

Pushbuttons and Indicating Lights



E22/EM22 Pilot Devices

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.

Product History

E22 was first sold in 1983. The line has had one major change in the mid 1990s to increase the size of the button plates to be roughly equivalent to a 30mm pushbutton. Then in 2002, the EM22 extension of the line was introduced. Since then, only minor changes/additions have occurred. While the entire product breadth is not available anymore as aftermarket, most functionality is available in the products shown in this catalog.

Product History Time Line

Product	1980	1985	1990	1995	2000	2005	Present
E22		■					
EM22						■	

Replacement Capabilities

Momentary Contact Pushbuttons, Non-Illuminated—UL (NEMA) Type 3, 3R, 4, 4X, 12, 13

Will accept maximum of three contact blocks (six circuits) when used with supplied three-way adapter and optional operator plug.

25 mm Diameter Flush Button

Color	E22 Series—Plastic Operators		EM22 Series—Metal Operators
	Black Bezel Catalog Number	Chrome Bezel Catalog Number	Chrome Bezel Catalog Number
Black	E22PB1	E22P1	EM22P1
Red	E22PB2	E22P2	EM22P2
Green	E22PB3	E22P3	EM22P3

25 mm Diameter Extended Button

Color	E22 Series—Plastic Operators		EM22 Series—Metal Operators
	Black Bezel Catalog Number	Chrome Bezel Catalog Number	Chrome Bezel Catalog Number
Red	E22EB2	E22E2	EM22E2

40 mm Diameter Mushroom Head Button

Color	E22 Series—Plastic Operators		EM22 Series—Metal Operators
	Black Bezel Catalog Number	Chrome Bezel Catalog Number	Chrome Bezel Catalog Number
Black	E22LB1	E22L1	EM22L1
Red	E22LB2	E22L2	EM22L2

50 mm Diameter Mushroom Head Button—Plastic

Color	E22 Series—Plastic Operators		EM22 Series—Metal Operators
	Black Bezel Catalog Number	Chrome Bezel Catalog Number	Chrome Bezel Catalog Number
Red	E22JP2	E22JP2	EM22JP2



Note

Operator plug E22BA2 required if third contact block is used. See [Page V12-T23-11](#).



Illuminated Pushbuttons, Non-Illuminated—UL (NEMA) Type 3, 3R, 4, 4X, 12, 13

Will accept maximum of two contact blocks (four circuits) when used with supplied three-way adapter.

25 mm Diameter Flush Lens

Color	E22 Series—Plastic Operators		EM22 Series—Metal Operators	
	Black Bezel Catalog Number		Chrome Bezel Catalog Number	
Red	E22NB2		E22N2	EM22N2
Green	E22NB3		E22N3	EM22N3
White	E22NB5		E22N5	EM22N5
Amber	E22NB9		E22N9	EM22N9

25 mm Diameter Extended Lens

Color	E22 Series—Plastic Operators		EM22 Series—Metal Operators	
	Black Bezel Catalog Number		Chrome Bezel Catalog Number	
Red	E22TB2		E22T2	EM22T2
Green	E22TB3		E22T3	EM22T3
Amber	E22TB9		E22T9	EM22T9

Alternate Action (Push-Push) Components Non-Illuminated Push-Push Operators

Will accept a maximum of two contact blocks when used with supplied three-way adapter, five-way mounting adapters are not to be used.

Black Bezel Flush, Non-Illuminated Push-Push Operators—UL (NEMA) Type 3, 3R, 4, 4X, 12, 13 ①



Black Bezel



Chrome Bezel

Color	E22 Series—Plastic Operators	
	Black Bezel Catalog Number	Chrome Bezel Catalog Number
Black	E22PPB1	E22PP1
White	E22PPB5	E22PP5
Gray	E22PPB7	E22PP7

Emergency Stop Components

Maximum of two contact blocks (four circuits) when used with supplied three-way adapter (unless otherwise noted).

E22LTA2 Standard Emergency Stop and Emergency OFF Operators—UL (NEMA) Type 3, 3R, 4, 4X, 12, 13



E22LTA2N123



Action	Color	Button Diameter/ Material	Legend/ Engraving	Plastic—Black Bezel Catalog Number
Maintained Trigger action Twist-to-release	Red	40 mm/plastic	—	E22LTA2 ②
Maintained Trigger action Twist-to-release	Red	40 mm/plastic	EMO	E22LTA2N123 ②

Notes

① 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 that 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 that 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.




