



Document Title:  
**Recloser & Regulator Bypass Switch, Single & Three-Phase**

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**Distribution**

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**Related/Referenced Documents**

N/A

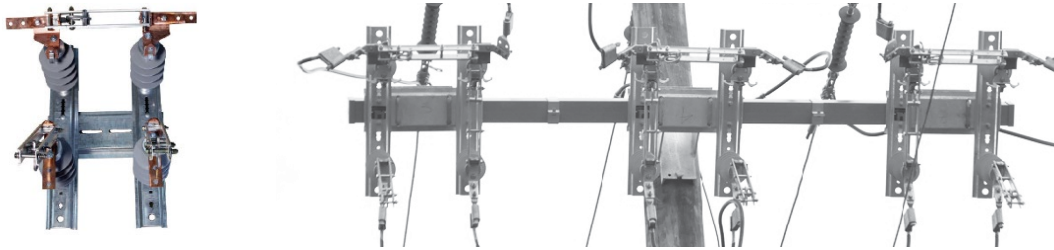
**Version History**

Version	Date	Revision Comments
1	Sep. 20, 2021	Initial Release, single-phase model.
2	Nov. 02, 2021	Three-Phase model added.
3	Apr. 13, 2022	TOC added.
4	Jun. 08, 2022	New signature format added.
5	Jul. 07, 2022	Section 9.5 modified.
6	Dec. 13, 2022	Cover Page added, Section 9, Appendix 2, and TOC modified.
7	Mar. 01, 2024	General format modifications, pole mounting bracket for single-phase model added. New Item created (032-85816). Date of the initial release on the version history corrected.



## Item Version History

Warehouse Catalog #	Asset Suite #	Version	Date
032-82357	82357	6	3/1/2024
032-85816	85816	1	3/1/2024
032-82358	82358	6	3/1/2024



## 1. Introduction

This is a general specification that covers the minimum requirements for a recloser and regulator bypass switch to be used in the distribution system in Puerto Rico. Further information will be provided by LUMA Energy at the time of order placement and will provide information on site specific conditions, quantity, and other requirements. This document includes the general electrical and mechanical characteristics of the equipment/material.

## 2. Special Requirements

Samples shall be furnished as requested by LUMA Energy. Vendors that have supplied this equipment/material to LUMA on previous orders, will not have to furnish samples at bid opening. The equipment/material will be received at the LUMA's general warehouse (011) at Palo Seco, Puerto Rico. Shipping will include transportation and unloading at the indicated warehouse.

## 3. Literature

Descriptive and technical literature must be supplied by the vendor at time of bidding. This literature may include, but is not limited to details of material, drawings, documented testing, and instructions for use and installation. Failure to submit documents on time will cause bidder disqualification. If required by LUMA, final drawings shall be submitted by the vendor before the manufacturing and shipping process for approval.

## 4. Markings

- 4.1. Containers shall be marked outside with LUMA Energy's purchase order and item number.
- 4.2. Packaging labels and tags shall be waterproof.

## 5. Compatible with

- 5.1. For compatible manufacturer and model see Table 1.
- 5.2. These models are examples of the equipment/material described in this document and do not represent a preference. LUMA will evaluate equally any model not listed here during any acquisition event.

## 6. Packaging

All equipment/material shall be packaged and marked in such a way as to facilitate handling and protection from damage and that the receiving warehouse can readily identify it and send it, in one complete unit, to a field location without opening crates or boxes to sort items and/or parts.

## 7. Number Per Package (Logistics)

Standard Package: One unit per box or as requested by LUMA.

## 8. Acceptance Criteria

- 8.1. Test required: certified by external qualified laboratories indicating the device was built and tested to the limits set in ANSI/IEEE C37.30.
- 8.2. Latest applicable codes, standards, and other regulations: ASTM (A153), ANSI/IEEE C37.30, C37.32, C37.34, & C37.37 and UL.

