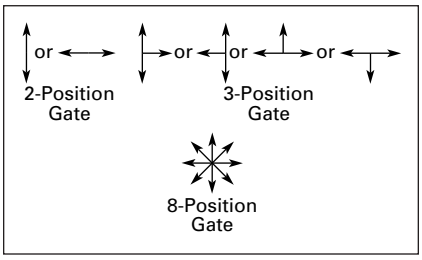


Figure 47-99. 2-, 3- or 8-Position Operation

The 8-position gate controls the four functions shown as "Up," "Down," "Left" and "Right." The remaining four diagonal positions each actuate two adjacent functions (see **Figure 47-100**); for example, "Left Down" actuates both "Left" and "Down." The operator may be arranged for spring return of handle to center position, or maintained in up to eight positions (see description of maintained position operator).

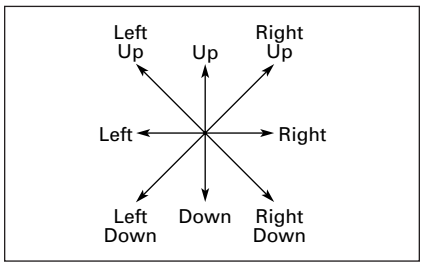


Figure 47-100. Adjacent Functions

Maintained Position

For maintained position (non-spring return), locate required maintained position or positions of operating lever in **Table 47-223** and add appropriate Suffix Number to the Catalog Number selected from **Table 47-222**.

Table 47-223. Maintained Positions

Maintained Positions				Suffix Number
Up	Down	Left	Right	
X	—	—	—	**1**
—	X	—	—	**2**
—	—	X	—	**3**
—	—	—	X	**4**
X	X	—	—	**5**
X	—	X	—	**6**
X	—	—	X	**7**
—	X	X	—	**8**
—	X	—	X	**9**
—	—	X	X	**10**
X	X	X	—	**11**
X	X	—	X	**12**
X	—	X	X	**13**
—	X	X	X	**14**
X	X	X	X	**15**

Note: On an 8-position gate, when an adjacent vertical and horizontal position are both maintained, the included diagonal position is also maintained.

Contact Blocks..... **Page 47-148**
Enclosures ..... **Pages 47-153 – 47-154**
Legend Plates..... **Pages 47-151 – 47-152**
Discount Symbol **1CD1C**

Joysticks (Continued)

Four-Position Joystick Operators (Continued)

Contact Block Operation
Contact blocks mount directly to the back of the operator. For reliable operation, the maximum number of contact blocks that should be installed behind each operator lever is 2 (4 total).

Figure 47-101 identifies the circuits activated by each of the eight possible lever positions. Contact block plungers 1, 2, 3, 4 are depressed (change state) when handle is in the position indicated by arrows below.

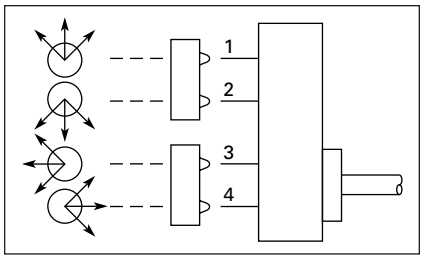


Figure 47-101. Circuit Activation

Note: Joystick in its resting state, center position, does not activate contact block plungers.

Ordering Example:
Suppose you are looking for a 4-position momentary joystick without a latch and the following circuit arrangements. X = Closed Circuit, O = Open Circuit.

Table 47-224. Example Circuit Arrangements

	Up	Down	Left	Right
1st Circuit	X	X	X	X
2nd Circuit	X	O	O	X

The contact blocks and their mounting locations would be as follows:

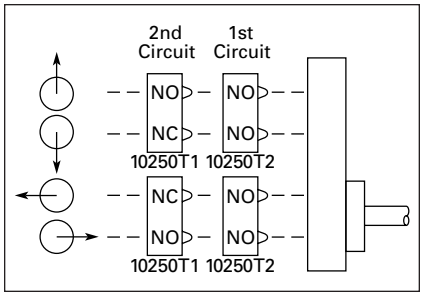


Figure 47-102. Example Contact Blocks and Locations

A complete bill of material for this example would include:

Table 47-225. Example Order

Qty.	Catalog Number
1	**10250T451**
2	**10250T2**
2	**10250T1**

Blank Legend Plates for Joystick Operators

When ordering engraved legend plates, order by Catalog Number and insert the following into Order Notes:

- Legend required
- Size of characters: 3/16, 1/8, 3/32 inch (4.8, 3.2, 2.4 mm)
- Location by letter (A – N)

Locations K and M can accommodate up to 2 lines horizontally; L and N up to 2 lines vertically.

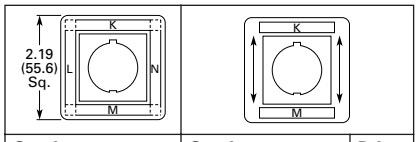
Maximum number of characters:

- Horizontal
  3/16" — 13, 1/8" — 14, 3/32" — 19
- Vertical
  3/16" — 10, 1/8" — 13, 3/32" — 14

Ordering Example:
2-position legend plate to be marked "UP" "DOWN."

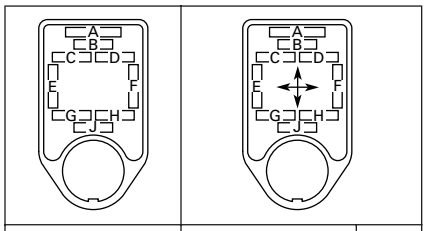
Catalog No.:	**10250TJ2S4STAMP**
Letter Size:	3/16 inch (4.8 mm)
Pos. K — UP	
Pos. M — DOWN	

Table 47-226. 2-Position



Catalog Number	Catalog Number	Price U.S. $
Blank Plate		
10250TJS3	**10250TJS4**	
Engraved Plate		
10250TJS3STAMP	**10250TJS4STAMP**	

Table 47-227. 4-Position



Catalog Number	Catalog Number	Price U.S. $
Blank Plate		
10250TJS1	**10250TJS2**	
Engraved Plate		
10250TJS1STAMP	**10250TJS2STAMP**	

Contact Blocks . . . . . **Page 47-148**
Discount Symbol **1CD1C**

Roto-Push® Units

Two-Position Momentary

Complete assembled Two-Position Roto-Push Units are listed below. These operators have black flush buttons and are arranged for vertical mounting. Order legend plates separately.

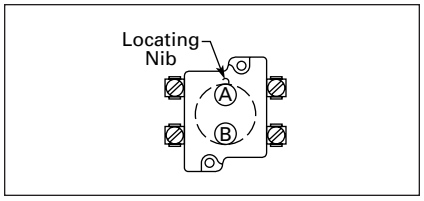


Figure 47-103. Mounting Location

Table 47-228. Roto-Push Units — UL (NEMA) Type 3, 3R, 4, 4X, 12, 13

	Typical Applications (Most Common Examples)	Operator Position ①				Roto-Push Assembled with Contact Blocks		Contact Type	Mounting Location	
		Collar Left		Collar Right		Catalog Number	Price U.S. $		A	B
		Normal	Depressed	Normal	Depressed					
2-Position										
Roto-Push — Black Flush Button for Vertical Mounting Cat. No. 10250T24111-1	FORWARD/REVERSE; HIGH/LOW; OPEN/CLOSE; UP/DOWN; etc.	O O	O X	O O	X O	**10250T2411-2**		1NO 1NO		
	JOG/RUN; MAN./AUTO; etc.	O O	X O	O X	X X	**10250T24111-2**		1NO 1NO		
	RUN/JOG; START/JOG; etc.	O X	X X	O O	X O	**10250T24111-1**		1NO 1NC		
	SAFE/RUN; etc.	O O	O O	O X	X X	**10250T2415-2**		1NO 1NO		

① X = Closed Circuit, O = Open Circuit.

Two-Position Latched

The Two-Position Roto-Push Latch Unit is fully assembled and only requires a legend plate for a great variety of applications. When the selector collar is in the extreme left position, the button is in the free or normal position and can be operated as a standard pushbutton. Rotating the collar to the extreme right position automatically depresses and latches the button in the depressed position. The white filled groove in the button indicates the selector collar position. The selector collar has spring return to the left position except when in the extreme right latched position.

Table 47-229. Rotates to a Latch-Out Mode

Color and Type of Button	Contact Block	Vertical Mounting	
		Catalog Number	Price U.S. $
Red Long	1NC 2NC	**10250T72** **10250T73**	

Accessories ..... **Pages 47-155 – 47-156**
Additional Circuit Arrangements ..... **Pages 47-133 – 47-134**
Dimensions ..... **Pages 47-160 – 47-162**
Enclosures ..... **Pages 47-153 – 47-154**
Legend Plates..... **Pages 47-151 – 47-152**
Discount Symbol **1CD1C**

Roto-Push Operators

Roto-Push Components

A Roto-Push control unit combines the function of a pushbutton and a selector switch. The contacts are operated by the combined action of rotating the outer collar and pushing a button contained in the collar.

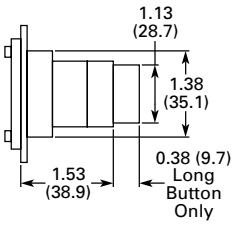
In selecting the cam and contact blocks for the listed function, the analysis involves considering the function with the collar rotated to the given position with the button free (designated as "N") and then in that same position with the button depressed (designated "D"). This is done for each rotational position of the collar.

When Ordering Specify

- Catalog Number of Operator with Cam Code Suffix from tables below and on following pages, Example: 10250T241**1**.
- Catalog Number(s) for Contact Blocks and Legend Plates if required.
- To select the cam and contact blocks needed for 2-position and 3-position switches, use the tables on following pages.

Operator and Cam 10250T24111

Table 47-230. Operator and Cam

Color and Type of Button	Vertical Mounting Catalog and Code Number	Horizontal Mounting Catalog and Code Number	Cam Code No. Select from Tables	Price U.S. $	Overall Dimensions in Inches (mm)
Black Flush Red Flush ① Green Flush Black Long Red Long ① Green Long	**10250T241_** **10250T242_** **10250T243_** **10250T261_** **10250T262_** **10250T263_**	**10250T251_** **10250T252_** **10250T253_** **10250T271_** **10250T272_** **10250T273_**	+ 1 to 18		

① Not to be used for Emergency Stop application.

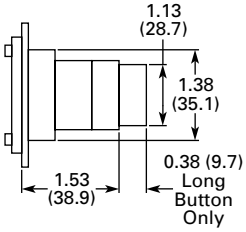
Two-Position Roto-Push Operator — Rotates to a Latch-Out Mode

Special Roto Latch — Red Long Button Catalog Number 10250T3213

Special Rotor Latch

This differs from the other Roto-Push operators in that as the collar is rotated to the right it depresses the button and releases the button when rotated left. But the button in the released position can be momentarily pushed independent of the collar or its position. As the button is depressed by rotating the collar, the button also rotates and indicates its mode by a white line on the button face. This button can be used as an emergency stop or latched stop.

Table 47-231. Special Rotor Latch — UL (NEMA) Type 3, 3R, 4, 4X, 12, 13

Color and Type of Button	Vertical Mounting Catalog Number	Price U.S. $	Overall Dimensions in Inches (mm)
Red Long Black Long	**10250T3213** **10250T3214**		

Contact Blocks ..... **Page 47-148**
Enclosures ..... **Pages 47-153 – 47-154**
Legend Plates ..... **Pages 47-151 – 47-152**
Discount Symbol **1CD1C**

Roto-Push Operators (Continued)

Table 47-232. Cam and Contact Block Selection for Two-Position Roto-Push

Combination Number	Collar Position		Cam Code 1	Cam Code 2	Cam Code 3	Cam Code 4	Cam Code 5	Cam Code 6
	Circuit Sequence ①							
	N D	N D						
1	O O	O X	A NO	A NO	—	—	A NO	—
2	O O	X O	—	—	—	A NC B NO	A NC B NO	—
3	O O	X X	—	—	—	—	B NO	A NO
4	O X	O O	B NO	A NC B NO	—	—	—	A NC B NO
5	O X	O X	A NO B NO	B NO	—	A NO	—	—
6	O X	X O	—	—	—	—	—	—
7	O X	X X	—	—	A or B NO	B NO	—	B NO
8	X O	O O	—	—	A or B NC	B NC	—	B NC
9	X O	O X	—	—	—	—	—	—
10	X O	X O	A NC B NC	B NC	—	A NC	—	—
11	X O	X X	B NC	A NO B NC	—	—	—	A NO B NC
12	X X	O O	—	—	—	—	B NC	A NC
13	X X	O X	—	—	—	A NO B NC	A NO B NC	—
14	X X	X O	A NC	A NC	—	—	A NC	—

① N = Button in free or normal position. D = Button depressed.

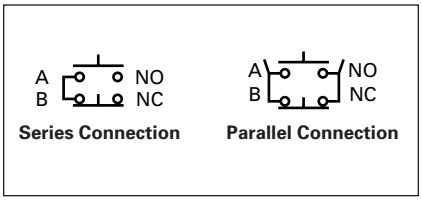


Figure 47-104. Series and Parallel Connections

The connections are not made at the factory. They are illustrated in the selection table as requirements, but must be made on the job.

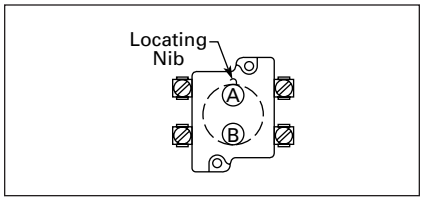


Figure 47-105. Circuit Location

Letters "A" and "B" represent the locations which the two circuits of a contact block will occupy in relation to the locating nib of the operator. **Figure 47-104** illustrates this pictorially.

Contact Blocks . . . . . **Page 47-148**

Roto-Push Operators (Continued)

Table 47-232. Cam and Contact Block Selection for Two-Position Roto-Push (Continued)

Combination Number	Collar Position		Cam Code 10	Cam Code 11	Cam Code 12	Cam Code 13	Cam Code 14
	Circuit Sequence ①						
	N D	N D					
15	O O	O X	—	A NO B NO	—	—	—
16	O O	X O	—	A NC B NO	A NC	A or B NC	A NC
17	O O	X X	B NO	B NO	—	—	—
18	O X	O O	A NO	A NO B NC	—	—	B NO
19	O X	O X	—	A NO	B NO	—	—
20	O X	X O	—	—	—	—	A NC B NO
21	O X	X X	A NO B NO	A NO B NO	A NC B NO	—	—
22	X O	O O	A NC B NC	A NC B NC	A NO B NC	—	—
23	X O	O X	—	—	—	—	A NO B NC
24	X O	X O	—	A NC	B NC	—	—
25	X O	X X	A NC	A NO B NO	—	—	B NC
26	X X	O O	B NC	B NC	—	—	—
27	X X	O X	—	A NO B NC	A NO	A or B NO	A NO
28	X X	X O	—	A NC B NC	—	—	—

① N = Button in free or normal position. D = Button depressed.

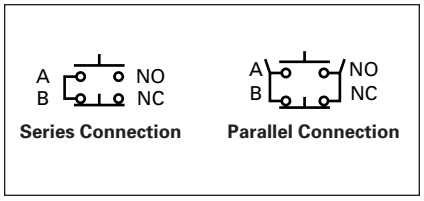


Figure 47-106. Series and Parallel Connections

The connections are not made at the factory. They are illustrated in the selection table as requirements, but must be made on the job.

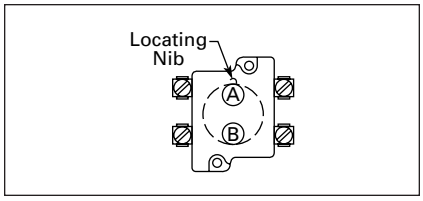


Figure 47-107. Circuit Location

Letters "A" and "B" represent the locations which the two circuits of a contact block will occupy in relation to the locating nib of the operator. **Figure 47-106** illustrates this pictorially.

Contact Blocks . . . . . **Page 47-148**

Roto-Push Operators (Continued)

Table 47-233. Cam and Contact Block Selection for Three-Position Roto-Push

Combination Number	Collar Position (Circuit Sequence ②)			Cam Code 7	Cam Code 8	Cam Code 9 ①	Cam Code 15 ①	Cam Code 16	Cam Code 17	Cam Code 18
	N D	N D	N D							
1	O O	O O	O X	A NO B NO	A NC B NO	—	B NO ①	B NO	—	A NC B NO
2	O O	O O	X X	—	—	B NO	—	—	A NO	—
3	O O	O X	O O	—	—	A NO B NC	—	—	—	A NO B NO
4	O O	O X	O X	—	—	—	—	—	—	B NO
5	O O	O X	X X	—	—	A NO ①	—	—	—	—
6	O O	X X	O O	—	A NO B NO	—	—	—	—	—
7	O O	X X	O X	—	B NO	—	—	—	—	—
8	O O	X X	X O	A NC B NO	—	—	—	—	—	—
9	O O	X X	X X	B NO	—	—	—	—	—	—
10	O X	O O	O O	A NO B NC	A NO B NC	—	A NO ①	A NO	B NO	A NO B NC
11	O X	O O	O X	A NO	—	—	A NO B NO	A NO B NO	—	—
12	O X	O O	X X	—	—	—	—	—	A NO B NO	—
13	O X	O X	O O	—	—	—	—	—	—	A NO
14	O X	O X	O X	—	—	—	—	—	—	A NO B NO
15	O X	X X	O O	—	A NO	—	—	—	—	—
16	O X	X X	O X	—	A NO B NO	—	—	—	—	—
17	O X	X X	X X	A NO B NO	—	—	—	—	—	—

① Limited to 4 contact blocks. See Note on **Page 47-148**.
② N = Button in free or normal position. D = Button depressed.

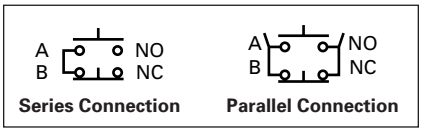


Figure 47-108. Series and Parallel Connections

The connections are not made at the factory. They are illustrated in the selection table as requirements, but must be made on the job.

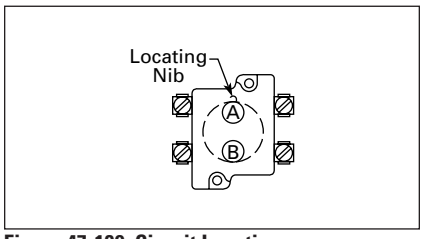


Figure 47-109. Circuit Location

Letters "A" and "B" represent the locations which the two circuits of a contact block will occupy in relation to the locating nib of the operator. **Figure 47-108** illustrates this pictorially.

Contact Blocks . . . . . **Page 47-148**

Roto-Push Operators (Continued)

Table 47-233. Cam and Contact Block Selection for Three-Position Roto-Push (Continued)

Combination Number	Collar Position			Cam Code 7	Cam Code 8 ①	Cam Code 9	Cam Code 15	Cam Code 16	Cam Code 17	Cam Code 18
	Circuit Sequence ②									
	N D	N D	N D							
18	X O	O O	O O	A NC B NC	—	—	—	—	—	—
19	X O	O O	X X	—	A NC	—	—	—	—	—
20	X O	O O	X O	—	A NC B NC	—	—	—	—	—
21	X O	X X	O O	—	—	—	—	—	A NC B NC	—
22	X O	X X	X X	A NC B NO	A NC B NO	—	—	A NC	B NC	A NC B NO
23	X O	X X	X O	A NC	—	—	—	A NC B NC	—	—
24	X O	X O	X O	—	—	—	A NC B NC	—	—	A NC B NC
25	X O	X O	X X	—	—	—	A NC ①	—	—	A NC
26	X X	O O	O O	B NC	—	A NC ①	—	—	—	—
27	X X	O O	O X	A NO B NC	—	—	—	—	—	—
28	X X	O O	X O	—	B NC	—	—	—	—	—
29	X X	O O	X X	—	A NC B NO	A NC B NO	—	—	—	—
30	X X	X X	O O	—	—	B NC	—	—	A NC	—
31	X X	X X	X O	A NC B NC	A NO B NC	—	—	B NC	—	A NO B NC
32	X X	X O	X O	—	—	—	B NC ①	—	—	B NC
33	X X	X O	X X	—	—	—	A NO B NC	—	—	A NC B NC

① Limited to 4 contact blocks.
② N = Button in free or normal position. D = Button depressed.

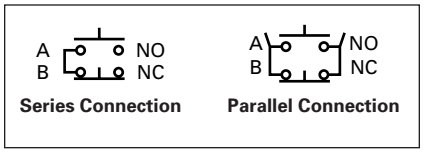


Figure 47-110. Series and Parallel Connection

The connections are not made at the factory. They are illustrated in the selection table as requirements, but must be made on the job.

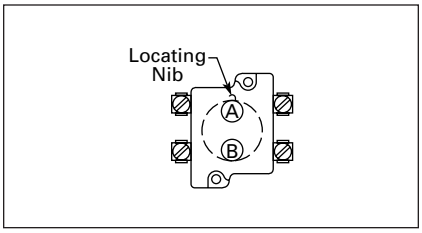


Figure 47-111. Circuit Location

Letters "A" and "B" represent the locations which the two circuits of a contact block will occupy in relation to the locating nib of the operator. **Figure 47-110** illustrates this pictorially.

Contact Blocks ..... **Page 47-148**

Contact Blocks

Standard Contact Blocks

- UL A600/P600 rated
- Color-coded plungers – red/green for NC/NO circuits
- Silver contact tips with "reliability nibs"
- Gray (opaque) or amber (translucent) housings
- Pressure plate or spade terminals
- Fingerproof shrouds (for pressure terminals only)

Logic Level Contact Blocks

- UL A600/P600 rated
- Color-coded plungers
- Inert palladium knife-blade contacts
- Gray (opaque) housings
- Pressure plate or spade terminals

Special Function Contact Blocks

- UL A600/P600 rated
- Color-coded plungers
- Silver contact tips with "reliability nibs"
- Gray (opaque) housings
- Pressure plate terminals only

Special Purpose Contact Block

- Maximum 300V rated
- Black plungers
- Silver contact tips with "reliability nibs"
- Black (opaque) housings
- Pressure plate terminals only
- Fingerproof shrouds not available

Reliability Nibs

Reliability nibs are the hallmark of Eaton's Cutler-Hammer contact blocks. A pointed silver nib on the contact tip ensures reliable switching from logic level (5V) up to 600V applications. Therefore standard contact blocks can be used for most logic level applications where the contacts are not exposed to any harsh environmental conditions.

Palladium Contacts

Palladium, which is more inert than gold, is well suited for voltages and currents approaching zero and is recommended for applications where environmental conditions are a factor.

Maximum Contact Block Mounting per Operator Type

Operator	Max. Stack	Operator	Max. Stack
Pushbuttons	6	2- or 3-Position Selector Switches	6
Push-Pull Operators	2	4-Position Selector Switches	4
Roto-Push Operators	4	Joysticks	4

Table 47-234. Contact Blocks

Symbol	Circuit	Description/ Notes ① *10250T1*	Standard				Logic Level			
			Pressure Terminals		Spade Terminals ②		Pressure Terminals		Spade Terminals ②	
			Catalog Number	Price U.S. $	Catalog Number	Price U.S. $	Catalog Number	Price U.S. $	Catalog Number	Price U.S. $
Blank No Plunger	1NC	Stack up to 6 blocks (6 circuits) unless otherwise noted.	**10250T51**		**10250T59**		**10250T51E**		**10250T59E**	
Blank No Plunger	1NO	Stack up to 6 blocks (6 circuits) unless otherwise noted.	**10250T53**		**10250T60**		**10250T53E**		**10250T60E**	
	NO-NC	Stack up to 6 blocks (12 circuits) unless otherwise noted.	**10250T1**		**10250T40**		**10250T1E**		**10250T40E**	
	2NC	Stack up to 6 blocks (12 circuits) unless otherwise noted.	**10250T3**		**10250T42**		**10250T3E**		**10250T42E**	
	2NO	Stack up to 6 blocks (12 circuits) unless otherwise noted.	**10250T2**		**10250T41**		**10250T2E**		**10250T41E**	
Special Function Blocks ③										
Blank No Plunger	LONC	Late opening NC. Stack up to 6 blocks (6 circuits) unless otherwise noted.	**10250T71** ③		—		**10250T71E** ③		—	
	ECNO -NC	Early closing NO and standard NC. Stack up to 6 blocks unless otherwise noted.	**10250T47** ③ ④		—		**10250T47E** ③		—	
	ECNO -NO	Early closing NO and standard NO. Stack up to 4 blocks unless otherwise noted.	**10250T57** ③ ④		—		**10250T57E** ③		—	
	2LONC	Two late opening NC contacts. Stack up to 6 blocks unless otherwise noted.	**10250T45** ③		—		**10250T45E** ③		—	
	LONC-ECNO	Overlapping contacts. Stack up to 4 blocks unless otherwise noted.	**10250T55** ③ ④		—		**10250T55E** ③		—	
Special Purpose Blocks ⑤										
	2NO-2NC	Four circuits in single block depth. Rated 300V max. Stack up to 4 blocks unless otherwise noted.	**10250T44** ⑤		—					

① All 10250T contact blocks shown are suitable for use on standard 10250T and E34 operators. These contact blocks are not suitable for Class I Division 2 type 10250T or E34 devices.

② Contact blocks with spade terminals are limited to a maximum of one contact block per operator and minimum spacing between devices is 2.5" (63.5 mm). Not suitable for use in 10250T or E34 enclosures. Also available in amber housing. Not available with fingerproof shrouds.

③ Special function contact blocks are not suitable for use with roto-push operators, 3-position push-pull operators, or 4-position selector switches.

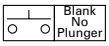
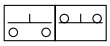
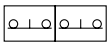
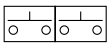
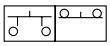
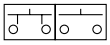
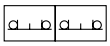
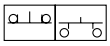
④ ECNO contact blocks are not suitable for use with 2-position joysticks or when operators are used with padlock attachments.

⑤ Special purpose 10250T44 contact blocks are not suitable on selector switches or roto-push operators. Okay to use with 3-position push-pull operators only on low voltage (30V or less) circuits. Fingerproof shrouds not available.

Ratings . . . . . **Page 47-116**
Dimensions . . . . . **Pages 47-160 – 47-162**
Discount Symbol **1CD1C**

Contact Blocks (Continued)

Table 47-235. Contact Blocks with Fingerproof Shrouds

Symbol	Circuit	Description/ Notes ① *10250T1CP*	Standard Pressure Terminals ② Catalog Number	Standard Price U.S. $	Logic Level Pressure Terminals ② Catalog Number	Logic Level Price U.S. $
Blank No Plunger	1NC	Stack up to 6 blocks (6 circuits) unless otherwise noted.	**10250T51P**		**10250T51EP**	
 Blank No Plunger	1NO	Stack up to 6 blocks (6 circuits) unless otherwise noted.	**10250T53P**		**10250T53EP**	
	NO-NC	Stack up to 6 blocks (12 circuits) unless otherwise noted.	**10250T1P**		**10250T1EP**	
	2NC	Stack up to 6 blocks (12 circuits) unless otherwise noted.	**10250T3P**		**10250T3EP**	
	2NO	Stack up to 6 blocks (12 circuits) unless otherwise noted.	**10250T2P**		**10250T2EP**	
Special Function Blocks ④						
Blank No Plunger	LONC	Late opening NC. Stack up to 6 blocks (6 circuits) unless otherwise noted.	**10250T71P** ③		**10250T71EP** ③	
	ECNO-NC	Early closing NO and standard NC. Stack up to 6 blocks unless otherwise noted.	**10250T47P** ③ ④		**10250T47EP** ③	
	ECNO-NO	Early closing NO and standard NO. Stack up to 4 blocks unless otherwise noted.	**10250T57P** ③ ④		**10250T57EP** ③	
	2LONC	Two late opening NC contacts. Stack up to 6 blocks unless otherwise noted.	**10250T45P** ③		**10250T45EP** ③	
	LONC-ECNO	Overlapping contacts. Stack up to 4 blocks unless otherwise noted.	**10250T55P** ③ ④		**10250T55EP** ③	

① All 10250T contact blocks shown are suitable for use on standard 10250T and E34 operators. These contact blocks are not suitable for Class I Division 2 type 10250T or E34 devices.

② To order contact blocks with translucent amber housing, change Suffix P to **CP** in Catalog Number e.g. 10250T51**CP**.

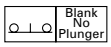
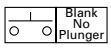
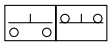
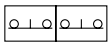
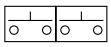
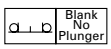
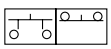
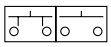
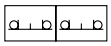
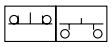
③ Special function contact blocks are not suitable for use with roto-push operators, 3-position push-pull operators, or 4-position selector switches.

④ ECNO contact blocks are not suitable for use with 2-position joysticks or when operators are used with padlock attachments.

Ratings. . . . . **Page 47-116**
Dimensions. . . . . **Pages 47-160 – 47-162**
Discount Symbol **1CD1C**

Contact Blocks (Continued)

Table 47-236. Amber Contact Blocks

Symbol	Circuit	Description/ Notes ① *10250T1C*	Standard				Logic Level			
			Pressure Terminals ②		Spade Terminals ③		Pressure Terminals ②		Spade Terminals ③	
			Catalog Number	Price U.S. $	Catalog Number	Price U.S. $	Catalog Number	Price U.S. $	Catalog Number	Price U.S. $
 Blank No Plunger	1NC	Stack up to 6 blocks (6 circuits) unless otherwise noted.	**10250T51C**		**10250T59C**		**10250T51EC**		**10250T59EC**	
 Blank No Plunger	1NO	Stack up to 6 blocks (6 circuits) unless otherwise noted.	**10250T53C**		**10250T60C**		**10250T53EC**		**10250T60EC**	
	NO-NC	Stack up to 6 blocks (12 circuits) unless otherwise noted.	**10250T1C**		**10250T40C**		**10250T1EC**		**10250T40EC**	
	2NC	Stack up to 6 blocks (12 circuits) unless otherwise noted.	**10250T3C**		**10250T42C**		**10250T3EC**		**10250T42EC**	
	2NO	Stack up to 6 blocks (12 circuits) unless otherwise noted.	**10250T2C**		**10250T41C**		**10250T2EC**		**10250T41EC**	
Special Function Blocks ③										
 Blank No Plunger	LONC	Late opening NC. Stack up to 6 blocks (6 circuits) unless otherwise noted.	**10250T71C** ④		—		**10250T71EC** ④		—	
	ECNO -NC	Early closing NO and standard NC. Stack up to 6 blocks unless otherwise noted.	**10250T47C** ④ ⑤		—		**10250T47EC** ④		—	
	ECNO -NO	Early closing NO and standard NO. Stack up to 4 blocks unless otherwise noted.	**10250T57C** ④ ⑤		—		**10250T57EC** ④		—	
	2LONC	Two late opening NC contacts. Stack up to 6 blocks unless otherwise noted.	**10250T45C** ④		—		**10250T45EC** ④		—	
	LONC-ECNO	Overlapping contacts. Stack up to 4 blocks unless otherwise noted.	**10250T55C** ④ ⑤		—		**10250T55EC** ④		—	

① All 10250T contact blocks shown are suitable for use on standard 10250T and E34 operators. These contact blocks are not suitable for Class I Division 2 type 10250T or E34 devices.

② To order amber contact blocks with fingerproof shrouds, change Suffix to **CP** in the Catalog Number e.g. 10250T51**CP**. Not available with spade terminals.

③ Contact blocks with spade terminals are limited to a maximum of one contact block per operator and minimum spacing between devices is 2.5" (63.5 mm). Not suitable for use in 10250T or E34 enclosures. Also available in amber housing. Not available with fingerproof shrouds.

④ Special function contact blocks are not suitable for use with roto-push operators, 3-position push-pull operators, or 4-position selector switches.

⑤ ECNO contact blocks are not suitable for use with 2-position joysticks or when operators are used with padlock attachments.

Ratings . . . . . **Page 47-116**
Dimensions . . . . . **Pages 47-160 – 47-162**
Discount Symbol **1CD1C**

Options

Legend Plates

Legend Plates with Standard Markings

The legend plates listed below are sized for all standard commercial enclosures and Eaton's Cutler-Hammer cast enclosures. For vertical spacing less than 1.75", replace the **S** in the Catalog Number with **MS**, or the **M** with **P** (except Push-Pull). No change in price. The smaller size legend plates, "MS" or "P" size, have limited space for legend.

Table 47-237. For Pushbutton Operators and Indicating Lights — Standard

Price Each — U.S. $			
Legend	**Color of Field**	**Catalog Number**	
		Square ①	**1/2 Round**
Blank		**See Table 47-243 on Page 47-152**	
Letters on Legend Plates Below are 3/16" High			
CLAMP	Black	**10250TS90**	**10250TM90**
CLOSE	Black	**10250TS73**	**10250TM11**
DOWN	Black	**10250TS74**	**10250TM12**
EMERG. STOP	Red	**10250TS13**	**10250TM13**
FAST	Black	**10250TS75**	**10250TM14**
FASTER	Black	**10250TS87**	**10250TM87**
FEEDER ON	Black	**10250TS94**	**10250TM94**
FEEDER OFF	Black	**10250TS95**	**10250TM95**
FORWARD	Black	**10250TS15**	**10250TM15**
HIGH	Black	**10250TS16**	**10250TM16**
IN	Black	**10250TS17**	**10250TM17**
INCH	Black	**10250TS18**	**10250TM18**
JOG	Black	**10250TS19**	**10250TM19**
JOG FOR.	Black	**10250TS20**	**10250TM20**
JOG REV.	Black	**10250TS21**	**10250TM21**
LOW	Black	**10250TS22**	**10250TM22**
LOWER	Black	**10250TS23**	**10250TM23**
LUBE-FAIL	Black	**10250TS92**	**10250TM92**
MOTOR RUN	Black	**10250TS81**	**10250TM81**
MOTOR STOP	Black	**10250TS82**	**10250TM82**
OFF	Red	**10250TS24**	**10250TM24**
ON	Black	**10250TS25**	**10250TM25**
OPEN	Black	**10250TS26**	**10250TM26**
OUT	Black	**10250TS27**	**10250TM27**
POWER ON	Black	**10250TS80**	**10250TM80**
RAISE	Black	**10250TS28**	**10250TM28**
READY	Black	**10250TS86**	**10250TM86**
RESET	Black	**10250TS29**	**10250TM29**
REVERSE	Black	**10250TS30**	**10250TM30**
RUN	Black	**10250TS31**	**10250TM31**
SAFE	Black	**10250TS85**	**10250TM85**
SLOW	Black	**10250TS32**	**10250TM32**
SLOWER	Black	**10250TS88**	**10250TM88**
START	Black	**10250TS33**	**10250TM33**
STOP	Red	**10250TS34**	**10250TM34**
TEST	Black	**10250TS83**	**10250TM83**
TRANSFER	Black	**10250TS93**	**10250TM93**
TRIP	Black	**10250TS84**	**10250TM84**
UNCLAMP	Black	**10250TS91**	**10250TM91**
UP	Black	**10250TS35**	**10250TM35**

① Square legend plates have a satin aluminum field. Color is on lower portion.

Table 47-238. Blank Plastic Legend Plates — Square

Price Each — U.S. $				
Color		**Catalog Number**		
Lettering	**Field**	**Standard**	**Jumbo ③**	**Extra Large**
Black	White or Silver ②	**10250TSP76**	**10250TLP76**	**10250TEP76**
White	Red or Black ②	**10250TSP77**	**10250TLP77**	**10250TEP77**

② If legend plate is to be engraved, specify field color required.

③ Cannot be used on cast enclosures except for top row. Suitable for most sheet metal enclosures.

Square Legend Plate Catalog Number 10250TS41

1/2 Round Legend Plate Catalog Number 10250TM38

70 mm Round — Plastic Catalog Number 10250TRP79

Table 47-239. For Selector Switch and Roto-Push Operators — Standard Size

Price Each — U.S. $			
Legend	**Color of Field**	**Catalog Number**	
		Square ④	**1/2 Round**
Blank		**See Table 47-243 on Page 47-152**	
2-Position — 5/32" High Lettering			
FOR. REV.	Black	**10250TS38**	**10250TM38**
HAND AUTO	Black	**10250TS39**	**10250TM39**
HIGH LOW	Black	**10250TS40**	**10250TM40**
JOG RUN	Black	**10250TS41**	**10250TM41**
MAN. AUTO	Black	**10250TS67**	**10250TM67**
OFF ON	Black	**10250TS42**	**10250TM42**
OPEN CLOSE	Black	**10250TS43**	**10250TM43**
RUN JOG	Black	**10250TS44**	**10250TM44**
SAFE RUN	Black	**10250TS45**	**10250TM45**
START JOG	Black	**10250TS46**	**10250TM46**
START STOP	Black	**10250TS47**	**10250TM47**
UP DOWN	Black	**10250TS48**	**10250TM48**
3-Position — 1/8" High Lettering			
AUTO OFF HAND	Black	**10250TS49**	**10250TM49**
FOR. OFF REV.	Black	**10250TS50**	**10250TM50**
FOR. SAFE REV.	Black	**10250TS69**	**10250TM69**
HAND OFF AUTO	Black	**10250TS51**	**10250TM51**
MAN. OFF AUTO	Black	**10250TS68**	**10250TM68**
OPEN OFF CLOSE	Black	**10250TS53**	**10250TM53**
RUN SAFE JOG	Black	**10250TS70**	**10250TM70**
UP OFF DOWN	Black	**10250TS54**	**10250TM54**
ON STOP SAFE	Red	**10250TS71**	**10250TM71**

④ Square legend plates have a satin aluminum field. Color is on lower portion.

Table 47-240. 45 mm and 70 mm Plastic — Round

Color		Catalog Number	Price U.S. $
Lettering	**Field**		
45 mm			
Blank	Yellow or Red ⑤	**10250TRP78**	
70 mm			
Blank	Yellow or Red ⑤	**10250TRP76**	
Red EMERG. STOP	Yellow	**10250TRP79**	

⑤ If legend plate is to be engraved, specify field color required.

Table 47-241. For Push-Pull Units ⑥

Price Each — U.S. $			
Legend	**Color of Field**	**Catalog Number**	
		Square ⑦	**1/2 Round**
Standard Size — Letters on Legend Plates Below are 3/32" High			
PULL START/PUSH STOP	Green/Red	**10250TPP2**	**10250TR2**
PUSH ON/PULL OFF	Black	**10250TPP5**	**10250TR5**
PULL OPEN/PUSH CLOSE	Black	**10250TPP8**	**10250TR8**
PULL UP/PUSH DOWN	Black	**10250TPP11**	**10250TR11**
Jumbo Size — Letters on Legend Plates Below are 1/8" High			
PULL START/PUSH STOP	Green/Red	**10250TPP3**	**10250TR3**
PULL ON/PUSH OFF	Black	**10250TPP6**	**10250TR6**
PULL OPEN/PUSH CLOSE	Black	**10250TPP9**	**10250TR9**
PULL UP/PUSH DOWN	Black	**10250TPP12**	**10250TR12**

⑥ All Push-Pull Legend Plates include the symbols ↑↓ in the center of the plate.

⑦ Square legend plates have a satin aluminum field. Color is on lower portion.

Discount Symbol **1CD1C**

Legend Plates with Non-standard Markings

When Ordering Specify

- Catalog Number of Blank Plate Phase plus Suffix "STAMP."
- Insert the following into Order Notes: Legend, Letter Size and Locations (letters A – W) — combine letters for definitive locations as shown.

Ordering Example:

Catalog No.: **10250TS36STAMP**
Letter Size: 3/32 inch (2.4 mm)
Pos. A — POWER HOUSE
Pos. B — START PUMP 1

Legend Characters Available

A B C D E F G H I J K L M N O P Q R S T U V W X
Y Z / - . , 1 2 3 4 5 6 7 8 9 0

Legend characters on black and red plates are white — on satin aluminum plates, characters are black.

Blackening Kit

Solution blackens aluminum exposed by engraving process. Must be applied immediately after engraving. 0.3 oz. bottle — sufficient for approximately 1100 legend plates.

Table 47-242. Blackening Kit

Catalog Number	Price U.S. $
10250TBK	

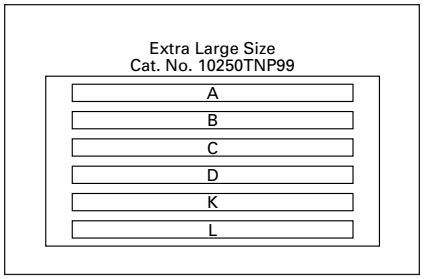


Figure 47-112. Legend Positions

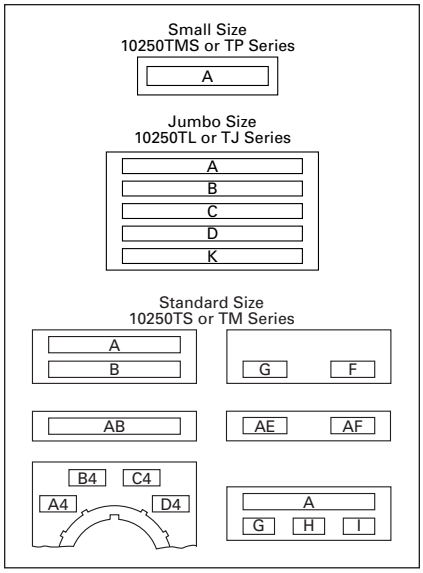


Figure 47-113. Legend Positions

Table 47-243. Blank and Custom Engraved Legend Plates

Style	Color	Small	Standard	Jumbo ③	Extra Large ②	4-Position Selector Switch		Push-Pull with Symbols ①		Price U.S. $	
						Custom ⑤	Standard	Standard	Jumbo ③	Blank	Custom Engraved
		Catalog Number	Catalog Number	Catalog Number	Catalog Number	Catalog Number	Catalog Number	Catalog Number	Catalog Number		
Square ④	Black	10250TMS36	10250TS36	10250TL36	—	10250TS76	10250TS72	10250TPP17	10250TPP18		
	Red	10250TMS37	10250TS37	10250TL37	—	—	—	—	—		
	Green/Red	—	—	—	—	—	—	10250TPP20	10250TPP21		
	Satin Alum.	—	—	—	10250TNP99	—	—	—	—		
1/2 Round	Black	10250TP36	10250TM36	10250TJ36	—	—	10250TM72	10250TR17	10250TR18		
	Red	10250TP37	10250TM37	10250TJ37	—	—	—	—	—		
	Green/Red	—	—	—	—	—	—	10250TR20	10250TR21		
	Satin Alum.	—	10250TM89	10250TJ89	—	—	—	—	—		

① All Push-Pull Legend Plates include the symbols ↑↓ in the center of the plate.
② When used to meet Ford Motor Co. specifications, specify engraved legend. Cannot be used on standard cast or sheet metal enclosures.
③ Cannot be used on cast enclosures except for top row. Suitable for most sheet metal enclosures.
④ Square legend plates have a satin aluminum field. Color is on lower portion.
⑤ Slightly larger than standard size for legends requiring more space — fits cast enclosures.

Table 47-244. Maximum Characters per Legend Plate and Approximate Dimensions

Top (Aluminum and Plastic)	Approximate Dimensions in Inches (mm)		Style	Character Size					
	Width	Height		3/32" High		1/8" High		3/16" High	
				Number of Lines	Number of Characters	Number of Lines	Number of Characters	Number of Lines	Number of Characters
Small ⑥	1.59 (40.4)	1.59 (40.4)	Square	1	17	—	—	—	—
			1/2 Round	1	15	1	12	1	9
Standard and Custom	1.75 (44.5)	1.75 (44.5)	Square	2	18	2	13	1	9
			1/2 Round	2	15	2	12	1	9
Jumbo ⑦	2.19 (55.6)	2.19 (55.6)	Square	5	23	3	18	2	12
			1/2 Round	5	19	4	15	2	11
Extra Large ⑧	2.44 (62)	2.44 (62)	Square	6	25	3	18	3	12

⑥ Recommended only when mounting on minimum centers [less than 1-3/4 inch (44.5 mm) vertical centers].
⑦ Can be used on top row only of any enclosure.
⑧ When used to meet Ford Motor Co. specifications, specify engraved legend. Cannot be used on standard cast or sheet metal enclosures.

Legend Plates for
Joystick Operator . . . . . **Page 47-141**
Discount Symbol **1CD1C**

Enclosures

Die Cast, Polyester and Stainless Steel Enclosures

Table 47-245. Enclosures (Case and Cover) — Surface Mounting ①

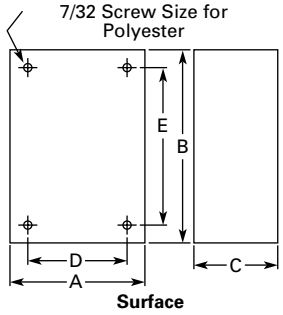
	Number of Elements	1 Contact Block Depth		2 Contact Block Depth	
		Catalog Number	Price U.S. $	Catalog Number	Price U.S. $
Die Cast Enclosure — Cat. No.10250TN11	**Cast Enclosure — In-Line ②③⑤ NEMA 4, 4X, 12, 13**				
	1	**10250TN1**		**10250TN11**	
	2	**10250TN2**		**10250TN12**	
	3	**10250TN3**		**10250TN13**	
	4	**10250TN4**		**10250TN14**	
Polyester Enclosure — Cat. No. E34N52	**Polyester⑤ — In-Line NEMA 3, 4X, 12**				
	1	—		**E34N51**	
	2	—		**E34N52**	
	3	—		**E34N53**	
	4	—		**E34N54**	
Stainless Steel Enclosure — Cat. No. 10250TN35	**Stainless Steel ④⑤ — In-Line NEMA 4, 4X, 12**				
	1	—		**10250TN33**	
	2	—		**10250TN34**	
	3	—		**10250TN35**	
	4	—		**10250TN36**	

① For spacing increments, see **Page 47-154.**
② All cast enclosures can be converted to base mounting of contact blocks, with spacers 10250TA22 or 10250TA23. See listing on **Page 47-156.**
③ When used with E30 pushbuttons, only the one element enclosure can be used.
④ 14 gauge, type 304.
⑤ When used with resistor light units, only the 2 contact block depth enclosure can be used.

Table 47-246. Approximate Dimensions

Number of Elements	Element Arrangement	Surface Mounting Dimensions in Inches (mm) Wide A	High B	Deep C	Mounting D	Mounting E	Conduit Entrance
Cast							
1	In-Line	3.88 (98.6)	4.0 (101.6)	3.0 (76.3) ⑦	2.69 (68.3)	3.25 (82.6)	3/4
2	In-Line	3.88 (98.6)	5.88 (149.4)	3.0 (76.3) ⑦	2.69 (68.3)	5.13 (130.3)	3/4
3	In-Line	3.88 (98.6)	7.75 (196.9)	3.0 (76.3) ⑦	2.69 (68.3)	7.0 (177.8)	1
4	In-Line	3.88 (98.6)	9.63 (244.6)	3.0 (76.3) ⑦	2.69 (68.3)	8.88 (225.6)	1
Polyester							
1	In-Line	3.81 (96.8)	6.63 (168.4)	3.38 (85.9)	2.94 (74.7)	4.88 (124.0)	⑥
2	In-Line	3.81 (96.8)	6.63 (168.4)	3.38 (85.9)	2.94 (74.7)	4.88 (124.0)	
3	In-Line	3.81 (96.8)	8.88 (225.6)	3.38 (85.9)	2.94 (74.7)	7.13 (181.1)	
4	In-Line	3.81 (96.8)	11.13 (282.7)	3.38 (85.9)	2.94 (74.7)	9.38 (238.3)	
Stainless Steel							
1	In-Line	3.00 (76.2)	3.50 (88.9)	3.00 (76.2)	1.50 (38.1)	4.25 (108.0)	⑥
2	In-Line	3.50 (88.9)	6.75 (171.5)	3.00 (76.2)	1.50 (38.1)	7.50 (190.5)	
3	In-Line	3.50 (88.9)	9.00 (228.6)	3.00 (76.2)	1.50 (38.1)	9.00 (228.6)	
4	In-Line	3.50 (88.9)	11.25 (285.8)	3.00 (76.2)	1.50 (38.1)	12.00 (304.8)	

Approximate Dimensions



⑥ No conduit entrance holes provided. Drill as required.
⑦ Depth given is for two contact block deep stations. One contact block deep stations subtract 3/4 inch (19.1 mm).

Note: 2-position joystick must be used with two contact block deep enclosures (maximum number of contact blocks = 1). 4-position joysticks can not be used within these enclosures.