② Compliant with EN418 Machinery Safety Directive.

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




Maintained Contact Mushroom Head Operators, Non-Illuminated—UL (NEMA) Type 3, 3R, 4, 4X, 12, 13

Will accept maximum of two contact blocks (four circuits) when used with supplied three-way adapter.




Twist-to-Release—28 mm Diameter Button (Push to Latch—Twist to Release)

Color	E22 Series—Plastic Operators		EM22 Series—Metal Operators
	Black Bezel Catalog Number	Chrome Bezel Catalog Number	Chrome Bezel Catalog Number
Red	E22MLB2 	E22ML2 	EM22ML2 







Twist-to-Release—40 mm Diameter Button (Push to Latch—Twist to Release)

Color	E22 Series—Plastic Operators		EM22 Series—Metal Operators
	Black Bezel Catalog Number	Chrome Bezel Catalog Number	Chrome Bezel Catalog Number
Red	E22LLB2 	E22LL2 	EM22LL2 




Push-Pull—40 mm Diameter Button (Push to Latch—Pull to Release)

Color	E22 Series—Plastic Operators		EM22 Series—Metal Operators
	Black Bezel Catalog Number	Chrome Bezel Catalog Number	Chrome Bezel Catalog Number
Red	E22LPB2 	E22LP2 	EM22LP2 

Push-Pull—50 mm Diameter Button (Push to Latch—Pull to Release)

Color	E22 Series—Plastic Operators		EM22 Series—Metal Operators
	Black Bezel Catalog Number	Chrome Bezel Catalog Number	Chrome Bezel Catalog Number
Red	E22JPLB2 	E22JPL2 	EM22JPL2 
Red (metal) EMERGENCY STOP	E22JLB2N8 	E22JL2N8 	EM22JL2N8 

Key Release—40 mm Diameter Button (Push to Latch—Turn Key to Release) ①

Color	E22 Series—Plastic Operators		EM22 Series—Metal Operators
	Black Bezel Catalog Number	Chrome Bezel Catalog Number	Chrome Bezel Catalog Number
Red	E22GB2 	E22G2 	EM22G2 

Note

① For legend plates, use oversize plates, Catalog Numbers E22VA2 or VA8 listed on Page V12-T23-11.

Indicating Light Units—One-Piece LED

- One-piece body style
- Plastic operators
- Full voltage LEDs
- Cluster-style integrated LED (non-removable)
- Plastic lenses

Non-Removable LED



Non-Removable LED

Cluster LED Type Indicating Lights—Non-Removable LEDs—UL (NEMA) Type 3, 3R, 4, 4X, 12, 13

Description	Supply Voltage	LED Color	Lamp Life ①	Catalog Number
Includes permanently attached lens and board mounted, cluster style LEDs	24 Vac/Vdc	Red	100,000	E22HL2X4
		Green	100,000	E22HL3X4
		Amber	100,000	E22HL9X4
	110/120 Vac/Vdc	Red	100,000	E22HL2X8
		Green	100,000	E22HL3X8
		Amber	100,000	E22HL9X8

Indicating Light Units—One-Piece Incandescent

- One-piece body style
- Plastic operators
- Full voltage
- Bayonet base incandescent lamp

Incandescent Standard Lens



Incandescent Standard Lens Type Indicating Lights—UL (NEMA) Type 3, 3R, 4, 4X, 12, 13

Description	Supply Voltage	Color	Lamp Life ①	Catalog Number
Includes lens and T 3-1/4 bayonet base lamp	24 Vac/Vdc #1819 lamp	Red	2500	E22HV2X4
		Green	2500	E22HV3X4
		Amber	2500	E22HV9X4
	110/120 Vac/Vdc W1121 lamp	Red	1000	E22HV2X8
		Green	1000	E22HV3X8
		Amber	1000	E22HV9X8











Note

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.

Selector Switches










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

Will accept a maximum of two contact blocks (four circuits) with supplied three-way mounting adapter. Optional five-way adapter will accept a maximum of five contact blocks (10 circuits).