## 9. Description

- 9.1. These are pole-type switches used to bypass and isolate reclosers and regulators for repair or routine maintenance without service interruption.
- 9.2. The switch shall have two disconnect blades parallel to each other and one bypass blade perpendicular to the disconnect ones on top, right-hand opening. The two disconnect blades shall be supported by two insulators each, parallel to the blades in a vertical way, attached to a C-channel base as frame with one C-channel crossing them in a H arrangement like the photo in top of this document.
- 9.3. The frame shall be hot dip galvanized steel as per ASTM A153.
- 9.4. The single-phase model shall be required with an angled pole mounting bracket described in section 9.9 below.
- 9.5. Another single-phase model shall be required without pole mounting bracket to be used as a spare part for the three-phase model, so it shall include all the necessary hardware for installation in the crossarm provided with the three-phase model.
- 9.6. The three-phase model shall include a 10' long (3.048 m) fiberglass crossarm to hold the three bypass switches. Details are shown on Appendix 1.
- 9.7. Both models (single and three-phase) shall comply with the electrical requirements of section 9.16.
- 9.8. These switches are to be mounted on a concrete or metal pole with holes at 8" (20.32 cm) apart on one face, center to center and 12" (30.48 cm) apart on the other face, center to center in a vertical way. To comply with this statement, the pole mounting bracket must have three holes/slots in a specified distance arrangement explained below.

9.9. Pole Mounting Bracket for the Single-Phase Model:

- a. Shall be made of hot dip galvanized steel as per ASTM A153 and shall include one keyhole on top and two more slots going down. All of them of 11/16" diameter (1.75 cm). See Appendix 2 for details.
- b. No sharp edges allowed.
- c. The keyhole shall be 1.5" diameter on the bottom (3.81 cm).
- d. Each slot shall be 1.5" long (3.8 cm).
- e. Distance from the keyhole to the middle slot shall be 8" (20.32 cm) (center to center) and from the keyhole to the bottom slot shall be 12" (30.48 cm) (center to center).
- f. The specified diameter of the holes and slots shall be measured at the end of the galvanization process (final product).

9.10. Pole Mounting Bracket for the Three-Phase Model with crossarm:

- a. Shall be made of hot dip galvanized steel as per ASTM A153 and shall include one keyhole on top and two more slots going down. All of them of 11/16" diameter (1.75 cm). See Appendix 3 for details.
- b. No sharp edges allowed.
- c. Shall be C-Type with a thickness of 1/4" (6.35 mm) as minimum. No sharp edges allowed.
- d. The keyhole shall be 1.5" diameter on the bottom (3.81 cm).
- e. Each slot shall be 1.5" long (3.8 cm).
- f. Distance from the keyhole to the middle slot shall be 12" (30.48 cm) (center to center) and from the keyhole to the bottom slot shall be 16" (40.64 cm) (center to center). See Appendix 3 for details.
- g. The specified diameter of the holes and slots shall be measured at the end of the galvanization process (final product).

9.11. The switch shall have the following features and characteristics:

- a. Current carrying parts as the hinge, terminal pads, and blades shall be silver plated copper.
- b. Shall have silicone rubber polymer post insulators, 2.25" Bolt Circle.
- c. Blades Length: 16" (40.64 cm) approximate.
- d. Insulators Length: 10" (25.4 cm) approximate.
- e. Approximate Weight: 70 pounds (31.75 kg).
- f. Each blade shall be hook-stick operable.

- g. Load-buster hooks shall be included on the bypass blade, as minimum, to allow load-buster tool operation.
  - h. Blade Stop: 180 degrees.
- 9.12. Hardware shall be hot dip galvanized steel as per ASTM A153.
- 9.13. All non-current carrying parts shall be 304 or 316 series stainless-steel.
- 9.14. The terminal pads shall be NEMA two-holes made of silver-plated copper to be used with copper and aluminum conductors.
- 9.15. Parallel groove connectors shall be included on each terminal pad.
- a. Shall be suitable for copper and aluminum conductors, ranging in size from #6 AWG solid to 397.5 MCM ASCR, 500 MCM copper or 556 MCM aluminum.
  - b. Shall be coated with an oxide inhibiting compound.
  - c. The connector bolts shall be suitably staked to the switch insulator assembly. Must include nuts, flat washers, and lock washers. All of them shall be made of stainless steel 304 or 316.
- 9.16. Electrical Requirements:
- a. Maximum Voltage Design: 27 kV
  - b. Nominal Operating Voltage: 15 kV
  - c. Basic Insulation Level (BIL): 150 kVBIL
  - d. Continuous Current Rating: 900 A
  - e. Minimum Momentary Current: 40 kA Asymmetric
  - f. Minimum Leakage Distance: 20" (50.80 cm).
- 9.17. Shall have a stainless-steel name plate fastened to the device showing all electrical characteristics.
- 9.18. Environmental Requirements:
- a. Temperature & humidity: Equipment supplied shall be adequate for an operating temperature range of 0°C to 50°C (32 to 122°F), with humidity up to 100%.
  - b. Wind conditions: All mounting equipment shall be designed and constructed to withstand sustained hurricane-force wind velocities complying with the applicable construction codes, standards, or LUMA Energy's design criteria for PR.
  - c. Pollution: The equipment/material shall be designed and constructed for the corrosive environment of a distribution system in a tropical zone exposed to strong sea winds and it shall provide reliable performance in environments with high exposure to salt, minerals, chemicals, or wind-borne particulate. The insulator contamination levels for the equipment should be adequate to prevent flashover.