One Contact Block Depth Enclosure

Two Contact Block Depth Enclosure

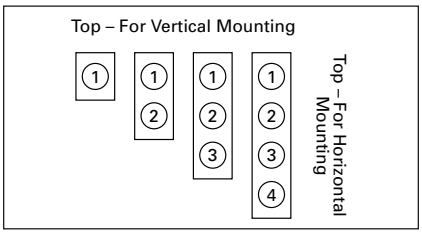


Figure 47-114. Enclosure Layouts

Discount Symbol **1CD1C**

Die Cast and Stainless Steel — Flush Mount, Covers Only

Table 47-247. Covers Only — Flush Mounting

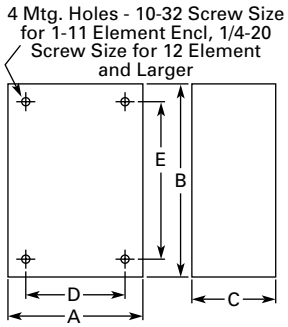
	Number of Elements	Catalog Number	Price U.S. $	Catalog Number	Price U.S. $
Flat Cover / Deep Cover		**Flush Cast Covers**			
		In-Line Deep Cover		**In-Line Flat Cover**	
	1	**10250TF11**		**10250TF1**	
	2	**10250TF12**		**10250TF2**	
	3	**10250TF13**		**10250TF3**	
	4	**10250TF14**		**10250TF4**	
		In-Line Stainless Steel Flush Plates ①			
		With Pullbox		**Without Pullbox**	
	1	**10250TS10**		**10250TS1**	
	2	**10250TS11**		**10250TS2**	
	3	**10250TS12**		**10250TS3**	
	4	**10250TS14**		**10250TS4**	

① Not oiltight. NEMA 1 applications only.

Table 47-248. Approximate Dimensions

Number of Elements	Flush Mounting Dimensions in Inches (mm) Wide A	High B	Deep C	Mounting D	Mounting E
Cast					
1	3.88 (98.6)	4.0 (101.6)	0.25 (6.4) ②	3.50 (88.9)	3.63 (92.2)
2	3.88 (98.6)	5.88 (149.4)	0.25 (6.4) ②	3.50 (88.9)	5.50 (139.7)
3	3.88 (98.6)	7.75 (196.9)	0.25 (6.4) ②	3.50 (88.9)	6.0 (152.4)
4	3.88 (98.6)	9.63 (244.6)	0.25 (6.4) ②	3.50 (88.9)	9.25 (235)
Stainless Steel					
1	5.0 (127)	5.0 (127)	2.50 (63.5) ③	3.25 (82.6)	1.88 (47.8)
2	5.0 (127)	6.88 (174.8)	2.50 (63.5) ③	3.25 (82.6)	3.63 (92.2)
3	5.0 (127)	8.63 (219.2)	2.50 (63.5) ③	3.25 (82.6)	5.50 (139.7)
4	5.0 (127)	10.50 (266.7)	2.50 (63.5) ③	3.25 (82.6)	7.25 (184.2)

Approximate Dimensions



Surface or Pendant

② Depth given is for flat cover. Deep cover 3/4 inch (19.1 mm) deeper.
③ Depth given includes pull box.

Table 47-249. Spacing Increments

Type	Approximate Dimensions in Inches (mm) F	G	H
Cast	2.44 (62)	2.5 (63.5)	1.88 (47.8)
Polyester	1.88 (47.8)	Min. 2.13 (54.1)	2.25 (57.2)
Stainless Steel	1.69 (42.9)	Min. 1.73 (43.9)	2.25 (57.2)

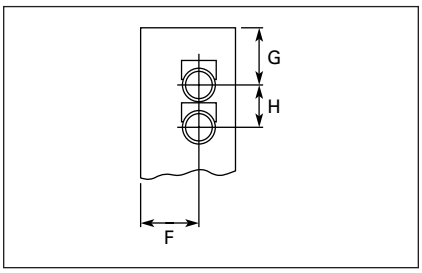


Figure 47-115. Spacing Increments for Enclosures

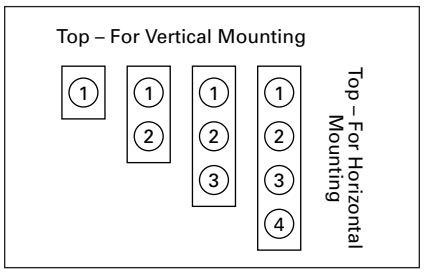


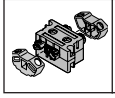
Figure 47-116. Enclosure Arrangement Diagram

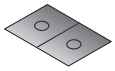
Discount Symbol **1CD1C**

Accessories

Padlocks not included with padlocking attachments. For operators with built-in padlock attachment, see **Page 47-120**.

Table 47-250. Accessories

	Description	Catalog Number	Price U.S. $
Padlock Attachments			
	Padlocking Attachment for Flush Pushbutton Operators Permits locking NC contacts in open position with 1/4" padlock. Will not lock NO contact.	10250TA2	
	Padlocking Attachment for Use with Extended Pushbutton Permits locking NC contacts in open position with 1/4" padlock.	10250TA26	
	Padlocking Cover Guard Cover locked over flush button makes it unaccessible or on extended button locks NC contacts open. Takes 1/4" shank size padlock.	10250TA36	
	Padlock Hasp or Flip-Up Guard When used with a 1/4" padlock, makes flush and long button and knob selector switch unaccessible, but not locked down. Without the padlock, it is a flip-up guard. Padlock hasp can be removed before assembly.	10250TA38	
	Padlocking Attachment for Use with Flexible Weather Resistant Boot Used on long button operators. Stainless steel. Use only for locking NC contacts open.	10250TA63	
	Padlock Attachment For use with Illuminated Push-buttons and maintained Push-Pull operators having standard button or lens only. Use 1/4″ padlock. Locks in down position only.	10250TA64	
	Padlocking Attachment for Non-illuminated Knob Selector Switches Provision for up to 5, 1/4" padlocks.	10250TA11	
Shrouds and Guards			
	Shroud for Mushroom Head Operator Prevents accidental operation. (Not for push-pull operators.)	10250TA6	
	Extended Retaining Nut Replaces standard nut and provides guard for flush head push-button operators.	10250TA12	
	Guard for Illuminated Pushbutton	10250TA15	
	Shroud For jumbo mushroom head operator. Gray Yellow	 10250TA56 10250TA56Y	
	Half Shroud – Yellow For jumbo mushroom head operator.	10250ED1241	
	**Fingerproof Shroud —** 10 per Package Fits new style contact blocks and light units.	10250TA101	

	Description	Catalog Number	Price U.S. $
Boots			
	Flexible Weather Resistant Boot For use with button operators (extended buttons preferred). Temperature to -25°F (-32°C) Black Red Green (See **Page 47-156** for 10250TA96 Tightening Tool.)	 10250TA3 10250TA4 ① 10250TA10	
	Transparent Boot For regular illuminated pushbutton operators and PresTest — Temperature to -38°F (-39°C) ②	10250TA25	
	Boot for Flush Pushbutton Clear Black Red Green	 10250TA46 10250TA47 10250TA48 10250TA49	
Hardware and Kits			
	Thrust Washers — To meet Ford Motor Co. mounting specifications.	10250TK3	
	**Contact Block Tape Seal —** Seals plunger openings on last contact block. Order in multiples of 10 pieces.	10250TK5	
	Selector Switch Operator Gasket — Seals out dust from getting in-between the cam and contact block plungers. Supplied as standard with all selector switches.	56-9337	
	Special Retaining Nut — to accommodate thick panel: Indicating lights PresTest, pushbuttons and selector switches	 10250TA30 10250TA31	
	Terminal Block — Two terminals, each will accommodate two wire terminations.	10250TA62	
	Spacer Ring — Used when legend plate is not required.	10250TA8	
	Stacking Screw — Replaces transformer mounting screws on indicating light so terminal block 10250TA62 can be mounted to light to support and connect a series resistor. This screw also fits all contact blocks. Order in multiples of 10.	10250TA79	

① Should not be used on flush button for STOP function.
② Not suitable for single contact block depth cast enclosure. Cover is too thick.

Dimensions . . . . . **Pages 47-160 – 47-162**
Discount Symbol **1CD1C**

Table 47-250. Accessories (Continued)

Description		Catalog Number	Price U.S. $
Hardware and Kits (Continued)			
	Base Mounting Spacers ① — Equivalent to contact block in depth — Complete with screws, washers, etc.	1 Block Deep 2 Block Deep	**10250TA22** **10250TA23**
	Grounding Kits — Kits consist of a ring connector and a #6 screw for mounting connector to rear of contact block mounting screw.		
	All components except Standard Indicating Lights and PresTest Indicating Lights		**10250TKG1**
	Standard Indicating Lights		**10250TKG2** ②
	PresTest Indicating Lights		**10250TKG3** ②
	Contact Block Terminal Jumpers — Available in multiples of 100 only.		
	Term. to Term. — within Block (short)		
	100 per pkg.		**10250TA70**
	1000 per pkg.		**10250TA70-2**
	Term. to Term. — Block to Block (long)		
	100 per pkg.		**10250TA71**
	1000 per pkg.		**10250TA71-2**
Special Operators and Attachments			
	Wobble Stick Complete with retaining nut — fits standard button.	**10250TA5**	
	Lever Operator For use with two vertically mounted flush pushbuttons.	**10250TA14**	
	Maintained Contact Attachment Release Button Assembly ② Mechanically interlocks with another pushbutton and contact block (not included). Provides mode indication. Minimum hole centers 1.62 inch (41.1 mm), maximum 2.313 inch (58.8 mm).		
	Black		**10250TA17**
	Red		**10250TA18**
	Green		**10250TA19**
	Yellow		**10250TA20**
	Same with Long Button — Black		**10250TA39**
	Maintained Contact Attachment ② Mechanically interlocks two buttons and provides position indication for one. Use with two pushbutton operators and one or more contact blocks.	**10250TA1**	
	Roto-Push Lever Operator — Used to provide lever operation for Roto-Push operators.	**10250TA13**	

Description		Catalog Number	Price U.S. $
Special Light Modules			
	Master Test (Dual Input) Module — Internal Form C relay suitable for either AC or DC applications. Total electrical isolation between monitored and test circuit. Fits all illuminated 10250T, E22, E30 and E34 devices.		
	48V DC		**10250TMT8**
	Flasher Module — Changes any AC illuminated device to a controlled flashing light. Fits 10250T, E30 and E34 devices.		
	24V		**10250TFL2**
	120V		**10250TFL1**
	Flashing Incandescent Lamp — For use with 120V transformer type or 6V full voltage type Indicating Lights including PresTest and most E29 devices.	**10250ED986-4**	
Hole Plugs			
	Plug — For unused holes — Steel, painted gray (Stainless steel, use **E30KT5**, see **Page 47-112**)	**10250TA7**	
Tools			
	Octagonal 10250T (notched to fit over selector switch lever), E29 and E30	**10250TA95**	
	E22, E30, E34 and Octagonal 10250T (will not fit over selector switch levers)	**E22CW**	
	Tool for Tightening Boots — Used to install boot Catalog Numbers, 10250TA3, A4, A10 and A25.	**10250TA96**	
	10250T, E34 Allen Wrench — Used for removal of jumbo mushroom head.	**10250TA102**	
	Lamp Removal Tools — For transformer type illuminated pushbuttons, push-pull and selector switches. Fits #12 lamp.	**10250TA74**	
	For full voltage and resistor type illuminated pushbuttons, push-pull and selector switches and E30.	**E30KV1**	
	Standard indicating lights. Fits #44, #755, #6S6 and #10S6.	**E29KLT**	

① Component only. Not to be used for custom built (factory assembled) stations.

② Not suitable for single contact block depth cast enclosure. Cover is too thick.

Dimensions . . . . . **Pages 47-160 – 47-162**
Discount Symbol **1CD1C**

Renewal Parts

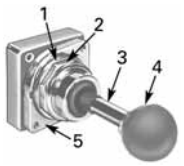
Table 47-251. Replacement Lamps — For 10250T Illuminated Operators

Mfg. Lamp Type	Voltage	Base Style	Application	Part Number	Price U.S. $
120MB	120V	T 3-1/4 Bayonet	10250T Resistor Indicating Light	**28-3044**	
#267	6.3V	T 3-1/4 Bayonet	10250T Flasher	**10250ED986-4**	
#755	6.3V	T 3-1/4 Bayonet	10250T Transformer, PresTest and Full Voltage	**28-2202**	
#756	12V	T 3-1/4 Bayonet	10250T Full Voltage	**28-5184**	
#757	24V	T 3-1/4 Bayonet	10250T Full Voltage	**28-5185**	
#1828	32V	T 3-1/4 Bayonet	10250T Full Voltage	**28-5186**	
#1835	55V	T 3-1/4 Bayonet	10250T Resistor	**28-5187**	
NE48	120V	T 4-1/2 Bayonet	10250T Neon	**28-494**	
NE51H-R22	120V	T 3-1/4 Bayonet	10250T Neon	**28-3754**	
NE51H-R68	240V	T 3-1/4 Bayonet	10250T Neon	**28-3755**	

Table 47-252. Replacement LED Lamps — For 10250T, E34 and E22 Units

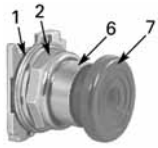
	Voltage	Color	Continuous		Flashing		
			AC/DC Catalog Number	Price U.S. $	AC Catalog Number	DC Catalog Number	Price U.S. $
Standard LED Lamp	6V – 12V	Red	**E22LED612RN**		**E22LED006RAF**	**E22LED006RDF**	
		Orange	**E22LED612ON**		**E22LED006OAF**	**E22LED006ODF**	
		Yellow	**E22LED612YN**		**E22LED006YAF**	**E22LED006YDF**	
		Green	**E22LED612GN**		**E22LED006GAF**	**E22LED006GDF**	
		Blue	**E22LED612BN**		**E22LED006BAF**	**E22LED006BDF**	
		White	**E22LED612WN**		**E22LED006WAF**	**E22LED006WDF**	
	24V	Red	**E22LED024RN**		**E22LED024RAF**	**E22LED024RDF**	
		Orange	**E22LED024ON**		**E22LED024OAF**	**E22LED024ODF**	
		Yellow	**E22LED024YN**		**E22LED024YAF**	**E22LED024YDF**	
		Green	**E22LED024GN**		**E22LED024GAF**	**E22LED024GDF**	
		Blue	**E22LED024BN**		**E22LED024BAF**	**E22LED024BDF**	
		White	**E22LED024WN**		**E22LED024WAF**	**E22LED024WDF**	
	48V	Red	**E22LED048RN**		**E22LED048RAF**	**E22LED048RDF**	
		Orange	**E22LED048ON**		**E22LED048OAF**	**E22LED048ODF**	
		Yellow	**E22LED048YN**		**E22LED048YAF**	**E22LED048YDF**	
		Green	**E22LED048GN**		**E22LED048GAF**	**E22LED048GDF**	
		Blue	**E22LED048BN**		**E22LED048BAF**	**E22LED048BDF**	
		White	**E22LED048WN**		**E22LED048WAF**	**E22LED048WDF**	
	60V	Red	**E22LED060RN**		**E22LED060RAF**	**E22LED060RDF**	
		Orange	**E22LED060ON**		**E22LED060OAF**	**E22LED060ODF**	
		Yellow	**E22LED060YN**		**E22LED060YAF**	**E22LED060YDF**	
		Green	**E22LED060GN**		**E22LED060GAF**	**E22LED060GDF**	
		Blue	**E22LED060BN**		**E22LED060BAF**	**E22LED060BDF**	
		White	**E22LED060WN**		**E22LED060WAF**	**E22LED060WDF**	
	120V	Red	**E22LED120RN**		**E22LED120RAF**	**E22LED120RDF**	
		Orange	**E22LED120ON**		**E22LED120OAF**	**E22LED120ODF**	
		Yellow	**E22LED120YN**		**E22LED120YAF**	**E22LED120YDF**	
		Green	**E22LED120GN**		**E22LED120GAF**	**E22LED120GDF**	
		Blue	**E22LED120BN**		**E22LED120BAF**	**E22LED120BDF**	
		White	**E22LED120WN**		**E22LED120WAF**	**E22LED120WDF**	

Discount Symbol **1CD1C**



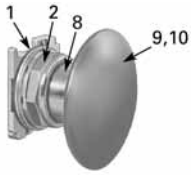
2-Position Joystick Operator

Flush Head Pushbutton Operator



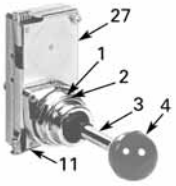
Mushroom Head Pushbutton Operator

Mushroom Head Operator with Padlock Attachment



Jumbo Mushroom Head Operator

Knob-Operated Selector Switch Operator

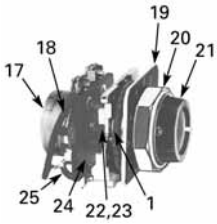


4-Position Joystick Operator (w/o Latch)

Illuminated Pushbutton Operator

Full Voltage, Resistor and Transformer Type Illuminated Selector Switch

Transformer Type Indicating Light



Potentiometers

Table 47-253. 10250T Style Operator Renewal Parts

Item No.	Description	No. Req.	Part Number	Price U.S. $
1	Gasket	1	**16-1548**	
2	Mounting Nut	1	**15-1530**	
3	Handle	1	**24-5045**	
4	Knob Knob (Not Shown) for Joystick Operator with Latch	1 1	**53-3157** **53-3159**	
5	Common Gate (Supplied with Operator)	2	**16-3400**	
6	Set Screw (#6-32 x 0.250" Long Hollow Hex)	2	**11-2014**	
7	Mushroom Head Button (Includes (2) Item 6) Black Red Yellow Green Blue	1 — — — — —	**As Req. Below** **53-1317** **53-1317-2** **53-1317-3** **53-1317-4** **53-1317-22**	
8	Set Screw (#10-32 x 0.250" Long Hollow Hex)	2	**11-544**	
9	Jumbo Mushroom Head Button (Aluminum — Includes (2) Item 8) Red Black Yellow Green	1 — — — —	**As Req. Below** **53-1317-9** **53-1317-10** **53-1317-11** **53-1317-12**	
10	Jumbo Mushroom Head Button (Aluminum — Red EMERG. STOP) Does Not Include Item (8)	1	**53-1349-18**	
11	Position Gate: 2 Position 3 Position 4 Position 8 Position	 1 1 1 1	 **54-7278** **54-7173** **54-12278** **54-12279**	
12	Mounting Screw (#6-32 x 0.710" Long) Washer	2 2	**10250TA79** **16-2038**	
13	Terminal Screw and Lug (Captive)	Req.	**80-5502**	
14	Gasket (Supplied with Basic Unit)	1	**32-803**	
15	Round Head Screw (#4-40 x 0.344" Long) (Supplied with Basic Unit)	2	**11-4553**	
16	Mounting Screw	2	**11-1632**	
17	Simple Potentiometer (Does Not Include Items 18, 28 or 29) 1,000 Ohms 2,500 Ohms 5,000 Ohms 10,000 Ohms 25,000 Ohms 50,000 Ohms	1 — — — — — —	**As Req. Below** **41-782-2** **41-782-3** **41-782-10** **41-782-4** **41-782-5** **41-782-6**	
18	Connector (Includes Screw and Lug)	2	**25-1851**	
19	Indicating Plate Standard Size (Without Legend) Large Size (Specify Legend)	1 — —	**As Req. Above** **30-4460** **10250TR30**	
20	Retaining Nut	1	**15-1547**	
21	Knob Socket Set Screw (#6-32 x 0.250" Long)	1 1	**53-1314** **11-2014**	
22	Coupling	1	**29-3749-2**	
23	Set Screw (#6-32 x 0.188" Long)	1	**11-1199**	
24	Spacer	2	**56-1066-18**	
25	Connector (Includes Screw and Lug)	1	**25-1851-2**	
26	Mounting Nut	1	**15-1938**	
27	4-Position Joystick Operating Mechanism (Complete)	1	**24-6565**	
28	(Not Shown) 4-Position Joystick Operating Mechanism (With Latch) Complete	1	**24-6565-2**	
29	Spring Loaded Latch	1	**52-1214-2**	
30	Hand Operated Latch	1	**52-913-3**	

Discount Symbol **1CD1C**

Mounting

Panel Thickness

- Minimum: 0.06 inch (1.6 mm)
- Maximum: 0.25 inch (8 mm) including legend plate
- Maximum can be increased to 0.375 inch (15.9 mm) using optional retaining nut
  - Indicating light: 10250TA30
  - Pushbutton/selector switch: 10250TA31

Table 47-254. Mounting Matrix

Legend Plate	Dimensions in Inches (mm)			
	A	B	C	D
Small	1.63 (41.3)	2.25 (57.2)	2.25 (57.2)	1.63 (41.3)
Medium	1.75 (44.5)	2.25 (57.2)	2.25 (57.2)	1.75 (44.5)
Large	2.25 (57.2)	2.25 (57.2)	2.25 (57.2)	2.25 (57.2)

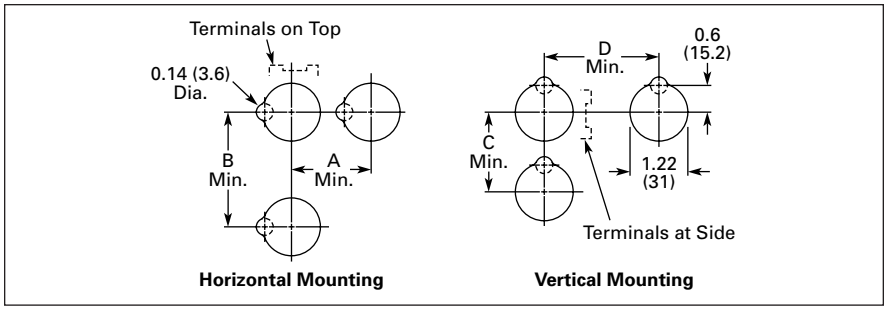


Figure 47-117. Mounting Options in Inches (mm)

Horizontal mounting means terminals are located top and bottom of contact block. Vertical mounting means terminals are left and right of contact block. This allows close spacing of adjacent operators with easy access to terminals.

Note: Locating nib hole or notch is 0.14 inch (3.6 mm) #29 drill.

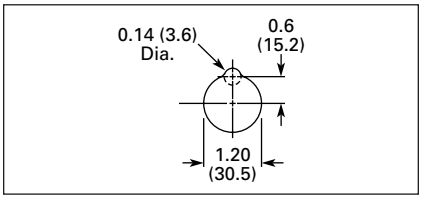
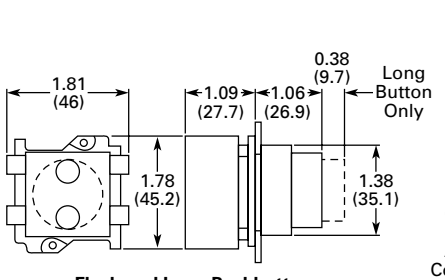
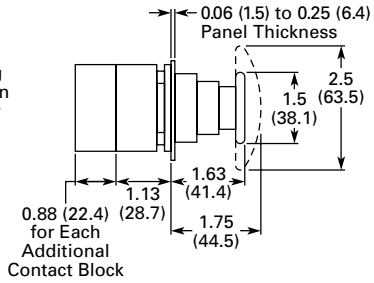


Figure 47-118. Drilling Dimensions in Inches (mm)

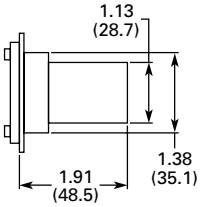
Dimensions



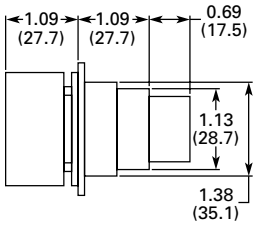
Flush and Long Pushbutton
Half Shroud Is Same as Long Pushbutton with Lower Half of Guard Ring Cut Back



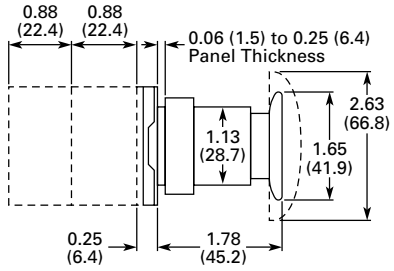
Mushroom and Jumbo Head Pushbutton



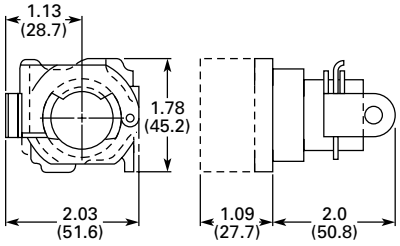
Pushbutton with Cylinder Lock



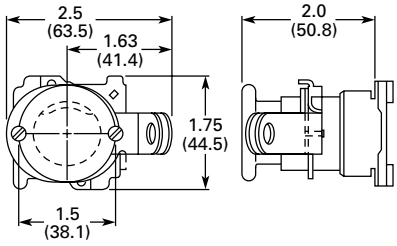
Illuminated Pushbutton



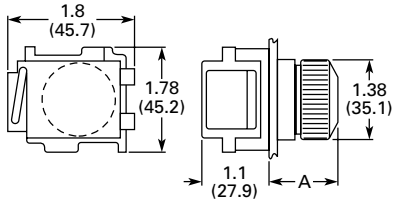
Push-Pull Switch



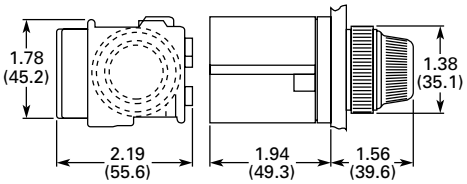
Flush Pushbutton Operator with Padlock Attachment



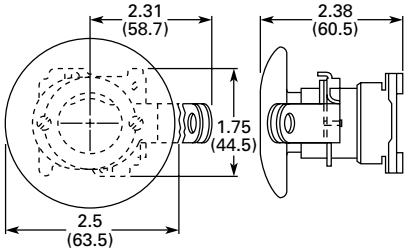
Mushroom Head Pushbutton Operator with Padlock Attachment



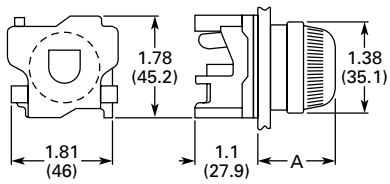
Indicating Light – Transformer Type



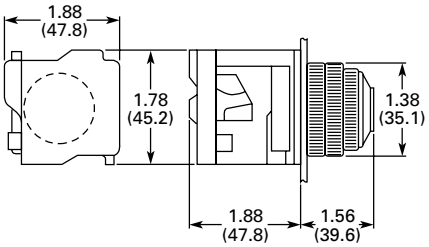
PresTest Indicating Light – Transformer Type



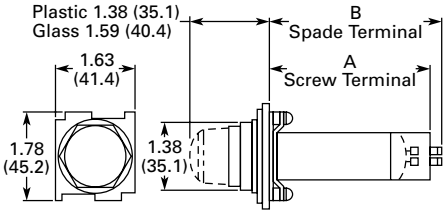
Jumbo Mushroom Head Pushbutton Operator with Padlock Attachment



Indicating Light – Resistor and Neon Type



PresTest Indicating Light – Resistor Type

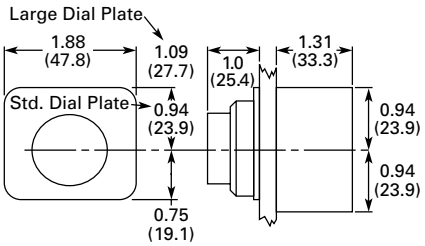


Master Test Indicating Light

Lens	Dimension A
Plastic	1.38 (35.1)
Glass	1.56 (39.6)

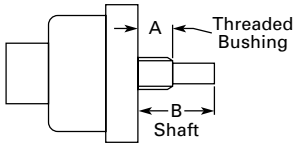
Description	Dim. in Inches (mm)	
	B	C
Relay Type	4.38 (111.2)	4.28 (108.7)
Solid-State Type	2.94 (74.7)	2.88 (73.2)

Figure 47-119. Approximate Dimensions in Inches (mm)



Potentiometer

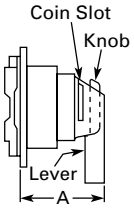
Potentiometer	Dimensions in Inches (mm)		
	A	B	C
2 Watt Single	1.31 (33.3)	0.94 (23.9)	0.94 (23.9)
25 Watt — Up to 25M Ohms	2.38 (60.5)	1.19 (30.2)	0.81 (20.6)
50M Ohms	2.56 (65)	1.69 (42.9)	1.25 (31.8)

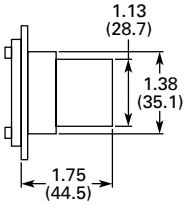


Shaft Dimensions of Potentiometer That C-H Operator Will Accept

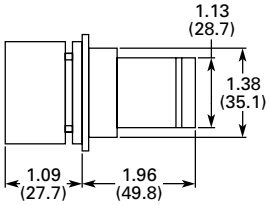
Cat. No. Operator	Dimensions in Inches (mm)	
	A	B
10250T330	0.38 (9.7) Dia. x 0.38 (9.7) Long	0.25 (6.4) Dia. x 0.63 (16) Long
10250TH3872	0.38 (9.7) Dia. x 0.38 (9.7) Long	0.25 (6.4) Dia. x 0.88 (22.4) Long

Operator	Dim. A
Knob	1.38 (35.1)
Lever	1.50 (38.1)
Coin Slot	1.38 (35.1)

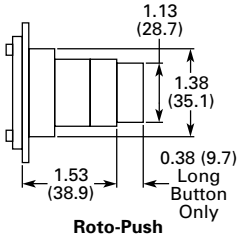




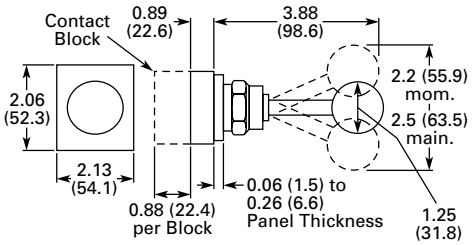
Key Operated Selector Switch



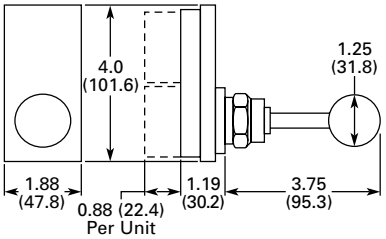
Illuminated Selector Switch



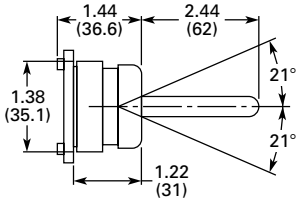
Roto-Push



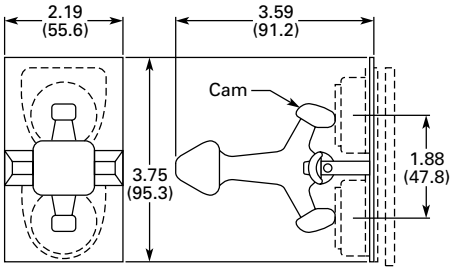
2-Position Joystick Operator



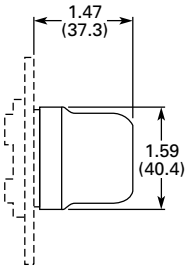
4-Position Joystick Operator



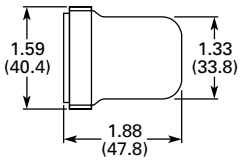
Wobble Stick Catalog No. 10250TA5



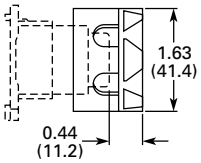
Lever Operator (For Use with Two Vertically Mounted Flush Pushbuttons) Catalog No. 10250TA14



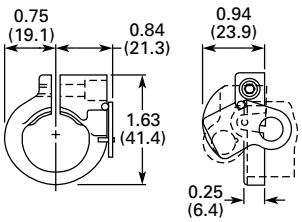
Flexible Boot for Protecting Flush or Long Pushbutton Catalog No. 10250TA3 Typical



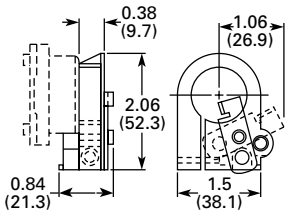
Transparent Flexible Boot for Illuminated Pushbutton Catalog No. 10250TA25



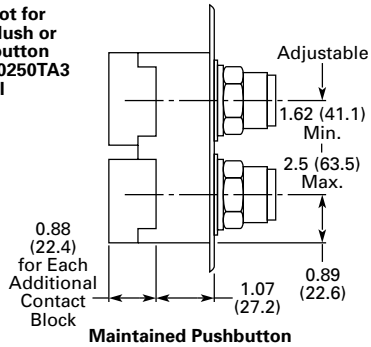
Padlock Attachment for Knob Selector Switch Catalog No. 10250TA11



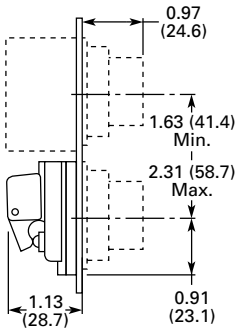
Padlock Attachment for Flush Pushbutton Catalog No. 10250TA2



Padlock Attachment for Extended Pushbutton Catalog No. 10250TA26

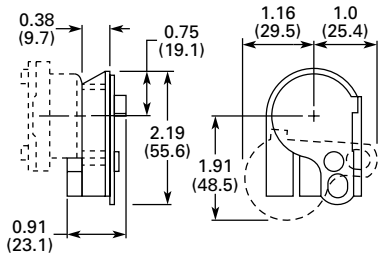


Maintained Pushbutton Catalog No. 10250TA66 Typical

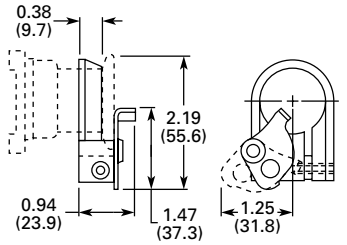


Maintained Contact Attachment Catalog No. 10250TA17 Typical

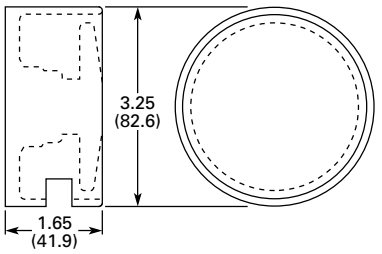
Figure 47-120. Approximate Dimensions in Inches (mm)



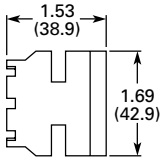
Padlock Cover Gaurd for Flush Pushbutton Catalog No. 10250TA36



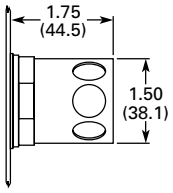
Padlock Attachment for Maintained Push-Pull Operator Catalog No. 10250TA64



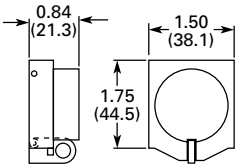
Protecting Shroud for Jumbo Mushroom Head Button Catalog No. 10250TA56



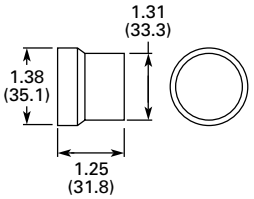
Protecting Shroud for Mushroom Head Button Catalog No. 10250TA6



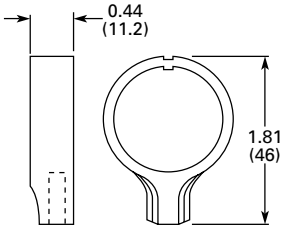
Protecting Shroud for Illuminated Pushbutton Catalog No. 10250TA15



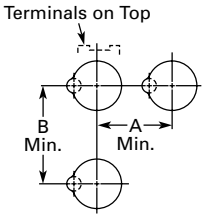
Padlock Hasp or Flip-Up Guard Catalog No. 10250TA38



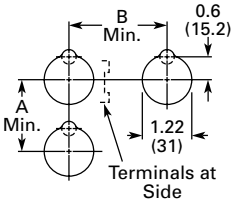
Extended Retaining Nut Catalog No. 10250TA12



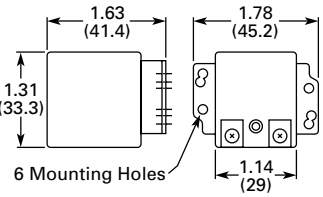
Lever for Roto-Push Operator Catalog No. 10250TA13



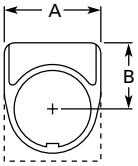
Horizontal Rows



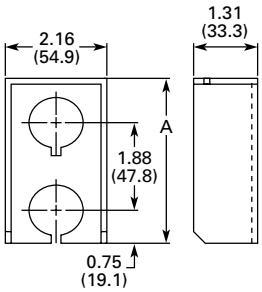
Vertical Rows



Master Test Module, Flasher Module



Legend Plate



Multiple Button Guard

47

Panel Drilling and Minimum Spacing

Legend Plate	Dim. in Inches (mm)	
	A Min.	B Min.
1 or 2 Circuit Contact Blocks		
Small or None	1.63 (41.4)	2.25 (57.2)
Standard	1.75 (44.5)	2.25 (57.2)
Jumbo ①	2.25 (57.2)	2.25 (57.2)
Extra Large	2.50 (63.5)	2.60 (66)
4 Circuit Contact Block 10250T44		
Small or None	1.88 (47.8)	2.25 (57.2)
Standard	1.88 (47.8)	2.25 (57.2)
Jumbo ①	2.25 (57.2)	2.25 (57.2)
Extra Large	2.50 (63.5)	2.60 (66)

① If Jumbo plates are to be placed one above the other vertically, add 0.13 (3.3) to minimum dimensions listed.

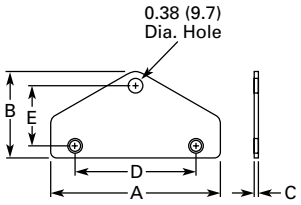
Note: Locating nib hole or notch is 1.36" – 1.4" (34.5 – 35.6 mm) #29 drill.

Number of Elements	Dimension A
2	4.0 (101.6)
3	5.88 (149.4)
4	7.88 (200.2)
7	13.38 (339.9)

Legend Plate	Dim. in Inches (mm)	
	A	B
1/2 Round Legend Plates		
Small	1.56 (39.6)	0.91 (23.1)
Standard	1.59 (40.4)	1.07 (27.2)
Jumbo	2.06 (52.3)	1.53 (38.9)
Square Legend Plates		
Small	1.59 (40.4) Sq.	0.90 (22.9)
Standard	1.75 (44.5) Sq.	1.06 (26.9) ②
Jumbo	2.19 (55.6) Sq.	1.50 (38.1)
Extra Large	2.44 (62.0) Sq.	1.63 (41.4)

② For plastic legend plate, Dimension B is 1.12 (28.4).

Enclosure Size (No. of Elements)	Dimensions in Inches (mm)				
	Wide A	High B	Deep C	Mounting	
				D	E
2, 3, & 4	3.75 (95.3)	1.94 (49.3)	0.13 (3.3)	2.69 (68.3)	1.38 (35.1)
6 & 7	4.0 (101.6)	2.19 (55.6)	0.13 (3.3)	2.88 (73.2)	1.63 (41.4)



Chain Hook Bracket

Figure 47-121. Approximate Dimensions in Inches (mm)

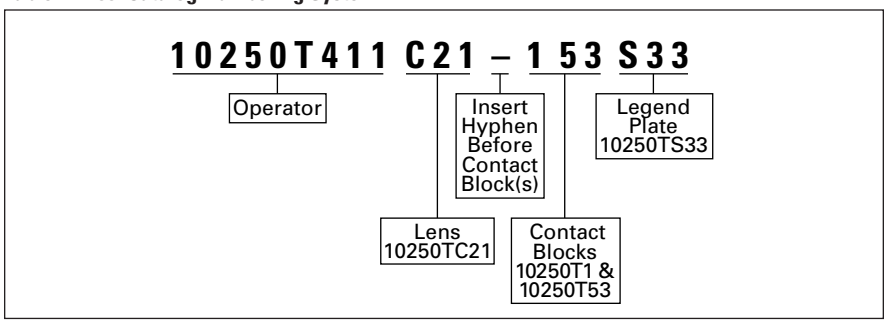
Ordering Complete Devices

Complete 10250T Pushbuttons, Indicating Lights and/or Selector Switch operators including contact block(s) and legend plate can be ordered using a single composite catalog number. The individually packaged components will be shipped unassembled in a single overpack carton marked with the composite Catalog Number. Construct Catalog Number as follows.

Ordering Example

Example: Illuminated Pushbutton Device — Catalog Number 10250T411C21-153S33

Table 47-255. Catalog Numbering System



For a complete Catalog Number breakdown, see **Pages 47-164 – 47-165**.

Catalog Number Structure

Table 47-256. Non-illuminated Pushbuttons Catalog Numbering System

10250T 10 1 – 1 ①

Operator
10 = Flush
11 = Extended
12 = 40 mm Mushroom
17 = 65 mm Mushroom
50 = 1/2 Shroud Vertical Mount
51 = 1/2 Shroud Horizontal Mount

Button Color
1 = Black
2 = Red
3 = Green
4 = Yellow
5 = Gray
6 = White
8 = Blue
9 = Orange

Circuit
Blank = Operator Only
1 = 1NO-1NC
2 = 2NO
3 = 2NC
51 = 1NC
53 = 1NO

① Add **X** at end of Catalog Number to receive parts assembled from factory.

Table 47-257. Illuminated and Non-illuminated Push-Pulls Catalog Numbering System

10250T 5 63 C47 __ – 1 ②

Operator
5 = 2-Position Maintained
4 = 3-Position Mom Push-Mom Pull
9 = 3-Position MT Push-Mom-Pull
10 = 3-Position Mom Push-Mom Pull

Incandescent Light Unit	LED Light Unit
Blank = Non-ill.	**Blank** = Non-ill.
89 = 24V/XFR	**89L** = 24V/XFR
63 = 120V/XFR	**63L** = 120V/XFR
64 = 208V/XFR	**64L** = 208V/XFR
65 = 240V/XFR	**65L** = 240V/XFR
82 = 277V/XFR	**82L** = 277V/XFR
66 = 380V/XFR	**66L** = 380V/XFR
67 = 480V/XFR	**67L** = 480V/XFR
68 = 600V/XFR	**68L** = 600V/XFR
69 = 6V/FV	**97L** = Full Voltage
70 = 12V/FV	
79 = 24V/FV	
83 = 32V/FV	
80 = 120V/RES	
81 = 240V/RES	

Circuit
Blank = Operator Only
1 = 1NO-1NC
2 = 2NO
3 = 2NC
51 = 1NC
53 = 1NO

LED Voltage
Blank = Non-ill.
Blank = Incand.
06 = 6V AC/DC
12 = 12V AC/DC
24 = 24V AC/DC
48 = 48V AC/DC
60 = 60V AC/DC
2A = 120V AC
2D = 120V DC

Non-illuminated	Illuminated		
Button	Incandescent	LED	Lens Type
B60 = Black 40 mm	**C47** =	**RD** =	Red 40 mm
B62 = Red 40 mm	**C53** =	**ED** =	Red 40 mm – "E" STOP
B63 = Red 40 mm – "E" STOP	**C48** =	**GD** =	Green 40 mm
B61 = Green 40 mm	**C49** =	**LD** =	Blue 40 mm
B64 = Blue 40 mm	**C50** =	**AD** =	Amber 40 mm
J60 = Black 65 mm	**C51** =	**WD** =	White 40 mm
J62 = Red 65 mm	**C52** =	**–** =	Clear 40 mm
J63 = Red 65 mm – "E" STOP	**C57** =	**RS** =	Red Side Light
J61 = Green 65 mm	**C63** =	**ES** =	Red Side Lt. – "E" STOP
J64 = Yellow 65 mm	**C58** =	**GS** =	Green Side Light
	C59 =	**LS** =	Blue Side Light
	C64 =	**AS** =	Amber Side Light
	C60 =	**YS** =	Yellow Side Light
	C61 =	**WS** =	White Side Light
	C62 =	**–** =	Clear Side Light
	C65 =	**RH** =	Red Heavy-Duty
	C66 =	**GH** =	Green Heavy-Duty
	C67 =	**AH** =	Amber Heavy-Duty

② Add **X** at end of Catalog Number to receive parts assembled from factory.

Table 47-258. Illuminated Pushbuttons Catalog Numbering System

10250T 416 C21 ___ – 1 ①

Incandescent Light Unit	LED Light Unit
416 = 24V/XFR	**416L** = 24V/XFR
412 = 120V/XFR	**411L** = 120V/XFR
412 = 240V/XFR	**412L** = 240V/XFR
419 = 277V/XFR	**419L** = 277V/XFR
413 = 380V/XFR	**413L** = 380V/XFR
414 = 480V/XFR	**414L** = 480V/XFR
415 = 600V/XFR	**415L** = 600V/XFR
473 = 6V/FV	**497L** = Full Voltage
474 = 12V/FV	
476 = 24V/FV	
477 = 32V/FV	
478 = 48V/FV	
471 = 120V/RES	
472 = 240V/RES	

Circuit
Blank = Operator Only
1 = 1NO-1NC
2 = 2NO
3 = 2NC
51 = 1NC
53 = 1NO

LED Voltage
Blank = Incand.
06 = 6V AC/DC
12 = 12V AC/DC
24 = 24V AC/DC
48 = 48V AC/DC
60 = 60V AC/DC
2A = 120V AC
2D = 120V DC

Incandescent Lens Color	LED Lens Color
C21 = Red	**RD** = Red
C22 = Green	**GD** = Green
C23 = Yellow	**YD** = Yellow
C26 = White	**WD** = White
C24 = Blue	**LD** = Blue
C43 = Amber	**AD** = Amber
C25 = Clear	

① Add **X** at end of Catalog Number to receive parts assembled from factory.

Table 47-259. Standard Indicating Lights, PresTest and Master Test Catalog Numbering System

10250T 203N C1N ___ ②

Light Unit Type	
Standard – Incandescent	**Standard – LED**
181N = 120V/XFR	**181L** = 120V/XFR
182N = 240V/XFR	**182L** = 240V/XFR
198N = 277V/XFR	**198L** = 277V/XFR
183N = 380V/XFR	**183L** = 380V/XFR
184N = 480V/XFR	**184L** = 480V/XFR
185N = 600V/XFR	**185L** = 600V/XFR
203N = 6V/FV	**197L** = Full Voltage
204N = 12V/FV	**PresTest – LED**
206N = 24V/FV	**221L** = 120V/XFR
207N = 32V/FV	**222L** = 240V/XFR
208N = 48V/FV	**223L** = 380V/XFR
201N = 120V/RES	**224L** = 480V/XFR
202N = 240V/RES	**225L** = 600V/XFR
226N = 120V/Neon	**297L** = Full Voltage
227N = 240V/Neon	
PresTest – Incandescent	
221N = 120V/XFR	
222N = 240V/XFR	
223N = 380V/XFR	
224N = 480V/XFR	
225N = 600V/XFR	
232N = 6V/FV	
233N = 12V/FV	
235N = 24V/FV	
238N = 32V/FV	
239N = 48V/FV	
231N = 120V/RES	
240N = 240V/RES	
Master Test – Incandescent	
187N = 120V/XFR	
189N = 240V AC – SS	

LED Voltage
Blank = Incand.
06 = 6V AC/DC
12 = 12V AC/DC
24 = 24V AC/DC
48 = 48V AC/DC
60 = 60V AC/DC
2A = 120V AC
2D = 120V DC

Plastic	Glass	Lens Color	Plastic	Glass	Lens Color
Standard/Master – Incandescent			**Standard/Master/PresTest – LED**		
C1N =	**C7N** =	Red	**RP** =	**RG** =	Red
C2N =	**C8N** =	Green	**GP** =	**GG** =	Green
C3N =	**–** =	Yellow	**YP** =	**–** =	Yellow
C6N =	**C12N** =	White	**WP** =	**WG** =	White
C4N =	**C10N** =	Blue	**LP** =	**LG** =	Blue
C19N =	**C9N** =	Amber	**AP** =	**AG** =	Amber
C5N =	**C11N** =	Clear			
PresTest – Incandescent					
C21 =	**C13N** =	Red			
C22 =	**C14N** =	Green			
C23 =	**–** =	Yellow			
C26 =	**C18N** =	White			
C24 =	**C16N** =	Blue			
C43 =	**C15N** =	Amber			
C25 =	**C17N** =	Clear			

② Add **X** at end of Catalog Number to receive parts assembled from factory.