		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		E22 Series—Plastic Operators		EM22 Series—Metal Operators	
		Left	Center	Right	Cam Code	Black Bezel Catalog Number	Chrome Bezel Catalog Number
Black Bezel, Lever							
Chrome Bezel, Lever							
Two-Position—45° Throw—Black Lever							
		—	M	M	2	E22VBF1	E22VF1
		M	—	M	2	E22VB51	E22V51
Three-Position—45° Throw—Black Lever							
Black Bezel, Lever		M	M	M	1	E22VBG1	E22VG1
		S	M	S	1	E22VBL1	E22VL1
Chrome Bezel, Lever		M	—	M	2	E22XB51	E22X51
Two-Position—45° Throw—Black Knob							
		M	—	M	2	E22XB51	E22X51
Three-Position—45° Throw—Black Knob							
		M	M	M	1	E22XBG1	E22XG1
		S	M	S	1	E22XBL1	E22XL1

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

Will accept a maximum of two contact blocks (four circuits) with supplied three-way mounting adapter. Optional five-way adapter will accept a maximum of five contact blocks (10 circuits).

		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		E22 Series—Plastic Operators		EM22 Series—Metal Operators	
		Left	Center	Right	Cam Code	Black Bezel Catalog Number	Chrome Bezel Catalog Number
E22 Black Bezel, Knob							
E22 Chrome Bezel, Knob							
Two-Position—60° Throw—Black Knob							
		M	—	M	2	E22XB561	E22X561
		M	—	M	2	E22XB561	E22X561
Three-Position—60° Throw—Black Knob							
EM22 Black Knob		M	M	M	1	E22XBG61	E22XG61
		M	M	M	1	E22XBG61	E22XG61

Key Operated Selector Switches

Key removal from maintained positions only—will accept a maximum of two contact blocks (four circuits) with supplied three-way mounting adapter. Optional five-way adapter will accept a maximum of five contact blocks (10 circuits).

Plastic Black Bezel



Plastic Chrome Bezel



Metal Chrome Bezel



Key Operated Selector Switches—UL (NEMA) Type 3, 3R, 4, 4X, 12, 13

Operating Mode
M = Maintained
S = Momentary

			E22 Series—Plastic Operators		EM22 Series—Metal Operators	
Left	Center	Right	Cam Code	45° Black Bezel Catalog Number ^①	45° Chrome Bezel Catalog Number ^①	60° Chrome Bezel Catalog Number ^①
Two-Position						
M	—	M	2	E22KB52	E22K52	—
M	—	M	2	E22KB53	E22K53	EM22K53
M	—	S	2	E22KB62	E22K62	EM22K62
—	M	M	2	E22KF4	E22KF4	EM22KF4
Three-Position						
M	M	M	1	E22KBG7	E22KG7	—

Spare Key

Description	Reference Number Stamped on Key	Catalog Number
Standard lock	92239	E22KS2

Specialty Operators

Mechanical Push Rod



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

Description	Color	Plastic—Black Bezel Catalog Number	Plastic—Chrome Bezel Catalog Number
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	E22PB7L	E22P7L

Double-Headed Pushbuttons

Double-Headed Pushbuttons



Illuminated and Non-Illuminated Double-Headed Pushbuttons—UL (NEMA) Type 1; IP40

Description	Operator Colors	Marking	Plastic—Black Bezel Catalog Number
Non-illuminated double-headed pushbutton	Green—Red	I	E22DB1A21

Contact Blocks

Contact Blocks



Contact Blocks

Description	Catalog Number
1NC	E22B1 ^②
1NO	E22B2
1NO-1NC	E22B11 ^②
2NO	E22B20
One self-monitoring 1NC	E22CB1M ^{②③}

Notes

^① Final digit of catalog number represents key removal position per the chart below.

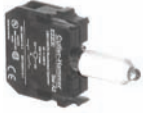
Key Removal Position	Code Suffix	Key Removal Position	Code Suffix
Left only	2	Center only	4
Right and left	3	Right, left and center	7

^② Marked with direct opening action (DOA) symbol per IEC 60947-5-1 (Annex K) and NEMA ICS 5 (Part 6).