## 10. Inspection

The acceptance of any equipment/material shall in no way relieve the vendor from his responsibility to meet all the requirements of this specification, and it would not prevent subsequent rejection if such equipment/materials were found later to be defective.

## 11. Proposal Information

11.1. Submitted proposals must include:

- a. Technical information
- b. Table of Compliance completed by the bidder with reference (see Appendix 4).

## 12. Table 1: Warehouse and Asset Suite Identification Number

Item	Warehouse Catalog #	Asset Suite #	Compatible Manufacturer & Model
Single-Phase <b>with</b> Pole Bracket	032-82357	82357	EATON (D73339S0M) * Hubbell (BP3R7M055) *
Single-Phase <b>without</b> Pole Bracket	032-85816	85816	EATON (D73339S0) Hubbell (BP3R7055)
Three-Phase	032-82358	82358	EATON (3D73339S0) Hubbell (BP3R7Z055)

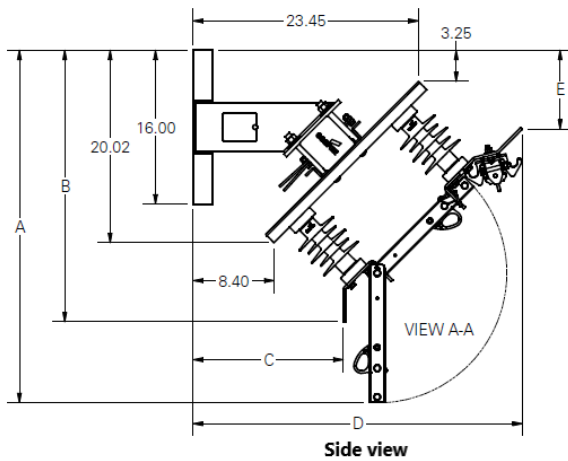
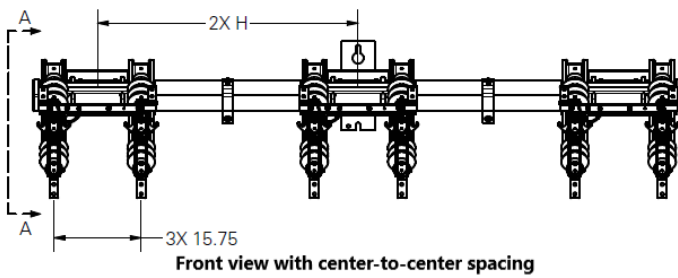
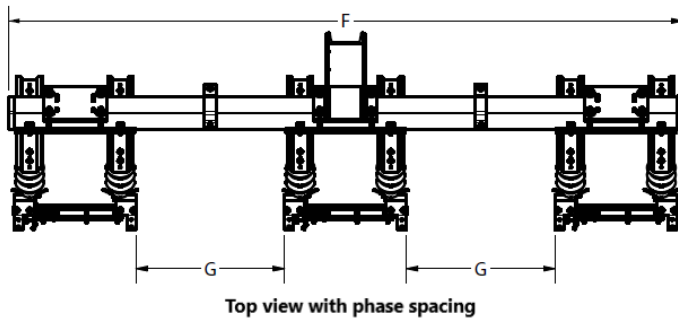
\* The letter M in the model of each manufacturer represents the pole mounting bracket, but the bracket shall comply with the requirements in section 9.9. Otherwise, the model won't be accepted.

