

## E34 Series

### 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.

### 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 wash-downs, effectively relieving pressure from the internal diaphragm seal, ensuring reliable sealing in applications even beyond NEMA 4.

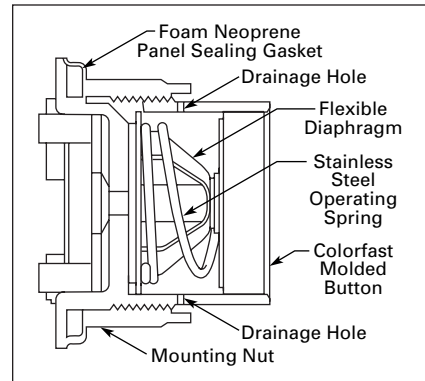


Figure 47-123. Diaphragm Seal

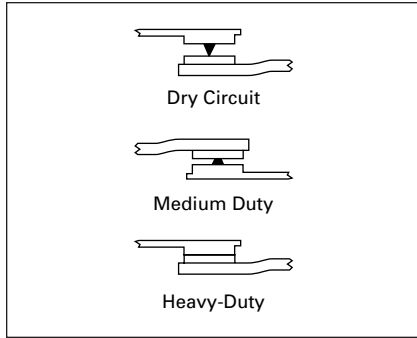


Figure 47-122. Reliability Nibs

### Features

- Epoxy-coated metal operators
- Corrosion resistant
- Integral ground screw terminal on operators
- FDA approved for sanitary chemical resistance requirements

Octagonal Mounting Nut Self-Adjusts to Panel Thickness — Eliminates Spacer Washers and Set Screws

Die Cast Construction with Thick, Tough Corrosion Resistant Coating

3 Styles of Legend Plates in 4 Sizes

Internal Sealing Diaphragm for Excellent Sealing

Wide Variety of Operator Types and Colors

Terminal Clamps Shipped Open Ready to Wire

Stackable Contact Blocks up to 12 Circuits per Operator

## 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:  $10 \times 10^6$  operations
  - Contact blocks:  $10 \times 10^6$  operations
  - PresTest units:  $10 \times 10^6$  operations
  - Lever and key selector switches:  $0.25 \times 10^6$  operations
  - Twist to release pushbuttons:  $0.3 \times 10^6$  operations
- Shock resistance
  - Duration: 210 mS  $\geq$  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:  $U_i = 660V$  AC or DC
- Thermal:  $I_{th} = 10A$

#### 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 –  $1 \times 10^6$  operations
    - 5A: 250V pf 0.4 –  $1 \times 10^6$  operations
    - 2A: 660V pf 0.4 –  $1 \times 10^6$  operations
- Switching capacity
  - AC15 rated make/break ( $11 \times I_e$  at  $1.1 \times U_e$ )
    - 6A: 120V pf 0.3
    - 4A: 240V pf 0.3
    - 2A: 660V pf 0.3
  - DC13 rated make/break ( $1.1 \times I_e$  at  $1.1 \times U_e$ )
    - 1.0A: 125V L/R  $\geq$  0.95 at 300 mS
    - 0.55A: 250V L/R  $\geq$  0.95 at 300 mS
    - 0.1A: 660V L/R  $\geq$  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<sup>2</sup>) to 2 x 14 AWG (2.5 mm<sup>2</sup>) conductors.
- Torque = 7 lb-in (0.8 Nm)
- Degree of protection against direct electrical contact: IP2X with finger-proof shroud

**E34 Series, Illuminated Components**

**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		
	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

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

**Table 47-266. Indicating Light Lens**

	Color	Plastic		Glass ③	
		Catalog Number	Price U.S. \$	Catalog Number	Price U.S. \$
	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. \$
	Red	E34V2		E34P2	
	Green	E34V3		E34P3	
	Yellow	E34V4		E34P4	
	White	E34V5		E34P5	
	Blue	E34V6		E34P6	
	Amber	E34V9		E34P9	
	Clear	E34V0		E34P0	