Contents

Description	*Page*
Product Description	**47-166**
Features	**47-166**
Standards and Certifications	**47-167**
Technical Data and Specifications	**47-167**
Product Selection	
Momentary Pushbutton Units	**47-168**
Indicating Light Units	**47-168**
Pushbuttons	**47-169**
Illuminated Pushbuttons and Indicating Lights	**47-170**
Push-Pull Units	**47-171**
Illuminated Push-Pull Units	**47-172**
Potentiometers	**47-174**
Push-Pulls	**47-175**
Selector Switch Units	**47-177**
Selector Switch Selection	**47-178**
Selector Switch Operators	**47-180**
Illuminated Selector Switch Operators	**47-181**
Contact Blocks	**47-182**
Options	
Legend Plates	**47-184**
Enclosures	**47-185**
Accessories	**47-187**
Renewal Parts	**47-189**
Mounting	**47-190**
Dimensions	**47-191**
Ordering Complete Devices	**47-192**
Catalog Number Structure	**47-193**

Product Description

Operator

Eaton's Cutler-Hammer® E34 Series 30.5 mm pushbutton line features the same rugged die cast construction of our 10250T line with an additional two-layer 100% solid thermosetting cathodic epoxy coating. This coating provides a flat black smooth, consistent, corrosion resistant surface that has passed a demanding 600 hour salt spray test. (The industry standard for this 4X test requires only 200 hours.)

Ultraviolet Light

E34 cathodic coating is not recommended for use in applications where exposure to ultraviolet light exists — use NEMA 4X 10250T operators.

Reliability Nibs

Eaton's Cutler-Hammer contact blocks feature enclosed silver contacts with pointed "reliability nibs" for reliable performance from logic level up to 600V. To ensure reliable switching, nibs bite through oxide which can form on silver contacts, eliminating the need for expensive logic level blocks for most applications.

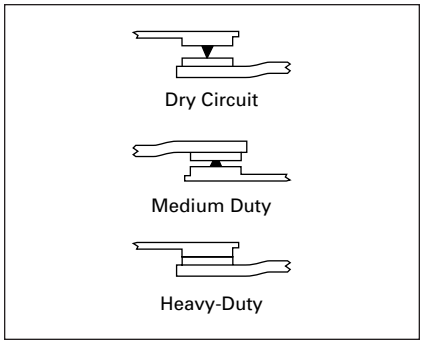


Figure 47-122. Reliability Nibs

Liquid Drainage

Eaton's Cutler-Hammer pushbutton operators offer front of panel drainage via holes in the operator bushing. Hidden from view by the mounting nut, these holes prevent buildup of liquid inside the operator, which can prevent operation in freezing environments. The holes also provide a route for escaping liquid in high pressure washdowns, effectively relieving pressure from the internal diaphragm seal, ensuring reliable sealing in applications even beyond NEMA 4.

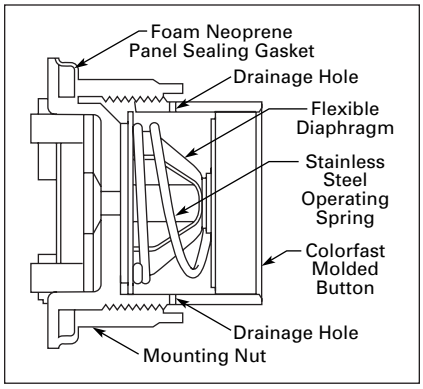
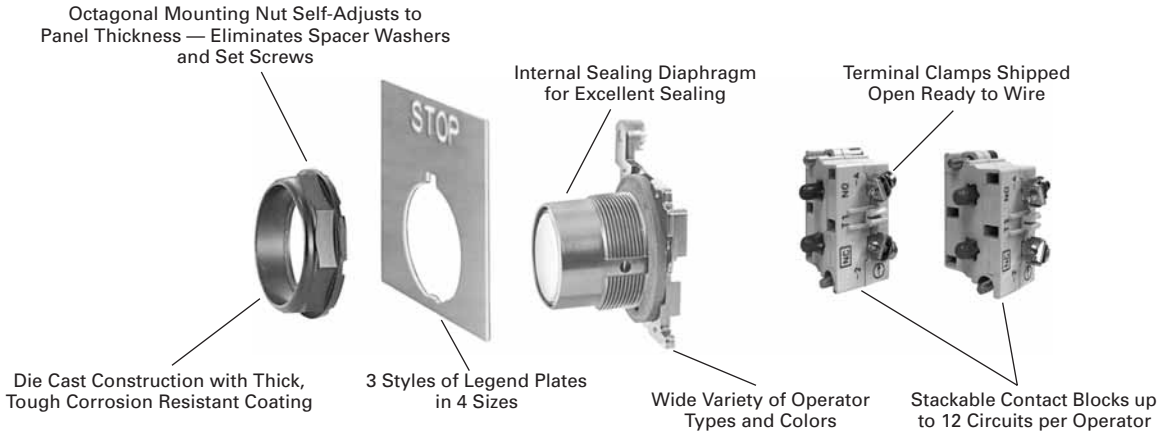


Figure 47-123. Diaphragm Seal

Features

- Epoxy-coated metal operators
- Corrosion resistant
- Integral ground screw terminal on operators
- FDA approved for sanitary chemical resistance requirements



E34 Series

Standards and Certifications

- CE EN60947-5-1
- UL 508 — File No. E131568
- CSA C22.2 No. 14 — File No. LR68551
- FDA 3-A Sanitary Standards

Ingress Protection

When mounted in similarly rated enclosure —

- Standard Indicating Lights
  - UL (NEMA) Type 1, 2, 3, 3R, 3S, 4, 4X, 12, 13
  - IEC IP65
- All Other Operators
  - UL (NEMA) Type 1, 2, 3, 3R, 4, 4X, 12, 13
  - IEC IP65

Technical Data and Specifications

Mechanical Ratings

- Frequency of operation
  - All pushbuttons: 6000 operations/hr.
  - Key and lever selector switches: 3000 operations/hr.
  - Auto-latch devices: 1200 operations/hr.
- Life
  - Pushbuttons: 10 x 10^6 operations
  - Contact blocks: 10 x 10^6 operations
  - PresTest units: 10 x 10^6 operations
  - Lever and key selector switches: 0.25 x 10^6 operations
  - Twist to release pushbuttons: 0.3 x 10^6 operations
- Shock resistance
  - Duration: 210 mS ≥ 5g

Climate Conditions

- Operating Temperature: 1° to 150°F (-17° to 66°C)
- Storage Temperature: -40° to 176°F (-40° to 80°C)
- Altitude: 6,562 ft. (2,000m)
- Humidity: Max. 95% RH @ 60°C

Electrical Ratings

Table 47-260. Contact Block

Meet or Exceed NEMA Rating Designations A600, A300 and B300 for AC and P600 for DC							
Description	Volts AC 50 or 60 Hz				Volts DC		
	120	240	480	600	24/28	125	250
Make and Emergency Interrupting Capacity (Amp)	60	30	15	12	5.7	1.1	0.55
Normal Load Break (Amp)	6	3	1.5	1.2	5.7	1.1	0.55
Thermal Current (Amp)	10	10	10	10	5.0	5.0	5.0
Voltamperes:							
Make and Emergency Interrupting Capacity	7200	7200	7200	7200	138	138	138
Normal Load Break	720	720	720	720	138	138	138

- Insulation: Ui = 660V AC or DC
- Thermal: Ith = 10A

Short Circuit Coordination to IEC/EN 60947-5-1

- Rated conditional short circuit current: 1 kA
- Fuse type: GE Power Controls TIA 10, Red Spot Type gG, 10A, 660V AC, 460V DC, BS88-2, IEC 60269-2-1

Fuse

- UL rating: A600, P600
  - AC load life duty cycle 1200 operations/hour
    - 10A: 110V pf 0.4 – 1 x 10^6 operations
    - 5A: 250V pf 0.4 – 1 x 10^6 operations
    - 2A: 660V pf 0.4 – 1 x 10^6 operations
- Switching capacity
  - AC15 rated make/break (11 x Ie at 1.1 x Ue)
    - 6A: 120V pf 0.3
    - 4A: 240V pf 0.3
    - 2A: 660V pf 0.3
  - DC13 rated make/break (1.1 x Ie at 1.1 x Ue)
    - 1.0A: 125V L/R ≥ 0.95 at 300 mS
    - 0.55A: 250V L/R ≥ 0.95 at 300 mS
    - 0.1A: 660V L/R ≥ 0.95 at 300 mS
    - 10A: 110V pure resistive
- Maximum ratings for logic level and hostile atmosphere application
  - Maximum amperes: 0.5A
  - Maximum volts: 120V AC/DC
- Low voltage switching: Conical shaped points or "reliability nibs" improve performance in dry circuit, corrosive, fine dust and other contaminated atmospheres. Under normal environmental conditions, the minimum operational voltage is 5V and the minimum operational current is 1 mA, AC/DC.
- Contact operation: Slow make and break. All normally closed contacts have positive opening operation, i.e., normally closed contacts are forced open in the event of contact weld or spring breakage.

Light Units

- Transformers: will withstand short circuit for 1 hour per IEC 60947-5-1
- Bulbs — average life:
  - Transformer type: 20,000 hrs.
  - Resistor/direct voltage type: 2500 hrs. minimum @ rated V
  - LED: 60,000 to 100,000 hrs.

Terminals

- Marking: NC-NO on the contact block to meet the NEMA requirements. Dual marking system 1 – 2 for normally closed, 3 – 4 for normally open to meet BS5472 (Cenelec EN50 005).
- Clamps: Terminals are saddle clamp type for 1 x 22 AWG (0.34 mm^2) to 2 x 14 AWG (2.5 mm^2) conductors.
- Torque = 7 lb-in (0.8 Nm)
- Degree of protection against direct electrical contact: IP2X with finger-proof shroud

Product Selection

Momentary Pushbutton Units

■ Non-illuminated

Table 47-261. Pushbutton Units — UL (NEMA) Type 3, 3R, 4, 4X, 12, 13

Contact Type	Button Color	Flush Button		Extended Button		Mushroom Button		Jumbo Mushroom ①	
		Catalog Number	Price U.S. $	Catalog Number	Price U.S. $	Catalog Number	Price U.S. $	Catalog Number	Price U.S. $
1NO	Black Red Green Red — Engraved EMERG. STOP	**E34PB1-53X** **E34PB2-53X** **E34PB3-53X** **—**		**E34EB1-53X** **E34EB2-53X** **E34EB3-53X** **—**		**E34LB1-53X** **E34LB2-53X** **E34LB3-53X** **—**		**E34JB1-53X** **E34JB2-53X** **E34JB3-53X** **E34JB2N8-53X**	
1NC	Black Red Green Red — Engraved EMERG. STOP	**E34PB1-51X** **E34PB2-51X** **E34PB3-51X** **—**		**E34EB1-51X** **E34EB2-51X** **E34EB3-51X** **—**		**E34LB1-51X** **E34LB2-51X** **E34LB3-51X** **—**		**E34JB1-51X** **E34JB2-51X** **E34JB3-51X** **E34JB2N8-51X**	
1NO-1NC	Black Red Green Red — Engraved EMERG. STOP	**E34PB1-1X** **E34PB2-1X** **E34PB3-1X** **—**		**E34EB1-1X** **E34EB2-1X** **E34EB3-1X** **—**		**E34LB1-1X** **E34LB2-1X** **E34LB3-1X** **—**		**E34JB1-1X** **E34JB2-1X** **E34JB3-1X** **E34JB2N8-1X**	

① Anodized aluminum head — may not be suitable for some corrosive environments.

Indicating Light Units

■ Plastic Lenses

24V Full Voltage Indicating Light — Red Catalog Number E34FB24H2X

47

Table 47-262. Indicating Light Units — UL (NEMA) Type 3, 3R, 3S, 4, 4X, 12, 13

Lamp	Type	Voltage	Color	Indicating Light ②		LED/Lamp Number
				Catalog Number	Price U.S. $	
LED	Full Voltage	24V AC/DC	Red Green Amber	**E34FB197LRP24** **E34FB197LGP24** **E34FB197LAP24**		Bayonet Base
		120V AC	Red Green Amber	**E34FB197LRP2A** **E34FB197LGP2A** **E34FB197LAP2A**		
Incandescent	Full Voltage	24V AC/DC	Red Green Amber	**E34FB24H2X** **E34FB24H3X** **E34FB24H9X**		#757
	Resistor	120V AC/DC	Red Green Amber	**E34RB120H2X** **E34RB120H3X** **E34RB120H9X**		120MB
	Transformer	120V AC 50/60 Hz	Red Green Amber	**E34TB120H2X** **E34TB120H3X** **E34TB120H9X**		#755

② Anodized aluminum head — may not be suitable for some corrosive environments.

Note: Use NEMA 4X 10250T operators where exposed to ultraviolet light, see **Pages 47-115 – 47-165**.

Additional Light Units . . . . . **Page 47-170**
Dimensions . . . . . **Page 47-191**
Enclosures . . . . . **Pages 47-185 – 47-186**
Legend Plates. . . . . **Page 47-184**
Replacement
Lamps/LEDs . . . . . **Page 47-157**
Discount Symbol **1CD1C**

Pushbuttons

Table 47-263. Momentary Pushbutton Operators, Non-illuminated — UL (NEMA) Type 3, 3R, 4, 4X, 12, 13

	Color	Catalog Number		Price U.S. $
Flush Button				
	Black	**E34PB1**		
	Red	**E34PB2**		
	Green	**E34PB3**		
	Yellow	**E34PB4**		
	White	**E34PB5**		
	Blue	**E34PB6**		
	Gray	**E34PB7**		
	Orange	**E34PB8**		
Extended Button				
	Black	**E34EB1**		
	Red	**E34EB2**		
	Green	**E34EB3**		
	Yellow	**E34EB4**		
	White	**E34EB5**		
	Blue	**E34EB6**		
	Gray	**E34EB7**		
	Orange	**E34EB8**		
Half Shrouded Button				
		Vertical	**Horizontal**	
	Black	**E34EVB1**	**E34EHB1**	
	Red	**E34EVB2**	**E34EHB2**	
	Green	**E34EVB3**	**E34EHB3**	
	Yellow	**E34EVB4**	**E34EHB4**	
	White	**E34EVB5**	**E34EHB5**	
	Blue	**E34EVB6**	**E34EHB6**	
	Gray	**E34EVB7**	**E34EHB7**	
	Orange	**E34EVB8**	**E34EHB8**	
Mushroom Button				
	Black	**E34LB1**		
	Red	**E34LB2**		
	Green	**E34LB3**		
	Yellow	**E34LB4**		
	Blue	**E34LB6**		
Anodized Aluminum Jumbo Mushroom Button ①				
	Black	**E34JB1**		
	Red	**E34JB2**		
	Red (Engraved EMER. STOP)	**E34JB2N8**		
	Green	**E34JB3**		
	Yellow	**E34JB4**		

① Anodized aluminum head — may not be suitable for some corrosive environments.

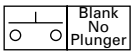
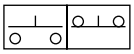
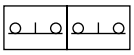
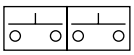
Note: Use NEMA 4X 10250T operators where exposed to ultraviolet light, see **Pages 47-115 – 47-165**.

Contact Blocks

See **Page 47-182** for additional contact blocks, fingerproof shrouds and Transparent Amber colored blocks.

Contact Block

Table 47-264. Contact Blocks

Symbol	Circuit	Catalog Number	Price U.S. $
Blank No Plunger	NC	**10250T51**	
 Blank No Plunger	NO	**10250T53**	
	NO-NC	**10250T1**	
	2NC	**10250T3**	
	2NO	**10250T2**	

Accessories . . . . . **Pages 47-187 – 47-188**
Dimensions . . . . . **Page 47-191**
Enclosures . . . . . **Pages 47-185 – 47-186**
Legend Plates. . . . . **Page 47-184**
Discount Symbol **1CD1C**

Illuminated Pushbuttons and Indicating Lights

Table 47-265. Operators without Lens

Light Unit Type	Type	Voltage	Illuminated Pushbutton		Indicating Light		PresTest		Lamp Number
			Catalog Number	Price U.S. $	Catalog Number	Price U.S. $	Catalog Number	Price U.S. $	
LED (LEDs not included) ①	Full Voltage	—	**E34CB497L**		**E34FB197L**		**E34FPB297L**		Bayonet Base
	Transformer AC Only	24	**E34XB024L**		—		—		
		120	**E34XB120L**		**E34TB120L**		**E34TPB120L**		
		240	**E34XB240L**		**E34TB240L**		**E34TPB240L**		
		277	**E34XB277L**		**E34TB277L**		—		
		380	**E34XB380L**		**E34TB380L**		**E34TPB380L**		
		480	**E34XB480L**		**E34TB480L**		**E34TPB480L**		
		600	**E34XB600L**		**E34TB600L**		**E34TPB600L**		
Incandescent	Full Voltage AC/DC	6	**E34CB06**		**E34FB06**		**E34FPB06**		#755
		12	**E34CB12**		**E34FB12**		**E34FPB12**		#756
		24	**E34CB24**		**E34FB24**		**E34FPB24**		#757
		32	**E34CB32**		**E34FB32**		**E34FPB32**		#1828
		48	**E34CB48**		**E34FB48**		**E34FPB48**		#1835
	Resistor ② AC/DC	120	**E34SB120**		**E34RB120**		**E34RPB120**		120MB
		240	**E34SB240**		**E34RB240**		**E34RPB240**		120MB
	Transformer AC Only	24	**E34XB024**		—		—		#755
		120	**E34XB120**		**E34TB120**		**E34TPB120**		
		240	**E34XB240**		**E34TB240**		**E34TPB240**		
		277	**E34XB277**		**E34TB277**		—		
		380	**E34XB380**		**E34TB380**		**E34TPB380**		
		480	**E34XB480**		**E34TB480**		**E34TPB480**		
		600	**E34XB600**		**E34TB600**		**E34TPB600**		
	Neon AC/DC	120	—		**E34NB120**		—		NE51H-R-22
		240	—		**E34NB240**		—		NE51H-4-68

① These units do not include lamps. Order LED separately to match lens color, see **Page 47-157** for LED Selection and **Pages 47-193 – 47-194** for Catalog Numbering Structure.

② Resistor units are not available for use with LEDs, choose either transformer or full voltage LED style.

Note: Use NEMA 4X 10250T operators where exposed to ultraviolet light, see **Pages 47-115 – 47-165**.

Table 47-266. Indicating Light Lens

	Color	Plastic		Glass ③	
		Catalog Number	Price U.S. $	Catalog Number	Price U.S. $
Plastic *Glass*	Red	**E34H2**		**E34G2**	
	Green	**E34H3**		**E34G3**	
	Yellow	**E34H4**		**E34G4**	
	White	**E34H5**		**E34G5**	
	Blue	**E34H6**		**E34G6**	
	Amber	**E34H9**		**E34G9**	
	Clear	**E34H0**		**E34G0**	

③ Glass lens has black anodized aluminum bezel.

Table 47-268. PresTest Lens

	Color	Plastic		Glass ④	
		Catalog Number	Price U.S. $	Catalog Number	Price U.S. $
Plastic *Glass*	Red	**E34V2**		**E34P2**	
	Green	**E34V3**		**E34P3**	
	Yellow	**E34V4**		**E34P4**	
	White	**E34V5**		**E34P5**	
	Blue	**E34V6**		**E34P6**	
	Amber	**E34V9**		**E34P9**	
	Clear	**E34V0**		**E34P0**	

④ Glass lens has black anodized aluminum bezel.

Table 47-267. Illuminated Pushbutton Lens

	Color	Catalog Number	Price U.S. $
	Red	**E34V2**	
	Green	**E34V3**	
	Yellow	**E34V4**	
	White	**E34V5**	
	Blue	**E34V6**	
	Amber	**E34V9**	
	Clear	**E34V0**	

Dimensions . . . . . **Page 47-191**
Enclosures. . . . . **Pages 47-185 – 47-186**
Legend Plates . . . . . **Page 47-184**
Replacement
Lamps/LEDs . . . . . **Page 47-157**
Discount Symbol **1CD1C**

Push-Pull Units

- Two- and Three-Position
- Non-illuminated

Table 47-269. 2-Position Push-Pull Units Non-illuminated — UL (NEMA) Type 3, 3R, 4, 4X, 12, 13

	Operator Position ①		Button Type/Color ②	Push-Pull		Contact Type	Mounting Location	
	Pull	Push		Catalog Number	Price U.S. $		A	B
	Maintained Push, Maintained Pull							
	O X	X O	40 mm/Red 40 mm Engraved EMERGENCY STOP/Red 65 mm Alum. Engraved EMERGENCY STOP/Red	E34GDBC2-1X E34GDBC2N8-1X E34GDBJ2N8-1X		1NO 1NC		

① X = closed circuit, O = open circuit.
② To order different type or color buttons, substitute the underlined characters with appropriate Suffix Code from the table below. Example: E34GDB**C6**-1X.

Table 47-270. 3-Position Push-Pull Units Non-illuminated — UL (NEMA) Type 3, 3R, 4, 4X, 12, 13

Operator Position ③			Button Type/Color ④	Push-Pull		Contact Type	Mounting Location	
Pull	Intermediate	Push		Catalog Number	Price U.S. $		A	B
Maintained Push, Momentary Pull								
X X	O X	O O	40 mm/ Black 40 mm/Red 40 mm Engraved EMERGENCY STOP/Red	E34GFBC1-3X E34GFBC2-3X E34GFBC2N8-3X		1NC 1NC		
Momentary Push, Momentary Pull								
X X	O X	O O	40 mm/Black 40 mm/Red	E34GEBC1-3X E34GEBC2-3X		1NC 1NC		
O X	O O	X O	40 mm/Black 40 mm/Red	E34GHBC1-1X E34GHBC2-1X		1NO 1NC		

③ X = closed circuit, O = open circuit.
④ To order different type or color buttons, substitute the underlined characters with appropriate Suffix Code from the Button and Color Selection Table below. Example: E34GDB**C6**-1X.

Table 47-271. Button and Color Selection Table

Standard — 40 mm	Color	Suffix Code	Catalog Number	Price U.S. $	Jumbo Mushroom Head ⑤ (Anodized) Aluminum — 65 mm	Color	Suffix Code	Catalog Number	Price U.S. $
	Black Red Red (EMERG. STOP) Green Blue	C1 C2 C2N8 C3 C6	E34C1 E34C2 E34C2N8 E34C3 E34C6			Red Red (EMER. STOP)	J2 J2N8	E34J2 E34J2N8	

⑤ Anodized aluminum may not be suitable for use on some corrosive applications.

Note: Use NEMA 4X 10250T operators where exposed to ultraviolet light, see **Pages 47-115 – 47-165**.

Accessories . . . . . **Pages 47-187 – 47-188**
Dimensions. . . . . **Page 47-191**
Enclosures . . . . . **Pages 47-185 – 47-186**
Legend Plates . . . . . **Page 47-184**
Discount Symbol **1CD1C**

Illuminated Push-Pull Units

- Two-Position Maintained
- Illuminated

Illuminated Push-Pull Unit

Table 47-272. 2-Position Illuminated Maintained Push, Maintained Pull — UL (NEMA) Type 3, 3R, 4, 4X, 12, 13

Operator Position ①		Lamp	Type	Voltage	Red Standard Push-Pull ②		Contact Type	Mounting Location		LED/Lamp Number
Maintained — Pull	Maintained — Push				Catalog Number	Price U.S. $		A	B	
O X	X O	LED	Full Voltage	24V AC/DC	**E34GDB97LRD24-1X**		1NO 1NC			Bayonet Base
				120V AC/DC	**E34GDB97LRD2A-1X**					
			Transformer	24V AC	**E34GDB89LRD06-1X**					
				120V AC	**E34GDB63LRD06-1X**					
O X	X O	Incan-descent	Full Voltage	24V AC/DC	**E34GDB79M2-1X**		1NO 1NC			#757
			Resistor	120V AC/DC	**E34GDB80M2-1X**					120MB
			Transformer	24V AC	**E34GDB89M2-1X**					#755
				120V AC	**E34GDB63M2-1X**					

① X = closed circuit, O = open circuit.

② To order different type or color lens, substitute the underlined characters with appropriate Suffix Code from Lens and Color Selection Table below. Example: E34GDB79 M3-1X. For LEDs with different voltages see ordering example on **Page 47-176**.

Table 47-273. Lens and Color Selection Table

Type	Color	Incand. Suffix Code	LED Suffix Code	Catalog Number	Price U.S. $
Standard	Red	**M2**	**RD**	**E34M2**	
	Red (EMER. STOP)	**M2N8**	**ED**	**E34M2N8**	
	Green	**M3**	**GD**	**E34M3**	
	Blue	**M6**	**LD**	**E34M6**	
	Amber	**M9**	**AD**	**E34M9**	
	White	**M5**	**WD**	**E34M5**	
	Clear	**M0**	**CD**	**E34M0**	

Note: Use NEMA 4X 10250T operators where exposed to ultraviolet light, see **Pages 47-115 – 47-165**.

Accessories ..... **Pages 47-187 – 47-188**
Additional Light Units .... **Page 47-176**
Dimensions ..... **Page 47-191**
Enclosures ..... **Pages 47-185 – 47-186**
Legend Plates..... **Page 47-184**
Replacement
Lamps/LEDs ..... **Page 47-157**
Discount Symbol **1CD1C**

Illuminated Push-Pull Units (Continued)

- Three-Position Momentary
- Illuminated

Illuminated Push-Pull Unit

Table 47-274. 3-Position Illuminated Momentary Push, Momentary Pull — UL (NEMA) Type 3, 3R, 4, 4X, 12, 13

Operator Position ①			Lamp	Type	Voltage	Red Standard Push-Pull ②		Contact Type	Mounting Location		LED/Lamp Number
Momentary — Pull	Maintained — Intermediate	Momentary — Push				Catalog Number	Price U.S. $		A	B	
O X	O O	X O	LED	Full Voltage	24V AC/DC	**E34GHB97LRD24-1X**		1NO 1NC			Bayonet Base
					120V AC	**E34GHB97LRD2A-1X**					
				Trans-former	24V AC	**E34GHB89LRD06-1X**					
					120V AC	**E34GHB63LRD06-1X**					
X X	O X	O O		Full Voltage	24V AC/DC	**E34GEB97LRD24-3X**		1NC 1NC			Bayonet Base
					120V AC	**E34GEB97LRD2A-3X**					
				Trans-former	24V AC	**E34GEB89LRD06-3X**					
					120V AC	**E34GEB63LRD06-3X**					
O X	O O	X O	Incan-descent	Full Voltage	24V AC/DC	**E34GHB79M2-1X**		1NO 1NC			#757
				Resistor	120V AC	**E34GHB80M2-1X**					120MB
				Trans-former	24V AC	**E34GHB89M2-1X**					#755
					120V AC	**E34GHB63M2-1X**					
X X	O X	O O		Full Voltage	24V AC/DC	**E34GEB79M2-3X**		1NC 1NC			#757
				Resistor	120V AC	**E34GEB80M2-3X**					120MB
				Trans-former	24V AC	**E34GEB89M2-3X**					#755
					120V AC	**E34GEB63M2-3X**					

① X = closed circuit, O = open circuit.
② To order different type or color lens, substitute the underlined characters with appropriate Suffix Code from Lens and Color Selection Table on the bottom of **Page 47-172.** Example: E34GEB79M3-3X. For LEDs with different voltages see ordering example on **Page 47-176**.

Note: Use NEMA 4X 10250T operators where exposed to ultraviolet light, see **Pages 47-115 – 47-165**.

Accessories . . . . . **Pages 47-187 – 47-188**
Additional Light Units . . . . . **Page 47-176**
Dimensions. . . . . **Page 47-191**
Enclosures . . . . . **Pages 47-185 – 47-186**
Legend Plates . . . . . **Page 47-184**
Replacement
Lamps/LEDs . . . . . **Page 47-157**
Discount Symbol **1CD1C**

Illuminated Push-Pull Units (Continued)

- Three-Position — Maintained Push, Momentary Pull
- Illuminated

Illuminated Push-Pull Unit

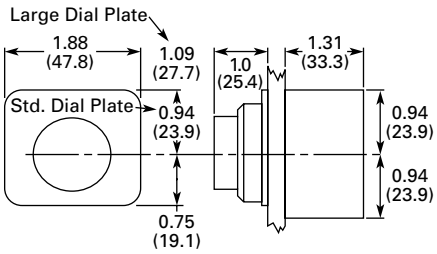
Table 47-275. 3-Position Illuminated Maintained Push, Momentary Pull — UL (NEMA) Type 3, 3R, 4, 4X, 12, 13

Operator Position ①			Lamp	Type	Voltage	Red Standard Push-Pull ②		Contact Type	Mounting Location		LED/Lamp Number
Momentary — Pull	Maintained — Intermediate	Maintained — Push				Catalog Number	Price U.S. $		A	B	
X	O	O	LED	Full Voltage	24V AC/DC	**E34GFB97LRD24-3X**		1NC			Bayonet Base
X	X	O			120V AC	**E34GFB97LRD2A-3X**					
				Trans-former	24V AC	**E34GFB89LRD06-3X**		1NC			
					120V AC	**E34GFB63LRD06-3X**					
X	O	O	Incan-descent	Full Voltage	24V AC/DC	**E34GFB79M2-3X**		1NC			#757
X	X	O		Resistor	120V AC	**E34GFB80M2-3X**					120MB
				Trans-former	24V AC	**E34GFB89M2-3X**		1NC			#755
					120V AC	**E34GFB63M2-3X**					

① X = closed circuit, O = open circuit.
② To order different type or color lens, substitute the underlined characters with appropriate Suffix Code from table on the bottom of **Page 47-172.** Example: E34GFB79**M3**-3X. For LEDs with different voltages see ordering example on **Page 47-176**.

Potentiometers

Table 47-276. Potentiometer with Knob and Standard Dial Plate — Linear Type ±10% — UL (NEMA) Type 3, 3R, 4, 4X, 12, 13

Vertical or Horizontal One-Hole Mounting	Potentiometer Ohms	2 Watt (60V Max.) Single Potentiometer with Standard Aluminum Dial Plate ③④		Dimensions in Inches (mm)
		Catalog Number	Price U.S. $	
With Standard Aluminum Dial Plate	1000 2500 5000 10000 25000 50000	**E34PDB1F1** **E34PDB1F2** **E34PDB1F5** **E34PDB1F10** **E34PDB1F25** **E34PDB1F50**		 **Potentiometer**
	Operator Only ⑤	**E34PDB1A0**		
	Alternative – Black Plastic Large Legend with Standard Markings	**E34LP99**		

③ Large dial plate with space for legend is available at no charge. To order, add Suffix **36** to Catalog Number. Example: E34PDB1F1**36**. To order separately, see footnote ④ below.
④ Large dial plate has space at top for 15 letters. 3/32 inch high. For custom stamped legend plates, order legend plate as separate item **10250TR30** and specify stamping.
⑤ For use with commercially purchased potentiometers having shaft dimensions per dimension drawing on **Page 47-161**.

Note: Use NEMA 4X 10250T operators where exposed to ultraviolet light, see **Pages 47-115 – 47-165**.

Accessories ..... **Pages 47-187 – 47-188**
Additional Light Units .... **Page 47-176**
Dimensions ..... **Page 47-191**
Enclosures ..... **Pages 47-185 – 47-186**
Legend Plates..... **Page 47-184**
Replacement Lamps/LEDs ..... **Page 47-157**
Discount Symbol **1CD1C**

2-Position Maintained Push-Pull without Button on Lens Catalog Number E34GDB

Push-Pull Operators

An illuminated Push-Pull pushbutton unit, arranged for one-hole mounting, can replace two pushbuttons and a pilot light or the non-illuminated form can replace two pushbuttons. These units are available in three basic types:

- **Maintained** — (Two-Position). Maintains in the pulled or pushed position until manually actuated to the opposite mode.
- **Momentary** — (Three-Position). Spring returns to an intermediate position when pulled or pushed and released.
- **Momentary Pull, Maintained Push** — (Three-Position). Spring returns to intermediate position when pulled. Maintains in pushed position until manually returned to intermediate (ready to reset) position. Maintained stop holds circuit open and will prevent other series connected operators from starting the system.

The Operators, Buttons, Contact Blocks, etc., are offered as building block components that can be intermixed to satisfy many requirements. This minimizes the need for a varied and costly inventory.

Application Guide

To assist in the selection of contact blocks, the sketch to the right shows pictorially by symbols **A** and **B** locations of contact circuits after assembly of contact blocks and adapter to the operator. The chart below shows the effect of the push and pull operations on either NO or NC contacts. (X = contact closed, O = contact open)

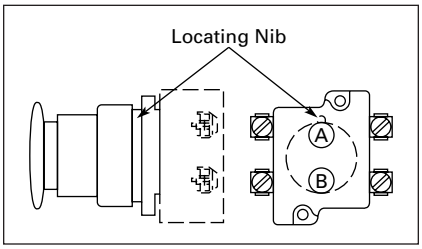


Figure 47-124. Contact Circuit Locations

Table 47-277. Push-Pull Operator Components

Type of Operator	Catalog Number	Price U.S. $	Contact Block — Max. of 2 Blocks, 4 Circuits ①	Operator Position and Circuit Arrangement: Out — Pull		Intermediate		In — Push	
				Contact Block Mounting Location					
				A	B	A	B	A	B
2-Position Operator without Lens									
Maintained Push-Pull	**E34GDB**		1NO 1NC	O X	or O X	No Intermediate Position		X O	or X O
			2NO 2NC	O X	O X			X O	X O
3-Position Operator without Lens									
Momentary Push-Pull	**E34GEB** ①		1NO 1NC	O X	or O X	O O	or O X	X O	or O O
Maintained Push-Momentary Pull	**E34GFB** ①		2NO 2NC	O X	O X	O O	O X	X O	O O
Momentary Push-Pull	**E34GHB** ①		1NO 1NC	O X	or O X	O O	or O O	X O	or X O
			2NO 2NC	O X	O X	O O	O O	X O	X O

① Special function contact blocks shown on **Page 47-182** CANNOT be used with 3-position push-pull operators E34GEB, E34GFB or E34GHB.

Note: Use NEMA 4X 10250T operators where exposed to ultraviolet light, see **Pages 47-115 – 47-165**.

Note: See Typical Applications on **Page 47-129**.

Button or Lens ..... **Page 47-176**
Contact Blocks ..... **Page 47-182**
Dimensions..... **Page 47-191**
Enclosures ..... **Pages 47-185 – 47-186**
Legend Plates ..... **Page 47-184**
Discount Symbol **1CD1C**

Push-Pull Operators (Continued)

Push-Pull Light Units, Lenses and Buttons

Table 47-278. Light Units for Illuminated Push-Pull Devices

Light Unit Type	Type	Voltage	Catalog Number	Price U.S. $	LED/Lamp Number
LED (LEDs not included) ①	Full Voltage	—	**10250T97L**		Bayonet Base
	Transformer AC Only 50/60 Hz	24 120 208 240 277 380 480 600	**10250T89L** **10250T63L** **10250T64L** **10250T65L** **10250T82L** **10250T66L** **10250T67L** **10250T68L**		
Incandescent	Full Voltage AC or DC	6 12 24/28 32	**10250T69** **10250T70** **10250T79** **10250T83**		#755 #756 #757 #1828
	Resistor AC or DC	120 240	**10250T80** **10250T81**		120MB
	Transformer AC Only 50/60 Hz	24 120 208 240 277 380 480 600	**10250T89** **10250T63** **10250T64** **10250T65** **10250T82** **10250T66** **10250T67** **10250T68**		#755

① These units do not include lamps. Order LED separately to match lens color from chart at right.

Table 47-279. Buttons for Non-illuminated Push-Pull Devices

	Color	Incand. Suffix Code	Catalog Number	Price U.S. $
	Black Red Red (EMERG. STOP) Green Blue	**C1** **C2** **C2N8** **C3** **C6**	**E34C1** **E34C2** **E34C2N8** **E34C3** **E34C6**	
	Jumbo — Red ② Jumbo — Red (EMERGENCY STOP)	**J2** **J2N8**	**E34J2** **E34J2N8**	

② Anodized aluminum may not be suitable for use on some corrosive applications.

Note: Use NEMA 4X 10250T operators where exposed to ultraviolet light, see **Pages 47-115 – 47-165**.

Table 47-280. Alternate Lenses for Illuminated Push-Pull Devices

	Color	Incand. Suffix Code	LED Suffix Code ③	Catalog Number	Price U.S. $
	Red Red (EMERG. STOP) Green Blue Amber	**M2** **M2N8** **M3** **M6** **M9**	**RD** **ED** **GD** **LD** **AD**	**E34M2** **E34M2N8** **E34M3** **E34M6** **E34M9**	
	White Clear	**M5** **M0**	**WD** **—**	**E34M5** **E34M0**	

③ Suffix Codes should only be used for assembling composite Catalog Numbers. To order lens, order by Catalog Number.

Table 47-281. LED Selection Table

Voltage	Color	Catalog Number	Price U.S. $
6V AC/DC Suitable for Use with Transformers	Red Orange Yellow Green Blue White	**E22LED006RN** **E22LED006ON** **E22LED006YN** **E22LED006GN** **E22LED006BN** **E22LED006WN**	
12V AC/DC	Red Orange Yellow Green Blue White	**E22LED012RN** **E22LED012ON** **E22LED012YN** **E22LED012GN** **E22LED012BN** **E22LED012WN**	
24V AC/DC	Red Orange Yellow Green Blue White	**E22LED024RN** **E22LED024ON** **E22LED024YN** **E22LED024GN** **E22LED024BN** **E22LED024WN**	
48V AC/DC	Red Orange Yellow Green Blue White	**E22LED048RN** **E22LED048ON** **E22LED048YN** **E22LED048GN** **E22LED048BN** **E22LED048WN**	
60V AC/DC	Red Orange Yellow Green Blue White	**E22LED060RN** **E22LED060ON** **E22LED060YN** **E22LED060GN** **E22LED060BN** **E22LED060WN**	
120V AC	Red Orange Yellow Green Blue White	**E22LED120RA** **E22LED120OA** **E22LED120YA** **E22LED120GA** **E22LED120BA** **E22LED120WA**	
120V DC	Red Orange Yellow Green Blue White	**E22LED120RD** **E22LED120OD** **E22LED120YD** **E22LED120GD** **E22LED120BD** **E22LED120WD**	

Note: For a complete listing of all LEDs available, see **Page 47-165**.

Ordering example with one composite number:

Non-illuminated E34GDB + E34C2 + 10250T1 =
E34GDBC2-1X

Incandescent E34GDB + 10250T79 + E34M2 + 10250T1 =
E34GDB79M2-1X

LED E34GDB + 10250T97L + E34M2 + Voltage Code + 10250T1 =
E34GDB97LRD24-1X

06 — 6V AC/DC
12 — 12V AC/DC
24 — 24V AC/DC
48 — 48V AC/DC
60 — 60V AC/DC
2A — 120V AC
2D — 120V DC

Contact Blocks . . . . . **Page 47-182**
Dimensions . . . . . **Page 47-191**
Enclosures. . . . . **Pages 47-185 – 47-186**
Legend Plates . . . . . **Page 47-184**
Replacement Lamps/LEDs . . . . . **Page 47-157**
Discount Symbol **1CD1C**

Selector Switch Units

- Two-, Three- and Four-Position — Maintained
- Non-illuminated and Illuminated

2-Position Maintained Switch Knob

4-Position Maintained Switch Lever

Table 47-282. 2-Position Selector Switch — UL (NEMA) Type 3, 3R, 4, 4X, 12, 13

Operator Position ①		Operator Action ②	Non-illuminated		Price U.S. $	Illuminated — 120V Transformer		Price U.S. $	Contact Type	Mounting Location		Cam Code
			Black Knob ③	Black Lever ③		Red Knob ③	Red Lever ③					
			Catalog Number	Catalog Number		Catalog Number	Catalog Number			A	B	
X O	O X	M M	E34VFBK1-1X	E34VFBL1-1X		E34VFB120ER-1X	E34VFB120FR-1X		1NC 1NO			1

① X = closed circuit, O = open circuit.
② M = Maintained.
③ To order different type or color selector switch, substitute the underlined character with appropriate Suffix Code from the Color Selection table. Example: E34VFBK2-X1.

Table 47-283. 3-Position Selector Switch — UL (NEMA) Type 3, 3R, 4, 4X, 12, 13

Operator Position ④			Operator Action ⑤	Non-illuminated		Price U.S. $	Illuminated — 120V Transformer		Price U.S. $	Contact Type	Mounting Location		Cam Code
				Black Knob ⑥	Black Lever ⑥		Red Knob ⑥	Red Lever ⑥					
				Catalog Number	Catalog Number		Catalog Number	Catalog Number			A	B	
X O	O O	O X	M M M	E34VHBK1-2X	E34VHBL1-2X		E34VHB120TER-2X	E34VHB120TFR-2X		1NO 1NO			3
X O O	O X O	O O X	M M M	E34VHBK1-23X	E34VHBL1-23X		E34VHB120TER-23X	E34VHB120TFR-23X		1NO 2NC (Series) 1NO			3

④ X = closed circuit, O = open circuit.
⑤ M = Maintained.
⑥ To order different type or color selector switch, substitute the underlined character with appropriate Suffix Code from the Color Selection table. Example: E34VFBK2-X1.

Table 47-284. 4-Position Selector Switch — UL (NEMA) Type 3, 3R, 4, 4X, 12, 13

Operator Position ⑦				Operator Action ⑧	Non-illuminated		Price U.S. $	Illuminated — 120V Transformer		Price U.S. $	Contact Type	Mounting Location		Cam Code
					Black Knob ⑨	Black Lever ⑨		Red Knob ⑨	Red Lever ⑨					
					Catalog Number	Catalog Number		Catalog Number	Catalog Number			A	B	
X O O O	O X O O	O O X O	O O O X	M M M M	E34VTBK1-23X	E34VTBL1-23X		E34VRB120TER-23X	E34VRB120TFR-23X		1NC 1NO 1NO 1NC			7

⑦ X = closed circuit, O = open circuit.
⑧ M = Maintained.
⑨ To order different type or color selector switch, substitute the underlined character with appropriate Suffix Code from the Color Selection table. Example: E34VFBK2-X1.

Table 47-285. Color Selection, Non-illuminated

Color	Code Letter
Black	1
Red	2
Green	3
Yellow	4
White	5
Blue	6
Gray	7
Orange	8

Note: For Light Unit Voltage Suffix and Knobs, Levers tables, see **Page 47-181**.

Note: Use NEMA 4X 10250T operators where exposed to ultraviolet light, see **Pages 47-115 – 47-165**.

Accessories . . . . . **Pages 47-187 – 47-188**
Additional Circuit Arrangements . . . . . **Pages 47-178 – 47-179**
Dimensions . . . . . **Page 47-191**
Enclosures . . . . . **Pages 47-185 – 47-186**
Legend Plates . . . . . **Page 47-184**
Discount Symbol **1CD1C**

E34 Series

Selector Switch Selection

Cam and Contact Block Selection

Selector switches in their varied forms (2-position, 3-position and 4-position) are a big factor contributing to the great flexibility of control that a well rounded line of "pushbuttons" can achieve. Because of their flexibility, they tend to cause difficulty with product selection and application. The following systematic approach should simplify that task.

Cam and contact block selection is better understood if you:

- Work with each incoming and outgoing wire/circuit separately.
- Recognize the terms NO and NC only identify the type of contact by its mode before mounting to the operator. The "X-O" chart (**Page 47-179**) shows how that contact will act after assembly to the operator with the selected cam shape. X = closed circuit, O = open circuit.
- Up to six NO or NC contacts may be mounted behind each plunger location for a total of twelve contacts. Single circuit contact blocks have only one plunger with the other side of the block "open." Therefore, single circuit contact blocks transmit motion to blocks behind them only for the position containing the circuit.
- Each cam has two separate lobes, each of which operates one of the two contact block plungers independently of each other. Those are identified as position A (locating nib side) and position B (opposite of locating nib). The position designations give direction in selecting and mounting of the contact blocks (see Illustration below).

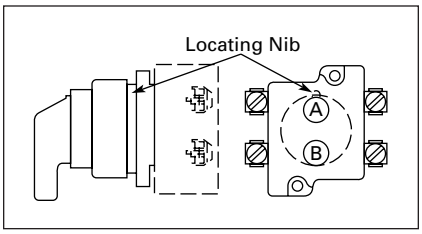
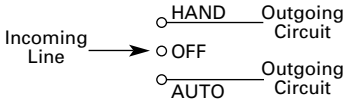


Figure 47-125. Contact Circuit Locations

Systematic Approach

Application: **HAND-OFF-AUTO** Selector Switch. In this circuit, one incoming line is distributed to two other outgoing circuits by the switch. The two circuits can be looked at individually.

Step 1: Elementary Diagram.
Construct on paper, or in your mind, a simple elementary diagram of the switching scheme as follows:



Step 2: "X-O" Pattern.
From the elementary diagram, you can construct an "X-O" diagram which describes when the contacts are to be closed (X) or open (O) in the various positions of the switch. The "X-O" for the **HAND** circuit looks like this:

HAND OFF AUTO
X O O

In this circuit, you want a contact closed on the left (HAND) but open in the center and right.

For the **AUTO** circuit, the "X-O" diagram would look like this:

HAND OFF AUTO
O O X

Putting them together, the complete "X-O" diagram is:

X O O
O O X

Once the "X-O" diagram has been generated, the next step is to select the cam and contact block, or blocks, needed to perform the desired "X-O" functions. The selection table on the following page lists the various types (shapes) of cams by number to choose from and the type of contact and position to achieve the function outlined in your "X-O" diagram.

Step 3: Cam Selection.
The cam you select determines the operation of all contact blocks mounted to the operator. It is selected on the basis that it provides the simplest circuitry for the desired "X-O" diagram. The selection tables of the following page show all the "X-O" combinations. For the purpose of this example, the applicable portion of those charts is shown in **Table 47-286**.

Table 47-286. Example Selection Table

No.	"X-O" Pattern	Cam Code #2		Cam Code #3	
		Top A	Bottom B	Top A	Bottom B
1	X O O	① NO NC		NO	
4	O O X		NO		NO

① Wired in series.

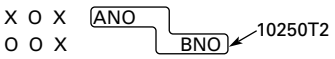
Now to make the cam selection, make a simple worksheet such as:

	Cam 2	Cam 3
X O O	(A)NO – (B)NC	**(A)NO**
O O X	(B)NO	**(B)NO**

It becomes immediately obvious that cam 3 is the better choice for two reasons, (1) the series combination can be avoided making it simpler to wire, (2) only two contacts are required, which is less expensive than the three contacts required by cam 2.

Step 4: Contact Block Selection.
Having selected the cam, contact block selection is simply a matter of gathering the A position and B position circuits into pairs which make up the most convenient contact block arrangement. If there is an imbalance in the number of circuits under A or B, then single circuit blocks must be selected for these leftover circuits.

Back to the worksheet, having selected cam 3 do this:



Step 5: Selector Switch Operator.
Lastly, you have to choose from the many types of operators — knob and lever in various colors or keyed. Also what combinations of maintained and spring return functions are required. Selection of these operators can be found on **Page 47-180**. For the above example you may want a 3-position maintained black knob, cam 3 — Catalog Number E34VHBK1.

The Complete Switch: E34VHBK1 with one 10250T2 or, for one composite catalog number, E34VHBK1-Y1 found on **Page 47-177**.

Selector Switch Selection (Continued)

Table 47-287. 2-Position Selector Switch Contact Block Selection

No.	Desired Circuit and Operator Position		Contact Blocks Required to Accomplish Circuit Function	
			Top Plunger A	Bottom Plunger B
1	X	O	or NC	NC
2	O	X	or NO	NO

Diagrams

Circuits shown illustrate connections to obtain a selector switch circuit combination and are shown with their appropriate line diagrams. Field wiring of jumper connections required as shown.

X = Closed Circuit
O = Open Circuit

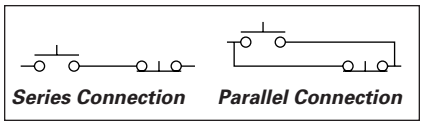


Figure 47-126. Wiring of Jumper Connections

Note: 4-Position Selector Switches limited to 4 contact blocks.

Contact Blocks

For selection and number of available contact blocks per operator, see **Page 47-182**.