— End of Specification —



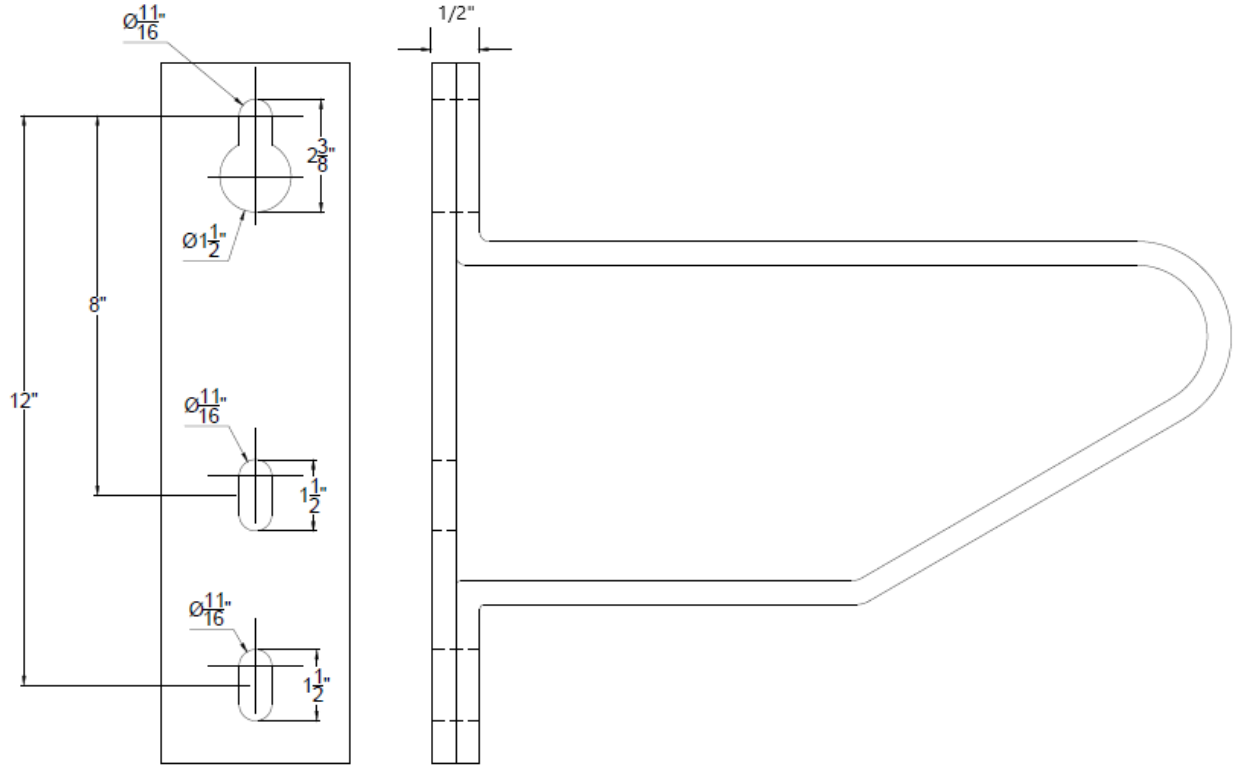
## Appendix

## Appendix 1: Fiberglass cross-arm dimensions

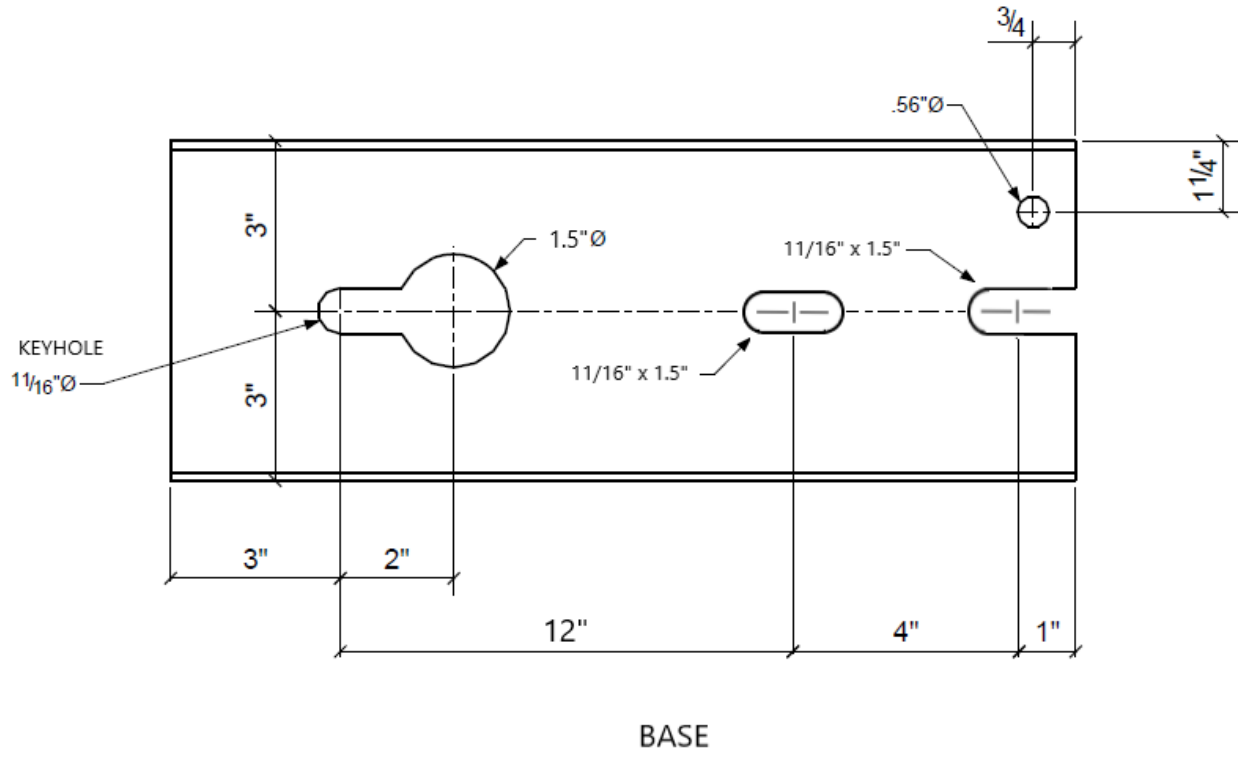


- A = 42.25" (107.89 cm)
- B = 30.96" (78.64 cm)
- C = 16.20" (41.15 cm)
- D = 36.99" (93.95 cm)
- E = 8.82" (22.40 cm)
- F = 121.19" (307.82 cm)
- G = 27.82" (70.66 cm)
- H = 49.00" (124.46 cm)

## Appendix 2: Single-Phase Model Pole Mounting Bracket



### Appendix 3: Three-Phase Model Base



## Appendix 4: Table of Compliance

Line	Criteria	Description	Pass/Fail (P / F)	Comments
1	Specification	The Proponent complies with the corresponding specification document (4350.031)		
2	Industry Standards	The Proponent complies with the industry standards established in the specification document. (ANSI/ASTM, ANSI/IEEE, UL)		
3	Electrical Requirements	<ul style="list-style-type: none"> <li>• Design Voltage: 27 kV</li> <li>• Nominal Voltage: 15 kV</li> <li>• Continuous Current: 900 A</li> <li>• Basic Insulation Level: 150 kVBIL</li> <li>• Momentary Current: 40 kA</li> <li>• Min. Leakage Distance: 20"</li> </ul>		
4	Mechanical Requirements	<ul style="list-style-type: none"> <li>• Approx. Blades Length: 16"</li> <li>• Approx. Insulators Length: 10"</li> <li>• Approx. Weight: 70 lbs.</li> <li>• Crossarm Length (3Ø model): 10'</li> </ul>		
