

E34 Series

Contents

<i>Description</i>	<i>Page</i>
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.

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.

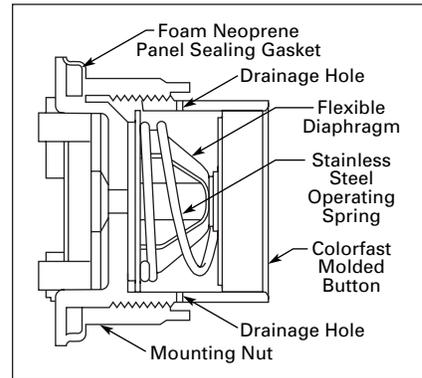


Figure 47-123. Diaphragm Seal

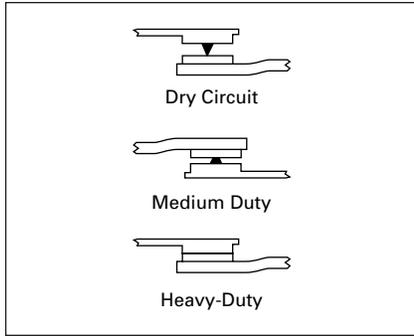


Figure 47-122. Reliability Nibs

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

Internal Sealing Diaphragm for Excellent Sealing

Terminal Clamps Shipped Open Ready to Wire

Die Cast Construction with Thick, Tough Corrosion Resistant Coating

3 Styles of Legend Plates in 4 Sizes

Wide Variety of Operator Types and Colors

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 x 10⁶ operations
 - Contact blocks: 10 x 10⁶ operations
 - PresTest units: 10 x 10⁶ operations
 - Lever and key selector switches: 0.25 x 10⁶ operations
 - Twist to release pushbuttons: 0.3 x 10⁶ 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

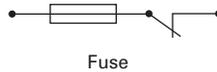
Table 47-260. Contact Block

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: 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



- UL rating: A600, P600
 - AC load life duty cycle 1200 operations/hour
 - 10A: 110V pf 0.4 – 1 x 10⁶ operations
 - 5A: 250V pf 0.4 – 1 x 10⁶ operations
 - 2A: 660V pf 0.4 – 1 x 10⁶ operations
- Switching capacity
 - AC15 rated make/break (11 x I_e at 1.1 x U_e)
 - 6A: 120V pf 0.3
 - 4A: 240V pf 0.3
 - 2A: 660V pf 0.3
 - DC13 rated make/break (1.1 x I_e at 1.1 x U_e)
 - 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 mm²) to 2 x 14 AWG (2.5 mm²) conductors.
- Torque = 7 lb-in (0.8 Nm)
- Degree of protection against direct electrical contact: IP2X with finger-proof shroud