Table 47-288. 3-Position Switch — Cam and Contact Block Selection

No.	Desired Circuit and Operator Position			Contact Blocks Required to Accomplish Circuit Function (Jumpers must be installed where indicated)			
				Operator with Cam Code #2		Operator with Cam Code #3	
				Mounting Location		Mounting Location	
				Top Plunger A	Bottom Plunger B	Top Plunger A	Bottom Plunger B
1	X	O	O	NO NC		NO	
2	X	X	O		NC		NC
3	X	O	X	NO		NO NO	
4	O	O	X		NO		NO
5	O	X	X	NC NO		NC	
6	O	X	O	NC		NC NC	

Table 47-289. 4-Position Switch — Contact Block Selection

No.	Desired Circuit and Operator Position				Contact Blocks Required to Accomplish Circuit Function		Combination No.	Desired Circuit and Operator Position				Contact Blocks Required to Accomplish Circuit Function	
					Mounting Location							Mounting Location	
					Top Plunger A	Bottom Plunger B						Top Plunger A	Bottom Plunger B
1	X	O	O	O	NC		10	X	O	X	O	NC NO	
2	O	X	O	O		NO							
3	O	O	X	O	NO		11	X	X	X	O	NC NO NO	
4	O	O	O	X		NC							
5	X	O	O	X	NC NC		12	O	X	X	X	NO NC NO	
6	O	X	X	O	NO NO								
7	O	O	X	X	NO NC		13	X	O	X	X	NO NC NC	
8	X	X	O	O	NC NO								
9	O	X	O	X		NO NC	14	X	X	O	X	NC NO NC	

2-Position Maintained Black Knob Selector Switch — Cam 1 Catalog Number E34VFBK1

3-Position Maintained Keyed Selector Switch Catalog Number E34KGHB1

Selector Switch Operators

Table 47-290. Operators with Knob Assembled — UL (NEMA) Type 3, 3R, 4, 4X, 12, 13

Positions	Operator Action ①	Black Knob Selector Switch — Vertical Mounting ③		
		Cam Code ②	Catalog Number ④	Price U.S. $
2-Position — 60° Throw	M M	1	E34VFBK1	
	M S	1	E34VEBK1	
3-Position — 60° Throw	M M M	2 3	E34VGBK1 E34VHBK1	
	M S M	2 3	E34VJBK1 E34VKBK1	
	M S S	2 3	E34VLBK1 E34VMBK1	
	M M S	2 3	E34VNBK1 E34VPBK1	
4-Position — 40° Throw	M M M M	7	E34VTBK1	

① M = Maintained. S = Spring return in direction of arrow (→).
② For selection of the proper cam and contact block to obtain the proper circuit sequence, see selection instructions and table on **Pages 47-178 – 47-179**.
③ Field convertible to Horizontal Mounting.
④ For other colors of either the knob or lever, replace the underlined characters of the Catalog Number with the appropriate Suffix Code from Alternate Knob and Lever Table below. Example: E34VFBL2.

Note: Use NEMA 4X 10250T operators where exposed to ultraviolet light, see **Pages 47-115 – 47-165**.

Table 47-291. Key Operators with Cam and Cap — UL (NEMA) Type 3, 3R, 4, 4X, 12, 13

Positions	Operator Action ⑤	Cam Code ⑥	Key Removal Positions ⑦	Vertical Mounting Catalog Number	Horiz. Mounting Catalog Number	Price U.S. $
2-Position — 60° Throw	M M	1	1, 2, 3	E34KFB_	E34KFHB_	
	M S	1	2	E34KEB_	E34KEHB_	
3-Position — 60° Throw	M M M	2 3	1 – 7	E34KGB_ E34KHB_	E34KGHB_ E34KHHB_	
	M S M	2 3	1, 4, 5	E34KJB_ E34KKB_	E34KJHB_ E34KKHB_	
	M S S	2 3	4	E34KLB_ E34KMB_	E34KLHB_ E34KMHB_	
	M M S	2 3	2, 4, 6	E34KNB_ E34KPB_	E34KNHB_ E34KPHB_	
4-Position — 40° Throw	M M M M	7	7	E34KTB_	E34KTHB_	

⑤ M = Maintained. S = Spring return in direction of arrow (→).
⑥ For selection of the proper cam and contact block to obtain the proper circuit sequence, see selection instructions and table on **Pages 47-178 – 47-179**.
⑦ Choose key removal position required for application from **Table 47-292**. Add key removal Code No. to listed Catalog Number. Example: E34KFB2.

Table 47-292. Key Removal Positions

Code Suffix	Key Removal Positions	Code Suffix	Key Removal Positions
1	Right Only	**5**	Right & Center
2	Left Only	**6**	Left & Center
3	Right & Left	**7**	All Positions
4	Center Only		

Note: Key removal in "spring return from" positions not recommended.

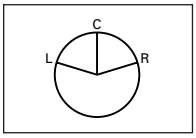


Figure 47-127. Key Removal Positions

Dissimilar Locks and Keys

Listed operators have identical locks and keys (Key Code H661), Catalog Number **10250ED824.** For dissimilar lock and key combinations, see **Page 47-136.**

Table 47-293. Alternate Knobs and Levers for Operators Above

Color	Knob			Lever			Lever Designed for Added Ingress Protection ⑧		
	Suffix Code	Catalog Number	Price U.S. $	Suffix Code	Catalog Number	Price U.S. $	Suffix Code	Catalog Number	Price U.S. $
Black	K1	E34K1		L1	E34L1		A1	E34A1	
Red	K2	E34K2		L2	E34L2		A2	E34A2	
Green	K3	E34K3		L3	E34L3		A3	E34A3	
Yellow	K4	E34K4		L4	E34L4		A4	E34A4	
White	K5	E34K5		L5	E34L5		A5	E34A5	
Blue	K6	E34K6		L6	E34L6		A6	E34A6	
Gray	K7	E34K7		L7	E34L7		A7	E34A7	
Orange	K8	E34K8		L8	E34L8		A8	E34A8	

⑧ For use on maintained operators only.

Accessories ..... **Page 47-187 – 47-188**
Dimensions ..... **Page 47-191**
Legend Plates..... **Page 47-184**
Discount Symbol **1CD1C**

2-Position Maintained
120V AC Transformer
Selector Switch, Cam 1
Catalog Number E34VFB120

Illuminated Selector Switch Operators

Table 47-294. Operator without Knob or Lever

Positions	Operator Action	Transformer Type — 50/60 Hz 6 Volt #755 Lamp Catalog Number ①⑤		Price U.S. $	Full Voltage Type — AC or DC ③ Lamps — #755, #757, #1835, 120MB ④ Catalog Number ⑤		Price U.S. $
2-Position — 60° Throw	M M	Cam Code 1 ② **E34VFB_**			Cam Code 1 ② **E34SFB_**		
3-Position — 60° Throw	M M M	Cam Code 2 ② **E34VGB_**	Cam Code 3 ② **E34VHB_**		Cam Code 2 ② **E34SGB_**	Cam Code 3 ② **E34SHB_**	
	M M S	**E34VNB_** ⑥	**E34VPB_** ⑥		**E34SNB_** ⑦	**E34SPB_** ⑦	
	M S M	**E34VJB_** ⑥	**E34VKB_** ⑥		**E34SJB_** ⑦	**E34SKB_** ⑦	
	M S S	**E34VLB_**	**E34VMB_**		**E34SLB_**	**E34SMB_**	
4-Position — 40° Throw	M M M M	**E34VRB_**	—		**E34SRB_**	—	

① Operator includes lens gasket and lens attachment screws.
② For selection of the proper cam and contact block required to obtain a specific circuit sequence, see selection table on **Pages 47-178 – 47-179.**
③ Full voltage light units can be used at other than listed voltages by changing lamp. Replacement lamps are listed in **Page 47-157.**
④ 120MB lamps are used on both 120V and 240V operators.
⑤ Add Code Suffix for Light Unit Voltage to listed Catalog Number from Light Unit Voltage Suffix Table at bottom of page.
Example: For 24V transformer type light unit, order E34VFB**024**.
⑥ 120 and 240V transformer only.
⑦ 120 full voltage only.

Table 47-295. Light Unit Voltage Suffix — Add to operator Catalog Number listed in table above.

Type of Light Unit					
Transformer Type 50/60 Hz			Full Voltage Type AC or DC ⑧		
Voltage	Suffix Code	Adder U.S. $	Voltage	Suffix Code	Adder U.S. $
24	**024**		6	**06**	
120	**120**		12	**12**	
208	**208**		24	**24**	
240	**240**		48	**48**	
380	**380**		120	**120**	
480	**480**		240 ⑨	**240**	
600	**600**				

⑧ Full voltage light units can be used at other than listed voltages by changing lamp. Replacement lamps are listed in **Page 47-157.**
⑨ Resistor type. May generate excess heat if used in high density.

Table 47-296. Knobs, Levers

	Color ⑩	Knob	Lever	Price U.S. $
		Catalog Number and Code Number		
	Red	**10250TER**	**10250TFR**	
	Green	**10250TEG**	**10250TFG**	
	Yellow	**10250TEA**	**10250TFA**	
	Blue	**10250TEL**	**10250TFL**	
	Clear	**10250TEC**	**10250TFC**	
	White	**10250TEW**	**10250TFW**	
	Amber	**10250TEM**	**10250TFM**	

⑩ Amber, clear and white lenses have a black arrow (pointer). Red, green and blue lenses have a white arrow (pointer).

Note: Use NEMA 4X 10250T operators where exposed to ultraviolet light, see **Pages 47-115 – 47-165**.

Contact Blocks..... **Page 47-182**
Dimensions..... **Page 47-191**
Enclosures ..... **Pages 47-185 – 47-186**
Legend Plates..... **Page 47-184**
Discount Symbol **1CD1C**

Contact Blocks

Standard Contact Blocks

- UL A600/P600 rated
- Color-coded plungers – red/green for NC/NO circuits
- Silver contact tips with "reliability nibs"
- Black (opaque) or amber (translucent) housings
- Pressure plate or spade terminals
- Fingerproof shrouds (for pressure terminals only)

Logic Level Contact Blocks

- UL A600/P600 rated
- Black plungers
- Inert palladium knife-blade contacts
- Black (opaque) housings
- Pressure plate or spade terminals
- Fingerproof shrouds not available

Special Function Contact Blocks

- UL A600/P600 rated
- Black plungers
- Silver contact tips with "reliability nibs"
- Black (opaque) housings
- Pressure plate terminals only
- Fingerproof shrouds not available

Special Purpose Contact Block

- Maximum 300V rated
- Black plungers
- Silver contact tips with "reliability nibs"
- Black (opaque) housings
- Pressure plate terminals only
- Fingerproof shrouds not available

Reliability Nibs

Reliability nibs are the hallmark of Eaton's Cutler-Hammer contact blocks. A pointed silver nib on the contact tip ensures reliable switching from logic level (5V) up to 600V applications. Therefore standard contact blocks can be used for most logic level applications where the contacts are not exposed to any harsh environmental conditions.

Palladium Contacts

Palladium, which is more inert than gold, is well suited for voltages and currents approaching zero and is recommended for applications where environmental conditions are a factor.

Maximum Contact Block Mounting per Operator Type

Operator	Max. Stack	Operator	Max. Stack
Pushbuttons	6	2- or 3-Position Selector Switches	6
Push-Pull Operators	2	4-Position Selector Switches	4
Roto-Push Operators	4	Joysticks	4

Table 47-297. Contact Blocks

Symbol	Circuit	Description/ Notes ① *10250T1*	Standard				Logic Level			
			Pressure Terminals		Spade Terminals ②		Pressure Terminals		Spade Terminals ②	
			Catalog Number	Price U.S. $	Catalog Number	Price U.S. $	Catalog Number	Price U.S. $	Catalog Number	Price U.S. $
Blank No Plunger	1NC	Stack up to 6 blocks (6 circuits) unless otherwise noted.	**10250T51**		**10250T59**		**10250T51E**		**10250T59E**	
Blank No Plunger	1NO	Stack up to 6 blocks (6 circuits) unless otherwise noted.	**10250T53**		**10250T60**		**10250T53E**		**10250T60E**	
	NO-NC	Stack up to 6 blocks (12 circuits) unless otherwise noted.	**10250T1**		**10250T40**		**10250T1E**		**10250T40E**	
	2NC	Stack up to 6 blocks (12 circuits) unless otherwise noted.	**10250T3**		**10250T42**		**10250T3E**		**10250T42E**	
	2NO	Stack up to 6 blocks (12 circuits) unless otherwise noted.	**10250T2**		**10250T41**		**10250T2E**		**10250T41E**	
Special Function Blocks ③										
Blank No Plunger	LONC	Late opening NC. Stack up to 6 blocks (6 circuits) unless otherwise noted.	**10250T71** ③		—		**10250T71E** ③		—	
	ECNO -NC	Early closing NO and standard NC. Stack up to 6 blocks unless otherwise noted.	**10250T47** ③④		—		**10250T47E** ③		—	
	ECNO -NO	Early closing NO and standard NO. Stack up to 4 blocks unless otherwise noted.	**10250T57** ③④		—		**10250T57E** ③		—	
	2LONC	Two late opening NC contacts. Stack up to 6 blocks unless otherwise noted.	**10250T45** ③		—		**10250T45E** ③		—	
	LONC-ECNO	Overlapping contacts. Stack up to 4 blocks unless otherwise noted.	**10250T55** ③④		—		**10250T55E** ③		—	
Special Purpose Blocks ⑤										
	2NO-2NC	Four circuits in single block depth. Rated 300V max. Stack up to 4 blocks unless otherwise noted.	**10250T44** ⑤		—					

① All 10250T contact blocks shown are suitable for use on standard 10250T and E34 operators. These contact blocks are not suitable for Class I Division 2 type 10250T or E34 devices.

② Contact blocks with spade terminals are limited to a maximum of one contact block per operator and minimum spacing between devices is 2.5" (63.5 mm). Not suitable for use in 10250T or E34 enclosures. Also available in amber housing. Not available with fingerproof shrouds.

③ Special function contact blocks are not suitable for use with roto-push operators, 3-position push-pull operators, or 4-position selector switches.

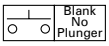
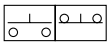
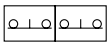
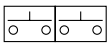
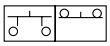
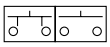
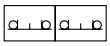
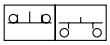
④ ECNO contact blocks are not suitable for use with 2-position joysticks or when operators are used with padlock attachments.

⑤ Special purpose 10250T44 contact blocks are not suitable on selector switches or roto-push operators. Okay to use with 3-position push-pull operators only on low voltage (30V or less) circuits.

Ratings . . . . . **Page 47-116**
Dimensions . . . . . **Pages 47-160 – 47-162**
Discount Symbol **1CD1C**

Contact Blocks (Continued)

Table 47-298. Contact Blocks with Fingerproof Shrouds

Symbol	Circuit	Description/ Notes ① *10250T1CP*	Standard Pressure Terminals ② Catalog Number	Standard Price U.S. $	Logic Level Pressure Terminals ② Catalog Number	Logic Level Price U.S. $
	1NC	Stack up to 6 blocks (6 circuits) unless otherwise noted.	**10250T51P**		**10250T51EP**	
	1NO	Stack up to 6 blocks (6 circuits) unless otherwise noted.	**10250T53P**		**10250T53EP**	
	NO-NC	Stack up to 6 blocks (12 circuits) unless otherwise noted.	**10250T1P**		**10250T1EP**	
	2NC	Stack up to 6 blocks (12 circuits) unless otherwise noted.	**10250T3P**		**10250T3EP**	
	2NO	Stack up to 6 blocks (12 circuits) unless otherwise noted.	**10250T2P**		**10250T2EP**	
Special Function Blocks ③						
	LONC	Late opening NC. Stack up to 6 blocks (6 circuits) unless otherwise noted.	**10250T71P ③**		**10250T71EP ③**	
	ECNO-NC	Early closing NO and standard NC. Stack up to 6 blocks unless otherwise noted.	**10250T47P ③ ④**		**10250T47EP ③**	
	ECNO-NO	Early closing NO and standard NO. Stack up to 4 blocks unless otherwise noted.	**10250T57P ③ ④**		**10250T57EP ③**	
	2LONC	Two late opening NC contacts. Stack up to 6 blocks unless otherwise noted.	**10250T45P ③**		**10250T45EP ③**	
	LONC-ECNO	Overlapping contacts. Stack up to 4 blocks unless otherwise noted.	**10250T55P ③ ④**		**10250T55EP ③**	

① All 10250T contact blocks shown are suitable for use on standard 10250T and E34 operators. These contact blocks are not suitable for Class I Division 2 type 10250T or E34 devices.

② To order contact blocks with translucent amber housing, change Suffix P to **CP** in Catalog Number e.g. 10250T51**CP**.

③ Special function contact blocks are not suitable for use with roto-push operators, 3-position push-pull operators, or 4-position selector switches.

④ ECNO contact blocks are not suitable for use with 2-position joysticks or when operators are used with padlock attachments.

Ratings. . . . . **Page 47-167**
Dimensions. . . . . **Pages 47-160 – 47-162**
Discount Symbol **1CD1C**

Options

Legend Plates

Field Color

Legend plates can be supplied printed on black, red, silver or white field. To order legend printed on a color other than indicated — add Suffix Code to the end of the Catalog Number as follows:

"R" for Red field;
"W" for White field; or
"S" for Silver field.

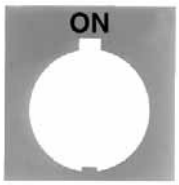
Example: E34SP26**R** — Standard plate with red field marked OPEN.

Table 47-299. For Pushbutton Operators and Indicating Lights

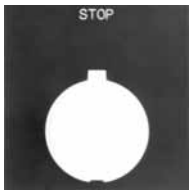
Price Each — U.S. $ . . . . . .

Legend	Color of Field	Catalog Number Standard ①	Catalog Number Jumbo
Letters on Legend Plates Below are 3/16" High			
CLAMP	Black	**E34SP90**	**E34LP90**
CLOSE	Black	**E34SP73**	**E34LP73**
DOWN	Black	**E34SP74**	**E34LP74**
EMERG. STOP	Red	**E34SP13**	**E34LP13**
FAST	Black	**E34SP75**	**E34LP75**
FASTER	Black	**E34SP87**	**E34LP87**
FEEDER ON	Black	**E34SP94**	**E34LP94**
FEEDER OFF	Black	**E34SP95**	**E34LP95**
FORWARD	Black	**E34SP15**	**E34LP15**
HIGH	Black	**E34SP16**	**E34LP16**
IN	Black	**E34SP17**	**E34LP17**
INCH	Black	**E34SP18**	**E34LP18**
JOG	Black	**E34SP19**	**E34LP19**
JOG FOR.	Black	**E34SP20**	**E34LP20**
JOG REV.	Black	**E34SP21**	**E34LP21**
LOW	Black	**E34SP22**	**E34LP22**
LOWER	Black	**E34SP23**	**E34LP23**
LUBE-FAIL	Black	**E34SP92**	**E34LP92**
MOTOR RUN	Black	**E34SP81**	**E34LP81**
MOTOR STOP	Black	**E34SP82**	**E34LP82**
OFF	Red	**E34SP24**	**E34LP24**
ON	Black	**E34SP25**	**E34LP25**
OPEN	Black	**E34SP26**	**E34LP26**
OUT	Black	**E34SP27**	**E34LP27**
POWER ON	Black	**E34SP80**	**E34LP80**
RAISE	Black	**E34SP28**	**E34LP28**
READY	Black	**E34SP86**	**E34LP86**
RESET	Black	**E34SP29**	**E34LP29**
REVERSE	Black	**E34SP30**	**E34LP30**
RUN	Black	**E34SP31**	**E34LP31**
SAFE	Black	**E34SP85**	**E34LP85**
SLOW	Black	**E34SP32**	**E34LP32**
SLOWER	Black	**E34SP88**	**E34LP88**
START	Black	**E34SP33**	**E34LP33**
STOP	Red	**E34SP34**	**E34LP34**
TEST	Black	**E34SP83**	**E34LP83**
TRANSFER	Black	**E34SP93**	**E34LP93**
TRIP	Black	**E34SP84**	**E34LP84**
UNCLAMP	Black	**E34SP91**	**E34LP91**
UP	Black	**E34SP35**	**E34LP35**

① 3/32" high lettering.



Standard



Jumbo

Table 47-300. For Selector Switch Operators

Price Each — U.S. $ . . . . . .

Legend	Color of Field	Catalog Number Standard	Catalog Number Jumbo
2 Position — 3/16" High Lettering			
FOR. REV.	Black	**E34SP38**	**E34LP38**
HAND AUTO	Black	**E34SP39**	**E34LP39**
HIGH LOW	Black	**E34SP40**	**E34LP40**
JOG RUN	Black	**E34SP41**	**E34LP41**
MAN. AUTO	Black	**E34SP67**	**E34LP67**
OFF ON	Black	**E34SP42**	**E34LP42**
OPEN CLOSE	Black	**E34SP43**	**E34LP43**
RUN JOG	Black	**E34SP44**	**E34LP44**
SAFE RUN	Black	**E34SP45**	**E34LP45**
START JOG	Black	**E34SP46**	**E34LP46**
START STOP	Black	**E34SP47**	**E34LP47**
UP DOWN	Black	**E34SP48**	**E34LP48**
3 Position — 3/16" High Lettering			
AUTO OFF HAND	Black	**E34SP49**	**E34LP49**
FOR. OFF REV.	Black	**E34SP50**	**E34LP50**
FOR. SAFE REV.	Black	**E34SP69**	**E34LP69**
HAND OFF AUTO	Black	**E34SP51**	**E34LP51**
MAN. OFF AUTO	Black	**E34SP68**	**E34LP68**
OPEN OFF CLOSE	Black	**E34SP53**	**E34LP53**
RUN SAFE JOG	Black	**E34SP70**	**E34LP70**
UP OFF DOWN	Black	**E34SP54**	**E34LP54**
ON STOP SAFE	Black	**E34SP71**	**E34LP71**

Table 47-301. For Push-Pull Units

Price Each — U.S. $ . . . . . .

Legend	Color of Field	Catalog Number Standard ②	Catalog Number Jumbo ③
PULL ON/ PUSH OFF	Black	**E34PP5**	**E34R5**
PULL OPEN/ PUSH CLOSE	Black	**E34PP8**	**E34R8**
PULL UP/ PUSH DOWN	Black	**E34PP11**	**E34R11**

② 3/32 inch (2.4 mm) high lettering.
③ 1/8 inch (3.2 mm) high lettering.

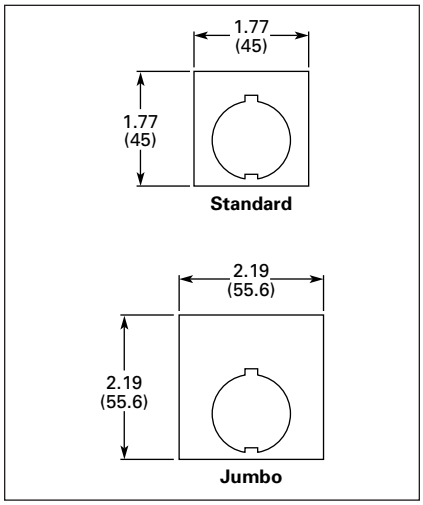


Figure 47-128. Approximate Dimensions in Inches (mm)

Table 47-302. Blank Plastic Legend Plates — Square

Price Each — U.S. $ . . . . . .

Colors: Lettering	Field: Side 1	Field: Side 2	Catalog Number Standard	Catalog Number Jumbo	Catalog Number Extra Large
Black	White	Silver	**10250TSP76**	**10250TLP76**	**10250TEP76**
White	Red	Black	**10250TSP77**	**10250TLP77**	**10250TEP77**

Legend Plates with Non-standard Markings or Aluminum Legend Plates

See 10250T listing on **Page 47-152**.

Discount Symbol **1CD1C**

Enclosures

Die Cast, Polyester and Stainless Steel Enclosures

Table 47-303. Enclosures (Case and Cover) — Surface Mounting ①

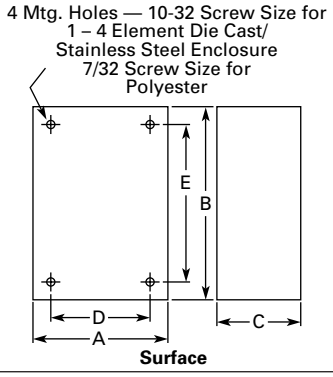
	Number of Elements	1 Contact Block Depth		2 Contact Block Depth	
		Catalog Number	Price U.S. $	Catalog Number	Price U.S. $
Die Cast Enclosure — Cat. No. E34N11	**Cast Enclosure — In-Line ②③ NEMA 4, 4X, 12, 13**				
	1	**E34N1**		**E34N11**	
	2	**E34N2**		**E34N12**	
	3	**E34N3**		**E34N13**	
	4	**E34N4**		**E34N14**	
Polyester Enclosure — Cat. No. E34N52	**Polyester — In-Line NEMA 3, 4X, 12**				
	1	—		**E34N51**	
	2	—		**E34N52**	
	3	—		**E34N53**	
	4	—		**E34N54**	
Stainless Steel Enclosure — Cat. No. 10250TN35	**Stainless Steel ④ — In-Line NEMA 4, 4X, 12**				
	1	—		**10250TN33**	
	2	—		**10250TN34**	
	3	—		**10250TN35**	
	4	—		**10250TN36**	

① For spacing increments, see **Page 47-186**.
② All cast enclosures can be converted to base mounting of contact blocks, with spacers 10250TA22 or 10250TA23. See listing on **Page 47-156**.
③ When used with E30 pushbuttons, only the one element enclosure can be used.
④ 14 gauge, type 304.

Table 47-304. Approximate Dimensions

Number of Elements	Element Arrangement	Surface Mounting Dimensions in Inches (mm) Wide A	High B	Deep C	Mounting D	Mounting E	Conduit Entrance
Cast							
1	In-Line	3.88 (98.6)	4.0 (101.6)	3.0 (76.3) ⑥	2.69 (68.3)	3.25 (82.6)	3/4
2	In-Line	3.88 (98.6)	5.88 (149.4)	3.0 (76.3) ⑥	2.69 (68.3)	5.13 (130.3)	3/4
3	In-Line	3.88 (98.6)	7.75 (196.9)	3.0 (76.3) ⑥	2.69 (68.3)	7.0 (177.8)	1
4	In-Line	3.88 (98.6)	9.63 (244.6)	3.0 (76.3) ⑥	2.69 (68.3)	8.88 (225.6)	1
Polyester							
1	In-Line	3.81 (96.8)	6.63 (168.4)	3.38 (85.9)	2.94 (74.7)	4.88 (124.0)	⑤
2	In-Line	3.81 (96.8)	6.63 (168.4)	3.38 (85.9)	2.94 (74.7)	4.88 (124.0)	
3	In-Line	3.81 (96.8)	8.88 (225.6)	3.38 (85.9)	2.94 (74.7)	7.13 (181.1)	
4	In-Line	3.81 (96.8)	11.13 (282.7)	3.38 (85.9)	2.94 (74.7)	9.38 (238.3)	
Stainless Steel							
1	In-Line	3.00 (76.2)	3.50 (88.9)	3.00 (76.2)	1.50 (38.1)	4.25 (108.0)	⑤
2	In-Line	3.50 (88.9)	6.75 (171.5)	3.00 (76.2)	1.50 (38.1)	7.50 (190.5)	
3	In-Line	3.50 (88.9)	9.00 (228.6)	3.00 (76.2)	1.50 (38.1)	9.00 (228.6)	
4	In-Line	3.50 (88.9)	11.25 (285.8)	3.00 (76.2)	1.50 (38.1)	12.00 (304.8)	

Approximate Dimensions



⑤ No conduit entrance holes provided. Drill as required.
⑥ Depth given is for two contact block deep stations. One contact block deep stations subtract 3/4 inch (19.1 mm).

Note: These E34 Die Cast Enclosures feature a corrosion resistant coating identical to finish on the E34 operators except gray in color. Not for use in ultraviolet light applications.

One Contact Block Depth Enclosure

Two Contact Block Depth Enclosure

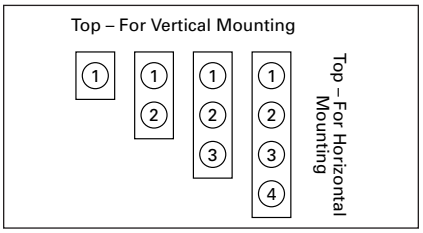


Figure 47-129. Enclosure Layouts

Discount Symbol **1CD1C**

Enclosures (Continued)

Die Cast and Stainless Steel — Flush Mount, Covers Only

These E34 Die Cast Covers feature a corrosion resistant coating identical to the finish on the E34 operators except gray in color.

Table 47-305. Covers Only — Flush Mounting

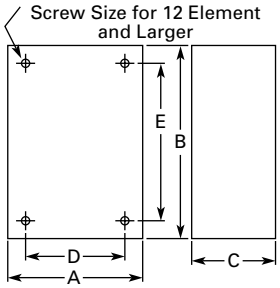
	Number of Elements	Catalog Number	Price U.S. $	Catalog Number	Price U.S. $
Flat Cover / Deep Cover		**Flush Cast Covers**			
		In-Line Deep Cover		**In-Line Flat Cover**	
	1	**E34F11**		**E34F1**	
	2	**E34F12**		**E34F2**	
	3	**E34F13**		**E34F3**	
	4	**E34F14**		**E34F4**	
		In-Line Stainless Steel Flush Plates ①			
		With Pullbox		**Without Pullbox**	
	1	**10250TS10**		**10250TS1**	
	2	**10250TS11**		**10250TS2**	
	3	**10250TS12**		**10250TS3**	
	4	**10250TS14**		**10250TS4**	

① Not oiltight. NEMA 1 applications only.

Table 47-306. Approximate Dimensions

Number of Elements	Flush Mounting Dimensions in Inches (mm) Wide A	High B	Deep C	Mounting D	Mounting E
Cast					
1	3.88 (98.6)	4.0 (101.6)	0.25 (6.4) ②	3.50 (88.9)	3.63 (92.2)
2	3.88 (98.6)	5.88 (149.4)	0.25 (6.4) ②	3.50 (88.9)	5.50 (139.7)
3	3.88 (98.6)	7.75 (196.9)	0.25 (6.4) ②	3.50 (88.9)	6.0 (152.4)
4	3.88 (98.6)	9.63 (244.6)	0.25 (6.4) ②	3.50 (88.9)	9.25 (235)
Stainless Steel					
1	5.0 (127)	5.0 (127)	2.50 (63.5) ③	3.25 (82.6)	1.88 (47.8)
2	5.0 (127)	6.88 (174.8)	2.50 (63.5) ③	3.25 (82.6)	3.63 (92.2)
3	5.0 (127)	8.63 (219.2)	2.50 (63.5) ③	3.25 (82.6)	5.50 (139.7)
4	5.0 (127)	10.50 (266.7)	2.50 (63.5) ③	3.25 (82.6)	7.25 (184.2)

Approximate Dimensions



Surface or Pendant

② Depth given is for flat cover. Deep cover 3/4 inch (19.1 mm) deeper.
③ Depth given includes pull box.

Table 47-307. Spacing Increments

Type	Approximate Dimensions in Inches (mm) F	G	H
Cast	2.44 (62)	2.5 (63.5)	1.88 (47.8)
Polyester	1.88 (47.8)	Min. 2.13 (54.1)	2.25 (57.2)
Stainless Steel	1.69 (42.9)	Min. 1.73 (43.9)	2.25 (57.2)

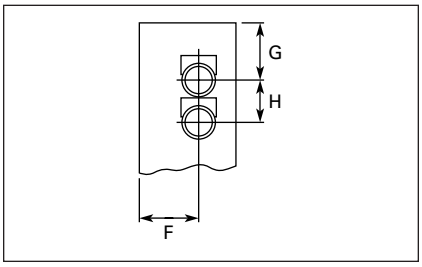


Figure 47-130. Spacing Increments for Enclosures

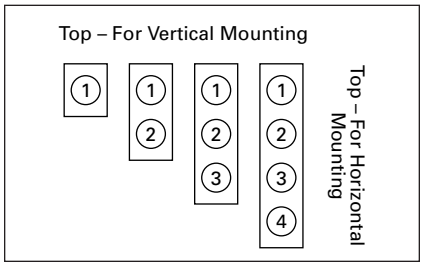
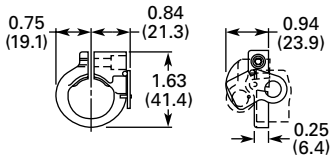
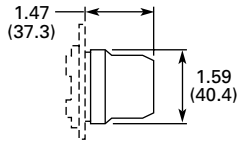
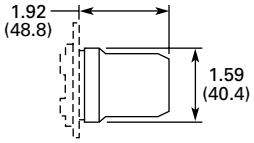
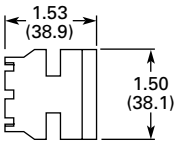
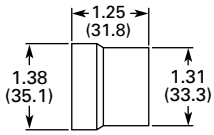
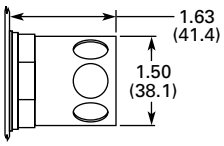


Figure 47-131. Enclosure Layouts

Discount Symbol **1CD1C**

Accessories

Table 47-308. Accessories

Description			Catalog Number	Price U.S. $	Overall Dimensions in Inches (mm)
	Padlocking Attachment for Flush Pushbutton Operators. Permits locking NC contacts in open position with 1/4" padlock. Will not lock NO contact.		**E34TA2**		
	Flexible Weather Resistant Boot for use with flush pushbutton operators.	Clear Black Red Green	**10250TA46** **10250TA47** **10250TA48** **10250TA49**		
	Flexible Weather Resistant Boot for use with button operators (extended buttons preferred).	Black Red Green Clear	**10250TA3** **10250TA4** ① **10250TA10** **10250TA85**		
	Transparent Boot for regular, illuminated pushbutton operators and PresTest.		**10250TA25** ②		
	Special Retaining Nut — to accommodate thick panel. Indicating light PresTest, pushbuttons and selector switches		**E34TA30** **E34TA31**		
	Shroud for Mushroom Head Operator — prevents accidental operation. (Not for Push-Pull operators.)		**E34TA6**		
	Extended Retaining Nut — Replaces standard nut and provides guard for flush type pushbutton operators.		**E34TA12**		
	Guard for Illuminated Pushbutton		**E34TA15**		
	Padlocking Attachment for non-illuminated knob selector switches — accommodates up to 5, 1/4" padlocks.		**E34TA11**		

① Should not be used on flush button for STOP function.
② Not suitable for single contact block depth cast enclosure. Cover is too thick.

Discount Symbol **1CD1C**

Table 47-308. Accessories (Continued)

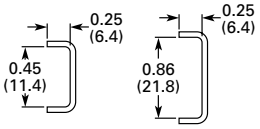
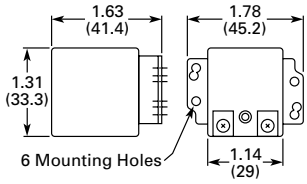
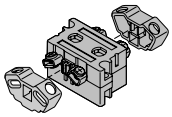
Description		Catalog Number	Price U.S. $	Overall Dimensions in Inches (mm)
	Thrust Washer — To meet Ford Motor Company mounting specifications.	**E34TK3**		
	Contact Block Terminal Jumps — Available in multiples of 100 only. Term. to Term. — Within Block (short): 100 per package 1000 per package Terminal to Terminal — Block to Block (long): 100 per package 1000 per package	 **10250TA70** **10250TA70-2** **10250TA71** **10250TA71-2**		
	Master Test (Dual Input) Module — Internal Form C relay suitable for either AC or DC applications. Total electrical isolation between monitored and test circuit. Fits all illuminated 10250T, E22, E30 and E34 devices. 48V DC	**10250TMT8**		
	Flasher Module — Internal Form C relay suitable for AC applications. One unit required for each operator in master test circuit. 24V AC 120V AC	 **10250TFL2** **10250TFL1**		
	Panel Mounting Nut Wrench — E22, E30, E34 and Octagonal 10250T.	**E22CW**		
	**Fingerproof Shroud** — 10 per Package Fits new style contact blocks and light units.	**10250TA101**		

Table 47-309. Replacement Lamps — For E34 Illuminated Operators

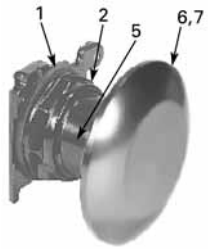
Mfg. Lamp Type	Voltage	Base Style	Application	Part Number	Price U.S. $
120MB	120V	T 3-1/4 Bayonet	10250T Resistor Indicating Light	**28-3044**	
#267	6.3V	T 3-1/4 Bayonet	10250T Flasher	**10250ED986-4**	
#755	6.3V	T 3-1/4 Bayonet	10250T Transformer, PresTest and Full Voltage	**28-2202**	
#756	12V	T 3-1/4 Bayonet	10250T Full Voltage	**28-5184**	
#757	24V	T 3-1/4 Bayonet	10250T Full Voltage	**28-5185**	
#1828	32V	T 3-1/4 Bayonet	10250T Full Voltage	**28-5186**	
#1835	55V	T 3-1/4 Bayonet	10250T Resistor	**28-5187**	
NE48	120V	T 4-1/2 Bayonet	10250T Neon	**28-494**	
NE51H-R22	120V	T 3-1/4 Bayonet	10250T Neon	**28-3754**	
NE51H-R68	240V	T 3-1/4 Bayonet	10250T Neon	**28-3755**	

Discount Symbol **1CD1C**

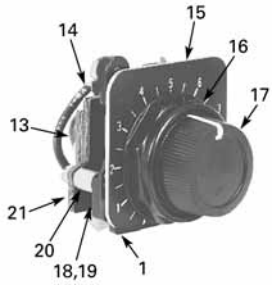
Renewal Parts

Flush Head Pushbutton Operator

Mushroom Head Pushbutton Operator



Jumbo Mushroom Head Operator

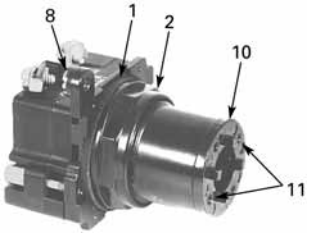


Potentiometers

Illuminated Pushbutton Operator

Transformer Type Indicating Light

Knob-Operated Selector Switch Operator



Full Voltage, Resistor and Transformer Type Illuminated Selector Switch

Table 47-310. Numbers Listed Are for E34 Style Operators

Item No.	Description	No. Req.	Part Number	Price U.S. $
1	Gasket	1	**16-1548**	
2	Mounting Nut	1	**15-1530-4**	
3	Set Screw (#6-32 x 0.250" Long Hollow Hex)	2	**11-2014**	
4	Mushroom Head Button (Includes (2) Item 5)	1	As Req. Below	
	Black	—	**53-1317**	
	Red	—	**53-1317-2**	
	Yellow	—	**53-1317-3**	
	Green	—	**53-1317-4**	
	Blue	—	**53-1317-22**	
5	Set Screw (#10-32 x 0.250" Long Hollow Hex)	2	**11-544**	
6	Jumbo Mushroom Head Button (Aluminum — Includes (2) Item 5)	1	As Req. Below	
	Red	—	**53-1317-9**	
	Black	—	**53-1317-10**	
	Yellow	—	**53-1317-11**	
	Green	—	**53-1317-12**	
7	Jumbo Mushroom Head Button (Aluminum — Red EMERG. STOP) Does Not Include Item 5	1	**53-1349-18**	
8	Mounting Screw (#6-32 x 0.710" Long)	2	**10250TA79**	
	Washer	2	**16-2038**	
9	Terminal Screw and Lug (Captive)	Req.	**80-5502**	
10	Gasket (Supplied with Basic Unit)	1	**32-803**	
11	Round Head Screw (#4-40 x 0.344" Long) (Supplied with Basic Unit)	2	**11-4553**	

Item No.	Description	No. Req.	Part Number	Price U.S. $
12	Mounting Screw	2	**11-1632**	
13	Simple Potentiometer (Does Not Include Items 18, 28 or 29)	1	As Req. Below	
	1,000 Ohms	—	**41-782-2**	
	2,500 Ohms	—	**41-782-3**	
	5,000 Ohms	—	**41-782-10**	
	10,000 Ohms	—	**41-782-4**	
	25,000 Ohms	—	**41-782-5**	
	50,000 Ohms	—	**41-782-6**	
14	Connector (Includes Screw and Lug)	2	**25-1851**	
15	Indicating Plate	1	As Req. Above	
	Standard Size (Without Legend)	—	**30-4460**	
	Large Size (Specify Legend)	—	**10250TR30**	
16	Retaining Nut	1	**15-1547-3**	
17	Knob	1	**53-1314**	
	Socket Set Screw (#6-32 x 0.250" Long)	1	**11-2014**	
18	Coupling	1	**11-2014**	
		1	**29-3749-2**	
19	Set Screw (#6-32 x 0.188" Long)	1	**11-1199**	
20	Spacer	2	**56-1066-18**	
21	Connector (Includes Screw and Lug)	1	**25-1851-2**	
22	Mounting Nut	1	**15-1938-2**	

Discount Symbol **1CD1C**

Mounting

Panel Thickness

- Minimum: 0.06 inch (1.6 mm)
- Maximum: 0.25 inch (8 mm) including legend plate
- Maximum can be increased to 0.375 inch (15.9 mm) using optional retaining nut
  - Indicating light: E34TA30
  - Pushbutton/selector switch: E34TA31

Table 47-311. Mounting Matrix

Legend Plate	Dimensions in Inches (mm)			
	A	B	C	D
Small	1.63 (41.3)	2.25 (57.2)	2.25 (57.2)	1.63 (41.3)
Medium	1.75 (44.5)	2.25 (57.2)	2.25 (57.2)	1.75 (44.5)
Large	2.25 (57.2)	2.25 (57.2)	2.25 (57.2)	2.25 (57.2)

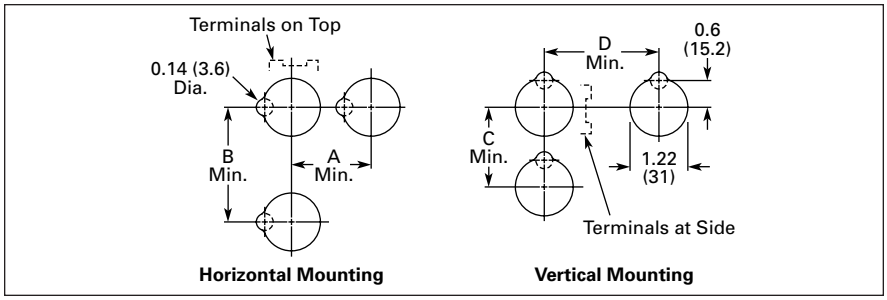


Figure 47-132. Mounting Options in Inches (mm)

Horizontal mounting means terminals are located top and bottom of contact block. Vertical mounting means terminals are left and right of contact block. This allows close spacing of adjacent operators with easy access to terminals.

Note: Locating nib hole or notch is 0.14 inch (3.6 mm)

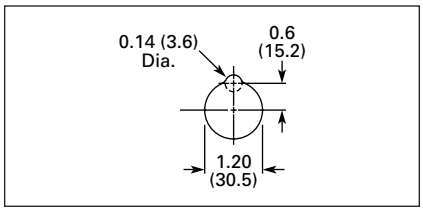


Figure 47-133. Drilling Dimensions in Inches (mm)

Dimensions

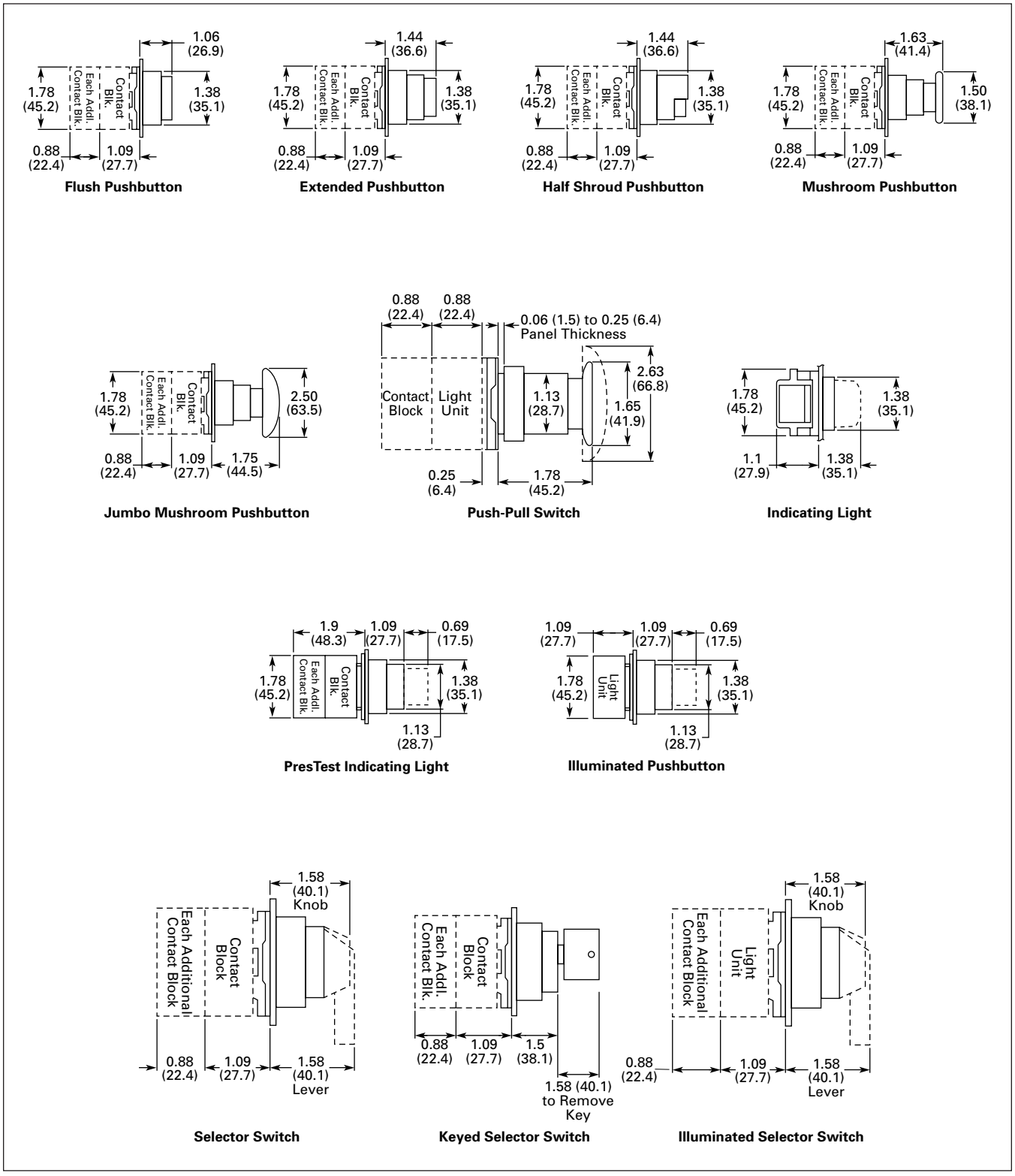


Figure 47-134. Approximate Dimensions in Inches (mm)

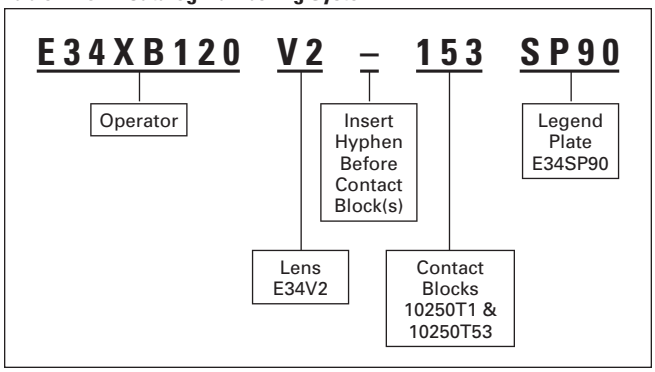
Ordering Complete Devices

Complete E34 Pushbuttons, Indicating Lights and/or Selector Switch operators including contact block(s) and legend plate can be ordered using a single composite catalog number. The individually packaged components will be shipped unassembled in a single overpack carton marked with the composite Catalog Number.