5	Material	<ul style="list-style-type: none"> <li>• Non-Carrying Parts: Stainless Steel 304 or 316</li> <li>• Current Carrying Parts: Silver Plated CU</li> <li>• Post Insulators: Silicone Rubber Polymer</li> <li>• Switch base: Hot Dip Galvanized as per ASTM A153</li> <li>• Hardware: Hot Dip Galvanized as per ASTM A153</li> <li>• Crossarm (3Ø model): Fiberglass</li> </ul>		
6	Connection Terminals	<ul style="list-style-type: none"> <li>• Terminal Pads NEMA two-holes.</li> <li>• Parallel Groove Connectors for AL/CU.</li> <li>• Range: #6 AWG solid to 397.5 MCM ASCR, 500 MCM copper or 556 MCM aluminum.</li> <li>• Bolts, nuts, and flat and lock washers.</li> </ul>		
7	Blade Stop & Blade Lock	<ul style="list-style-type: none"> <li>• Blade-stop at 180°.</li> <li>• A positive blade lock shall be provided to prevent opening under high momentary current.</li> </ul>		
8	Base Holes	<ul style="list-style-type: none"> <li>• Three holes (11/16" diameter) along the base. The top one is a keyhole. The other two are 1.5" slots.</li> <li>• 1Ø Model: Distance from keyhole to the second hole/slot is 8". Distance from keyhole to the bottom slot is 12".</li> <li>• 3Ø Model: Distance from keyhole to the second hole/slot is 12". Distance from keyhole to the bottom slot is 16".</li> </ul>		
9	Name Plate	Stainless-steel, fastened to the device showing all electrical characteristics.		










# 4350.031 1ph & 3ph Recloser & Regulator Bypass Switch (3-1-24)


Final Audit Report

2024-03-06


Created:	2024-03-01
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Status:	Signed
Transaction ID:	CBJCHBCAABAAXhdBCBwMgHCFJS5O1Pa3uv11U7CCR0_

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