^③ For use with trigger action emergency stop (E22LTA2) operators.

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—Includes a T3-1/4 (BA9) Bayonet Base LED**Tall LED Light Unit****Standard LED Light Unit**

Type	Supply Voltage	LED Color	Standard LED ^① Catalog Number	Tall LED ^① Catalog Number
Full voltage	Unit without lamp	—	E22DE	E22DE
	24 Vac/Vdc	Red	E22DL24R	E22DLT24R
		Green	E22DL24G	E22DLT24G
		Yellow	E22DL24Y	—
		White	E22DL24W	—
120 Vac/Vdc	Red	Red	E22DL120R	E22DLT120R
		Green	E22DL120G	E22DLT120G
		Yellow	E22DL120Y	—
		White	E22DL120W	—

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—Includes a T3-1/4 (BA9) Bayonet Base Lamp (Except When Noted)**Incandescent Light Units**

Type	Supply Voltage 50/60 Hz	Lamp Voltage	Standard Bulb Catalog Number
Full voltage AC/DC	Unit without lamp	—	E22D
	24	24	E22D24
	120	120	E22D120 ^②
Resistor AC/DC	120	60	E22R2
Transformer AC only	120	6	E22TL1
	240	6	E22TL2









PresTest Units—Includes Prewired 1NO-1NC Contact Blocks**PresTest Unit**

Type	Supply Voltage 50/60 Hz	Lamp Voltage	Standard Bulb Catalog Number
Full voltage AC/DC	Unit without lamp	—	E22D0C
	24	24	E22D24C
Resistor AC/DC	120	60	E22R2C
Transformer AC only	120	6	E22TL1C

Notes

- ① Use tall LEDs for Pull/Push operators. For all other illuminated devices, use standard LEDs.
- ② E22D120 light units are suitable for indicating light operators only.

Accessories

EM22 and E22 Series Accessories		
Hole Plug	Description	Catalog Number
	Hole Plug Forms oil- and watertight seal for unused panel holes — UL Listed Type 4-4X-13 black nylon	E22BHP
Enlarge Yellow Legend Plates	Enlarge Yellow Legend Plates ①	
	1.77 inches (45 mm) blank	E22VA2
	2.76 inches (70 mm) printed EMERGENCY STOP	E22VA8
Mounting Adapter	Mounting Adapter	
	Supplied as standard with E22 operators. Provides contact block and light unit mounting.	E22BA1
Auto Latch Mounting Adapter	Auto Latch Mounting Adapter	
	Supplied as standard with EM22 operators. Provides contact block and light unit mounting.	E22BA1A
Operator Plug	Operator Plug	
	Must be inserted into rear of momentary action pushbutton and mushroom head operators when third 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 0.62 inches (15.2 mm) prior to assembly. Plug is notched to indicate cut down length.	E22BA2
Locating Ring	Locating Ring	
	Provides additional anti-rotation features when using optional panel mounting hole notch—minimum order quantity 10 pieces (metal)	E22LRM
Padlockable Transparent Cover	Padlockable Transparent Cover	
	Suitable for use with 25 mm flush and extended pushbutton operators only	E22PCM
	Suitable for use with 28 mm mushroom operators, knob and key selector switches	E22BA9
Mushroom Guard	Mushroom Guard	
	For 40 mm trigger action switch—to be used with E22LTA2 and E22LTA2N123 operators	E22MGTA
	Note ① Yellow plates comply with EN418 machine safety standard background requirements for E-Stops.	

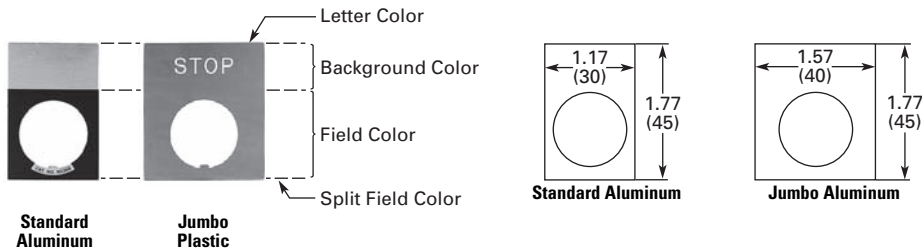
Options

Engraved Legend Plates with Standard Markings—1/8-Inch 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 the 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.