Ordering Example

Illuminated Pushbutton Device —
Catalog Number E34XB120V2-153SP90

Table 47-312. Catalog Numbering System



For a complete Catalog Number breakdown, see **Pages 47-193 – 47-194.**

Catalog Number Structure

Table 47-313. Non-illuminated Pushbuttons Catalog Numbering System

E34 PB 1 – 1 ①

Operator	
PB =	Flush
EB =	Extended
LB =	40 mm Mushroom
JB =	65 mm Mushroom
EVB =	1/2 Shroud Vertical Mount
EHB =	1/2 Shroud Horizontal Mount

Button Color	
1 =	Black
2 =	Red
3 =	Green
4 =	Yellow
7 =	Gray
5 =	White
6 =	Blue
8 =	Orange

Circuit	
Blank =	Operator Only
1 =	1NO-1NC
2 =	2NO
3 =	2NC
51 =	1NC
53 =	1NO

① Add **X** at end of Catalog Number to receive parts assembled from factory.

Table 47-314. Illuminated and Non-illuminated Push-Pulls Catalog Numbering System

E34 GDB 63 M2 __ – 1 ②

Operator	
GDB =	2-Position Maintained
GEB =	3-Position Mom Push-Mom Pull
GFB =	3-Position MT Push-Mom-Pull
GHB =	3-Position Mom Push-Mom Pull

Incandescent Light Unit		LED Light Unit	
Blank =	Non-ill.	**Blank** =	Non-ill.
89 =	24V/XFR	**89L** =	24V/XFR
63 =	120V/XFR	**63L** =	120V/XFR
64 =	208V/XFR	**64L** =	208V/XFR
65 =	240V/XFR	**65L** =	240V/XFR
82 =	277V/XFR	**82L** =	277V/XFR
66 =	380V/XFR	**66L** =	380V/XFR
67 =	480V/XFR	**67L** =	480V/XFR
68 =	600V/XFR	**68L** =	600V/XFR
69 =	6V/FV	**97L** =	Full Voltage
70 =	12V/FV		
79 =	24V/FV		
83 =	32V/FV		
80 =	120V/RES		
81 =	240V/RES		

Circuit	
Blank =	Operator Only
1 =	1NO-1NC
2 =	2NO
3 =	2NC
51 =	1NC
53 =	1NO

LED Voltage	
Blank =	Non-ill.
Blank =	Incand.
06 =	6V AC/DC
12 =	12V AC/DC
24 =	24V AC/DC
48 =	48V AC/DC
60 =	60V AC/DC
2A =	120V AC
2D =	120V DC

Non-illuminated		Illuminated			
Button		Incandescent	LED	Lens Type	
C1 =	Black 40 mm	**M2** =	**RD** =	Red 40 mm	
C2 =	Red 40 mm	**M2N8** =	**ED** =	Red 40 mm – "E" STOP	
C2N8 =	Red 40 mm – "E" STOP	**M3** =	**GD** =	Green 40 mm	
C3 =	Green 40 mm	**M6** =	**LD** =	Blue 40 mm	
C6 =	Blue 40 mm	**M9** =	**AD** =	Amber 40 mm	
– =	Black 65 mm	**M5** =	**WD** =	White 40 mm	
J2 =	Red 65 mm	**M0** =	**–** =	Clear 40 mm	
J2N8 =	Red 65 mm – "E" STOP				
– =	Green 65 mm				
– =	Yellow 65 mm				

② Add **X** at end of Catalog Number to receive parts assembled from factory.

Table 47-315. Illuminated Pushbuttons Catalog Numbering System

E34 XB 24 V2 ___ – 1 ①

Light Unit Type
XB = Transformer
CB = Full Voltage
SB = Resistor

Circuit
Blank = Operator Only
1 = 1NO-1NC
2 = 2NO
3 = 2NC
51 = 1NC
53 = 1NO

Incandescent Light Unit	LED Light Unit
024 = 24V/XFR	**024L** = 24V/XFR
120 = 120V/XFR	**120L** = 120V/XFR
240 = 240V/XFR	**240L** = 240V/XFR
277 = 277V/XFR	**277L** = 277V/XFR
380 = 380V/XFR	**380L** = 380V/XFR
480 = 480V/XFR	**480L** = 480V/XFR
600 = 600V/XFR	**600L** = 600V/XFR
06 = 6V/FV	**497L** = Full Voltage
12 = 12V/FV	
24 = 24V/FV	
32 = 32V/FV	
48 = 48V/FV	
120 = 120V/RES	
240 = 240V/RES	

LED Voltage	
Blank = Incand.	**48** = 48V AC/DC
06 = 6V AC/DC	**60** = 60V AC/DC
12 = 12V AC/DC	**2A** = 120V AC
24 = 24V AC/DC	**2D** = 120V DC

Incandescent Lens Color	LED Lens Color
V2 = Red	**RD** = Red
V3 = Green	**GD** = Green
V4 = Yellow	**YD** = Yellow
V5 = White	**WD** = White
V6 = Blue	**LD** = Blue
V9 = Amber	**AD** = Amber
V0 = Clear	

① Add **X** at end of Catalog Number to receive parts assembled from factory.

Table 47-316. Standard Indicating Lights, PresTest and Master Test Catalog Numbering System

E34 FB06 H2 ___ ②

Light Unit Type	
Standard – Incandescent	**Standard – LED**
TB120 = 120V/XFR	**TB120L** = 120V/XFR
TB240 = 240V/XFR	**TB240L** = 240V/XFR
TB277 = 277V/XFR	**TB277L** = 277V/XFR
TB380 = 380V/XFR	**TB380L** = 380V/XFR
TB480 = 480V/XFR	**TB480L** = 480V/XFR
TB600 = 600V/XFR	**TB600L** = 600V/XFR
FB06 = 6V/FV	**FB197L** = Full Voltage
FB12 = 12V/FV	**PresTest – LED**
FB24 = 24V/FV	**TPB120L** = 120V/XFR
FB32 = 32V/FV	**TPB240L** = 240V/XFR
FB48 = 48V/FV	**TPB380L** = 380V/XFR
RB120 = 120V/RES	**TPB480L** = 480V/XFR
RB240 = 240V/RES	**TPB600L** = 600V/XFR
NB120 = 120V/Neon	**FPB297L** = Full Voltage
NB240 = 240V/Neon	
PresTest – Incandescent	
TPB120 = 120V/XFR	
TPB240 = 240V/XFR	
TPB380 = 380V/XFR	
TPB480 = 480V/XFR	
TPB600 = 600V/XFR	
FPB06 = 6V/FV	
FPB12 = 12V/FV	
FPB24 = 24V/FV	
FPB32 = 32V/FV	
FPB48 = 48V/FV	
RPB120 = 120V/RES	
RPB240 = 240V/RES	

LED Voltage
Blank = Incand.
06 = 6V AC/DC
12 = 12V AC/DC
24 = 24V AC/DC
48 = 48V AC/DC
60 = 60V AC/DC
2A = 120V AC
2D = 120V DC

Plastic	Glass	Lens Color	Plastic	Glass	Lens Color
Standard/Master – Incandescent			**Standard/Master/PresTest – LED**		
H2 =	**G2** =	Red	**RP** =	**RG** =	Red
H3 =	**G3** =	Green	**GP** =	**GG** =	Green
H4 =	**G4** =	Yellow	**YP** =	**YG** =	Yellow
H5 =	**G5** =	White	**WP** =	**WG** =	White
H6 =	**G6** =	Blue	**LP** =	**LG** =	Blue
H9 =	**G9** =	Amber	**AP** =	**AG** =	Amber
H0 =	**G0** =	Clear			
PresTest – Incandescent					
V2 =	**P2** =	Red			
V3 =	**P3** =	Green			
V4 =	**P4** =	Yellow			
V5 =	**P5** =	White			
V6 =	**P6** =	Blue			
V9 =	**P9** =	Amber			
V0 =	**P0** =	Clear			

② Add **X** at end of Catalog Number to receive parts assembled from factory.

Contents

Description	*Page*
Product Description	**47-195**
Features	**47-195**
Benefits	**47-195**
Standards and Certifications	**47-195**
Technical Data and Specifications	**47-196**
Product Selection	
Momentary Pushbutton Units	**47-197**
Illuminated Pushbutton Units	**47-198**
Indicating Light Units	**47-200**
Push-Pull Units	**47-201**
Selector Switch Units	**47-203**
Selector Switch Contact Block Selection	**47-205**
Contact Blocks	**47-205**
Options	
Legend Plates	**47-206**
Accessories	**47-208**
Dimensions	**47-210**
Catalog Number Structure	**47-214**

Product Description

The Cutler-Hammer® HT800 Series from Eaton's electrical business is a family of 30.5 mm pushbutton devices which includes momentary, illuminated and mushroomhead pushbuttons, selector switches, indicating lights and push-pull switches. The HT800 devices have a familiar appearance found in most industrial applications and are suitable for replacement of several other manufacturers' 30.5 mm pushbutton devices.

Features

- Anodized aluminum mounting rings
- Watertight double V-gasket seals
- Extended height bulbs
- Transparent housing contact blocks
- Color-coded contact blocks
- Gold-plated contacts (on low voltage contact block)
- Reliability ridge on movable contact
- Stackable screw-mounted contact blocks
- Contact blocks can be mounted in left/right or top/bottom positions
- Standard NC contact opens before NO contact closes (break before make operation)
- Bright and long lasting LED indicating lights in six colors
- Field convertible maintained selector switches — from two- to three-position and vice versa
- Field selectable knob/lever mounting positions — at any 22.5° increment

Benefits

- Corrosion resistant NEMA 4X finish
- Watertight and oiltight NEMA 4, 13 ingress protection
- Increased side illumination of indicating lights and illuminated pushbuttons
- Easy visual inspection of contact conditions
- Easily identifiable NO (white) or NC (black) contact blocks
- Gold-plated contacts suitable for logic level circuits
- Reliability ridge penetrates contamination buildup on stationary contacts
- Left/right or top/bottom mounted contact blocks allow correct positioning in retrofit applications
- All-purpose selector switches are convertible and can rotate in 22.5° increments to suit panel layouts

Standards and Certifications

- UL508 per File No. E131568
- CSA C22.2 No. 14 per File No. LR68551

Ingress Protection

- UL (NEMA) Type 1, 2, 3, 3R, 4, 4X, 12 and 13 when mounted in similarly rated enclosures

HT800 Series

Technical Data and Specifications

Table 47-317. HT800 — Specifications

Description	Specification
Mechanical Ratings	
Frequency of Operation Pushbuttons Selector Switches Push-Pull Operators	 6,000 Operations per hour 3,000 Operations per hour 3,000 Operations per hour
Mechanical Endurance/Life Pushbuttons Selector Switches Push-Pull Operators	 10 x 10^6 Operations 6K Ops/Hr with 6 NO on left and 6 NC on right 250 x 10^3 Operations 3K Ops/Hr with 2 NO on left and 2 NC on right 250 x 10^3 Operations 3K Ops/Hr with 6 NO on left and 6 NC on right
Climatic Conditions	
Operating Temperature	10° to 140°F (-12° to 60°C)
Storage Temperature	-40° to 176°F (-40° to 80°C)
Altitude	6,562 ft. (2,000m)
Humidity	95% RH @ 60°C
Terminals	
Contact Blocks	#6-32 posi-drive saddle clamp type, 1 x 16 AWG to 2 x 14 AWG, 12 in-lbs max.
Light Units	#6-32 posi-drive saddle clamp type, 1 x 22 AWG to 2 x 14 AWG, 7 in-lbs max.
Electrical Ratings	
Standard Contact Blocks UL (NEMA) Rating	 See **Table 47-318**.
Logic Level Contact Block Power Rating	5V 1 mA (minimum) 28V 500 mA (maximum)

Table 47-318. Electrical Ratings — HT800 Standard Contact Blocks, UL Rating

Description/Function	Contact Type	Catalog Number	AC	DC
Standard Normally Open contact	NO	**HT8A**	A600 ①	P600 ②
Standard Normally Closed contact	NC	**HT8B**	A600 ①	P600 ②
Normally Open Early Make Contact will make circuit before standard NO contact. DC ratings do not apply.	NOEM	**HT8C**	A600 ①	—
Normally Closed Late Break contact will open after standard NC contact. DC ratings do not apply.	NCLB	**HT8D**	A600 ①	—
Logic level, low voltage NO contact. Gold plated contacts.	NO	**HT8E**	5V 1 mA (minimum) 28V 500 mA (maximum)	

① Heavy duty.
② Standard duty.

Table 47-319. UL A600 and P600 Ratings

Description	Volts AC 50 or 60 Hz				Volts DC ③		
	120	240	480	600	125	250	600
Make and Emerg. Interrupting Capacity (Amp)	60	30	15	12	1.1	0.55	0.2
Normal Load Break (Amp)	6	3	1.5	1.2	1.1	0.55	0.2
Thermal Current (Amp)	10	10	10	10	5	5	5
Voltamperes:							
Make and Emerg. Interrupting Capacity	7200	7200	7200	7200	138 ④	138 ④	138 ④
Normal Load Break	720	720	720	720	138	138	138

③ DC ratings do not apply to NOEM (Normally Open Early Make) and NCLB (Normal Closed Late Break) contact blocks HT8C and HT8D.
④ Maximum make or break volt-amperes at 300V or less.

Product Selection

Momentary Pushbutton Units, Non-illuminated

■ Flush, Extended or 40 mm Mushroom Head Operators

Flush Head Operator
Cat. No. HT8AAH

Extended Head Operator
Cat. No. HT8ABH

40 mm Mushroom Head Operator
Cat. No. HT8AEH

Table 47-320. Momentary Contact Pushbutton Units, Non-illuminated — UL (NEMA) Type 3, 3R, 4, 4X, 12 and 13

Contact Type	Button Color	Flush Head		Extended Head		Mushroom Head (40 mm)	
		Catalog Number	Price U.S. $	Catalog Number	Price U.S. $	Catalog Number	Price U.S. $
No Contact	Black Red Green	**HT8AAH** **HT8AAR** **HT8AAG**		**HT8ABH** **HT8ABR** **HT8ABG**		**HT8AEH** **HT8AER** **HT8AEG**	
1NO	Black Red Green	**HT8AAHA** **HT8AARA** **HT8AAGA**		**HT8ABHA** **HT8ABRA** **HT8ABGA**		**HT8AEHA** **HT8AERA** **HT8AEGA**	
1NC	Black Red Green	**HT8AAHB** **HT8AARB** **HT8AAGB**		**HT8ABHB** **HT8ABRB** **HT8ABGB**		**HT8AEHB** **HT8AERB** **HT8AEGB**	
1NO-1NC	Black Red Green	**HT8AAHAB** **HT8AARAB** **HT8AAGAB**		**HT8ABHAB** **HT8ABRAB** **HT8ABGAB**		**HT8AEHAB** **HT8AERAB** **HT8AEGAB**	
2NO-2NC	Black Red Green	**HT8AAHF1Q1** **HT8AARF1Q1** **HT8AAGF1Q1**		**HT8ABHF1Q1** **HT8ABRF1Q1** **HT8ABGF1Q1**		**HT8AEHF1Q1** **HT8AERF1Q1** **HT8AEGF1Q1**	

NO Contact Block

NC Contact Block

Table 47-321. Contact Blocks ①

Description/Function	Contact Type	Catalog Number	Price U.S. $
Standard Normally Open contact	NO	**HT8A**	
Standard Normally Closed contact	NC	**HT8B**	
Normally Open Early Make contact will make circuit before standard NO contact. DC ratings do not apply.	NOEM	**HT8C**	
Normally Closed Late Break contact will open after standard NC contact. DC ratings do not apply.	NCLB	**HT8D**	
Logic level, low voltage NO contact. Gold plated contacts.	NO	**HT8E**	

① Maximum of (4) contact blocks per side or a total of (8) contact blocks recommended.

Accessories ..... **Page 47-208**
Dimensions ..... **Page 47-210**
Legend Plates ..... **Page 47-206**
Discount Symbol **1CD1C**

Illuminated Pushbutton Units

- Incandescent or LED
- Full Voltage or Transformer Type
- 24V and 120V

Illuminated Pushbutton Operator
Cat. No. HT8GBRV7

Table 47-322. Illuminated Pushbuttons — UL (NEMA) Type 3, 3R, 4, 4X, 12 and 13

Type	Volts	Lens Color	Operator Only		1NO		1NC		1NO-1NC		2NO-2NC	
			Catalog Number	Price U.S. $	Catalog Number	Price U.S. $	Catalog Number	Price U.S. $	Catalog Number	Price U.S. $	Catalog Number	Price U.S. $
Incandescent Lamp												
Full Voltage	120V AC/DC	No Lens ①	HT8GBFV		—		—		—		—	
		Red	HT8GBRV7		HT8GBRAV7		HT8GBRBV7		HT8GBRABV7		HT8GBRF1Q1V7	
		Green	HT8GBGV7		HT8GBGAV7		HT8GBGBV7		HT8GBGABV7		HT8GBGF1Q1V7	
		Amber	HT8GBAV7		HT8GBAAV7		HT8GBABV7		HT8GBAABV7		HT8GBAF1Q1V7	
		Clear	HT8GBCV7		HT8GBCAV7		HT8GBCBV7		HT8GBCABV7		HT8GBCF1Q1V7	
		White	HT8GBWV7		HT8GBWAV7		HT8GBWBV7		HT8GBWABV7		HT8GBWF1Q1V7	
		Yellow	HT8GBYV7		HT8GBYAV7		HT8GBYBV7		HT8GBYABV7		HT8GBYF1Q1V7	
		Blue	HT8GBBV7		HT8GBBAV7		HT8GBBBV7		HT8GBBABV7		HT8GBBF1Q1V7	
	24V AC/DC	No Lens ①	HT8GBFV		—		—		—		—	
		Red	HT8GBRV3		HT8GBRAV3		HT8GBRBV3		HT8GBRABV3		HT8GBRF1Q1V3	
		Green	HT8GBGV3		HT8GBGAV3		HT8GBGBV3		HT8GBGABV3		HT8GBGF1Q1V3	
		Amber	HT8GBAV3		HT8GBAAV3		HT8GBABV3		HT8GBAABV3		HT8GBAF1Q1V3	
		Clear	HT8GBCV3		HT8GBCAV3		HT8GBCBV3		HT8GBCABV3		HT8GBCF1Q1V3	
		White	HT8GBWV3		HT8GBWAV3		HT8GBWBV3		HT8GBWABV3		HT8GBWF1Q1V3	
		Yellow	HT8GBYV3		HT8GBYAV3		HT8GBYBV3		HT8GBYABV3		HT8GBYF1Q1V3	
		Blue	HT8GBBV3		HT8GBBAV3		HT8GBBBV3		HT8GBBABV3		HT8GBBF1Q1V3	
Trans-former	120V AC	No Lens ①	HT8GBT1		—		—		—		—	
		Red	HT8GBRT1		HT8GBRAT1		HT8GBRBT1		HT8GBRABT1		HT8GBRF1Q1T1	
		Green	HT8GBGT1		HT8GBGAT1		HT8GBGBT1		HT8GBGABT1		HT8GBGF1Q1T1	
		Amber	HT8GBAT1		HT8GBAAT1		HT8GBABT1		HT8GBAABT1		HT8GBAF1Q1T1	
		Clear	HT8GBCT1		HT8GBCAT1		HT8GBCBT1		HT8GBCABT1		HT8GBCF1Q1T1	
		White	HT8GBWT1		HT8GBWAT1		HT8GBWBT1		HT8GBWABT1		HT8GBWF1Q1T1	
		Yellow	HT8GBYT1		HT8GBYAT1		HT8GBYBT1		HT8GBYABT1		HT8GBYF1Q1T1	
		Blue	HT8GBBT1		HT8GBBAT1		HT8GBBBT1		HT8GBBABT1		HT8GBBF1Q1T1	
LED												
Full Voltage	120V AC/DC	No Lens ①	HT8GBFV		—		—		—		—	
		Red	HT8GBRF7		HT8GBRAF7		HT8GBRBF7		HT8GBRABF7		HT8GBRF1Q1F7	
		Green	HT8GBGF7		HT8GBGAF7		HT8GBGBF7		HT8GBGABF7		HT8GBGF1Q1F7	
		Amber	HT8GBAF7		HT8GBAAF7		HT8GBABF7		HT8GBAABF7		HT8GBAF1Q1F7	
		Clear	HT8GBCF7		HT8GBCAF7		HT8GBCBF7		HT8GBCABF7		HT8GBCF1Q1F7	
		White	HT8GBWF7		HT8GBWAF7		HT8GBWBF7		HT8GBWABF7		HT8GBWF1Q1F7	
		Yellow	HT8GBYF7		HT8GBYAF7		HT8GBYBF7		HT8GBYABF7		HT8GBYF1Q1F7	
		Blue	HT8GBBF7		HT8GBBAF7		HT8GBBBF7		HT8GBBABF7		HT8GBBF1Q1F7	
	24V AC/DC	No Lens ①	HT8GBFV		—		—		—		—	
		Red	HT8GBRF3		HT8GBRAF3		HT8GBRBF3		HT8GBRABF3		HT8GBRF1Q1F3	
		Green	HT8GBGF3		HT8GBGAF3		HT8GBGBF3		HT8GBGABF3		HT8GBGF1Q1F3	
		Amber	HT8GBAF3		HT8GBAAF3		HT8GBABF3		HT8GBAABF3		HT8GBAF1Q1F3	
		Clear	HT8GBCF3		HT8GBCAF3		HT8GBCBF3		HT8GBCABF3		HT8GBCF1Q1F3	
		White	HT8GBWF3		HT8GBWAF3		HT8GBWBF3		HT8GBWABF3		HT8GBWF1Q1F3	
		Yellow	HT8GBYF3		HT8GBYAF3		HT8GBYBF3		HT8GBYABF3		HT8GBYF1Q1F3	
		Blue	HT8GBBF3		HT8GBBAF3		HT8GBBBF3		HT8GBBABF3		HT8GBBF1Q1F3	
Trans-former	120V AC	No Lens ①	HT8GBT1		—		—		—		—	
		Red	HT8GBRL1		HT8GBRAL1		HT8GBRBL1		HT8GBRABL1		HT8GBRF1Q1L1	
		Green	HT8GBGL1		HT8GBGAL1		HT8GBGBL1		HT8GBGABL1		HT8GBGF1Q1L1	
		Amber	HT8GBAL1		HT8GBAAL1		HT8GBABL1		HT8GBAABL1		HT8GBAF1Q1L1	
		Clear	HT8GBCL1		HT8GBCAL1		HT8GBCBL1		HT8GBCABL1		HT8GBCF1Q1L1	
		White	HT8GBWL1		HT8GBWAL1		HT8GBWBL1		HT8GBWABL1		HT8GBWF1Q1L1	
		Yellow	HT8GBYL1		HT8GBYAL1		HT8GBYBL1		HT8GBYABL1		HT8GBYF1Q1L1	
		Blue	HT8GBBL1		HT8GBBAL1		HT8GBBBL1		HT8GBBABL1		HT8GBBF1Q1L1	

① Light unit base operator without lens or bulb.

Accessories ..... **Page 47-208**
Dimensions ..... **Page 47-210**
Legend Plates..... **Page 47-206**
Discount Symbol **1CD1C**

Guarded Illuminated Pushbutton Units

- Incandescent or LED
- Full Voltage or Transformer Type
- 24V and 120V

Guarded Illuminated Pushbutton Operator
Cat. No. HT8GDRV7

Table 47-323. Guarded Illuminated Pushbuttons — UL (NEMA) Type 3, 3R, 4, 4X, 12 and 13

Type	Volts	Lens Color	Operator Only		1NO		1NC		1NO-1NC		2NO-2NC	
			Catalog Number	Price U.S. $	Catalog Number	Price U.S. $	Catalog Number	Price U.S. $	Catalog Number	Price U.S. $	Catalog Number	Price U.S. $
Incandescent Lamp												
Full Voltage	120V AC/DC	No Lens ①	HT8GDFV		—		—		—		—	
		Red	HT8GDRV7		HT8GDRAV7		HT8GDRBV7		HT8GDRABV7		HT8GDRF1Q1V7	
		Green	HT8GDGV7		HT8GDGAV7		HT8GDGBV7		HT8GDGABV7		HT8GDGF1Q1V7	
		Amber	HT8GDAV7		HT8GDAAV7		HT8GDABV7		HT8GDAABV7		HT8GDAF1Q1V7	
		Clear	HT8GDCV7		HT8GDVAV7		HT8GDCBV7		HT8GDCABV7		HT8GDCF1Q1V7	
		White	HT8GDWV7		HT8GDWAV7		HT8GDWBV7		HT8GDWABV7		HT8GDWF1Q1V7	
		Yellow	HT8GDYV7		HT8GDYAV7		HT8GDYBV7		HT8GDYABV7		HT8GDYF1Q1V7	
		Blue	HT8GDBV7		HT8GDBAV7		HT8GDBBV7		HT8GDBABV7		HT8GDBF1Q1V7	
	24V AC/DC	No Lens ①	HT8GDFV		—		—		—		—	
		Red	HT8GDRV3		HT8GDRAV3		HT8GDRBV3		HT8GDRABV3		HT8GDRF1Q1V3	
		Green	HT8GDGV3		HT8GDGAV3		HT8GDGBV3		HT8GDGABV3		HT8GDGF1Q1V3	
		Amber	HT8GDAV3		HT8GDAAV3		HT8GDABV3		HT8GDAABV3		HT8GDAF1Q1V3	
		Clear	HT8GDCV3		HT8GDVAV3		HT8GDCBV3		HT8GDCABV3		HT8GDCF1Q1V3	
		White	HT8GDWV3		HT8GDWAV3		HT8GDWBV3		HT8GDWABV3		HT8GDWF1Q1V3	
		Yellow	HT8GDYV3		HT8GDYAV3		HT8GDYBV3		HT8GDYABV3		HT8GDYF1Q1V3	
		Blue	HT8GDBV3		HT8GDBAV3		HT8GDBBV3		HT8GDBABV3		HT8GDBF1Q1V3	
Trans-former	120V AC	No Lens ①	HT8GDT1		—		—		—		—	
		Red	HT8GDRT1		HT8GDRAT1		HT8GDRBT1		HT8GDRABT1		HT8GDRF1Q1T1	
		Green	HT8GDGT1		HT8GDGAT1		HT8GDGBT1		HT8GDGABT1		HT8GDGF1Q1T1	
		Amber	HT8GDAT1		HT8GDAAT1		HT8GDABT1		HT8GDAABT1		HT8GDAF1Q1T1	
		Clear	HT8GDCT1		HT8GDCAT1		HT8GDCBT1		HT8GDCABT1		HT8GDCF1Q1T1	
		White	HT8GDWT1		HT8GDWAT1		HT8GDWBT1		HT8GDWABT1		HT8GDWF1Q1T1	
		Yellow	HT8GDYT1		HT8GDYAT1		HT8GDYBT1		HT8GDYABT1		HT8GDYF1Q1T1	
		Blue	HT8GDBT1		HT8GDBAT1		HT8GDBBT1		HT8GDBABT1		HT8GDBF1Q1T1	
LED												
Full Voltage	120V AC/DC	No Lens ①	HT8GDFV		—		—		—		—	
		Red	HT8GDRF7		HT8GDRAF7		HT8GDRBF7		HT8GDRABF7		HT8GDRF1Q1F7	
		Green	HT8GDGF7		HT8GDGAF7		HT8GDGBF7		HT8GDGABF7		HT8GDGF1Q1F7	
		Amber	HT8GDAF7		HT8GDAAF7		HT8GDABF7		HT8GDAABF7		HT8GDAF1Q1F7	
		Clear	HT8GDCF7		HT8GDCAF7		HT8GDCBF7		HT8GDCABF7		HT8GDCF1Q1F7	
		White	HT8GDWF7		HT8GDWAF7		HT8GDWBF7		HT8GDWABF7		HT8GDWF1Q1F7	
		Yellow	HT8GDYF7		HT8GDYAF7		HT8GDYBF7		HT8GDYABF7		HT8GDYF1Q1F7	
		Blue	HT8GDBF7		HT8GDBAF7		HT8GDBBF7		HT8GDBABF7		HT8GDBF1Q1F7	
	24V AC/DC	No Lens ①	HT8GDFV		—		—		—		—	
		Red	HT8GDRF3		HT8GDRAF3		HT8GDRBF3		HT8GDRABF3		HT8GDRF1Q1F3	
		Green	HT8GDGF3		HT8GDGAF3		HT8GDGBF3		HT8GDGABF3		HT8GDGF1Q1F3	
		Amber	HT8GDAF3		HT8GDAAF3		HT8GDABF3		HT8GDAABF3		HT8GDAF1Q1F3	
		Clear	HT8GDCF3		HT8GDCAF3		HT8GDCBF3		HT8GDCABF3		HT8GDCF1Q1F3	
		White	HT8GDWF3		HT8GDWAF3		HT8GDWBF3		HT8GDWABF3		HT8GDWF1Q1F3	
		Yellow	HT8GDYF3		HT8GDYAF3		HT8GDYBF3		HT8GDYABF3		HT8GDYF1Q1F3	
		Blue	HT8GDBF3		HT8GDBAF3		HT8GDBBF3		HT8GDBABF3		HT8GDBF1Q1F3	
Trans-former	120V AC	No Lens ①	HT8GDT1		—		—		—		—	
		Red	HT8GDRL1		HT8GDRAL1		HT8GDRBL1		HT8GDRABL1		HT8GDRF1Q1L1	
		Green	HT8GDGL1		HT8GDGAL1		HT8GDGBL1		HT8GDGABL1		HT8GDGF1Q1L1	
		Amber	HT8GDAL1		HT8GDAAL1		HT8GDABL1		HT8GDAABL1		HT8GDAF1Q1L1	
		Clear	HT8GDCL1		HT8GDCAL1		HT8GDCBL1		HT8GDCABL1		HT8GDCF1Q1L1	
		White	HT8GDWL1		HT8GDWAL1		HT8GDWBL1		HT8GDWABL1		HT8GDWF1Q1L1	
		Yellow	HT8GDYL1		HT8GDYAL1		HT8GDYBL1		HT8GDYABL1		HT8GDYF1Q1L1	
		Blue	HT8GDBL1		HT8GDBAL1		HT8GDBBL1		HT8GDBABL1		HT8GDBF1Q1L1	

① Light unit base operator without lens or bulb.

Accessories ..... **Page 47-208**
Dimensions ..... **Page 47-210**
Legend Plates ..... **Page 47-206**
Discount Symbol **1CD1C**

Indicating Light Units

- Incandescent or LED
- Full Voltage or Transformer Type
- Standard and PresTest Types
- 24V and 120V

PresTest — This device incorporates a press-to-test feature whereby depressing the lens disconnects the light from the source being monitored and connects the lamp to a continuously energized circuit for immediate detection of faulty lamps.

Indicating Light Unit
Cat. No. HT8HFRV7

PresTest Light Unit
Cat. No. HT8GTRV7

Table 47-324. Indicating Light Units — UL (NEMA) Type 3, 3R, 4, 4X, 12 and 13

Type	Volts	Lens Color	Indicating Light		PresTest	
			Catalog Number	Price U.S. $	Catalog Number	Price U.S. $
Incandescent						
Full Voltage	120V AC/DC	No Lens ①	**HT8HFFV**		**HT8GTFV**	
		Red	**HT8HFRV7**		**HT8GTRV7**	
		Green	**HT8HFGV7**		**HT8GTGV7**	
		Amber	**HT8HFAV7**		**HT8GTAV7**	
		Clear	**HT8HFCV7**		**HT8GTCV7**	
		White	**HT8HFWV7**		**HT8GTWV7**	
		Yellow	**HT8HFYV7**		**HT8GTYV7**	
		Blue	**HT8HFBV7**		**HT8GTBV7**	
	24V AC/DC	No Lens ①	**HT8HFFV**		**HT8GTFV**	
		Red	**HT8HFRV3**		**HT8GTRV3**	
		Green	**HT8HFGV3**		**HT8GTGV3**	
		Amber	**HT8HFAV3**		**HT8GTAV3**	
		Clear	**HT8HFCV3**		**HT8GTCV3**	
		White	**HT8HFWV3**		**HT8GTWV3**	
		Yellow	**HT8HFYV3**		**HT8GTYV3**	
		Blue	**HT8HFBV3**		**HT8GTBV3**	
Transformer	120V AC 50/60 Hz	No Lens ①	**HT8HBT1**		**HT8GTT1**	
		Red	**HT8HBRT1**		**HT8GTRT1**	
		Green	**HT8HBGT1**		**HT8GTGT1**	
		Amber	**HT8HBAT1**		**HT8GTAT1**	
		Clear	**HT8HBCT1**		**HT8GTCT1**	
		White	**HT8HBWT1**		**HT8GTWT1**	
		Yellow	**HT8HBYT1**		**HT8GTYT1**	
		Blue	**HT8HBBT1**		**HT8GTBT1**	
LED						
Full Voltage	120V AC/DC	No Lens ①	**HT8HFFV**		**HT8GTFV**	
		Red	**HT8HFRF7**		**HT8GTRF7**	
		Green	**HT8HFGF7**		**HT8GTGF7**	
		Amber	**HT8HFAF7**		**HT8GTAF7**	
		Clear	**HT8HFCF7**		**HT8GTCF7**	
		White	**HT8HFWF7**		**HT8GTWF7**	
		Yellow	**HT8HFYF7**		**HT8GTYF7**	
		Blue	**HT8HFBF7**		**HT8GTBF7**	
	24V AC/DC	No Lens ①	**HT8HFFV**		**HT8GTFV**	
		Red	**HT8HFRF3**		**HT8GTRF3**	
		Green	**HT8HFGF3**		**HT8GTGF3**	
		Amber	**HT8HFAF3**		**HT8GTAF3**	
		Clear	**HT8HFCF3**		**HT8GTCF3**	
		White	**HT8HFWF3**		**HT8GTWF3**	
		Yellow	**HT8HFYF3**		**HT8GTYF3**	
		Blue	**HT8HFBF3**		**HT8GTBF3**	
Transformer	120V AC 50/60 Hz	No Lens ①	**HT8HBT1**		**HT8GTT1**	
		Red	**HT8HBRL1**		**HT8GTRL1**	
		Green	**HT8HBGL1**		**HT8GTGL1**	
		Amber	**HT8HBAL1**		**HT8GTAL1**	
		Clear	**HT8HBCL1**		**HT8GTCL1**	
		White	**HT8HBWL1**		**HT8GTWL1**	
		Yellow	**HT8HBYL1**		**HT8GTYL1**	
		Blue	**HT8HBBL1**		**HT8GTBL1**	

① Light unit base operator without lens or bulb.

Accessories ..... **Page 47-208**
Dimensions ..... **Page 47-210**
Legend Plates..... **Page 47-206**
Discount Symbol **1CD1C**

Push-Pull Units

- 40 mm Mushroom Head
- Two-Position Maintained
- Non-illuminated

Round Head
2-Position Push-Pull Unit
Cat. No. HT8CBR

Flat Head
2-Position Push-Pull Unit
Cat. No. HT8DBH

Table 47-325. 2-Position Push-Pull, Maintained, Non-illuminated — UL (NEMA) Type 3, 3R, 4, 4X, 12 and 13

Contact Type	Operator Position		Button Color	2-Position Maintained Push-Pull			
				Round Head Mushroomhead Button		Flat Head Mushroomhead Button	
	Maintained	Maintained					
	Out	In		Catalog Number	Price U.S. $	Catalog Number	Price U.S. $
No Contact	—	—	Black Red Green	**HT8CBH** **HT8CBR** **HT8CBG**		**HT8DBH** **HT8DBR** **HT8DBG**	
NO	O	X	Black Red Green	**HT8CBHA** **HT8CBRA** **HT8CBGA**		**HT8DBHA** **HT8DBRA** **HT8DBGA**	
NC	X	O	Black Red Green	**HT8CBHB** **HT8CBRB** **HT8CBGB**		**HT8DBHB** **HT8DBRB** **HT8DBGB**	
NO-NC	O X	X O	Black Red Green	**HT8CBHAB** **HT8CBRAB** **HT8CBGAB**		**HT8DBHAB** **HT8DBRAB** **HT8DBGAB**	
NCLB ① NC	X X	O O	Black Red Green	**HT8CBHD1B** **HT8CBRD1B** **HT8CBGD1B**		**HT8DBHD1B** **HT8DBRD1B** **HT8DBGD1B**	
NCLB ① NCLB ①	X X	O O	Black Red Green	**HT8CBHD1D** **HT8CBRD1D** **HT8CBGD1D**		**HT8DBHD1D** **HT8DBRD1D** **HT8DBGD1D**	

① NCLB = Normally Closed Late Break.

NO Contact Block

NC Contact Block

Table 47-326. Contact Blocks ②

Description/Function	Contact Type	Catalog Number	Price U.S. $
Standard Normally Open contact	NO	**HT8A**	
Standard Normally Closed contact	NC	**HT8B**	
Normally Open Early Make contact will make circuit before standard NO contact. DC ratings do not apply.	NOEM	**HT8C**	
Normally Closed Late Break contact will open after standard NC contact. DC ratings do not apply.	NCLB	**HT8D**	
Logic level, low voltage NO contact. Gold plated contacts.	NO	**HT8E**	

② Maximum of (4) contact blocks per side or a total of (8) contact blocks recommended.

Accessories . . . . . **Page 47-208**
Dimensions. . . . . **Page 47-210**
Legend Plates . . . . . **Page 47-206**
Discount Symbol **1CD1C**

Illuminated Push-Pull Units

- Incandescent or LED
- Full Voltage or Transformer Type
- 24V and 120V

Illuminated Push-Pull Unit
Cat. No. HT8FBRABV7

Table 47-327. Illuminated Push-Pull Units — UL (NEMA) Type 3, 3R, 4, 4X, 12 and 13

Type	Volts	Lens Color	Operator Only		1NO ①		1NC ①		1NO-1NC ①		2NCLB ①	
			Catalog Number	Price U.S. $	Catalog Number	Price U.S. $	Catalog Number	Price U.S. $	Catalog Number	Price U.S. $	Catalog Number	Price U.S. $
Incandescent Lamp												
Full Voltage	120V AC/DC	Red Green	**HT8FBRV7** **HT8FBGV7**		**HT8FBRAV7** **HT8FBGAV7**		**HT8FBRBV7** **HT8FBGBV7**		**HT8FBRABV7** **HT8FBGABV7**		**HT8FBRD1DV7** **HT8FBGD1DV7**	
	24V AC/DC	Red Green	**HT8FBRV3** **HT8FBGV3**		**HT8FBRAV3** **HT8FBGAV3**		**HT8FBRBV3** **HT8FBGBV3**		**HT8FBRABV3** **HT8FBGABV3**		**HT8FBRD1DV3** **HT8FBGD1DV3**	
Trans-former	120V AC	Red Green	**HT8FBRT1** **HT8FBGT1**		**HT8FBRAT1** **HT8FBGAT1**		**HT8FBRBT1** **HT8FBGBT1**		**HT8FBRABT1** **HT8FBGABT1**		**HT8FBRD1DT1** **HT8FBGD1DT1**	
LED												
Full Voltage	120V AC/DC	Red Green	**HT8FBRF7** **HT8FBGF7**		**HT8FBRAF7** **HT8FBGAF7**		**HT8FBRBF7** **HT8FBGBF7**		**HT8FBRABF7** **HT8FBGABF7**		**HT8FBRD1DF7** **HT8FBGD1DF7**	
	24V AC/DC	Red Green	**HT8FBRF3** **HT8FBGF3**		**HT8FBRAF3** **HT8FBGAF3**		**HT8FBRBF3** **HT8FBGBF3**		**HT8FBRABF3** **HT8FBGABF3**		**HT8FBRD1DF3** **HT8FBGD1DF3**	
Trans-former	120V AC	Red Green	**HT8FBRL1** **HT8FBGL1**		**HT8FBRAL1** **HT8FBGAL1**	.	**HT8FBRBL1** **HT8FBGBL1**		**HT8FBRABL1** **HT8FBGABL1**		**HT8FBRD1DL1** **HT8FBGD1DL1**	

① Complete illuminated push-pull switches will not fit in a standard 3" deep enclosure.

Accessories . . . . . **Page 47-208**
Contact Blocks . . . . . **Page 47-197**
Dimensions . . . . . **Page 47-210**
Legend Plates . . . . . **Page 47-206**
Discount Symbol **1CD1C**

Selector Switch Units

- Two-, Three- and Four-Position
- Non-illuminated

Standard Knob Operator Cat. No. HT8JAH3A

Standard Lever Operator Cat. No. HT8JDH3A

Table 47-328. 2-Position Selector Switch Units, Non-illuminated — UL (NEMA) Type 3, 3R, 4, 4X, 12 and 13

Contact Type	Operator Position ①		Operating Mode M = Maintained S = Momentary		Standard Black Knob		Standard Black Lever	
					Catalog Number	Price U.S. $	Catalog Number	Price U.S. $
No Contacts	—	—	M S M	M M S	HT8JAH3A HT8JKH3A HT8JNH3A		HT8JDH3A HT8JLH3A HT8JPH3A	
1NO	O	X	M S M	M M S	HT8JAH3AA5 HT8JKH3AA5 HT8JNH3AA5		HT8JDH3AA5 HT8JLH3AA5 HT8JPH3AA5	
2NO	X O	O X	M S M	M M S	HT8JAH3AAA5 HT8JKH3AAA5 HT8JNH3AAA5		HT8JDH3AAA5 HT8JLH3AAA5 HT8JPH3AAA5	
2NO-2NC	X O X O	O X O X	M S M	M M S	HT8JAH3AF1Q1 HT8JKH3AF1Q1 HT8JNH3AF1Q1		HT8JDH3AF1Q1 HT8JLH3AF1Q1 HT8JPH3AF1Q1	

① X = closed circuit, O = open circuit.

Accessories ..... Page 47-208
Contact Blocks ..... Page 47-205
Dimensions..... Page 47-210
Legend Plates ..... Page 47-206
Discount Symbol 1CD1C

Standard Knob Operator Cat. No. HT8JBH1D

Standard Lever Operator Cat. No. HT8JEH1D

Table 47-329. 3-Position Selector Switch Units, Non-illuminated — UL (NEMA) Type 3, 3R, 4, 4X, 12 and 13

Contact Type	Operator Position ①			Operating Mode M = Maintained S = Momentary			Standard Black Knob		Standard Black Lever	
							Catalog Number	Price U.S. $	Catalog Number	Price U.S. $
No Contacts	—	—	—	M S M S	M M M M	M M S S	HT8JBH1D HT8JRH1D HT8JUH1D HT8JXH1D		HT8JEH1D HT8JSH1D HT8JVH1D HT8JYH1D	
2NO	X O	O O	O X	M S M S	M M M M	M M S S	HT8JBH1DAA5 HT8JRH1DAA5 HT8JUH1DAA5 HT8JXH1DAA5		HT8JEH1DAA5 HT8JSH1DAA5 HT8JVH1DAA5 HT8JYH1DAA5	
2NO-2NC ②	X O O	O X O	O O X	M S M S	M M M M	M M S S	HT8JBH1DF1Q1 HT8JRH1DF1Q1 HT8JUH1DF1Q1 HT8JXH1DF1Q1		HT8JEH1DF1Q1 HT8JSH1DF1Q1 HT8JVH1DF1Q1 HT8JYH1DF1Q1	
2NO-2NC	X O O X	O X O X	O X X O	M S M S	M M M M	M M S S	HT8JBH1DF1Q1 HT8JRH1DF1Q1 HT8JUH1DF1Q1 HT8JXH1DF1Q1		HT8JEH1DF1Q1 HT8JSH1DF1Q1 HT8JVH1DF1Q1 HT8JYH1DF1Q1	

① X = closed circuit, O = open circuit.
② For OXO, NC contacts must be wired in series — see **Table 47-332** on **Page 47-205**.

Standard Knob Operator Cat. No. HT8JCH8E

Standard Lever Operator Cat. No. HT8JFH8E

Table 47-330. 4-Position Selector Switch Units, Non-illuminated — UL (NEMA) Type 3, 3R, 4, 4X, 12 and 13

Contact Type	Operator Position ③				Operating Mode M = Maintained S = Momentary				Standard Black Knob		Standard Black Lever	
									Catalog Number	Price U.S. $	Catalog Number	Price U.S. $
No Contacts	—	—	—	—	M S M	M M M	M M M	M M S	HT8JCH8E HT8LNH8E HT8LRH8E		HT8JFH8E HT8LPH8E HT8LSH8E	
2NO-2NC	X O O O	O X O O	O O X O	O O O X	M S M	M M M	M M M	M M S	HT8JCH8EF1Q1 HT8LNH8EF1Q1 HT8LRH8EF1Q1		HT8JFH8EF1Q1 HT8LPH8EF1Q1 HT8LSH8EF1Q1	

③ X = closed circuit, O = open circuit.

Accessories ..... **Page 47-208**
Contact Blocks..... **Page 47-205**
Dimensions ..... **Page 47-210**
Legend Plates..... **Page 47-206**
Discount Symbol **1CD1C**

Selector Switch Contact Block Selection

For 2-, 3- and 4-Position Selector Switches

Table 47-331. 2-Position Selector Switch (Cam Code 3A)

Operator Position	Left	Right
X O	NO	or NC
O X	NC	or NO

Table 47-332. 3-Position Selector Switch (Cam Code 1D)

Operator Position	Left	Right
X O O	NO	
O X O	NC	NC
O O X		NO
O X X	NC	
X X O		NC

Table 47-333. 4-Position Selector Switch (Cam Code 8E)

Operator Position	Left	Right
X O O O	NO	
O X O O	NC	
O O X O		NO
O O O X		NC

Contact Blocks

NO Contact Block

NC Contact Block

Table 47-334. Contact Blocks ①

Description/Function	Contact Type	Catalog Number	Price U.S. $
Standard Normally Open contact	NO	**HT8A**	
Standard Normally Closed contact	NC	**HT8B**	
Normally Open Early Make contact will make circuit before standard NO contact. DC ratings do not apply.	NOEM	**HT8C**	
Normally Closed Late Break contact will open after standard NC contact. DC ratings do not apply.	NCLB	**HT8D**	
Logic level, low voltage NO contact. Gold plated contacts.	NO	**HT8E**	

① See **Page 47-196** for contact block electrical ratings.

Table 47-335. Contact Block Location (Viewed from Rear) Suffix Codes ②

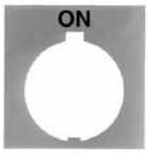
Left Side	Right Side
A = NO	**A5** = NO
A2 = 2NO	**A6** = 2NO
B1 = NC	**B** = NC
B2 = 2NC	**B6** = 2NC
C = NOEM	**C5** = NOEM
C2 = 2 NOEM	**C6** = 2 NOEM
D1 = NCLB	**D** = NCLB
D2 = 2 NCLB	**D6** = 2 NCLB
E1 = NOEM-NCLB	**E5** = NOEM-NCLB
F1 = NO & NC	**Q1** = NO & NC
F4 = 1NO-1NC	

② Maximum of (2) contact blocks per side or a total of (4) contact blocks recommended.