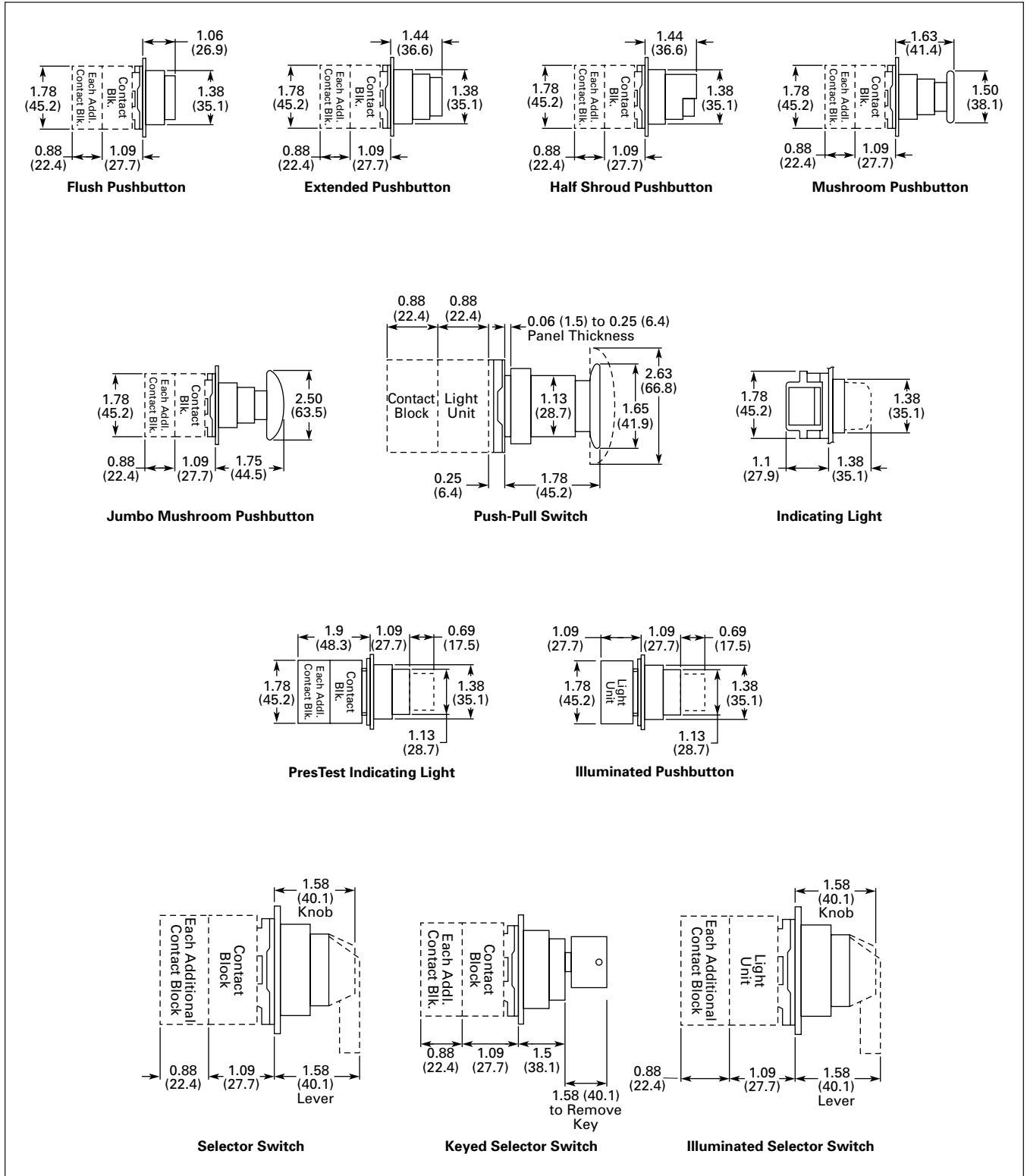
④ Glass lens has black anodized aluminum bezel.

**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	

**E34 Series, Dimensions**

**Dimensions**



**Figure 47-134. Approximate Dimensions in Inches (mm)**