Color Diagram and Approximate Dimensions in Inches (mm)



Engraved Legend Plates

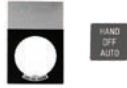
Nameplate Type	Standard Aluminum with Plastisol Backing NEMA 3, 3R, 4, 4X, 12, 13 ①		Standard Plastic, NEMA 1 Only	
	Letter Color	Background Color	Letter Color	Background Color
Standard Aluminum	Black	Silver	White	Black
Jumbo Plastic	Black	Black	Black	Red
		Black	White	Red
		Red	Black	Red
Pushbutton				
No engraving	E22NS36	E22NS37	E22NSP77	E22NSP77
CLOSE	E22NS11	—	—	—
DOWN	E22NS12	—	—	—
EMERG. STOP	—	E22NS13	—	—
FORWARD	E22NS15	—	—	—
JOG	E22NS19	—	—	—

Note

① To order jumbo legend plates, replace the fifth character with an **L**. For example E22NL87 is an aluminum, Jumbo legend plate marked "FASTER."

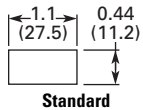
Engraved Legend Plates, Continued

Standard Aluminum with Plastisol Backing NEMA 3, 3R, 4, 4X, 12, 13 and Self-Adhesives Used on Enclosures ^①



Nameplate Type	Black	Black
Letter Color	Silver	Silver
Background Color	Black	Red
Field Color		
Pushbutton		
MOTOR RUN	E22NS81	—
MOTOR STOP	E22NS82	—
ON	E22NS25	—
OPEN	E22NS26	—
POWER ON	E22NS80	—
REVERSE	E22NS30	—
RUN	E22NS31	—
START	E22NS33	—
STOP	—	E22NS34
UP	E22NS35	—
Two-Position Selector Switch		
FOR/REV	E22NS38	—
HAND/AUTO	E22NS39	—
JOG/ RUN	E22NS41	—
OFF/ON	E22NS42	—
OPEN/CLOSE	E22NS43	—
UP/DOWN	E22NS48	—
Three-Position Selector Switch		
FOR/OFF/REV	E22NS50	—
HAND/OFF/AUTO	E22NS51	—

Approximate Dimensions in Inches (mm)



Legend Plates and Legend Plate Carriers

Plastic with Clip-In Insert without Carrier
NEMA 3, 3R, 4, 4X, 12, 13



Nameplate Type	White
Letter Color	Black
Background Color	Black
Field Color	
Pushbutton	
Legend plate carrier ^②	E22ND

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.

E22CSP1



Enclosures—UL (NEMA) 4, 4X, 12, 13

Cover Holes, Centerlines and Legend Plate Selection

Usable Depth Inches (mm)	Catalog Number
2.5 (64)	E22CSP1
3.4 (87)	E22CDP1

Will accommodate 2.65 inch (65 mm) legend plates listed on Page V12-T23-11

E22CSP1Y



Usable Depth Inches (mm)	Catalog Number
2.2 (57)	E22CSP1Y ^③
3.15 (80)	E22CDP1Y ^③

With safety yellow cover

E22CSP2



Usable Depth Inches (mm)	Catalog Number
2.2 (57)	E22CSP2

1.42 inch (36 mm)
Will accommodate self-adhesive legend plates listed on Pages V12-T23-12 and V12-T23-13

E22CSP4



Usable Depth Inches (mm)	Catalog Number
2.2 (57)	E22CSP4

1.18 inch (30 mm)
Will accommodate self-adhesive legend plates listed on Pages V12-T23-12 and V12-T23-13

Notes

- ^① To order jumbo legend plates, replace the fifth character with an L. For example, E22NLB7 is an aluminum, jumbo legend plate marked "FASTER."
- ^② One carrier required for each clip-in insert.
- ^③ Yellow covers comply with background requirements for EN418 Safety of Machinery Standard.

Further Information**Publication
Number****Description**

Publication Number	Description
TD04712001E	E22/EM22 Technical Data

Pricing Information

For pricing information, please consult Eaton's Price and Availability Digest (PAD) or your local authorized Eaton distributor.