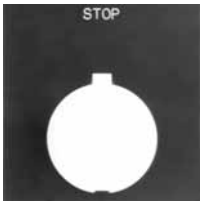
Discount Symbol **1CD1C**

Options

Legend Plates



Standard



Jumbo

Table 47-336. For Pushbutton Operators and Indicating Lights

Legend	Color of Field	Catalog Number (Standard)	Price U.S. $	Catalog Number (Jumbo)	Price U.S. $
Letters on Legend Plates Below are 3/16" High					
CLAMP	Black	**HT8SP90**		**HT8LP90**	
CLOSE	Black	**HT8SP73**		**HT8LP73**	
DOWN	Black	**HT8SP74**		**HT8LP74**	
EMERG. STOP	Red	**HT8SP13**		**HT8LP13**	
FAST	Black	**HT8SP75**		**HT8LP75**	
FASTER	Black	**HT8SP87**		**HT8LP87**	
FEEDER ON	Black	**HT8SP94**		**HT8LP94**	
FEEDER OFF	Black	**HT8SP95**		**HT8LP95**	
FORWARD	Black	**HT8SP15**		**HT8LP15**	
HIGH	Black	**HT8SP16**		**HT8LP16**	
IN	Black	**HT8SP17**		**HT8LP17**	
INCH	Black	**HT8SP18**		**HT8LP18**	
JOG	Black	**HT8SP19**		**HT8LP19**	
JOG FOR.	Black	**HT8SP20**		**HT8LP20**	
JOG REV.	Black	**HT8SP21**		**HT8LP21**	
LOW	Black	**HT8SP22**		**HT8LP22**	
LOWER	Black	**HT8SP23**		**HT8LP23**	
LUBE-FAIL	Black	**HT8SP92**		**HT8LP92**	
MOTOR RUN	Black	**HT8SP81**		**HT8LP81**	
MOTOR STOP	Black	**HT8SP82**		**HT8LP82**	
OFF	Red	**HT8SP24**		**HT8LP24**	
ON	Black	**HT8SP25**		**HT8LP25**	
OPEN	Black	**HT8SP26**		**HT8LP26**	
OUT	Black	**HT8SP27**		**HT8LP27**	
POWER ON	Black	**HT8SP80**		**HT8LP80**	
RAISE	Black	**HT8SP28**		**HT8LP28**	
READY	Black	**HT8SP86**		**HT8LP86**	
RESET	Black	**HT8SP29**		**HT8LP29**	
REVERSE	Black	**HT8SP30**		**HT8LP30**	
RUN	Black	**HT8SP31**		**HT8LP31**	
SAFE	Black	**HT8SP85**		**HT8LP85**	
SLOW	Black	**HT8SP32**		**HT8LP32**	
SLOWER	Black	**HT8SP88**		**HT8LP88**	
START	Black	**HT8SP33**		**HT8LP33**	
STOP	Red	**HT8SP34**		**HT8LP34**	
TEST	Black	**HT8SP83**		**HT8LP83**	
TRANSFER	Black	**HT8SP93**		**HT8LP93**	
TRIP	Black	**HT8SP84**		**HT8LP84**	
UNCLAMP	Black	**HT8SP91**		**HT8LP91**	
UP	Black	**HT8SP35**		**HT8LP35**	

Table 47-337. For Selector Switch Operators

Legend	Color of Field	Catalog Number (Standard)	Price U.S. $	Catalog Number (Jumbo)	Price U.S. $
2-Position — 3/16" High Lettering					
FOR. REV.	Black	**HT8SP38**		**HT8LP38**	
HAND AUTO	Black	**HT8SP39**		**HT8LP39**	
HIGH LOW	Black	**HT8SP40**		**HT8LP40**	
JOG RUN	Black	**HT8SP41**		**HT8LP41**	
MAN. AUTO	Black	**HT8SP67**		**HT8LP67**	
OFF ON	Black	**HT8SP42**		**HT8LP42**	
OPEN CLOSE	Black	**HT8SP43**		**HT8LP43**	
RUN JOG	Black	**HT8SP44**		**HT8LP44**	
SAFE RUN	Black	**HT8SP45**		**HT8LP45**	
START JOG	Black	**HT8SP46**		**HT8LP46**	
START STOP	Black	**HT8SP47**		**HT8LP47**	
UP DOWN	Black	**HT8SP48**		**HT8LP48**	
3-Position — 3/16" High Lettering					
AUTO OFF HAND	Black	**HT8SP49**		**HT8LP49**	
FOR. OFF REV.	Black	**HT8SP50**		**HT8LP50**	
FOR. SAFE REV.	Black	**HT8SP69**		**HT8LP69**	
HAND OFF AUTO	Black	**HT8SP51**		**HT8LP51**	
MAN. OFF AUTO	Black	**HT8SP68**		**HT8LP68**	
OPEN OFF CLOSE	Black	**HT8SP53**		**HT8LP53**	
RUN SAFE JOG	Black	**HT8SP70**		**HT8LP70**	
UP OFF DOWN	Black	**HT8SP54**		**HT8LP54**	
ON STOP SAFE	Black	**HT8SP71**		**HT8LP71**	

Table 47-338. For Push-Pull Units

Legend	Color of Field	Catalog Number (Standard) ①	Price U.S. $	Catalog Number (Jumbo) ②	Price U.S. $
ON / OFF	Black	**HT8PP5**		**HT8R5**	
OPEN / CLOSE	Black	**HT8PP8**		**HT8R8**	
UP / DOWN	Black	**HT8PP11**		**HT8R11**	

① 3/32" high lettering.
② 1/8" high lettering.

Table 47-339. Blank Plastic Legend Plates — Square

Legend	Color of Field	Catalog Number (Standard)	Price U.S. $	Catalog Number (Jumbo)	Price U.S. $
Black	White/Silver	**HT8SP76**		**HT8LP76**	
White	Red/ Black	**HT8SP77**		**HT8LP77**	

Dimensions ..... **Page 47-213**
Discount Symbol **1CD1C**

Legend Plates with Non-standard Markings

When Ordering Specify

- Catalog Number of Blank Plate per **Table 47-340**.
- Insert the following into Order Notes: Legend, Letter Size per **Table 47-341** and Locations per **Figure 47-135**.

Ordering Example:

Catalog No.: **HT85P76STAMP**
Letter Size: 3/32 inch (2.4 mm)
Pos. A — POWER HOUSE
Pos. B — START PUMP 1

Legend Characters Available

A B C D E F G H I J K L M N O P Q R S T U V W X
Y Z / - . , 1 2 3 4 5 6 7 8 9 0

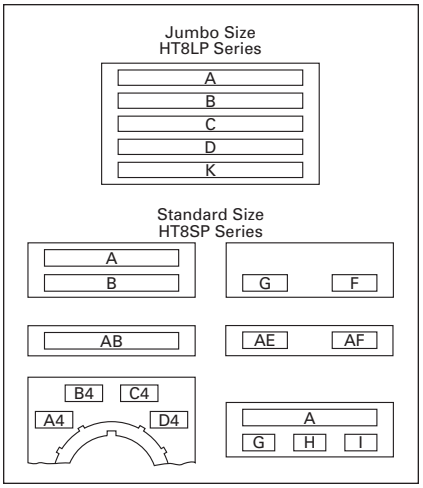


Figure 47-135. Legend Positions

Table 47-340. Blank Plastic Legend Plates for Non-standard Markings — Plastic

Legend	Color of Field	Standard		Jumbo	
		Catalog Number	Price U.S. $	Catalog Number	Price U.S. $
Black	White/Silver	**HT8SP76STAMP**		**HT8LP76STAMP**	
White	Red/Black	**HT8SP77STAMP**		**HT8LP77STAMP**	

Table 47-341. Maximum Characters per Legend Plate and Approximate Dimensions

Top (Aluminum and Plastic)	Approximate Dimensions in Inches (mm)		Style	Character Size					
	Width	Height		3/32" High		1/8" High		3/16" High	
				Number of Lines	Number of Characters	Number of Lines	Number of Characters	Number of Lines	Number of Characters
Standard	1.75 (44.5)	1.75 (44.5)	Square	2	18	2	13	1	9
Jumbo ①	2.19 (55.6)	2.19 (55.6)	Square	5	23	3	18	2	12

① Can be used on top row only of any enclosure.

Discount Symbol **1CD1C**

Accessories

Table 47-342. HT800 Accessories

	Description	Catalog Number	Price U.S. $
	Illuminated Pushbutton Guard	**HT8A15**	
	Wrench Tool	**HT8WRENCH**	
	Lamp/Bulb Removal Tool	**HT8LAMPTOOL**	
	Thrust Washer (Anti-rotation) (Included with every operator)	**HT8X1**	
	Trim Ring (Included with every operator)	**HT8X2**	
	Sealing/Spacer Washer (Five included with every operator)	**HT8X3**	
	Grounding Kit for Pushbuttons and Selector Switches (Included with every operator)	**HT8GR1**	
	Grounding Kit for Indicating Lights (Included with indicating lights)	**HT8GR2**	

Discount Symbol **1CD1C**

Light Unit

Incandescent Bulb

LED Bulb

Table 47-343. Light Units

Type	Voltage	Catalog Number	Price U.S. $
Full Voltage	24V AC/DC 120V AC/DC	**HT8F3V3** **HT8F7V8**	
Transformer	120V AC	**HT8L1T1**	

Table 47-344. Replacement Bulbs and LEDs

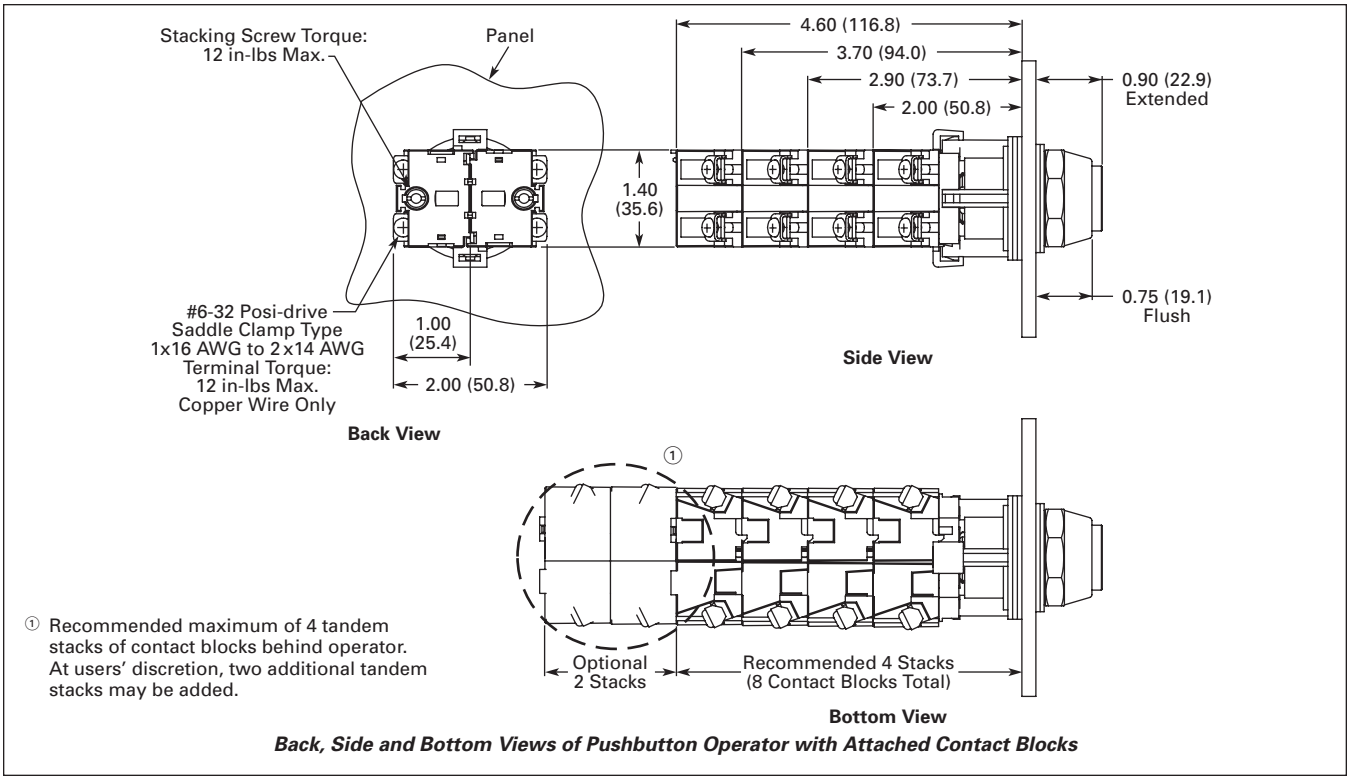
Voltage	Color	Catalog Number	Price U.S. $
Incandescent			
6V 24V 120V	— — —	**HT8BULBV1** **HT8BULBV3** **HT8BULBV7**	
LED			
6 – 12V (For use with transformers with 6V secondary winding)	Red Green Amber/Orange	**HT8LEDRF1** **HT8LEDGF1** **HT8LEDAF1**	
	White/Clear Yellow Blue	**HT8LEDWF1** **HT8LEDYF1** **HT8LEDBF1**	
24V	Red Green Amber/Orange	**HT8LEDRF3** **HT8LEDGF3** **HT8LEDAF3**	
	White/Clear Yellow Blue	**HT8LEDWF3** **HT8LEDYF3** **HT8LEDBF3**	
120V	Red Green Amber/Orange	**HT8LEDRF7** **HT8LEDGF7** **HT8LEDAF7**	
	White/Clear Yellow Blue	**HT8LEDWF7** **HT8LEDYF7** **HT8LEDBF7**	

Table 47-345. Replacement Lenses

Color	Indicating Lights	Price U.S. $	PresTest Lights Illuminated Pushbuttons	Price U.S. $
Amber Blue Clear Green	**HT8LA** **HT8LB** **HT8LC** **HT8LG**		**HT8BA** **HT8BB** **HT8BC** **HT8BG**	
Red White Yellow	**HT8LR** **HT8LW** **HT8LY**		**HT8BR** **HT8BW** **HT8BY**	

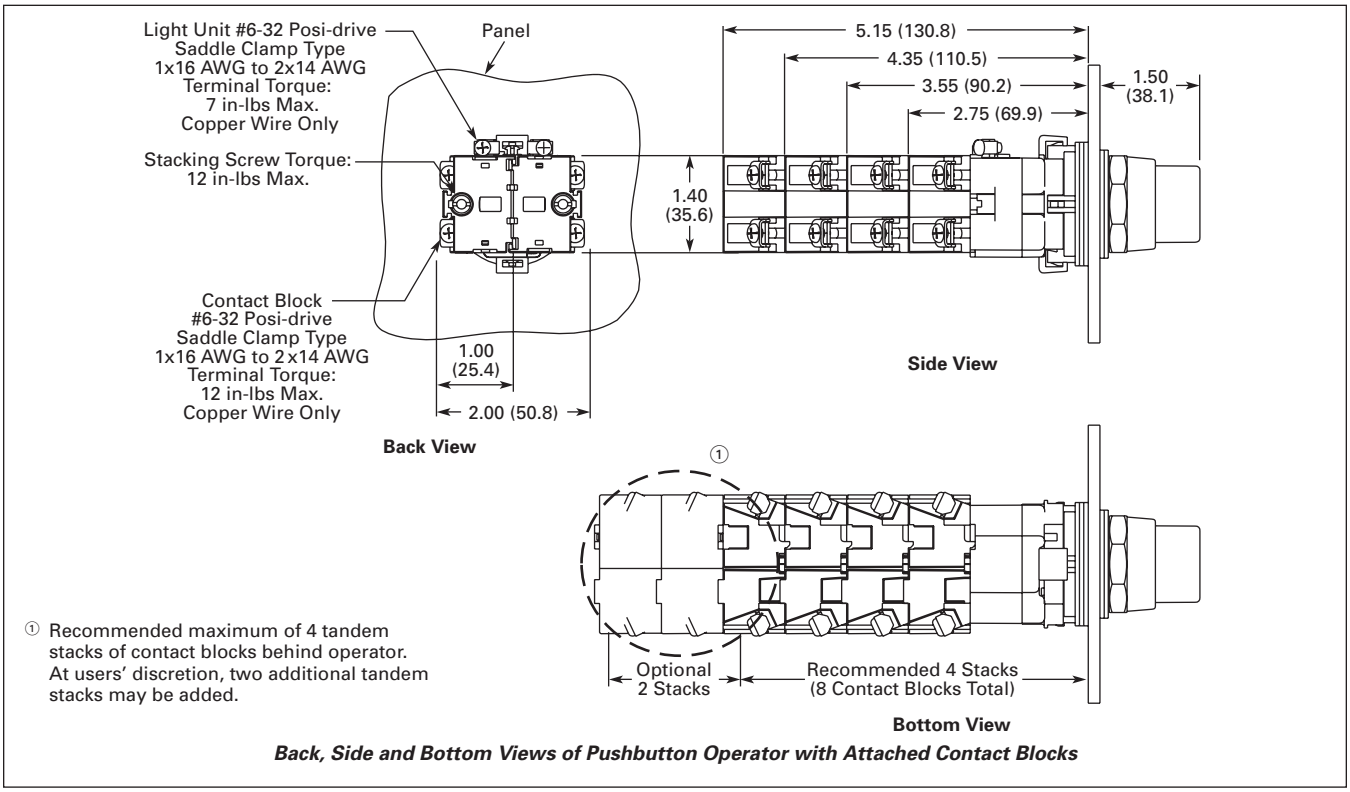
Discount Symbol **1CD1C**

Dimensions



Back, Side and Bottom Views of Pushbutton Operator with Attached Contact Blocks

Figure 47-136. Momentary Pushbuttons — Non-illuminated — Approximate Dimensions in Inches (mm)



Back, Side and Bottom Views of Pushbutton Operator with Attached Contact Blocks

Figure 47-137. Illuminated Pushbuttons — Approximate Dimensions in Inches (mm)

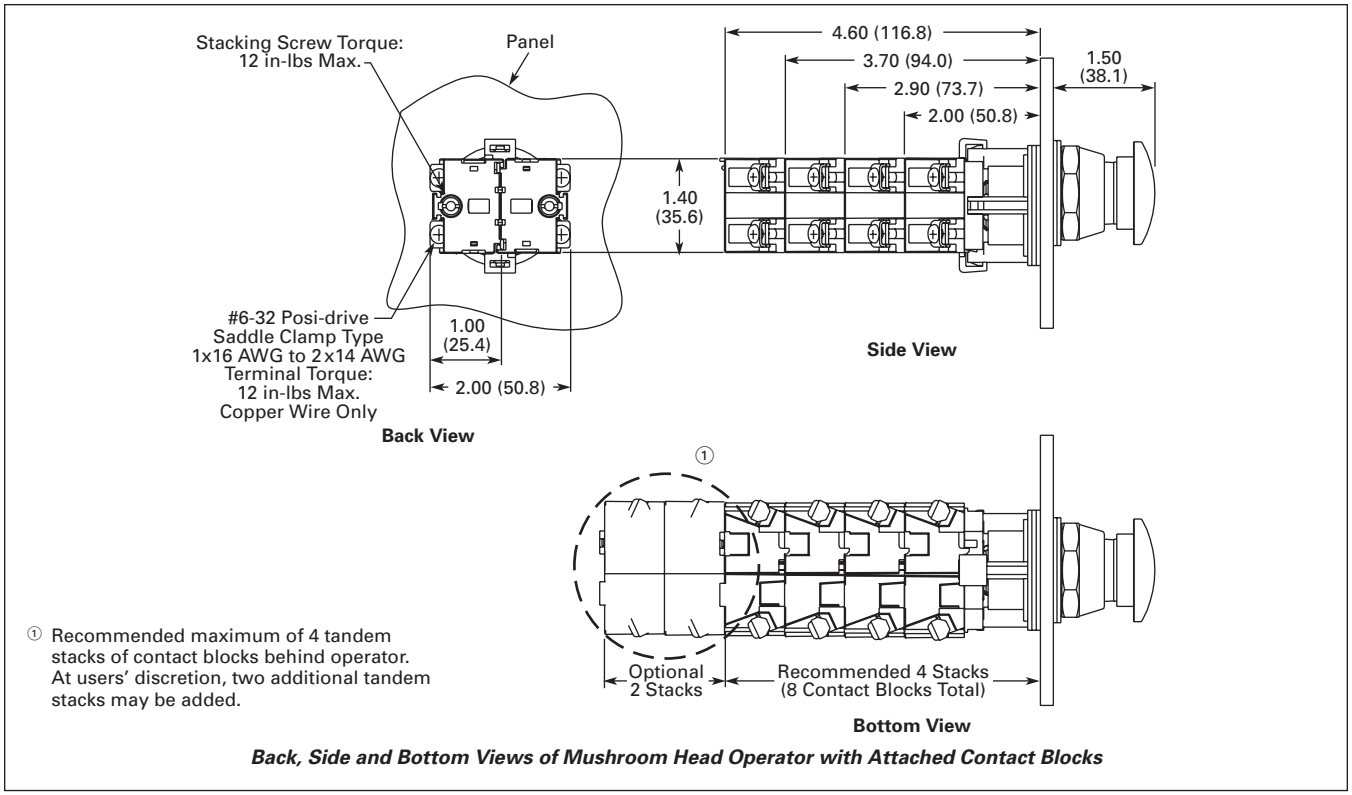


Figure 47-138. Mushroom Head Pushbuttons and Round Head MRH Push-Pull Operators — Approximate Dimensions in Inches (mm)

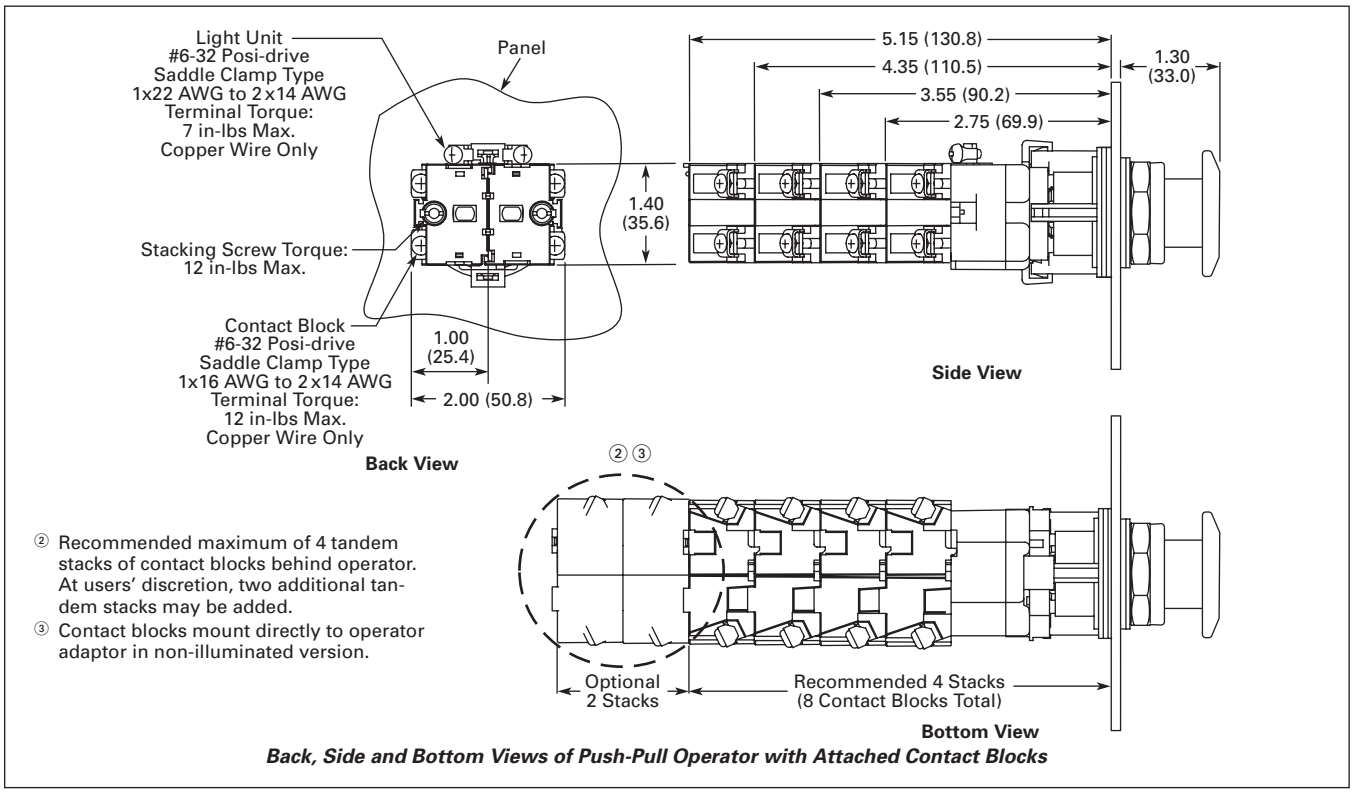


Figure 47-139. Illuminated and Non-illuminated Flat Head MRH Push-Pull Operators — Approximate Dimensions in Inches (mm)

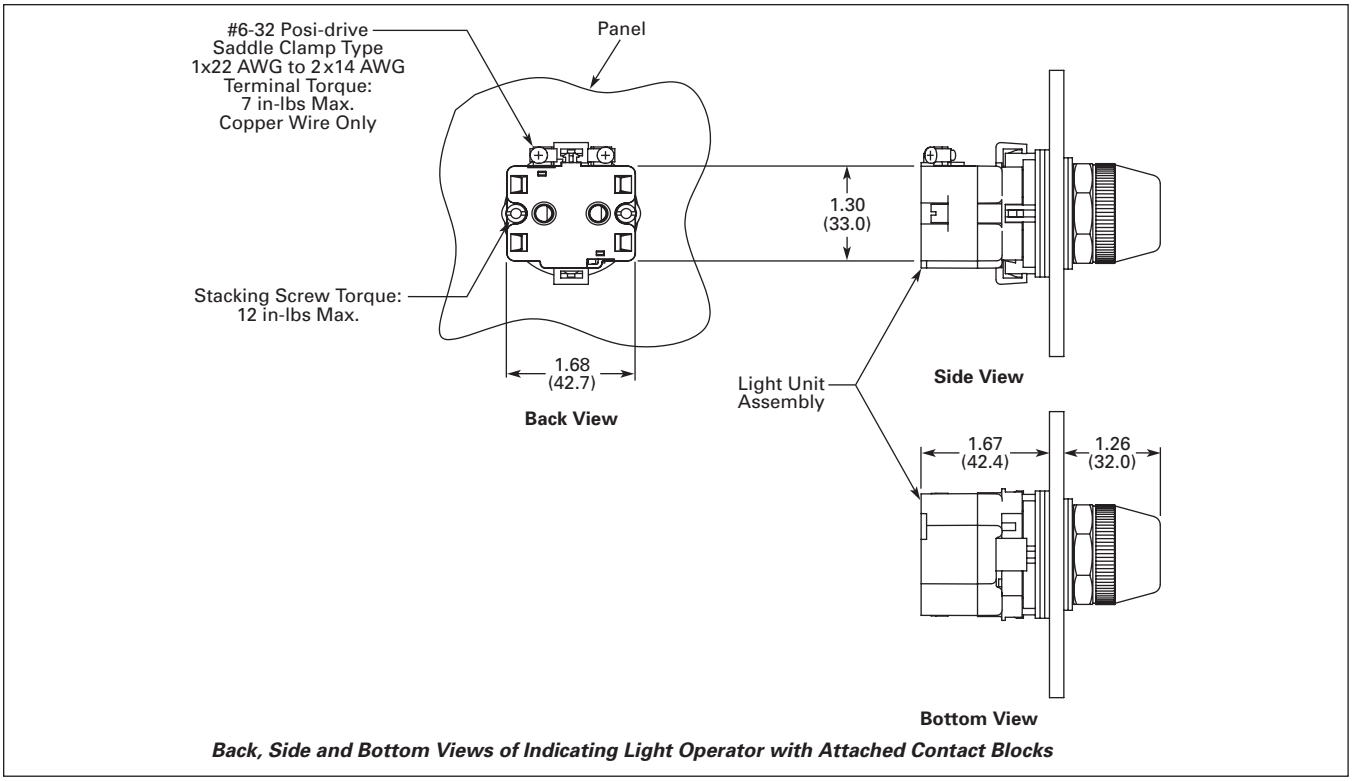


Figure 47-140. Indicating Lights — Approximate Dimensions in Inches (mm)

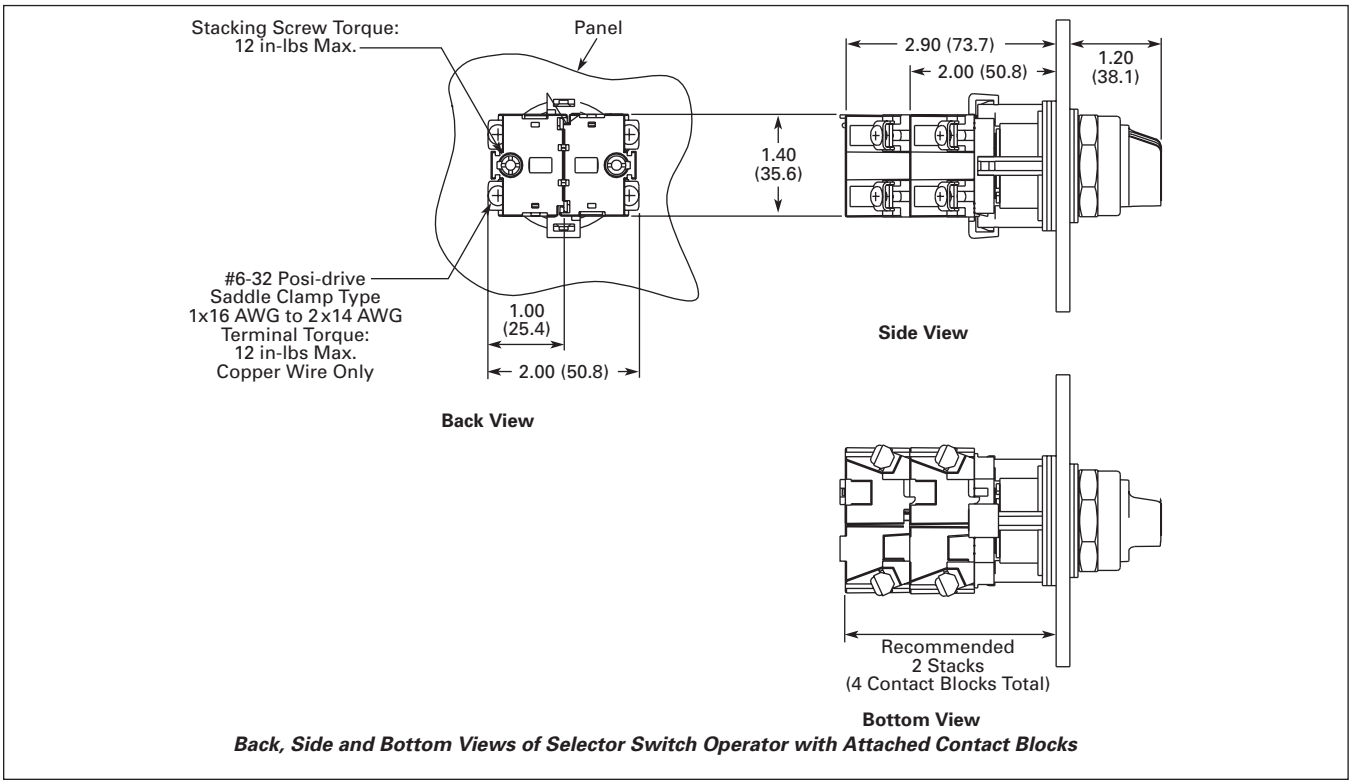


Figure 47-141. Selector Switches— Approximate Dimensions in Inches (mm)

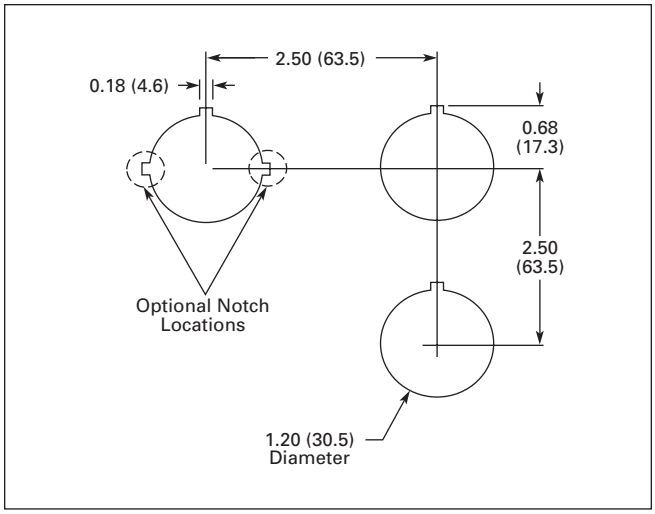


Figure 47-142. Mounting Matrix and Minimum Panel Spacing Requirements in Inches (mm)

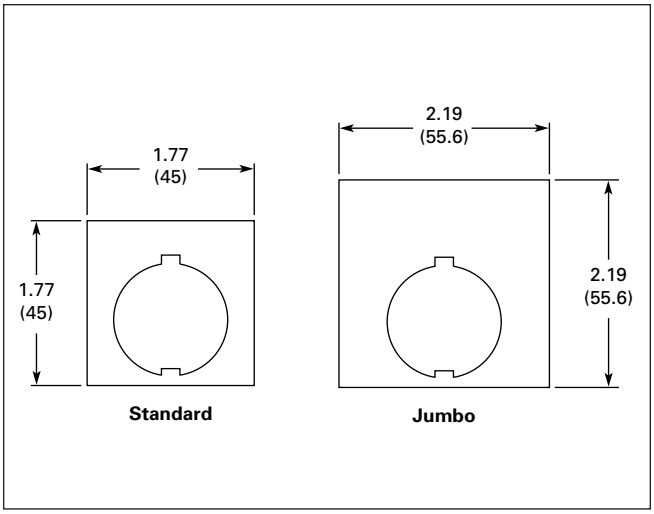


Figure 47-143. Legend Plates — Approximate Dimensions in Inches (mm)

Catalog Number Structure

For deciphering Catalog Numbers. Not all combinations are suitable for ordering.

Table 47-346. HT800 Catalog Numbering System for Pushbuttons, Push-Pulls and Indicating Lights

HT8 GB R AB T1

Style

Pushbuttons
AA = Flush
AB = Extended
AE = Mushroomhead

Illuminated Pushbuttons
GB = Illuminated PB

Push-Pull Operators
CB = 2-Position, Maintained

Indicating Lights
HF = Full Voltage/Resistor Type
HB = Transformer Type

Push-to-Test Operators
GT = All Types

Button Color

G = Green
H = Black
R = Red

Lens Color

A = Amber/Orange
B = Blue
C = Clear
G = Green
R = Red
W = White
Y = Yellow

Contact Block Location (viewed from rear) ①

Left Side			Right Side		
A	=	NO	**A5**	=	NO
A2	=	2NO	**A6**	=	2NO
B1	=	NC	**B**	=	NC
B2	=	2NC	**B6**	=	2NC
C	=	NOEM	**C5**	=	NOEM
C2	=	2 NOEM	**C6**	=	2 NOEM
D1	=	NCLB	**D**	=	NCLB
D2	=	2 NCLB	**D6**	=	2 NCLB
E1	=	NOEM-NCLB	**E5**	=	NOEM-NCLB
F1	=	NO & NC	**Q1**	=	NO & NC
F4	=	1NO-1NC			

Light Unit Type/Voltage

F3 = 24V FV, LED
F7 = 120V FV, LED
L1 = 120V Transformer, LED
T1 = 120V Transformer, Incand.
V3 = 24V FV, Incand.
V7 = 120V Res., Incand.

① Maximum of (4) contact blocks per side or a total of (8) contact blocks recommended.

Table 47-347. HT800 Selector Switch Catalog Numbering System

HT8 JA H 3A F1Q1

Style

Selector Switches
JA = 2-Pos., Knob, Maint.
JB = 3-Pos., Knob, Maint.
JC = 4-Pos., Knob, Maint.
JD = 2-Pos., Lever, Maint.
JE = 3-Pos., Lever, Maint.
JF = 4-Pos., Lever, Maint.
JK = 2-Pos., Knob, Spr. Rtn., Left
JL = 2-Pos., Lever, Spr. Rtn., Left
JN = 2-Pos., Knob, Spr. Rtn., Right
JP = 2-Pos., Lever, Spr. Rtn., Right
JR = 3-Pos., Knob, Spr. Rtn., Left
JS = 3-Pos., Lever, Spr. Rtn., Left
JU = 3-Pos., Knob, Spr. Rtn., Right
JV = 3-Pos., Lever, Spr. Rtn., Right
JX = 3-Pos., Knob, Spr. Rtn., Both
JY = 3-Pos., Lever, Spr. Rtn., Both
LN = 4-Pos., Knob, Spr. Rtn., Pos 1 to 2
LP = 4-Pos., Lever, Spr. Rtn., Pos 1 to 2
LR = 4-Pos., Knob, Spr. Rtn., Pos 4 to 3
LS = 4-Pos., Lever, Spr. Rtn., Pos 4 to 3

Switch Color

H = Black

Cam Location/Type

1D – For all 3-Pos.
3A – For all 2-Pos.
8E – For all 4-Pos.

Contact Block Location (viewed from rear) ②

Left Side			Right Side		
A	=	NO	**A5**	=	NO
A2	=	2NO	**A6**	=	2NO
B1	=	NC	**B**	=	NC
B2	=	2NC	**B6**	=	2NC
C	=	NOEM	**C5**	=	NOEM
C2	=	2 NOEM	**C6**	=	2 NOEM
D1	=	NCLB	**D**	=	NCLB
D2	=	2 NCLB	**D6**	=	2 NCLB
E1	=	NOEM-NCLB	**E5**	=	NOEM-NCLB
F1	=	NO & NC	**Q1**	=	NO & NC
F4	=	1NO-1NC			

② Maximum of (2) contact blocks per side or a total of (4) contacts blocks recommended.

Contents

Description	Page
Product Description	**47-215**
Features	**47-216**
Benefits	**47-216**
Standards and Certifications	**47-216**
Technical Data and Specifications	**47-217**
Product Selection	
Momentary Pushbutton Units	**47-218**
Non-illuminated Pushbuttons	**47-220**
Illuminated Pushbutton Units	**47-221**
Indicating Light Units	**47-223**
Illuminated Pushbuttons and Indicating Lights	**47-224**
Push-Pull Units	**47-225**
Illuminated Push-Pull Units	**47-226**
Push-Pulls	**47-229**
Selector Switch Units	**47-231**
Selector Switch Selection	**47-233**
Selector Switch Operators	**47-235**
Illuminated Selector Switch Operators	**47-237**
Options	
Contact Block and Mounting Adapters	**47-239**
Enclosures	**47-240**
Mounting and Assembly	**47-241**
Catalog Number Structure	**47-242**

Product Description

All the Industry-Proven Quality of Eaton's Cutler-Hammer® 10250T and E34 Series of Logic Devices, plus Class I Division 2 Certification

The **10250T1H** consists of a normally open-normally closed factory sealed contact block that is UL Listed for use in Class I, Division 2, Groups B, C and D (NEC 500 – 503) — Class I, Zone 2, IIB + H_2 (NEC 505) hazardous locations and is rated for both NEMA A600 and NEMA Q300. 10250T and E34 illuminated components have also been UL Listed for use in Class I, Division 2, Groups B, C and D (NEC 500 – 503) — Class I, Zone 2, IIB + H_2 (NEC 505).

This, combined with the industry-proven Cutler-Hammer 10250T 30.5 mm pushbutton line, offers a complete solution to Division 2 hazardous location requirements.

Single composite catalog numbers for complete assembled stations and operators for use in Division 2 hazardous locations are featured throughout this section.

Operator

The 30.5 mm 10250T pushbutton line features a zinc die cast construction with chrome-plated housing and mounting nut.

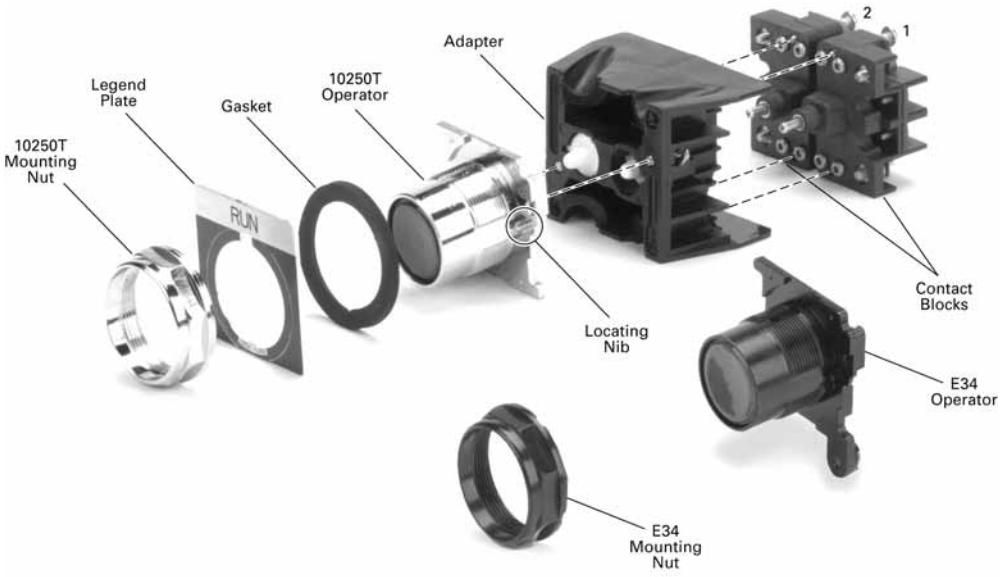
Eaton's Cutler-Hammer E34 Series 30.5 mm pushbutton line features the same rugged die cast construction of our 10250T line with an additional two-layer 100% solid thermosetting cathodic epoxy coating. This coating provides a flat black smooth, consistent, corrosion resistant surface that has passed a demanding 600 hour salt spray test. (The industry standard for this 4X test requires only 200 hours.)

Ultraviolet Light

E34 epoxy coating is not recommended for use in applications where exposure to ultraviolet light exists — use NEMA 4X 10250T operators.

Ratings

Our Class I Division 2 line of pushbuttons are UL Listed (NEMA type) 1, 2, 3, 3R, 4, 4X, 12 and 13. Our Class I Division 2 E34 line meets IEC 947-1 IP66 standards and the cathodic coating meets FDA 3A sanitary chemical resistance requirements. For a complete listing of all applicable ratings see **Page 47-217.**



Class I Division 2

Liquid Drainage

Eaton's Cutler-Hammer pushbutton operators offer front of panel drainage via holes in the operator bushing. Hidden from view by the mounting nut, these holes prevent buildup of liquid inside the operator, which can prevent operation in freezing environments. The holes also provide a route for escaping liquid in high pressure washdowns, effectively relieving pressure from the internal diaphragm seal, ensuring reliable sealing in applications even beyond NEMA 4.

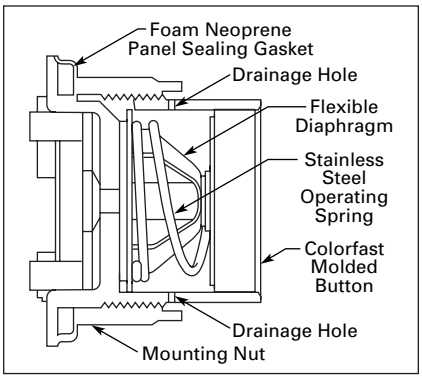


Figure 47-144. Diaphragm Seal

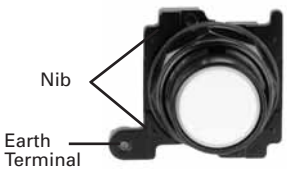
10250T Grounding

10250T line operators have "grounding nibs" — four metal points on the operator casting designed to bite through most paints and other coatings on metal panels to enhance the grounding connection when the operator is securely tightened.

10250T Grounding Nibs

E34 Grounding

E34 line of operators is equipped with a ground screw terminal as part of its die cast construction. This earthing terminal provides an easily accessible point for grounding operators when used in a painted or nonmetallic enclosure and eliminates the need for extra kits when daisy chain grounding is required.



E34 Grounding Nibs

Features

- Factory sealed contact blocks
- Heavy-duty zinc die cast construction
- NEMA rated 1, 2, 3, 3R, 4, 4X, 12, 13
- Front-of-panel drainage holes
- Grounding nibs on the operator casing
- Solid thermosetting cathodic epoxy coating on E34
- Corrosion resistance in E34

Benefits

- Pushbutton for hazardous locations
- Drainage holes prevent buildup of liquid inside the operator which can prevent operation in freezing environments
- Grounding nibs bite through paint and other coatings to provide secure ground
- Suitable for corrosive environments (E34 only)
- Earth terminal provides additional grounding point and allows for daisy chain grounding (E34 line)

Standards and Certifications

- UL 508 — File No. E131568
- UL 1604 — File No. E10323
- CSA Certified C22.2 No.14 — File No. LR 68551
- CSA Certified C22.2 No. 213-M1987 — File No. LR 20713

Ingress Protection

- Standard Indicating Lights
  - UL (NEMA) Type 3, 3R, 3S, 4, 4X, 12, 13
  - IEC IP65
- All Other Operators
  - UL (NEMA) Type 3, 3R, 4, 4X, 12, 13
  - IEC IP65

Technical Data and Specifications

Mechanical Ratings

- Frequency of Operation
  - All pushbuttons: 6000 operations/hr.
  - Key and lever selector switches: 3000 operations/hr.
- Life
  - Pushbuttons: 10 x 10^6 operations
  - Contact block: 10 x 10^6 operations
  - Key and lever selector switches: 0.25 x 10^6 operations
- Shock Resistance
  - Duration/force: 20 mS ≥5g

Climatic Conditions

- Operating: 32° to 140°F (0° to 60°C)
- Storage: -40° to 176°F (-40° to 80°C)
- Altitude: 6,562 ft. (2,000m)
- Humidity: Max. 95% RH @ 60°C

Terminals

Light Units

- Terminals are saddle clamp type for 1 x 22 AWG (0.34 sq. mm) to 2 x 14 AWG (4.0 sq. mm) conductors
- Torque = 7 lb-in (0.8 Nm)
- Degree of protection against direct electrical contact: IP2X with finger-proof shroud

Contact Blocks

- Terminals are Stainless Steel saddle clamp type for 1 x 18 – 14 AWG (0.75 – 2.5 sq. mm) solid or stranded copper conductor
- Torque = 9 lb-in (1.0 Nm) with size 2 Phillips screwdriver
- Degree of protection against direct electrical contact: IP2X with finger-proof shroud

Electrical Ratings

Table 47-348. Contact Block

Meet or Exceed NEMA Contact Rating Designations A600 and Q300						
Description	**A600 (AC)**				**Q300 (DC)**	
	120V	**240V**	**480V**	**600V**	**125V**	**250V**
Make and Emergency Interrupting Capacity (Amps)	60	30	15	12	0.55	0.27
Normal Load Break (Amps)	6	3	1.5	1.2	0.55	0.27
Thermal Current (Amps)	10	10	10	10	2.5	2.5
Voltamperes Max. Make Max. Break	 7200 720	 7200 720	 7200 720	 7200 720	 69 69	 69 69

Light Units

- Bulbs — Average Life
  - Transformer type: 20,000 hrs.
  - Resistor/direct voltage type: 2,500 hrs. min. @ rated voltage
  - LED: 60,000 to 100,000 hrs.

Note: For additional technical information, see Pub. **TD.7.4.T.E.04**.

All illuminated devices have operating temperatures below 100°C except for the following Catalog Numbers with temperature codes per NEC table 500-5(d) and UL 1604:

Table 47-349. Temperature Codes

10250T	E34	Temp. Code
10250T201H	E34RB120H	T3C
10250T202H	E34RB240H	T3A
10250T471H	E34SB120H	TC3
10250T472H	E34SB240H	T3B
10250T80H	—	T3C
10250T81H	—	T3B
All Selector Switches w/120MB Lamp		T3C
All Illuminated Devices with Lamp 1835		T4A

Mounting and Assembly . . . . . Page 47-241

Product Selection

Momentary Pushbutton Units

Table 47-350. Non-illuminated Flush and Extended Pushbuttons — UL (NEMA) Type 3, 3R, 4, 4X, 12, 13, NEC Class I Division 2, Groups B, C and D

Contact Type	Button Color ①	Flush Button				Extended Button			
		10250T		E34		10250T		E34	
		Catalog Number	Price U.S. $	Catalog Number	Price U.S. $	Catalog Number	Price U.S. $	Catalog Number	Price U.S. $
1NO-1NC	Black Red Green	**10250T706B** **10250T706R** **10250T706G**		**E34EX706B** **E34EX706R** **E34EX706G**		**10250T708B** **10250T708R** **10250T708G**		**E34EX708B** **E34EX708R** **E34EX708G**	
2NO-2NC	Black Red Green	**10250T707B** **10250T707R** **10250T707G**		**E34EX707B** **E34EX707R** **E34EX707G**		**10250T709B** **10250T709R** **10250T709G**		**E34EX709B** **E34EX709R** **E34EX709G**	

① To order different color guarded button, simply substitute the underlined character in Catalog Number with appropriate Suffix Code from Color Selection Table below. Example: 10250T706**Y**

Table 47-351. Non-illuminated Mushroom and Jumbo Mushroom Pushbuttons — UL (NEMA) Type 3, 3R, 4, 4X, 12, 13, NEC Class I Division 2, Groups B, C and D

Contact Type	Button Color ②	Mushroom Button				Jumbo Mushroom Button			
		10250T		E34		10250T ③		E34 ③	
		Catalog Number	Price U.S. $	Catalog Number	Price U.S. $	Catalog Number	Price U.S. $	Catalog Number	Price U.S. $
1NO-1NC	Black Red Green	**10250T710B** **10250T710R** **10250T710G**		**E34EX710B** **E34EX710R** **E34EX710G**		**10250T712B** **10250T712R** **10250T712G**		**E34EX712B** **E34EX712R** **E34EX712G**	
2NO-2NC	Black Red Green	**10250T711B** **10250T711R** **10250T711G**		**E34EX711B** **E34EX711R** **E34EX711G**		**10250T713B** **10250T713R** **10250T713G**		**E34EX713B** **E34EX713R** **E34EX713G**	

② To order different color guarded button, simply substitute the underlined character in Catalog Number with appropriate Suffix Code from Color Selection Table below. Example: 10250T710**Y**

③ Anodized aluminum head is not suitable for use in ultraviolet applications.

Table 47-352. Color Selection Table

Color	Suffix Code
Black	**B**
Red	**R**
Green	**G**
Yellow	**Y**
White	**W**
Blue	**L** ④
Orange ⑤	**N**
Red (EMERG. STOP) ⑥	**E**

④ Blue not available on Jumbo Mushroom Pushbutton.

⑤ Orange is only available on Flush or Extended Pushbuttons.

⑥ Red with EMERG. STOP engraved on button head for Jumbo Mushroom Pushbutton only.

Note: Use NEMA 4X 10250T operators where exposed to ultraviolet light.

Accessories ..... **Pages 47-155** & **47-187**
Dimensions ..... **Pages 47-239**, **47-160** & **47-191**
Enclosures ..... **Page 47-240**
Legend Plates.... **Pages 47-151** & **47-184**
Discount Symbol.. **1CD1C**

Momentary Pushbutton Units (Continued)

- Momentary Contact
- Non-illuminated
- Booted or Guarded

Table 47-353. 10250T Pushbuttons Booted and Guarded — UL (NEMA) Type 3, 3R, 4, 4X, 12, 13, NEC Class I Division 2, Groups B, C and D

Contact Type	Button Color	Booted Flush Button		Booted Extended Button		Guarded Extended Button ②	
		Catalog Number	Price U.S. $	Catalog Number	Price U.S. $	Catalog Number	Price U.S. $
1NO-1NC	Black Red Green	**10250T706BB** **10250T706RB** ① **10250T706GB**		**10250T708BB** **10250T708RB** **10250T708GB**		**10250T706BG** **10250T706RG** **10250T706GG**	
2NO-2NC	Black Red Green	**10250T707BB** **10250T707RB** ① **10250T707GB**		**10250T709BB** **10250T709RB** **10250T709GB**		**10250T707BG** **10250T707RG** **10250T707GG**	

① Red Booted Flush Pushbutton is not recommended for STOP function.
② To order different color guarded button, simply substitute the underlined character in Catalog Number with appropriate Suffix Code from Color Selection Table below. Example: 10250T706**Y**G

Table 47-354. E34 Pushbuttons Booted and Guarded — UL (NEMA) Type 3, 3R, 4, 4X, 12, 13, NEC Class I Division 2, Groups B, C and D

Contact Type	Button Color	Booted Flush Button		Booted Extended Button		Guarded Extended Button ④	
		Catalog Number	Price U.S. $	Catalog Number	Price U.S. $	Catalog Number	Price U.S. $
1NO-1NC	Black Red Green	**E34EX706BB** **E34EX706RB** ③ **E34EX706GB**		**E34EX708BB** **E34EX708RB** **E34EX708GB**		**E34EX706BG** **E34EX706RG** **E34EX706GG**	
2NO-2NC	Black Red Green	**E34EX707BB** **E34EX707RB** ③ **E34EX707GB**		**E34EX709BB** **E34EX709RB** **E34EX709GB**		**E34EX707BG** **E34EX707RG** **E34EX707GG**	

③ Red Booted Flush Pushbutton is not recommended for STOP function.
④ To order different color guarded button, simply substitute the underlined character in Catalog Number with appropriate Suffix Code from Color Selection Table below. Example: 10250T706**Y**G

Table 47-355. Color Selection Table

Color	Suffix Code
Black	**B**
Red	**R**
Green	**G**
Yellow	**Y**
White	**W**
Blue	**L**
Orange	**N**

Note: Use NEMA 4X 10250T operators where exposed to ultraviolet light.

Accessories . . . . . **Pages 47-155** & **47-187**
Dimensions. . . . . **Pages 47-239**, **47-160** & **47-191**
Enclosures . . . . . **Page 47-240**
Legend Plates . . . **Pages 47-151** & **47-184**
Discount Symbol . **1CD1C**

Pushbuttons

Table 47-356. Non-illuminated Pushbuttons, Momentary Contact — UL (NEMA) Type 3, 3R, 4, 4X, 12, 13

Color	Flush Button				Extended Button				Half Shrouded Button					
	10250T ①		E34		10250T		E34		10250T			E34		
	Catalog Number	Price U.S. $	Catalog Number	Price U.S. $	Catalog Number	Price U.S. $	Catalog Number	Price U.S. $	Vertical Catalog Number	Horizontal Catalog Number	Price U.S. $	Vertical Catalog Number	Horizontal Catalog Number	Price U.S. $
Black	10250T101		E34PB1		10250T111		E34EB1		10250T501	10250T511		E34EVB1	E34EHB1	
Red	10250T102		E34PB2		10250T112		E34EB2		10250T502	10250T512		E34EVB2	E34EHB2	
Green	10250T103		E34PB3		10250T113		E34EB3		10250T503	10250T513		E34EVB3	E34EHB3	
Yellow	10250T104		E34PB4		10250T120		E34EB4		10250T504	10250T514		E34EVB4	E34EHB4	
Gray	10250T105		E34PB5		—		E34EB5		10250T505	10250T515		E34EVB5	E34EHB5	
White	10250T106		E34PB6		10250T116		E34EB6		10250T506	10250T516		E34EVB6	E34EHB6	
Blue	10250T108		E34PB7		10250T118		E34EB7		10250T508	10250T518		E34EVB7	E34EHB7	
Orange	10250T109		E34PB8		10250T119		E34EB8		10250T509	10250T519		E34EVB8	E34EHB8	

① To order operator with factory assembled Extended Retaining Nut, 10250TA12, for thick panel applications, add Suffix letter **E** to listed Catalog Number.

Table 47-357. Mushroom Head Non-illuminated Pushbuttons, Momentary Contact — UL (NEMA) Type 3, 3R, 4, 4X, 12, 13

Color	Mushroom Button				Anodized Aluminum Jumbo Mushroom Button			
	10250T		E34		10250T ②		E34 ③	
	Catalog Number	Price U.S. $	Catalog Number	Price U.S. $	Catalog Number	Price U.S. $	Catalog Number	Price U.S. $
Black	10250T121		E34LB1		10250T171		E34JB1	
Red	10250T122		E34LB2		10250T172		E34JB2	
Red (EMERG. STOP)	—		—		10250T17213		E34JB2N8	
Green	10250T123		E34LB3		10250T173		E34JB3	
Yellow	10250T124		E34LB4		10250T174		E34JB4	
Blue	10250T129		E34LB6		—		—	

② Anodized aluminum head is not suitable for use in ultraviolet light applications.
③ Anodized aluminum head may not be suitable for some corrosive environments.

Note: Use NEMA 4X 10250T operators where exposed to ultraviolet light.

Accessories ..... **Pages 47-155** & **47-187**
Contact Blocks... **Page 47-239**
Dimensions ..... **Pages 47-239**, **47-160** & **47-191**
Enclosures ..... **Page 47-240**
Legend Plates.... **Pages 47-151** & **47-184**
Discount Symbol.. **1CD1C**

Illuminated Pushbutton Units

- Momentary Contact
- Illuminated
- Plastic Lenses

Table 47-358. Illuminated Pushbuttons — UL (NEMA) Type 3, 3R, 4, 4X, 12, 13, NEC Class I Division 2, Groups B, C and D

Lamp	Type	Voltage	Color	Contact	10250T			E34		
					Catalog Number ①	Price U.S. $	LED/Lamp Number	Catalog Number ①	Price U.S. $	LED/Lamp Number
LED	Full Voltage	24V AC/DC	Red Green Amber	1NO-1NC	**10250T828RD24** **10250T828GD24** **10250T828AD24**		Bayonet Base	**E34EX828RD24** **E34EX828GD24** **E34EX828AD24**		Bayonet Base
		120V AC	Red Green Amber	1NO-1NC	**10250T828RD2A** **10250T828GD2A** **10250T828AD2A**			**E34EX828RD2A** **E34EX828GD2A** **E34EX828AD2A**		
	Transformer	120V AC	Red Green Amber	1NO-1NC	**10250T802RD06** **10250T802GD06** **10250T802AD06**			**E34EX802RD06** **E34EX802GD06** **E34EX802AD06**		Bayonet Base 6V AC
Incandescent	Full Voltage	24V AC/DC	Red Green Amber	1NO-1NC	**10250T818RD** **10250T818GD** **10250T818AD**		#757	**E34EX818RD** **E34EX818GD** **E34EX818AD**		#757
	Resistor	120V AC/DC	Red Green Amber	1NO-1NC	**10250T824RD** **10250T824GD** **10250T824AD**		120MB	**E34EX824RD** **E34EX824GD** **E34EX824AD**		120MB
	Transformer	120V AC	Red Green Amber	1NO-1NC	**10250T802RD** **10250T802GD** **10250T802AD**		#755	**E34EX802RD** **E34EX802GD** **E34EX802AD**		#755 6V AC

① To order different color lens, simply substitute the underlined character in the Catalog Number with appropriate Suffix Code from Lenses Selection Table below. Example: 10250T828**Y**D24

Table 47-359. Lenses Selection Table

10250T	Color	Suffix Code	Catalog Number	Price U.S. $	E34	Color	Suffix Code	Catalog Number	Price U.S. $
	Red Green Yellow Amber Blue Clear White	**R** **G** **Y** **A** **L** **C** **W**	**10250TC21** **10250TC22** **10250TC23** **10250TC43** **10250TC24** **10250TC25** **10250TC26**			Red Green Yellow Amber Blue Clear White	**R** **G** **Y** **A** **L** **C** **W**	**E34V2** **E34V3** **E34V4** **E34V9** **E34V6** **E34V0** **E34V5**	

Additional Light Units . . . . . **Page 47-224**
Dimensions. . . . . **Pages 47-239**, **47-160** & **47-191**
Enclosures . . . . . **Page 47-240**
Legend Plates . . . . **Pages 47-151** & **47-184**
Replacement Lamps/LEDs. . . . **Page 47-157**
Discount Symbol . . **1CD1C**

Guarded Illuminated Pushbutton Units

- Momentary Contact
- Guarded Illuminated
- Plastic Lenses

Table 47-360. Guarded Illuminated Pushbuttons — UL (NEMA) Type 3, 3R, 4, 4X, 12, 13, NEC Class I Division 2, Groups B, C and D

Lamp	Type	Voltage	Color	Contact	10250T			E34		
					Catalog Number ①	Price U.S. $	LED/Lamp Number	Catalog Number ①	Price U.S. $	LED/Lamp Number
LED	Full Voltage	24V AC/DC	Red Green Amber	1NO-1NC	**10250T828RG24** **10250T828GG24** **10250T828AG24**		Bayonet Base	**E34EX828RG24** **E34EX828GG24** **E34EX828AG24**		Bayonet Base
		120V AC	Red Green Amber	1NO-1NC	**10250T828RG2A** **10250T828GG2A** **10250T828AG2A**			**E34EX828RG2A** **E34EX828GG2A** **E34EX828AG2A**		
	Transformer	120V AC	Red Green Amber	1NO-1NC	**10250T802RG06** **10250T802GG06** **10250T802AG06**			**E34EX802RG06** **E34EX802GG06** **E34EX802AG06**		
Incandescent	Full Voltage	24V AC/DC	Red Green Amber	1NO-1NC	**10250T818RG** **10250T818GG** **10250T818AG**		#757	**E34EX818RG** **E34EX818GG** **E34EX818AG**		#757
	Resistor	120V AC/DC	Red Green Amber	1NO-1NC	**10250T824RG** **10250T824GG** **10250T824AG**		120MB	**E34EX824RG** **E34EX824GG** **E34EX824AG**		120MB
	Transformer	120V AC	Red Green Amber	1NO-1NC	**10250T802RG** **10250T802GG** **10250T802AG**		#755	**E34EX802RG** **E34EX802GG** **E34EX802AG**		#755 6V AC

① To order different color lens, simply substitute the underlined character in the Catalog Number with appropriate Suffix Code from Lenses Selection Table below. Example: 10250T828**Y**G24

Table 47-361. Lenses Selection Table

10250T	Color	Suffix Code	Catalog Number	Price U.S. $	E34	Color	Suffix Code	Catalog Number	Price U.S. $
	Red Green Yellow Amber Blue Clear White	**R** **G** **Y** **A** **L** **C** **W**	**10250TC21** **10250TC22** **10250TC23** **10250TC43** **10250TC24** **10250TC25** **10250TC26**			Red Green Yellow Amber Blue Clear White	**R** **G** **Y** **A** **L** **C** **W**	**E34V2** **E34V3** **E34V4** **E34V9** **E34V6** **E34V0** **E34V5**	

Additional Light Units. . . . . **Page 47-224**
Dimensions . . . . . **Pages 47-239, 47-160** & **47-191**
Enclosures . . . . . **Page 47-240**
Legend Plates. . . . **Pages 47-151** & **47-184**
Replacement Lamps/LEDs . . . **Page 47-157**
Discount Symbol. . **1CD1C**

Indicating Light Units

- Standard
- Plastic Lens

Table 47-362. Indicating Lights — UL (NEMA) Type 3, 3R, 3S, 4, 4X, 12, 13, NEC Class I Division 2, Groups B, C and D

Lamp	Type	Voltage	Color	10250T		E34		LED/Lamp Number
				Catalog Number ①	Price U.S. $	Catalog Number ①	Price U.S. $	
LED	Full Voltage	24V AC/DC	Red Green Amber	10250T197HLRP24 10250T197HLGP24 10250T197HLAP24		E34FB197HLRP24 E34FB197HLGP24 E34FB197HLAP24		Bayonet Base
		120V AC	Red Green Amber	10250T197HLRP2A 10250T197HLGP2A 10250T197HLAP2A		E34FB197HLRP2A E34FB197HLGP2A E34FB197HLAP2A		
	Transformer	120V AC	Red Green Amber	10250T181HLRP06 10250T181HLGP06 10250T181HLAP06		E34TB120HLRP06 E34TB120HLGP06 E34TB120HLAP06		
Incandescent	Full Voltage	24V AC/DC	Red Green Amber	10250T206HRP 10250T206HGP 10250T206HAP		E34FB24HRP E34FB24HGP E34FB24HAP		#757
	Resistor	120V AC/DC	Red Green Amber	10250T201HRP 10250T201HGP 10250T201HAP		E34RB120HRP E34RB120HGP E34RB120HAP		120MB
	Transformer	120V AC	Red Green Amber	10250T181HRP 10250T181HGP 10250T181HAP		E34HB120HRP E34HB120HGP E34HB120HAP		#755

① To order different color lens, simply substitute the underlined characters in the Catalog Number with appropriate Suffix Code from the Lenses Selection Table below. Example: 10250T201H**YP**

Table 47-363. Lenses Selection Table

	Color	10250T						E34					
		Plastic			Glass			Plastic			Glass		
		Suffix Code	Catalog Number	Price U.S. $	Suffix Code	Catalog Number	Price U.S. $	Suffix Code	Catalog Number	Price U.S. $	Suffix Code	Catalog Number	Price U.S. $
Plastic *Glass*	Red	RP	10250TC1N		RG	10250TC7N		RP	E34H2		RG	E34G2	
	Green	GP	10250TC2N		GG	10250TC8N		GP	E34H3		GG	E34G3	
	Amber	AP	10250TC19N		AG	10250TC9N		AP	E34H9		AG	E34G9	
	Yellow	YP	10250TC3N		—	—		YP	E34H4		YG	E34G4	
	Blue	LP	10250TC4N		LG	10250TC10N		LP	E34H6		LG	E34G6	
	Clear	CP	10250TC5N		CG	10250TC11N		CP	E34H0		CG	E34G0	
	White	WP	10250TC6N		WG	10250TC12N		WP	E34H5		WG	E34G5	

Note: Use NEMA 4X 10250T operators where exposed to ultraviolet light.

Additional Light Units ..... **Page 47-224**
Dimensions..... **Pages 47-239, 47-160** & **47-191**
Enclosures ..... **Page 47-240**
Legend Plates ... **Pages 47-151** & **47-184**
Replacement Lamps/LEDs... **Page 47-157**
Discount Symbol . **1CD1C**

Illuminated Pushbuttons and Indicating Lights

Table 47-364. Operators without Lens — NEC Class I Division 2, Groups B, C and D

Light Unit Type	Type	Voltage	Illuminated Pushbutton 10250T Catalog Number	Illuminated Pushbutton 10250T Price U.S. $	Illuminated Pushbutton E34 Catalog Number	Illuminated Pushbutton E34 Price U.S. $	Indicating Light 10250T Catalog Number	Indicating Light 10250T Price U.S. $	Indicating Light E34 Catalog Number	Indicating Light E34 Price U.S. $	LED/Lamp Number
LED (LEDs not included) ①	Full Voltage	—	10250T397HL		E34CB497HL		10250T197HL		E34FB197HL		Bayonet Base
	Transformer AC Only	24	10250T416HL		E34XB024HL		—		—		
		120	10250T411HL		E34XB120HL		10250T181HL		E34TB120HL		
		240	10250T412HL		E34XB240HL		10250T182HL		E34TB240HL		
		277	10250T419HL		E34XB277HL		10250T198HL		E34TB277HL		
		380	10250T413HL		E34XB380HL		10250T183HL		E34TB380HL		
		480	10250T414HL		E34XB480HL		10250T184HL		E34TB480HL		
		600	10250T415HL		E34XB600HL		10250T185HL		E34TB600HL		
Incandescent	Full Voltage AC/DC	6	10250T473H		E34CB06H		10250T203H		E34FB06H		#755
		12	10250T474H		E34CB12H		10250T204H		E34FB12H		#756
		24	10250T476H		E34CB24H		10250T206H		E34FB24H		#757
		32	10250T477H		E34CB32H		10250T207H		E34FB32H		#1828
		48	10250T478H		E34CB48H		10250T208H		E34FB48H		#1835
	Resistor ② AC/DC	120	10250T471H		E34SB120H		10250T201H		E34RB120H		120MB
		240	10250T472H		E34SB240H		10250T202H		E34RB240H		120MB
	Transformer AC Only	24	10250T416H		E34XB024H		—		—		#755
		120	10250T411H		E34XB120H		10250T181H		E34TB120H		
		240	10250T412H		E34XB240H		10250T182H		E34TB240H		
		277	10250T419H		E34XB277H		10250T198H		E34TB277H		
		380	10250T413H		E34XB380H		10250T183H		E34TB380H		
		480	10250T414H		E34XB480H		10250T184H		E34TB480H		
		600	10250T415H		E34XB600H		10250T185H		E34TB600H		
	Neon AC/DC	120	—		—		10250T226H		E34NB120H		NE51H-R-22
		240	—		—		10250T227H		E34NB240H		NE51H-4-68

① These units do not include lamps. Order LED separately to match lens color from the LED Selection Table on **Page 47-230.**
② Resister units are not available for use with LEDs, choose either transformer or full voltage LED style.

Note: Use NEMA 4X 10250T operators where exposed to ultraviolet light.

Table 47-365. Indicating Light Lens

Plastic	Color	10250T Catalog Number	10250T Price U.S. $	E34 Catalog Number	E34 Price U.S. $
10250T E34	Red	10250TC1N		E34H2	
	Green	10250TC2N		E34H3	
	Amber	10250TC19N		E34H9	
	Yellow	10250TC3N		E34H4	
	Blue	10250TC4N		E34H6	
	Clear	10250TC5N		E34H0	
	White	10250TC6N		E34H5	

Glass	Color	10250T Catalog Number	10250T Price U.S. $	E34 Catalog Number	E34 Price U.S. $
10250T E34	Red	10250TC7N		E34G2	
	Green	10250TC8N		E34G3	
	Amber	10250TC9N		E34G9	
	Yellow	—		E34G4	
	Blue	10250TC10N		E34G6	
	Clear	10250TC11N		E34G0	
	White	10250TC12N		E34G5	

Table 47-366. Illuminated Pushbutton Lenses

	Color	10250T Catalog Number	10250T Price U.S. $	E34 Catalog Number	E34 Price U.S. $
10250T E34	Red	10250TC21		E34V2	
	Green	10250TC22		E34V3	
	Yellow	10250TC23		E34V4	
	Amber	10250TC43		E34V9	
	Blue	10250TC24		E34V6	
	Clear	10250TC25		E34V0	
	White	10250TC26		E34V5	

Accessories ..... **Pages 47-155** & **47-187**
Contact Blocks ... **Page 47-239**
Dimensions ..... **Pages 47-239, 47-160** & **47-191**
Enclosures..... **Page 47-240**
Legend Plates.... **Pages 47-151** & **47-184**
Replacement Lamps/LEDs ... **Page 47-157**
Discount Symbol.. **1CD1C**

Push-Pull Units

- Two- and Three-Position
- Non-illuminated

Table 47-367. 2-Position Maintained Push, Maintained Pull — UL (NEMA) Type 3, 3R, 4, 4X, 12, 13, NEC Class I Division 2, Groups B, C and D

Operator Function (Position) ①		Red Standard Push-Pull ②				Contact Type	Mounting Location ①	
Maintained (Pull)	Maintained (Push)	10250T		E34			1	2
		Catalog Number	Price U.S. $	Catalog Number	Price U.S. $			
O X	X O	**10250T714R**		**E34EX714R**		1NO 1NC		
O X O X	X O X O	**10250T715R**		**E34EX715R**		2NO 2NC		

① Bolded circuit corresponds to "X-O" circuit selection. X = closed circuit, O = open circuit.
② To order different type or color buttons, simply substitute underlined character with appropriate Suffix Code from the Button and Color Selection Table below. Example: 10250T714**G**

Table 47-368. 3-Position Maintained Push, Momentary Pull — UL (NEMA) Type 3, 3R, 4, 4X, 12, 13, NEC Class I Division 2, Groups B, C and D

Operator Function (Position) ③			Red Standard Push-Pull ④				Contact Type	Mounting Location ③	
Momentary (Pull)	Maintained (Intermediate)	Maintained (Push)	10250T		E34			1	2
			Catalog Number	Price U.S. $	Catalog Number	Price U.S. $			
O X	O O	X O	**10250T716R**		**E34EX716R**		1NO 1NC		
X X	O X	O O	**10250T717R**		**E34EX717R**		1NC 1NC		

③ Bolded circuit corresponds to "X-O" circuit selection. X = closed circuit, O = open circuit.
④ To order different type or color buttons, simply substitute underlined character with appropriate Suffix Code from the Button and Color Selection Table below. Example: 10250T716**G**

Table 47-369. 3-Position Momentary Push, Momentary Pull — UL (NEMA) Type 3, 3R, 4, 4X, 12, 13, NEC Class I Division 2, Groups B, C and D

Operator Function (Position) ⑤			Red Standard Push-Pull ⑥				Contact Type	Mounting Location ⑤	
Momentary (Pull)	Maintained (Intermediate)	Momentary (Push)	10250T		E34			1	2
			Catalog Number	Price U.S. $	Catalog Number	Price U.S. $			
O X	O O	X O	**10250T718R**		**E34EX718R**		1NO 1NC		
X X	O X	O O	**10250T721R**		**E34EX721R**		1NC 1NC		

⑤ Bolded circuit corresponds to "X-O" circuit selection. X = closed circuit, O = open circuit.
⑥ To order different type or color buttons, simply substitute underlined character with appropriate Suffix Code from the Button and Color Selection Table below. Example: 10250T718**G**

Table 47-370. Button and Color Selection Table

Standard	Color	Suffix Code	Catalog Number		Price U.S. $	Jumbo Mushroom Head (Anodized) Aluminum	Color	Suffix Code	Catalog Number		Price U.S. $
	Red Red (EMER. STOP) Green Black Blue	**R** **E** **G** **B** **L**	**10250TB62** **10250TB63** **10250TB61** **10250TB60** **10250TB64**	**E34C2** **E34C2N8** **E34C3** **E34C1** **E34C6**			Red Red (EMER. STOP) Green Black Yellow	**RJ** **EJ** **GJ** **BJ** **YJ**	**10250TJ62** **10250TJ63** **10250TJ61** **10250TJ60** **10250TJ64**	**E34J2** **E34J2N8** — — —	

Accessories . . . . . **Pages 47-155** & **47-187**
Dimensions. . . . . **Pages 47-239, 47-160** & **47-191**
Enclosures . . . . . **Page 47-240**
Legend Plates . . . . **Pages 47-151** & **47-184**
Discount Symbol . . **1CD1C**

Illuminated Push-Pull Units

- Two-Position Maintained
- Illuminated

Table 47-371. 2-Position Illuminated Maintained Push, Maintained Pull — UL (NEMA) Type 3, 3R, 4, 4X, 12, 13, NEC Class I Division 2, Groups B, C and D

Operator Position ①		Lamp	Type	Voltage	Red Standard Push-Pull ②				Contact Type	Mounting Location ①	
Maintained — Pull	Maintained — Push				10250T		E34			1	2
					Catalog Number	Price U.S. $	Catalog Number	Price U.S. $			
O X	X O	LED	Full Voltage	24V AC/DC	**10250T853RD24**		**E34EX853RD24**		1NO 1NC		
				120V AC	**10250T853RD2A**		**E34EX853RD2A**				
			Transformer	24V AC	**10250T843RD06**		**E34EX843RD06**				
				120V AC	**10250T844RD06**		**E34EX844RD06**				
O X	X O	Incan-descent	Full Voltage	24V AC/DC	**10250T849RD**		**E34EX849RD**		1NO 1NC		
			Resistor	120V AC/DC	**10250T851RD**		**E34EX851RD**				
			Transformer	24V AC	**10250T843RD**		**E34EX843RD**				
				120V AC	**10250T844RD**		**E34EX844RD**				

① Bolded circuit corresponds to "X-O" circuit selection. X = closed circuit, O = open circuit.

② To order different type or color lens, simply substitute the underlined characters with appropriate Suffix Code from the Lens and Color Selection Table below. Example: 10250T851**GS**

Table 47-372. Lens and Color Selection Table

Standard

Color	10250T Suffix Code	10250T Catalog Number	10250T Price U.S. $	E34 Suffix Code	E34 Catalog Number	E34 Price U.S. $
Red	**RD**	**10250TC47**		**RD**	**E34M2**	
Red (EMER. STOP)	**ED**	**10250TC53**		**ED**	**E34M2N8**	
Green	**GD**	**10250TC48**		**GD**	**E34M3**	
Blue	**LD**	**10250TC49**		**LD**	**E34M6**	
Amber	**AD**	**10250TC50**		**AD**	**E34M9**	
White	**WD**	**10250TC51**		**WD**	**E34M5**	
Clear	**CD**	**10250TC52**		**CD**	**E34M0**	

Side-Lighted (Anodized) Aluminum

Color	10250T Suffix Code	10250T Catalog Number	10250T Price U.S. $
Red	**RS**	**10250TC57**	
Red (EMER. STOP)	**ES**	**10250TC63**	
Green	**GS**	**10250TC58**	
Blue	**LS**	**10250TC59**	
Amber	**AS**	**10250TC64**	
Yellow	**YS**	**10250TC60**	
White	**WS**	**10250TC61**	
Clear	**CS**	**10250TC62**	

HD Alum. with Transparent Center

Red	**RH**	**10250TC65**	
Green	**GH**	**10250TC66**	
Amber	**AH**	**10250TC67**	

Standard

Side-Lighted (Anodized) Aluminum

HD Alum. with Transparent Center

Accessories ..... **Pages 47-155** & **47-187**
Additional Light Units..... **Page 47-224**
Dimensions ..... **Pages 47-239**, **47-160** & **47-191**
Enclosures..... **Page 47-240**
Legend Plates..... **Pages 47-151** & **47-184**
Replacement Lamps/LEDs .... **Page 47-157**
Discount Symbol... **1CD1C**

Illuminated Push-Pull Units (Continued)

- Three-Position — Maintained Push, Momentary Pull
- Illuminated

Table 47-373. 3-Position Illuminated Maintained Push, Momentary Pull — UL (NEMA) Type 3, 3R, 4, 4X, 12, 13, NEC Class I Division 2, Groups B, C and D

Operator Position ①			Lamp	Type	Voltage	Red Standard Push-Pull ②				Contact Type	Mounting Location ①	
Momentary — Pull	Maintained — Intermediate	Maintained — Push				10250T		E34				
						Catalog Number	Price U.S. $	Catalog Number	Price U.S. $		1	2
O X	O O	X O	LED	Full Voltage	24V AC/DC	**10250T864RD24**		**E34EX864RD24**		1NO 1NC		
					120V AC	**10250T864RD2A**		**E34EX864RD2A**				
				Trans-former	24V AC	**10250T854RD06**		**E34EX854RD06**				
					120V AC	**10250T855RD06**		**E34EX855RD06**				
X X	O X	O O		Full Voltage	24V AC/DC	**10250T875RD24**		**E34EX875RD24**		1NC 1NC		
					120V AC	**10250T875RD2A**		**E34EX875RD2A**				
				Trans-former	24V AC	**10250T865RD06**		**E34EX865RD06**				
					120V AC	**10250T866RD06**		**E34EX866RD06**				
O X	O O	X O	Incan-descent	Full Voltage	24V AC/DC	**10250T860RD**		**E34EX860RD**		1NO 1NC		
				Resistor	120V AC	**10250T862RD**		**E34EX862RD**				
				Trans-former	24V AC	**10250T854RD**		**E34EX854RD**				
					120V AC	**10250T855RD**		**E34EX855RD**				
X X	O X	O O		Full Voltage	24V AC/DC	**10250T871RD**		**E34EX871RD**		1NC 1NC		
				Resistor	120V AC	**10250T873RD**		**E34EX873RD**				
				Trans-former	24V AC	**10250T865RD**		**E34EX865RD**				
					120V AC	**10250T866RD**		**E34EX866RD**				

① Bolded circuit corresponds to "X-O" circuit selection. X = closed circuit, O = open circuit.
② To order different type or color lens, simply substitute the underlined characters with appropriate Suffix Code from the Lens and Color Selection Table on the bottom of **Page 47-226.** Example: 10250T862**AS**

Accessories . . . . . **Pages 47-155** & **47-187**
Additional Light Units . . . . . **Page 47-224**
Dimensions. . . . . **Pages 47-239**, **47-160** & **47-191**
Enclosures . . . . . **Page 47-240**
Legend Plates . . . **Pages 47-151** & **47-184**
Replacement Lamps/LEDs . . . **Page 47-157**
Discount Symbol . **1CD1C**

Illuminated Push-Pull Units (Continued)

- Three-Position Momentary
- Illuminated

Table 47-374. 3-Position Illuminated Momentary Push, Momentary Pull — UL (NEMA) Type 3, 3R, 4, 4X, 12, 13, NEC Class I Division 2, Groups B, C and D

Operator Position ①			Lamp	Type	Voltage	Red Standard Push-Pull ②				Contact Type	Mounting Location ①	
Momentary — Pull	Maintained — Intermediate	Maintained — Push				10250T		E34				
						Catalog Number	Price U.S. $	Catalog Number	Price U.S. $		1	2
O X	O O	X O	LED	Full Voltage	24V AC/DC	**10250T886RD24**		**E34EX886RD24**		1NO 1NC		
					120V AC	**10250T886RD2A**		**E34EX886RD2A**				
				Trans-former	24V AC	**10250T876RD06**		**E34EX876RD06**				
					120V AC	**10250T877RD06**		**E34EX877RD06**				
X X	O X	O O		Full Voltage	24V AC/DC	**10250T897RD24**		**E34EX897RD24**		1NC 1NC		
					120V AC	**10250T897RD2A**		**E34EX897RD2A**				
				Trans-former	24V AC	**10250T887RD06**		**E34EX887RD06**				
					120V AC	**10250T888RD06**		**E34EX888RD06**				
O X	O O	X O	Incan-descent	Full Voltage	24V AC/DC	**10250T882RD**		**E34EX882RD**		1NO 1NC		
				Resistor	120V AC	**10250T884RD**		**E34EX884RD**				
				Trans-former	24V AC	**10250T876RD**		**E34EX876RD**				
					120V AC	**10250T877RD**		**E34EX877RD**				
X X	O X	O O		Full Voltage	24V AC/DC	**10250T893RD**		**E34EX893RD**		1NC 1NC		
				Resistor	120V AC	**10250T895RD**		**E34EX895RD**				
				Trans-former	24V AC	**10250T887RD**		**E34EX887RD**				
					120V AC	**10250T888RD**		**E34EX888RD**				

① Bolded circuit corresponds to "X-O" circuit selection. X = closed circuit, O = open circuit.

② To order different type or color lens, simply substitute the underlined characters with appropriate Suffix Code from the Lens and Color Selection Table on the bottom of **Page 47-226**. Example: 10250T884**GD**

Accessories ..... **Pages 47-155** & **47-187**
Additional Light Units..... **Page 47-224**
Dimensions..... **Pages 47-239**, **47-160** & **47-191**
Enclosures ..... **Page 47-240**
Legend Plates.... **Pages 47-151** & **47-184**
Replacement Lamps/LEDs ... **Page 47-157**
Discount Symbol.. **1CD1C**

Push-Pull Operators

An illuminated Push-Pull pushbutton unit, arranged for one-hole mounting, can replace two pushbuttons and a pilot light or the non-illuminated form can replace two pushbuttons. These units are available in three basic types:

- **Maintained** — (Two-Position). Maintains in the pulled or pushed position until manually actuated to the opposite mode.
- **Momentary** — (Three-Position). Spring returns to an intermediate position when pulled or pushed and released.
- **Momentary Pull, Maintained Push** — (Three-Position). Spring returns to intermediate position when pulled. Maintains in pushed position until manually returned to intermediate (ready to reset) position. Maintained stop holds circuit open and will prevent other series connected operators from starting the system.

The Operators, Buttons, Contact Blocks, etc., are offered as building block components that can be intermixed to satisfy many requirements. This minimizes the need for a varied and costly inventory.

Application Guide

To assist in the selection of contact blocks, the sketch to the right shows pictorially by symbols **1** and **2** locations of contact circuits after assembly of contact blocks and adapter to the operator. The chart below shows the effect of the push and pull operations on either NO or NC contacts.
(X = contact closed, O = contact open)

2-Position Maintained Push-Pull without Button on Lens Catalog Number E34GDB

2-Position Maintained Push-Pull without Button on Lens Catalog Number 10250T5

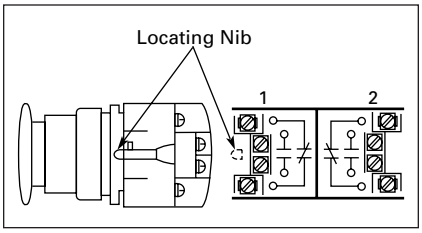


Figure 47-145. Locating Nibs

Table 47-375. Push-Pull Operator Components

Type of Operator	10250T Catalog Number	10250T Price U.S. $	E34 Catalog Number	E34 Price U.S. $	Contact Block	Operator Position and Circuit Arrangement: Out — Pull, Contact Block Mounting Location 1	Out — Pull, 2	Intermediate, 1	Intermediate, 2	In — Push, 1	In — Push, 2
2-Position Operator without Lens											
Maintained Push-Pull	**10250T5**		**E34GDB**		1NO 1NC	O X	or O X	No Intermediate Position		X O	or X O
					2NO 2NC	O X	O X			X O	X O
3-Position Operator without Lens											
Momentary Push-Pull	**10250T4**		**E34GEB**		1NO 1NC	O X	or O X	O O	or O X	X O	or O O
Maintained Push-Momentary Pull	**10250T9**		**E34GFB**		2NO 2NC	O X	O X	O O	O X	X O	O O
Momentary Push-Pull	**10250T10**		**E34GHB**		1NO 1NC	O X	or O X	O O	or O O	X O	or X O
					2NO 2NC	O X	O X	O O	O O	X O	X O

Note: Use NEMA 4X 10250T operators where exposed to ultraviolet light.

Button or Lens ..... **Page 47-230**
Contact Blocks ..... **Page 47-239**
Dimensions..... **Pages 47-160** & **47-191**
Enclosures ..... **Page 47-240**
Legend Plates ..... **Pages 47-151** & **47-184**
Discount Symbol **1CD1C**

Push-Pull Operators (Continued)

Push-Pull Light Units, Lens and Buttons

Table 47-376. Light Units for Illuminated Push-Pull Devices — NEC Class I Division 2 Groups B, C and D

Light Unit Type	Type	Voltage	Catalog Number	Price U.S. $	LED/Lamp Number
LED (LEDs not included) ①	Full Voltage	—	**10250T97HL**		Bayonet Base
	Transformer AC Only 50/60 Hz	24	**10250T89HL**		
		120	**10250T63HL**		
		208	**10250T64HL**		
		240	**10250T65HL**		
		277	**10250T82HL**		
		380	**10250T66HL**		
		480	**10250T67HL**		
		600	**10250T68HL**		
Incandescent	Full Voltage AC or DC	6	**10250T69H**		#755
		12	**10250T70H**		#756
		24/28	**10250T79H**		#757
		32	**10250T83H**		#1828
	Resistor AC or DC	120	**10250T80H**		120MB
		240	**10250T81H**		
	Transformer AC Only 50/60 Hz	24	**10250T89H**		#755
		120	**10250T63H**		
		208	**10250T64H**		
		240	**10250T65H**		
		277	**10250T82H**		
		380	**10250T66H**		
		480	**10250T67H**		
		600	**10250T68H**		

① These units do not include lamps. Order LED separately to match lens color from **Table 47-379**.

Table 47-377. Alternate Lenses for Illuminated Push-Pull Devices

	Color	10250T		E34	
		Catalog Number	Price U.S. $	Catalog Number	Price U.S. $
	Standard				
	Red	**10250TC47**		**E34M2**	
	Red (EMER. STOP)	**10250TC53**		**E34M2N8**	
	Green	**10250TC48**		**E34M3**	
	Blue	**10250TC49**		**E34M6**	
	Amber	**10250TC50**		**E34M9**	
	White	**10250TC51**		**E34M5**	
	Clear	**10250TC52**		**E34M0**	
	Side-Lighted Anodized Aluminum Ring				
	Red	**10250TC57**		—	
	Red (EMER. STOP)	**10250TC63**		—	
	Green	**10250TC58**		—	
	Blue	**10250TC59**		—	
	Amber	**10250TC64**		—	
	Yellow	**10250TC60**		—	
	White	**10250TC61**		—	
	Clear	**10250TC62**		—	
	Heavy-Duty Aluminum with Transparent Center				
	Red	**10250TC65**		—	
	Green	**10250TC66**		—	
	Amber	**10250TC67**		—	

Table 47-378. Buttons for Non-illuminated Push-Pull Devices

	Color	10250T		E34	
		Catalog Number	Price U.S. $	Catalog Number	Price U.S. $
	Standard				
	Red	**10250TB62**		**E34C2**	
	Red (EMER. STOP)	**10250TB63**		**E34C2N8**	
	Green	**10250TB61**		**E34C3**	
	Black	**10250TB60**		**E34C1**	
	Blue	**10250TB64**		**E34C6**	

Table 47-378. Buttons for Non-illuminated Push-Pull Devices (Continued)

	Color	10250T		E34	
		Catalog Number	Price U.S. $	Catalog Number	Price U.S. $
	Jumbo Mushroom Head (Anodized) Aluminum ②				
	Red	**10250TJ62**		**E34J2**	
	Red (EMER. STOP)	**10250TJ63**		**E34J2N8**	
	Green	**10250TJ61**		—	
	Black	**10250TJ60**		—	
	Yellow	**10250TJ64**		—	

② Anodized aluminum head is not suitable for use with ultraviolet light applications.

Note: Use NEMA 4X 10250T operators where exposed to ultraviolet light.

Table 47-379. LED Selection Table

Voltage	Color	Catalog Number	Price U.S. $
6V AC/DC Suitable for Use with Transformers	Red	**E22LED006RN**	
	Orange	**E22LED006ON**	
	Yellow	**E22LED006YN**	
	Green	**E22LED006GN**	
	Blue	**E22LED006BN**	
	White	**E22LED006WN**	
12V AC/DC	Red	**E22LED012RN**	
	Orange	**E22LED012ON**	
	Yellow	**E22LED012YN**	
	Green	**E22LED012GN**	
	Blue	**E22LED012BN**	
	White	**E22LED012WN**	
24V AC/DC	Red	**E22LED024RN**	
	Orange	**E22LED024ON**	
	Yellow	**E22LED024YN**	
	Green	**E22LED024GN**	
	Blue	**E22LED024BN**	
	White	**E22LED024WN**	
48V AC/DC	Red	**E22LED048RN**	
	Orange	**E22LED048ON**	
	Yellow	**E22LED048YN**	
	Green	**E22LED048GN**	
	Blue	**E22LED048BN**	
	White	**E22LED048WN**	
60V AC/DC	Red	**E22LED060RN**	
	Orange	**E22LED060ON**	
	Yellow	**E22LED060YN**	
	Green	**E22LED060GN**	
	Blue	**E22LED060BN**	
	White	**E22LED060WN**	
120V AC	Red	**E22LED120RA**	
	Orange	**E22LED120OA**	
	Yellow	**E22LED120YA**	
	Green	**E22LED120GA**	
	Blue	**E22LED120BA**	
	White	**E22LED120WA**	
120V DC	Red	**E22LED120RD**	
	Orange	**E22LED120OD**	
	Yellow	**E22LED120YD**	
	Green	**E22LED120GD**	
	Blue	**E22LED120BD**	
	White	**E22LED120WD**	

For a complete listing of all LEDs available, see Page 47-157.

Accessories . . . . . **Pages 47-155** & **47-187**
Contact Blocks . . . . . **Page 47-239**
Dimensions . . . . . **Pages 47-160** & **47-191**
Enclosures. . . . . **Page 47-240**
Legend Plates . . . . . **Pages 47-151** & **47-184**
Replacement
Lamps/LEDs . . . . . **Page 47-157**
Discount Symbol **1CD1C**

Selector Switch Units

- Two- and Three-Position
- Non-illuminated

Table 47-380. 2-Position Selector Switch — Non-illuminated — UL (NEMA) Type 3, 3R, 4, 4X, 12, 13, NEC Class I Division 2, Groups B, C and D

Operator Position ①		Operator Action ②	Black Knob — Selector Switch ③				Contact Type	Mounting Location ①		Cam Code
			10250T		E34					
			Catalog Number	Price U.S. $	Catalog Number	Price U.S. $		1	2	
X O	O X	M M	10250T722BK		E34EX722BK		1NC 1NO			1
		M S	10250T724BK		E34EX724BK					
X O X O	O X O X	M M	10250T723BK		E34EX723BK		1NC 1NO 1NC 1NO			1
		M S	10250T725BK		E34EX725BK					

① Bolded circuit corresponds to "X-O" circuit selection. X = closed circuit, O = open circuit.
② M = Maintained. S = Spring return in direction of arrow (→).
③ To order different type or color selector switch, simply substitute the underlined characters with appropriate Suffix Code from the table on **Page 47-232.** Example: 10250T722**LL**. For keyed selector switch, substitute the underlined characters with **T_ (cam)+_ (key removal position)**. Example: 10250T722**T13**

Table 47-381. 3-Position Selector Switch — Non-illuminated — UL (NEMA) Type 3, 3R, 4, 4X, 12, 13, NEC Class I Division 2, Groups B, C and D

Operator Position ④			Operator Action ⑤	Black Knob — Selector Switch ⑥				Contact Type	Mounting Location ④		Cam Code
				10250T		E34					
				Catalog Number	Price U.S. $	Catalog Number	Price U.S. $		1	2	
X O	O O	O X	M M M	10250T726BK		E34EX726BK		1NO 1NO			3
			M S M	10250T728BK		E34EX728BK					
			M S S	10250T730BK		E34EX730BK					
			M M S	10250T732BK		E34EX732BK					
X O O	O X O	O O X	M M M	10250T727BK		E34EX727BK		1NO 1NC-1NC (Series) 1NO			3
			M S M	10250T729BK		E34EX729BK					
			M S S	10250T731BK		E34EX731BK					
			M M S	10250T733BK		E34EX733BK					

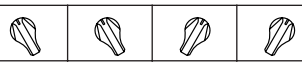
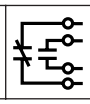
④ Bolded circuit corresponds to "X-O" circuit selection. X = closed circuit, O = open circuit.
⑤ M = Maintained. S = Spring return in direction of arrow (→).
⑥ To order different type or color selector switch, simply substitute the underlined characters with appropriate Suffix Code from the Switch and Color Selection Table on **Page 47-232.** Example: 10250T726**LL**. For keyed selector switch, substitute the underlined characters with **T_ (cam)+_ (key removal position)**. Example: 10250T726**T13**

Accessories . . . . . **Pages 47-155** & **47-187**
Additional Circuit Arrangements . **Pages 47-233** – **47-234**
Dimensions. . . . . **Pages 47-239**, **47-160** & **47-191**
Enclosures . . . . . **Page 47-240**
Legend Plates . . . **Pages 47-151** & **47-184**
Discount Symbol . **1CD1C**

Selector Switch Units (Continued)

- Four-Position Maintained
- Non-illuminated

Table 47-382. 4-Position Selector Switch — Non-illuminated — UL (NEMA) Type 3, 3R, 4, 4X, 12, 13, NEC Class I Division 2, Groups B, C and D

Operator Position ①				Operator Action ②	Black Knob — Selector Switch ③				Contact Type	Mounting Location ①		Cam Code
					10250T		E34					
					Catalog Number	Price U.S. $	Catalog Number	Price U.S. $		1	2	
X O O O	O X O O	O O X O	O O O X	M M M M	**10250T743BK**		**E34EX743BK**		1NC 1NO 1NO 1NC			7

① Bolded circuit corresponds to "X-O" circuit selection. X = closed circuit, O = open circuit.
② M = Maintained.
③ To order different type or color selector switch, simply substitute the underlined characters with appropriate Suffix Code from the Switch and Color Selection Table below.
Example: 10250T743**LL**. For keyed selector switch, substitute the underlined characters with **T_ (cam) + _ (key removal position)**. Example: 10250T743**T77**

Table 47-383. Switch and Color Selection Table

Color	Knob		Lever		Lever ④		Coin Slot ⑤	
	Suffix Code	Adder U.S. $	Suffix Code	Adder U.S. $	Suffix Code	Adder U.S. $	Suffix Code	Adder U.S. $
Black	**BK**		**BL**		**BA**		**BC**	
Red	**RK**		**RL**		**RA**		**RC**	
Green	**GK**		**GL**		**GA**		**GC**	
Yellow	**YK**		**YL**		**YA**		**YC**	
White	**WK**		**WL**		**WA**		**WC**	
Gray	**AK**		**AL**		**AA**		**AC**	
Blue	**LK**		**LL**		**LA**		**LC**	
Orange	**NK**		**NL**		**NA**		**NC**	

④ Designed for added ingress protection. For use in maintained operators only.
⑤ 10250T only.

Table 47-384. Key Operated Selection Table

Number of Position	Operator Action ⑥	Suffix and Removal Positions
2	M M M ← S	T1 + 1, 2, 3 T1 + 2
3	M M M S → M M S → M ← S M M ← S	T3 + 1 – 7 T3 + 1, 4, 5 T3 + 4 T3 + 2, 4, 6
4	MMMM	T7 + 7

⑥ M = Maintained. S = Spring return in direction of arrow (→).

Table 47-385. Key Removal Positions

Code Suffix	Key Removal Positions	Code Suffix	Key Removal Positions
1	Right Only	**5**	Right & Center
2	Left Only	**6**	Left & Center
3	Right & Left	**7**	All Positions
4	Center Only		

Note: Key removal in "spring return from" positions not recommended.

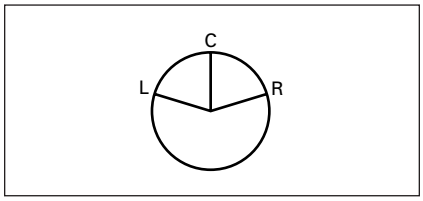


Figure 47-146. Key Removal Positions

Accessories . . . . . **Pages 47-155** & **47-187**
Additional Circuit Arrangements . **Pages 47-233** – **47-234**
Dimensions . . . . . **Pages 47-239**, **47-160** & **47-191**
Enclosures . . . . . **Page 47-240**
Legend Plates. . . . **Pages 47-151** & **47-184**
Discount Symbol. . **1CD1C**

10250T

E34

Selector Switch Selection

Cam and Contact Block Selection

Selector switches in their varied forms (2-position, 3-position, and 4-position) are a big factor contributing to the great flexibility of control that a well rounded line of "pushbuttons" can achieve. Because of their flexibility, they tend to cause difficulty with product selection and application. The following systematic approach should simplify that task.

Cam and contact block selection is better understood if you:

- Work with each incoming and outgoing wire/circuit separately.
- Recognize the terms NO and NC only identify the type of contact by its mode before mounting to the operator. The "X-O" table (**Page 47-234**) shows how that contact will act after assembly to the operator with the selected cam shape.
  X = closed circuit, O = open circuit.
- One NO-NC contact block may be mounted behind each plunger of the mounting adapter for a total of four circuits.
- Each cam has two separate lobes, each of which operates one of the two contact block plungers independently of each other. Those are identified as position 1 (locating nib side) and position 2 (opposite of locating nib). The position designations give direction in selecting and mounting of the contact blocks (see **Figure 47-147**).

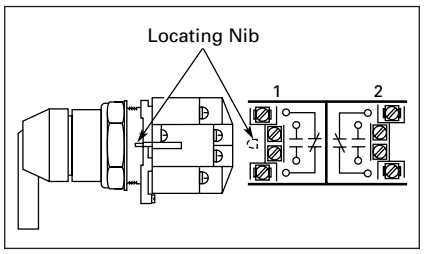
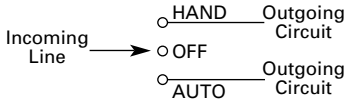


Figure 47-147. Contact Circuit Locations

Systematic Approach

Application: **HAND-OFF-AUTO** Selector Switch. In this circuit, one incoming line is distributed to two other outgoing circuits by the switch. The two circuits can be looked at individually.

Step 1: Elementary Diagram.
Construct on paper, or in your mind, a simple elementary diagram of the switching scheme as follows:



Step 2: "X-O" Pattern.
From the elementary diagram, you can construct an "X-O" diagram which describes when the contacts are to be closed (X) or open (O) in the various positions of the switch. The "X-O" for the **HAND** circuit looks like this:

HAND OFF AUTO
X O O

In this circuit, you want a contact closed on the left (HAND) but open in the center and right.

For the **AUTO** circuit, the "X-O" diagram would look like this:

HAND OFF AUTO
O O X

Putting them together, the complete "X-O" diagram is:

X O O
O O X

Once the "X-O" diagram has been generated, the next step is to select the cam and contact block, or blocks, needed to perform the desired "X-O" functions. The selection table on the following page lists the various types (shapes) of cams by number to choose from and the type of contact and position to achieve the function outlined in your "X-O" diagram.

Step 3: Cam Selection.
The cam you select determines the operation of all contact blocks mounted to the operator. It is selected on the basis that it provides the simplest circuitry for the desired "X-O" diagram. The selection tables of the following page show all the "X-O" combinations. For the purpose of this example, the applicable portion of those tables is shown in **Table 47-386**.

Table 47-386. Example Selection Table

No.	Desired Circuit & Operator Position	Cam Code #2		Cam Code #3	
		Contact Blocks & Mounting Location		Contact Blocks & Mounting Location	
		1	2	1	2
1	X O O	NO	NC ①	NO	
4	O O X		NO		NO

① Wired in series.

Now to make the cam selection, make a simple worksheet such as below.
(1) or (2) = mounting location from chart above:

	Cam 2	Cam 3
X O O	(1)NO – (2)NC ①	**(1)NO**
O O X	(2)NC	**(2)NO**

It becomes obvious that cam 3 is the better choice because the series connection can be avoided, making it simpler to wire.

Step 4: Contact Block Selection.
Having selected the cam, contact block selection is simply a matter of determining if you require one NO-NC contact block (Cat. No 10250T1H) or two. Given the limitations of the factory sealed contact block and the desired "X-O" application, you may have circuits that will not be needed — as seen here with the two additional NC circuits.
(1) or (2) = mounting location from chart above.

Qty	Catalog No.	Cam 3	
2	10250TIH	**(1)NO**	(2)NC
		(1)NC	**(2)NO**

Step 5: Selector Switch Operator.
Lastly, you have to choose from the many types of operators — knob and lever in various colors or keyed. Also what combinations of maintained and spring return functions are required. Selection of these operators can be found on **Page 47-235**. For the above example you may want a 3-position maintained black knob, cam 3 — Catalog Number 10250T1323 (or 34VHBK1).

The Complete Switch: 10250T1323 (or 34VHBK1) with two 10250T1H or for one composite catalog number — 10250T726BK (or E34EX726BK) found on **Page 47-231**.

Selector Switch Selection (Continued)

Circuits shown illustrate connections to obtain a selector circuit combination and are shown with their appropriate line diagrams in **BOLD**. Field wiring of jumper connections required as shown.

X = Closed Circuit, O = Open Circuit

Table 47-387. 2-Position Selector Switch

Number	Desired Circuit and Operator Position		Cam Code #1	
			Contact Blocks and Mounting Location	
			1	2
1	X	O	NC	NC
2	O	X	NO	NO

Table 47-388. 3-Position Selector Switch

No.	Desired Circuit and Operator Position			Cam Code #2		Cam Code #3	
				Contact Blocks and Mounting Location		Contact Blocks and Mounting Location	
				1	2	1	2
1	X	O	O	NO (Series) NC		NO	
2	X	X	O		NC		NC
3	X	O	X	NO		NO (Parallel) NO	
4	O	O	X		NO		NO
5	O	X	X	NC (Parallel) NO		NC	
6	O	X	O	NC		NC (Series) NC	

Table 47-389. 4-Position Selector Switch

Number	Desired Circuit and Operator Position				Cam Code #7	
					Contact Blocks and Mounting Location	
					1	2
1	X	O	O	O	NC	
2	O	X	O	O		NO
3	O	O	X	O	NO	
4	O	O	O	X		NC
5	X	O	O	X	NC (Parallel) NC	
6	O	X	X	O	NO (Parallel) NO	
7	O	O	X	X	NO (Parallel) NC	
8	X	X	O	O	NC (Parallel) NO	
9	O	X	O	X		NO/NC (Parallel)
10	X	O	X	O	NO/NC (Parallel)	

Selector Switch Operators

10250T Selector Switch Operators with Caps

Table 47-390. 10250T Selector Switch Operators with Caps — UL (NEMA) Type 3, 3R, 4, 4X, 12, 13

Positions	Operator Action ①	Black Knob Selector Switch — Vertical Mounting ③			Black Lever Selector Switch — Vertical Mounting ③		
		Cam Code ②	Catalog Number	Price U.S. $	Cam Code ②	Catalog Number	Price U.S. $
2-Position — 60° Throw	M M	1	**10250T1311**		1	**10250T3011**	
	M S	1	**10250T1371**		1	**10250T3071**	
3-Position — 60° Throw	M M M	2 3	**10250T1322** **10250T1323**		2 3	**10250T3022** **10250T3023**	
	S M M	2 3	**10250T1332** **10250T1333**		2 3	**10250T3032** **10250T3033**	
	S M S	2 3	**10250T1342** **10250T1343**		2 3	**10250T3042** **10250T3043**	
	M M S	2 3	**10250T1352** **10250T1353**		2 3	**10250T3052** **10250T3053**	
4-Position — 40° Throw	M M M M	7	**10250T1367**		7	**10250T3067**	

① M = Maintained. S = Spring return in direction of arrow (→).
② For selection of the proper cam and contact block to obtain the proper circuit sequence, see selection instructions and table on **Pages 47-233 – 47-234**.
③ Field convertible to Horizontal Mounting or order operator only and separate operator cap.

Table 47-391. 10250T Key Operators with Cam — UL (NEMA) Type 3, 3R, 4, 4X, 12, 13

Positions	Operator Action ④	Cam Code ⑤	Optional Key Removal Positions ⑥	Vertical Mounting	Horizontal Mounting	Price U.S. $
				Catalog Number ⑥	Catalog Number ⑥	
2-Position — 60° Throw	M M	1	1, 2, 3	**10250T1511_**	**10250T1611_**	
	M S	1	2	**10250T1571_**	**10250T1581_**	
3-Position — 60° Throw	M M M	2 3	1 – 7	**10250T1522_** **10250T1523_**	**10250T1622_** **10250T1623_**	
	S M M	2 3	1, 4, 5	**10250T1532_** **10250T1533_**	**10250T1632_** **10250T1633_**	
	S M S	2 3	4	**10250T1542_** **10250T1543_**	**10250T1642_** **10250T1643_**	
	M M S	2 3	2, 4, 6	**10250T1652_** **10250T1653_**	**10250T1662_** **10250T1663_**	
4-Position — 40° Throw	M M M M	7	7	**10250T1677_**	**10250T1687_**	

④ M = Maintained. S = Spring return in direction of arrow (→).
⑤ For selection of the proper cam and contact block to obtain the proper circuit sequence, see selection instructions and table on **Pages 47-233 – 47-234**.
⑥ Choose key removal position required for application from **Table 47-392**. Add key removal Code No. to listed Catalog Number. Example: 10250T1511<u>2</u>.

Table 47-392. Key Removal Positions

Code Suffix	Key Removal Positions	Code Suffix	Key Removal Positions
1	Right Only	**5**	Right & Center
2	Left Only	**6**	Left & Center
3	Right & Left	**7**	All Positions
4	Center Only		

Note: Key removal in "spring return from" positions not recommended.

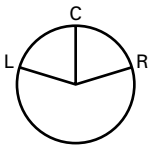


Figure 47-148. Key Removal Positions

Replacement Keys or Dissimilar Locks for Above Key Operators

Listed operators have identical locks and keys (Key Code H661) Catalog Number 10250ED824.

Table 47-393. Replacement Keys

Description	Catalog Number	Price U.S. $
Replacement Keys (Code **H661**)	**10250ED824**	

Contact Blocks ..... **Page 47-239**
Dimensions..... **Pages 47-160 – 47-162**
Enclosures ..... **Page 47-240**
Legend Plates ..... **Pages 47-151 – 47-152**
Discount Symbol..... **1CD1C**

Selector Switch Operators (Continued)

Table 47-394. E34 Selector Switch Operators with Knob Assembled — UL (NEMA) Type 3, 3R, 4, 4X, 12, 13

Positions	Operator Action ①	Black Knob Selector Switch — Vertical Mounting ③		
		Cam Code ②	Catalog Number ④	Price U.S. $
2-Position — 60° Throw	M M	1	E34VFBK1	
	M S	1	E34VEBK1	
3-Position — 60° Throw	M M M	2 3	E34VGBK1 E34VHBK1	
	S M M	2 3	E34VJBK1 E34VKBK1	
	S M S	2 3	E34VLBK1 E34VMBK1	
	M M S	2 3	E34VNBK1 E34VPBK1	
4-Position — 40° Throw	M M M M	7	E34VTBK1	

① M = Maintained. S = Spring return in direction of arrow (→).
② For selection of the proper cam and contact block to obtain the proper circuit sequence, see selection instructions and table on **Pages 47-233 – 47-234**.
③ Field convertible to Horizontal Mounting.
④ For other colors of either knob or lever, replace the underlined characters of the Catalog Number with the appropriate Suffix Code from Alternate Knob and Lever Table below. Example: E34VFB**L2**

Table 47-395. E34 Key Operators with Cam and Cap — UL (NEMA) Type 3, 3R, 4, 4X, 12, 13

Positions	Operator Action ⑤	Cam Code ⑥	Key Removal Positions ⑦	Vertical Mounting	Horizontal Mounting	Price U.S. $
				Catalog Number	Catalog Number	
2-Position — 60° Throw	M M	1	1, 2, 3	E34KFB_	E34KFHB_	
	M S	1	2	E34KEB_	E34KEHB_	
3-Position — 60° Throw	M M M	2 3	1 – 7	E34KGB_ E34KHB_	E34KGHB_ E34KHHB_	
	M S M	2 3	1, 4, 5	E34KJB_ E34KKB_	E34KJHB_ E34KKHB_	
	M S S	2 3	4	E34KLB_ E34KMB_	E34KLHB_ E34KMHB_	
	M M S	2 3	2, 4, 6	E34KNB_ E34KPB_	E34KNHB_ E34KPHB_	
4-Position — 40° Throw	M M M M	7	7	E34KTB_	E34KTHB_	

⑤ M = Maintained. S = Spring return in direction of arrow (→).
⑥ For selection of the proper cam and contact block to obtain the proper circuit sequence, see selection instructions and table on **Pages 47-233 – 47-234**.
⑦ Choose key removal position required for application from **Table 47-396**. Add key removal Code No. to listed Catalog Number. Example: E34KFB**2**

Note: Use NEMA 4X 10250T operators where exposed to ultraviolet light, see **Page 47-235**.

Table 47-396. Key Removal Positions

Code Suffix	Key Removal Positions	Code Suffix	Key Removal Positions
1	Right Only	**5**	Right & Center
2	Left Only	**6**	Left & Center
3	Right & Left	**7**	All Positions
4	Center Only		

Note: Key removal in "spring return from" positions not recommended.

Figure 47-149. Key Removal Positions

Table 47-397. Alternate Knobs and Levers for Operators Above

Color	Knob			Lever			Lever Designed for Added Ingress Protection ⑧		
	Suffix Code	Catalog Number	Price U.S. $	Suffix Code	Catalog Number	Price U.S. $	Suffix Code	Catalog Number	Price U.S. $
Black	**K1**	**E34K1**		**L1**	**E34L1**		**A1**	**E34A1**	
Red	**K2**	**E34K2**		**L2**	**E34L2**		**A2**	**E34A2**	
Green	**K3**	**E34K3**		**L3**	**E34L3**		**A3**	**E34A3**	
Yellow	**K4**	**E34K4**		**L4**	**E34L4**		**A4**	**E34A4**	
White	**K5**	**E34K5**		**L5**	**E34L5**		**A5**	**E34A5**	
Blue	**K6**	**E34K6**		**L6**	**E34L6**		**A6**	**E34A6**	
Gray	**K7**	**E34K7**		**L7**	**E34L7**		**A7**	**E34A7**	
Orange	**K8**	**E34K8**		**L8**	**E34L8**		**A8**	**E34A8**	

⑧ For use on maintained operators only.

Contact Blocks ..... **Page 47-239**
Dimensions ..... **Page 47-191**
Enclosures..... **Page 47-240**
Legend Plates..... **Page 47-184**
Discount Symbol **1CD1C**

Illuminated Selector Switch Operators

2-Position Maintained
120V AC Transformer
Selector Switch,
Cam Code 1
Catalog Number
10250T5971

Table 47-398. 10250T Illuminated Selector Switch Operator Only without Knob or Lever

Positions	Operator Action ①	Transformer Type — 50/60 Hz 6 Volt #755 Lamp				Full Voltage Type — AC or DC ④ Lamps: 6V — #755, 12V — #756, 24V — #757, 48V — #1835, 120/240V — 120MB			
		Voltage	Cam Code ③	Catalog and Code Number ②	Price U.S. $	Voltage	Cam Code ③	Catalog and Code Number ②	Price U.S. $
2-Position – 60° Throw	M M	24 120 208 240 380 480 600	1	**10250T5961H** **10250T5971H** **10250T6511H** **10250T5981H** **10250T5991H** **10250T6001H** **10250T6011H**		6 12 24 48 120 240 ⑤	1	**10250T6201H** **10250T6211H** **10250T6221H** **10250T6231H** **10250T6361H** **10250T6371H**	
3-Position – 60° Throw	M M M	24 120 208 240 380 480 600	+ 2 or 3	**10250T602_H** **10250T603_H** **10250T652_H** **10250T604_H** **10250T605_H** **10250T606_H** **10250T607_H**		6 12 24 48 120 240 ⑤	+ 2 or 3	**10250T624_H** **10250T625_H** **10250T626_H** **10250T627_H** **10250T638_H** **10250T639_H**	
	M M S	120 240	+ 2 or 3	**10250T620_H** **10250T656_H**		120	+ 2 or 3	**10250T622_H**	
	M S M	120 240	+ 2 or 3	**10250T621_H** **10250T662_H**		120	+ 2 or 3	**10250T623_H**	
	M S S	24 120 208 240 380 480 600	+ 2 or 3	**10250T614_H** **10250T615_H** **10250T653_H** **10250T616_H** **10250T617_H** **10250T618_H** **10250T619_H**		6 12 24 48 120 240 ⑤	+ 2 or 3	**10250T628_H** **10250T629_H** **10250T630_H** **10250T631_H** **10250T640_H** **10250T641_H**	
4-Position – 40° Throw	M M M M	24 120 208 240 380 480 600	7	**10250T6087H** **10250T6097H** **10250T6547H** **10250T6107H** **10250T6117H** **10250T6127H** **10250T6137H**		6 12 24 48 120 240 ⑤	7	**10250T6327H** **10250T6337H** **10250T6347H** **10250T6357H** **10250T6427H** **10250T6437H**	

① M = Maintained. S = Spring return in direction of arrow (→).
② Operator includes lens gasket and lens attachment screws.
③ For selection of the proper cam and contact block, to obtain the proper circuit sequence, see selection table on **Page 47-234**.
④ Full voltage light units can be used at other than listed voltages by changing lamp. Replacement lamps are listed on **Page 47-157.**
⑤ Resistor type. May generate excess heat if used in high density.

Table 47-399. Knobs, Levers

Color ⑥	Catalog and Code Number Knob	Lever	Price U.S. $
Red	**10250TER**	**10250TFR**	
Green	**10250TEG**	**10250TFG**	
Yellow	**10250TEA**	**10250TFA**	
Blue	**10250TEL**	**10250TFL**	
Clear	**10250TEC**	**10250TFC**	
White	**10250TEW**	**10250TFW**	
Amber	**10250TEM**	**10250TFM**	

⑥ Amber, Clear and White lenses have a black arrow (pointer), Red, Green and Blue lenses have a white arrow (pointer).

Contact Blocks ..... **Page 47-239**
Dimensions..... **Pages 47-160 – 47-162**
Enclosures ..... **Page 47-240**
Legend Plates ..... **Pages 47-151 – 47-152**
Discount Symbol..... **1CD1C**

Illuminated Selector Switch Operators (Continued)

2-Position Maintained 120V AC Transformer Selector Switch, Cam 1 Catalog Number E34VFB120

Table 47-400. E34 Illuminated Selector Switch Operator Only without Knob or Lever

Positions	Operator Action	Transformer Type — 50/60 Hz, 6 Volt #755 Lamp			Full Voltage Type — AC or DC ③, Lamps — #755, #757, #1835, 120MB ④		
		Catalog Number ①⑤		Price U.S. $	Catalog Number ⑤		Price U.S. $
2-Position — 60° Throw	M M	Cam Code 1 ②			Cam Code 1 ②		
		E34VFB_H			E34SFB_H		
3-Position — 60° Throw	M M M	Cam Code 2 ②	Cam Code 3 ②		Cam Code 2 ②	Cam Code 3 ②	
		E34VGB_H	E34VHB_H		E34SGB_H	E34SHB_H	
	M M S	E34VNB_H ⑥	E34VPB_H ⑥		E34SNB_H ⑦	E34SPB_H ⑦	
	S M M	E34VJB_H ⑥	E34VKB_H ⑥		E34SJB_H ⑦	E34SKB_H ⑦	
	S M S	E34VLB_H	E34VMB_H		E34SLB_H	E34SMB_H	
4-Position — 40° Throw	M M M M	E34VRB_H	—		E34SRB_H	—	

① Operator includes lens gasket and lens attachment screws.
② For selection of the proper cam and contact block required to obtain a specific circuit sequence, see selection table on **Page 47-234**.
③ Full voltage light units can be used at other than listed voltages by changing lamp. Replacement lamps are listed on **Page 47-157**.
④ 120MB lamps are used on both 120V and 240V operators.
⑤ Replace underscore with proper voltage Suffix Code from Light Unit Voltage Suffix Table below. Example: 3-position maintained with 120V transformer type light unit: E34VGB**120**H
⑥ 120 and 240V transformer only.
⑦ 120 full voltage only.

Table 47-401. Light Unit Voltage Suffix — Add to operator Catalog Number listed in table above.

Type of Light Unit			
Transformer Type 50/60 Hz		Full Voltage Type AC or DC ⑧	
Voltage	Suffix Code	Voltage	Suffix Code
24	**024**	6	**06**
120	**120**	12	**12**
208	**208**	24	**24**
240	**240**	48	**48**
380	**380**	120	**120**
480	**480**	240 ⑨	**240**
600	**600**		

⑧ Full voltage light units can be used at other than listed voltages by changing lamp. Replacement lamps are listed on **Page 47-157**.
⑨ Resistor type. May generate excess heat if used in high density.

Table 47-402. Knobs, Levers

	Color ⑩	Catalog Number and Code Number		Price U.S. $
		Knob	Lever	
	Red	**10250TER**	**10250TFR**	
	Green	**10250TEG**	**10250TFG**	
	Yellow	**10250TEA**	**10250TFA**	
	Blue	**10250TEL**	**10250TFL**	
	Clear	**10250TEC**	**10250TFC**	
	White	**10250TEW**	**10250TFW**	
	Amber	**10250TEM**	**10250TFM**	

⑩ Amber, clear and white lenses have a black arrow (pointer). Red, green and blue lenses have a white arrow (pointer).

Note: Use NEMA 4X 10250T operators where exposed to ultraviolet light, see **Page 47-237**.

Contact Blocks ..... **Page 47-239**
Dimensions ..... **Page 47-191**
Enclosures..... **Page 47-240**
Legend Plates..... **Page 47-184**
Discount Symbol **1CD1C**

Contact Block
Catalog Number 10250T1H

Mounting Adapter
Catalog Number 10250TD2

Options

Contact Blocks and Mounting Adapters

Table 47-403. Contact Block — NEC Class I Division 2, Groups B, C and D

Units	Description	Catalog Number	Price U.S. $
1NO-1NC	Class I Div. 2 Factory Sealed Contact Block	**10250T1H**	

Table 47-404. Mounting Adapter

Units	Description	Catalog Number	Price U.S. $
	Mounting Adapter for Pushbuttons	**10250TD2**	
	Mounting Adapter for Selector Switches	**10250TD3**	

Table 47-405. Mounting Adapters with Contact Block(s) — Overpacked — NEC Class I Division 2 Groups B, C and D

Units	Description	Catalog Number	Price U.S. $
	Pushbutton Adapter with 1NO-1NC	**10250TD21H**	
	Pushbutton Adapter with 2 (1NO-1NC)	**10250TD21H1H**	
	Selector Switch Adapter with 1NO-1NC	**10250TD31H**	
	Selector Switch Adapter with 2 (1NO-1NC)	**10250TD31H1H**	

Approximate Dimensions

Dimensions in Inches (mm). Dimensions are not intended to be used for manufacturing purposes.

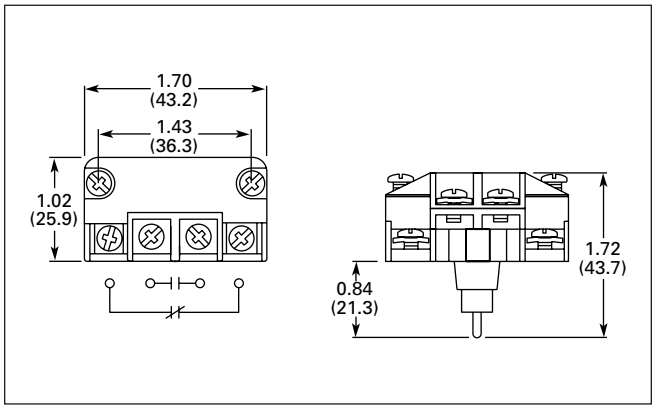


Figure 47-150. Contact Block

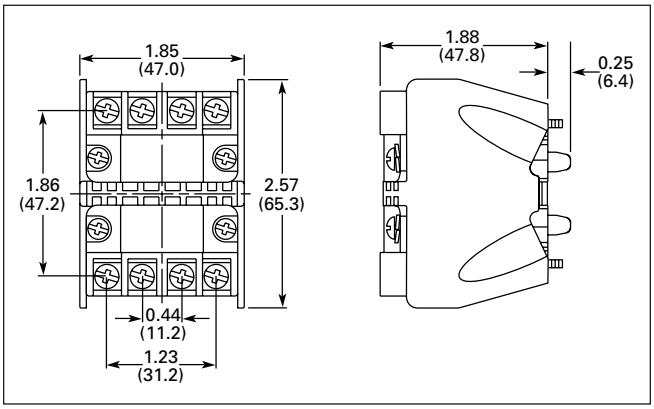


Figure 47-151. Mounting Adapter

Ratings..... **Page 47-217**
Discount Symbol **1CD1C**

Enclosures

Die Cast, Polyester and Stainless Steel Enclosures

Table 47-406. Enclosures (Case and Cover) — Surface Mounting ①

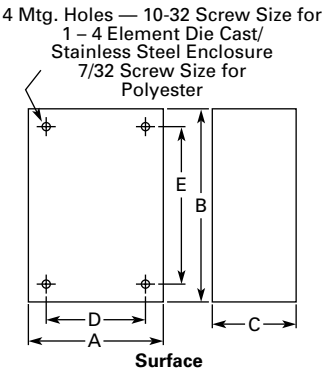
	Number of Elements	10250T		E34	
		Catalog Number	Price U.S. $	Catalog Number	Price U.S. $
Die Cast Enclosure Catalog Number 10250TN11	**Cast Enclosure — Deep Cover — In-Line NEMA 4, 4X, 12, 13**				
	1	**10250TN11**		**E34N11**	
	2	**10250TN12**		**E34N12**	
	3	**10250TN13**		**E34N13**	
	4	**10250TN14**		**E34N14**	
Polyester Enclosure Catalog Number E34N52	**Polyester — In-Line NEMA 3, 4X, 12**				
	1	—		**E34N51**	
	2	—		**E34N52**	
	3	—		**E34N53**	
	4	—		**E34N54**	
Stainless Steel Enclosure Catalog Number 10250TN35	**Stainless Steel ② — In-Line NEMA 4, 4X, 12**				
	1	—		**10250TN33**	
	2	—		**10250TN34**	
	3	—		**10250TN35**	
	4	—		**10250TN36**	

① For spacing increments, see **Page 47-154**.
② 14 gauge, type 304.

Table 47-407. Approximate Dimensions

Number of Elements	Element Arrangement	Surface Mounting Dimensions in Inches (mm) Wide A	High B	Deep C	Mounting D	Mounting E	Conduit Entrance
Cast							
1	In-Line	3.88 (98.6)	4.0 (101.6)	3.0 (76.3)	2.69 (68.3)	3.25 (82.6)	3/4
2	In-Line	3.88 (98.6)	5.88 (149.4)	3.0 (76.3)	2.69 (68.3)	5.13 (130.3)	3/4
3	In-Line	3.88 (98.6)	7.75 (196.9)	3.0 (76.3)	2.69 (68.3)	7.0 (177.8)	1
4	In-Line	3.88 (98.6)	9.63 (244.6)	3.0 (76.3)	2.69 (68.3)	8.88 (225.6)	1
Polyester							
1	In-Line	3.81 (96.8)	6.63 (168.4)	3.38 (85.9)	2.94 (74.7)	4.88 (124.0)	③
2	In-Line	3.81 (96.8)	6.63 (168.4)	3.38 (85.9)	2.94 (74.7)	4.88 (124.0)	
3	In-Line	3.81 (96.8)	8.88 (225.6)	3.38 (85.9)	2.94 (74.7)	7.13 (181.1)	
4	In-Line	3.81 (96.8)	11.13 (282.7)	3.38 (85.9)	2.94 (74.7)	9.38 (238.3)	
Stainless Steel							
1	In-Line	3.00 (76.2)	3.50 (88.9)	3.00 (76.2)	1.50 (38.1)	4.25 (108.0)	③
2	In-Line	3.50 (88.9)	6.75 (171.5)	3.00 (76.2)	1.50 (38.1)	7.50 (190.5)	
3	In-Line	3.50 (88.9)	9.00 (228.6)	3.00 (76.2)	1.50 (38.1)	9.00 (228.6)	
4	In-Line	3.50 (88.9)	11.25 (285.8)	3.00 (76.2)	1.50 (38.1)	12.00 (304.8)	

Approximate Dimensions



③ No conduit entrance holes provided. Drill as required.

Application Notes:

1. Operators need to be mounted in their horizontal orientation for all enclosures. For die cast enclosures remove locating nib on operators and use thrust washer (Catalog Number 10250TK3).
2. Polyester enclosures must be used when mounting illuminated operators.

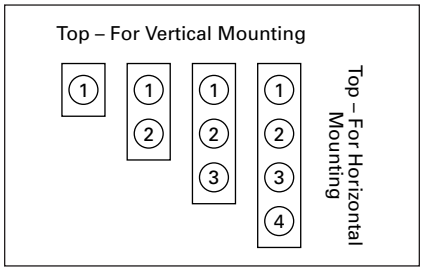


Figure 47-152. Enclosure Layouts

Discount Symbol **1CD1C**

Mounting and Assembly

Panel Thickness

- Minimum: 0.06 inch (1.6 mm)
- Maximum: 0.25 inch (8 mm) including legend plate
- Maximum can be increased to 0.375" (15.9 mm) using optional retaining nut
  - Indicating Light: 10250TA30/E34TA30
  - Pushbutton/Selector Switch: 10250TA31/E34TA31

Table 47-408. Mounting Matrix

Legend Plate	Dimensions in Inches (mm)			
	A	B	C	D
Small	2.87 (72.6)	2.25 (57.2)	2.25 (57.2)	2.87 (72.6)
Jumbo	2.87 (72.6)	2.32 (58.6)	2.32 (58.6)	2.87 (72.6)
Extra Large	2.87 (72.6)	2.56 (65.2)	2.52 (64.1)	2.87 (72.6)

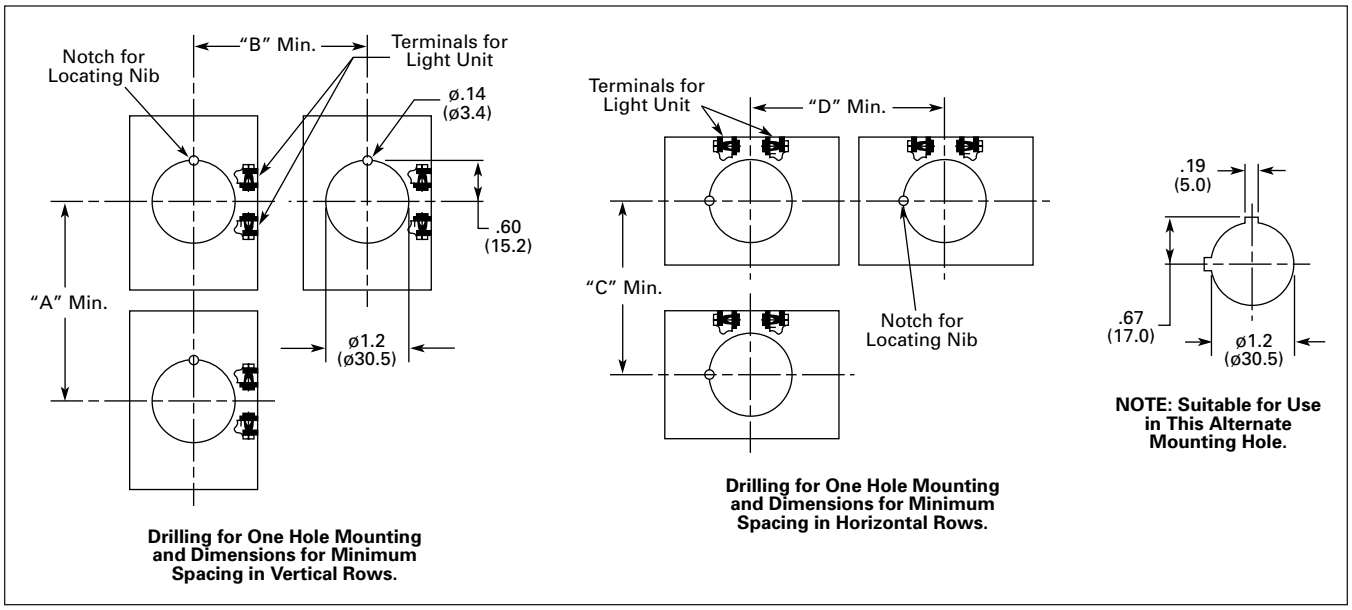


Figure 47-153. Panel Spacing and Drilling Drawings

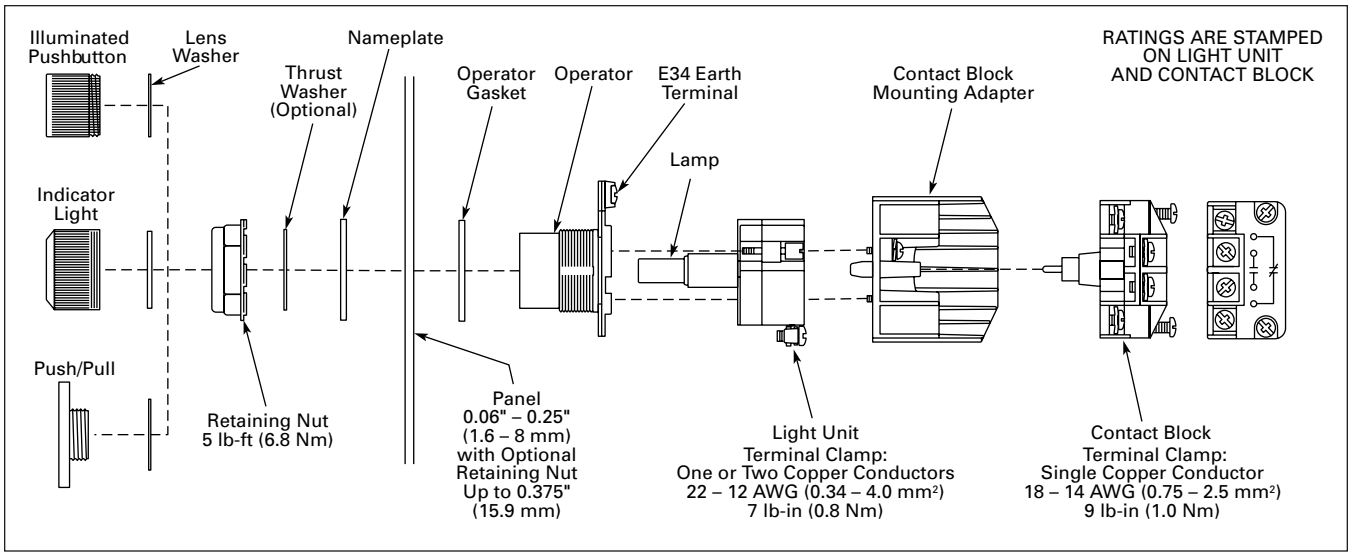
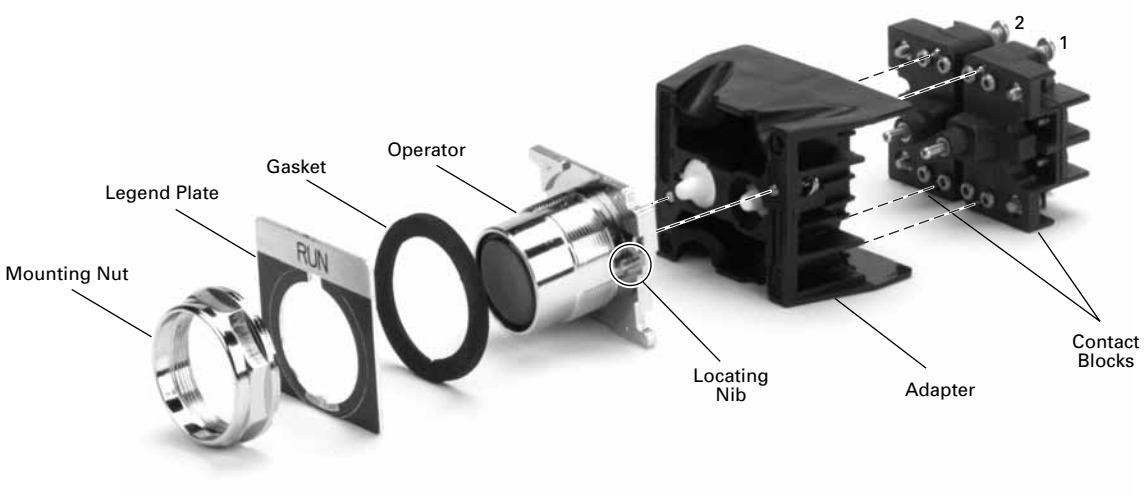


Figure 47-154. Operator Assembly

Catalog Number Structure



10250T/E34 Series

Table 47-409. Non-illuminated Assembled Operators — Class I Division 2 Catalog Numbering System

10250T 718 E J

Operator Type

10250T = Heavy-Duty Oiltight
E34EX = Corrosion Resistant Oiltight

Operator and Contact Block

706 = Flush 1NO-1NC
707 = Flush 2NO-2NC
708 = Extended 1NO-1NC
709 = Extended 2NO-2NC
710 = Mushroom 1NO-1NC
711 = Mushroom 2NO-2NC
712 = JMB Mushroom 1NO-1NC
713 = JMB Mushroom 2NO-2NC
714 = 2P MT Push-Pull 1NO-1NC
715 = 2P MT Push-Pull 2NO-2NC
716 = 3P MT Push-Mom Pull 1NO-1NC
717 = 3P MT Push-Mom Pull 2NO-2NC
718 = 3P Mom Push-Pull 1NO-1NC
721 = 3P Mom Push-Pull 2NO-2NC
722 = 2P SS MT XO,OX-CAM1
723 = 2P SS MT XO,OX,XO,OX-CAM1
724 = 2P SS SPR-R XO,OX-CAM1
725 = 2P SS SPR-R XO,OX,XO,OX-CAM1
726 = 3P SS MT XOO,OOX-CAM3
727 = 3P SS MT XOO,OXO,OOX-CAM3
728 = 3P SS SPR-L XOO,OOX-CAM3
729 = 3P SS SPR-L XOO,OXO,OOX-CAM3
730 = 3P SS SPR-L&R XOO,OOX-CAM3
731 = 3P SS SPR-L&R XOO,OXO,OOX-CAM3
732 = 3P SS SPR-R XOO,OOX-CAM3
733 = 3P SS SPR-R XOO,OXO,OOX-CAM3
743 = 4P SS MT XOOO,OXOO,OOXO,OOOX-CAM7

ACC/SS Type

Blank = None
J = JMB Push-Pull
B = Booted-FL/EXT
G = Guarded-FL
K = Knob-SS
L = Lever-SS
A = Lever W/IP-SS
C = Coin-SS
__ __ Keyed-SS

Cam

1
2
3
7

Key Removal

1 = RT Only
2 = LT Only
3 = RT & LT
4 = CT Only
5 = RT & CT
6 = LT & CT
7 = All

Button Color

B = Black
R = Red
G = Green
Y = Yellow
W = White
L = Blue
N = Orange
E = Red EMERG STOP
T = Keyed-SS

Summary of NEC Article 500

The NEC Article 500 explains in great detail the requirements for the installation of wiring and electrical equipment in hazardous locations. The purpose of this summary is for general reference only, the National Electric Code along with other applicable authorities having jurisdiction over the site should be the installer's guidelines when wiring or installing electrical equipment in any hazardous or potentially hazardous location.

Class I, Division 2 Definition

Class I, Division 2 covers hazardous locations where flammable gases, vapors or volatile liquids are handled either in a closed system, or confined within suitable enclosures, or where hazardous concentrations are normally prevented by positive mechanical ventilation. Areas adjacent to Division 1 locations, into which gases might occasionally flow, would also belong to Division 2 (NEC (500-5[b])).

Hazardous Location

Any area where there is the possibility of explosion and fire resulting from the presence of flammable vapors, liquids or gas, or combustible dust or fibers.

Summary of NEC Article 505

The NEC also classifies hazardous locations for flammable gases and vapors into zones under NEC 505. This system is more in line with the European Standards, CENELEC and IEC, with the major difference being that NEC 505 only classifies gases and vapors while CENELEC and IEC also include dusts.

Summary of Classifications — NEC 500 – 503

Class	Division	Group
I. Gas	1. Hazard may exist — May exist in atmosphere under normal operating conditions	A. Acetylene
		B. Hydrogen and manufactured gases containing 30% hydrogen by volume (e.g. butadiene, ethylene oxide, propylene oxide)
		C. Petrochemicals (e.g. carbon monoxide, ether, ethylene, hydrogen sulfide, morpholine, cyclopropane)
		D. Petrochemicals (e.g. gasoline, benzene, butane, propane, acetone, ammonia, vinyl chloride)
	2. Potential hazard — May be present in atmosphere only under abnormal circumstances OR location adjacent to Class I, Division 1 location	A. Acetylene
		B. Hydrogen and manufactured gases containing 30% hydrogen by volume (e.g. butadiene, ethylene oxide, propylene oxide)
		C. Petrochemicals (e.g. carbon monoxide, ether, ethylene, hydrogen sulfide, morpholine, cyclopropane)
		D. Petrochemicals (e.g. gasoline, benzene, butane, propane, acetone, ammonia, vinyl chloride)
II. Dust	1. Hazard may exist — May exist in atmosphere under normal operating conditions	E. Conductive and combustible dust (resistivity $<10^5$ ohm/cm) (metal dusts)
		F. Carbonaceous dusts (resistivity $>10^2$ ohms/cm but $\leq 10^8$ ohms/cm) (e.g. carbon black, coke dust, coal)
		G. Non-conductive combustible dust (resistivity $\geq 10^5$ ohms/cm) (e.g. grain dust, flour, starch, sugar, plastics)
	2. Potential hazard — May be present in atmosphere only under abnormal circumstances	F. Carbonaceous dusts (resistivity $>10^2$ ohms/cm but $\leq 10^8$ ohms/cm) (e.g. carbon black, coke dust, coal)
		G. Non-conductive combustible dust (resistivity $\geq 10^5$ ohms/cm) (e.g. grain dust, flour, starch, sugar, plastics)
III. Fibers	1. Production areas	Easily ignitable fibers or flyings
	2. Handling and storage areas	Easily ignitable fibers or flyings

Note: For additional information on grouping of compounds, see NFPA 497M-1991 and NFPA 325-1994.

Summary of Classifications — NEC 505

Class	Zone	Group
I. Gas	0. Continuously present or present for long periods of time	IIC. Acetylene, hydrogen or equivalent hazard
		IIB. Acetaldehyde, ethylene or equivalent hazard
		IIA. Acetone, ammonia, ethyl alcohol, gasoline, methane, propane or equivalent hazard
	1. Likely to exist under normal operating or maintenance conditions or adjacent to Zone 0	IIC. Acetylene, hydrogen or equivalent hazard
		IIB. Acetaldehyde, ethylene or equivalent hazard
		IIA. Acetone, ammonia, ethyl alcohol, gasoline, methane, propane or equivalent hazard
	2. Not likely to occur in normal operation and if they do occur will only exist for short period or adjacent to Zone 1	IIC. Acetylene, hydrogen or equivalent hazard
		IIB. Acetaldehyde, ethylene or equivalent hazard
		IIA. Acetone, ammonia, ethyl alcohol, gasoline, methane, propane or equivalent hazard

Summary of Basic Methods Available for Class I, Division 2 Locations

Method	Features		
	Configuration	Advantages	Disadvantages
Factory Sealed Contact Block	Closed-ended labyrinth contact block with an incendive circuit incapable of external ignition	• Higher continuous carrying amperages — up to 10A • Direct drive contacts — contacts can be forced open • Suitable for use in all enclosures • Best suited for motor control applications	• May not be suitable for logic level circuits
Hermetically Sealed Block	Reed switch sealed against an external atmosphere	• Suitable for low energy level circuits • Suitable for use in all enclosures	• Lower continuous carrying amperages are not suitable for motor control applications (typically 3A to 5A rated) • Contacts cannot be forced open • Permanent magnet attracts metallic dust and filings that can reduce the electrical creepage distance between live terminals
Explosion Proof Enclosures (Class I, Division 1 and 2)	Enclosures capable of withstanding an internal explosion while preventing external ignition. Enclosures designed for Class I, Div. 1 can safely be used in Class I, Div. 2	• Higher level of protection than required for Class I Division 2	• Higher material and installation costs • Conduit sealing is still required • Time consuming maintenance

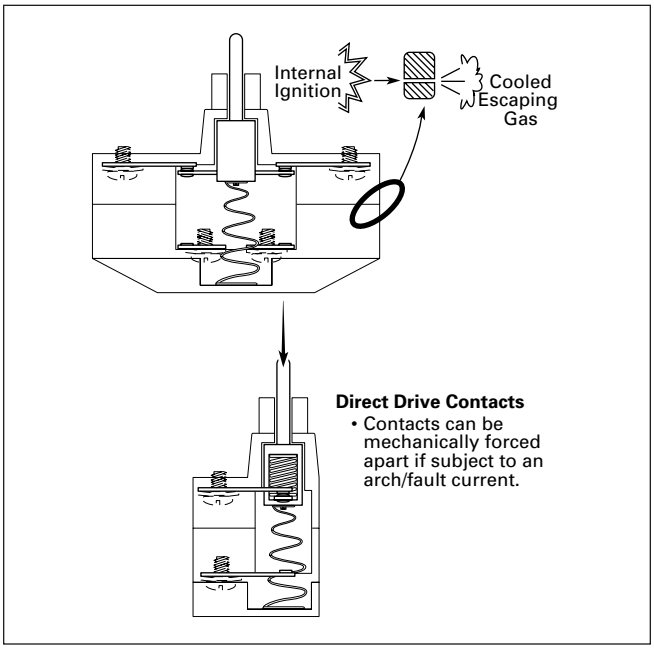


Figure 47-155. Factory Sealed Contact Blocks

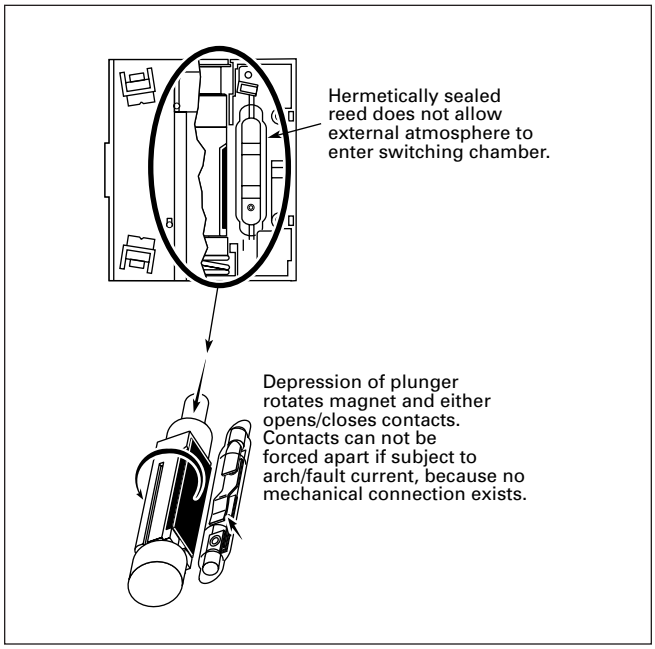


Figure 47-156. Hermetically Sealed Reed Contact Block

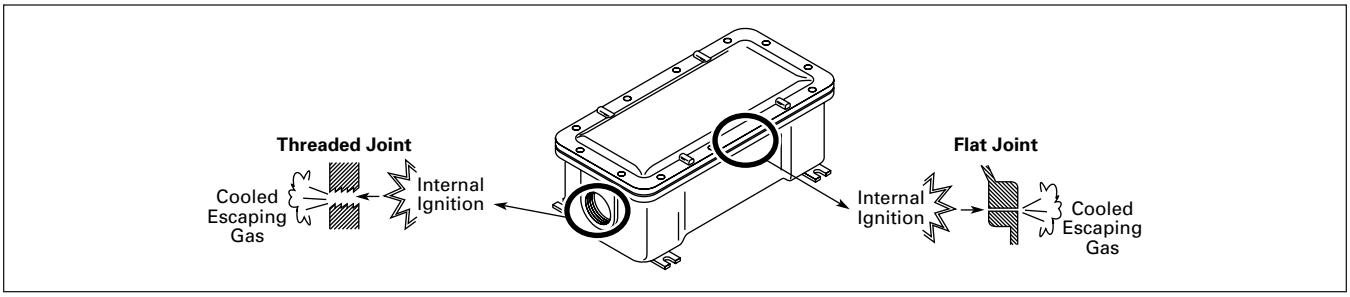


Figure 47-157. Explosion Proof Enclosure