



Document Title:  
**Elbow Connector, 15 kV, 200 A, Load Break**

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**Author**

Rodolfo A. Flores Ortiz, PE (Lic. 27131)  
General Engineer, Distribution Standards & Materials

Signature and Date

Oct 25, 2024

**Reviewer**

Miguel J. Rios López, PE (Lic. 16636)  
General Engineer, Distribution Standards & Materials

Signature and Date

Oct 25, 2024

**Approver**

Ricardo Castro Gómez, PE (Lic. 12135)  
Manager, Distribution Standards & Materials

Signature and Date

Oct 25, 2024

**Management Approval (If apply)**

**Approver**

Name  
Position

Signature and Date

N/A

**Related/Referenced Documents**

N/A

**Version History**

Version	Date	Revision Comments
01	May. 11, 2022	PREPA to LUMA format and Table of compliance (TOC) added.
02	Aug. 01, 2022	Signature format modified.
03	Aug. 30, 2022	General format revision and item 038-83334 added.
04	Oct. 25, 2024	General format modifications, TOC updated, Section 4, 8, and 9 modified, and sections order rearranged.



## Item Version History

Warehouse Catalog #	Asset Suite #	Version	Date
038-00844	54681	9	10/25/2024
038-00851	54682	8	10/25/2024
038-83334	83334	2	10/25/2024
038-00877	54684	8	10/25/2024



## 1. Introduction

This is a general specification that covers the minimum requirements for elbow connector load break to be used in the electrical 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 LUMA's general warehouse (011) at Palo Seco, Puerto Rico. Shipping will include transportation and unloading at the indicated warehouse.

## 3. Literature

- 3.1. Descriptive and technical literature must be supplied by the vendor at time of bidding. This literature must include, but is not limited to details of material, drawings, documented testing, and instructions for use and installation. **The literature must be an official document from and certified by the manufacturer.** Failure to submit documents on time and duly certified by the manufacturer will cause bidder disqualification.
- 3.2. If required by LUMA, final drawings and documentation shall be submitted by the vendor before the manufacturing and shipping process for approval.

## 4. Compatible with

For compatible manufacturers and models, see Table 1. These models are examples of the equipment/materials described in this document and do not represent a preference. LUMA will evaluate equally any models not listed here during any acquisition event.

## 5. Markings

- 5.1. Containers shall be marked outside with LUMA Energy's purchase order and item number.
- 5.2. Package(s) to be delivered to the warehouse shall be clearly marked with manufacturer and item information (part number, serial number, quantity, etc.).

5.3. Packaging labels and tags shall be waterproof.

## 6. Packaging

All material and equipment 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)

One (1) unit per box or as requested by LUMA.

## 8. Acceptance Criteria

8.1. Test required: certified by external laboratories.

8.2. Product shall be manufactured in accordance with the latest issue below (section 8.3). When conflicts occur between purchaser's specifications and the latest issue below, the purchaser's specification shall prevail.

8.3. Latest applicable codes, standards, and other regulations:

a. IEEE 386-2016 for separable insulated connector systems for power distribution systems rated 2.5 kV through 35 kV.

8.4. If any other standards different from the ones indicated in this document are used, the supplier must provide information showing compatibility with the required ones.

## 9. Description

9.1. This equipment is used for load break single-phase cable connection in primary fully submersible connection box, 15 kV class system.

9.2. For cable sizes see table 1.

9.3. Shall provide a fully shielded, submersible connection, assuring proper stress relief for terminating cable.

9.4. Shall be hot-stick operable at energized circuits.

9.5. Shall be suitable to be installed in manholes.

9.6. Housing shall be made of rubber or ethylene propylene diene terpolymer (EPDM), watertight, resistant to chemicals.

9.7. Shall be suitable for copper and aluminum conductors.

9.8. Shall have a cable shield adapter or a grounding kit, and a test point.

9.9. The elbow shall be designed to ensure a reliable mechanical lock with the mating product.

9.10. Electrical Characteristics:

a. Operating voltage: 13.2 kV

- b. Voltage capacity: 15 kV
- c. Basic Insulation Level: 95 kV BIL
- d. Current capacity: 200 A
- e. Frequency: 60 Hz

9.11. Cable Description:

- a. Conductive strand shielding: 0.020" (0.51mm)
- b. Semiconductive tape shield: 0.010" (0.25mm)
- c. Insulating thickness: 0.175" (4.45mm)
- d. Copper tape-shield thickness: 0.003" (0.08mm)
- e. PVC jacket thickness: 0.080" (2.03mm)

9.12. Grounding kit description:

- a. Shall be for cables sizes shown in table 1.
- b. Shall provide fully shield watertight ground take off.
- c. Shall be suitable to be installed in a manhole with elbow connectors, in-line splice switching units, stress cones, etc.
- d. This device shall be used in conductors 15 kV and up 600 A capacity.
- e. Shall eliminate the need for soldering or taping and shall be made of rubber or EPDM.
- f. Shall be furnished with the metallic tape shield contact and a copper ground lead of adequate size for the intended use.

## 10. Inspection

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

## 11. Proposal Information

11.1. Submitted proposals must include:

- a. Technical information, tests, and drawings.
- b. Table of Compliance completed by the bidder with reference (see Appendix 1).



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

Item (Cable Size)	Warehouse Catalog #	Asset Suite #	Conductor Diameter	Diameter Over Insulation		Overall Diameter (Tape - C.N.)	Compatible Manufacturer & Model Including Connector & Shield Adapter or Grounding Kit
				Tape Shield	Concentric Neutral		
<b>2 AWG</b>	038-00844	54681	0.283" (7.19 mm)	0.670" (17.02 mm)	0.735" (18.67 mm)	0.880" - 1.068" (22.4 - 27.1 mm)	<b>Elastimold</b> (162LR-B5220-SG3) <b>EATON</b> (LE215-AB-04-T-SA2)
<b>1/0 AWG</b>	038-00851	54682	0.362" (9.19 mm)	0.749" (19.02 mm)	0.839" (21.31 mm)	0.989" - 1.147" (25.12 - 29.13 mm)	<b>Elastimold</b> (162LR-B5240-SG3) <b>EATON</b> (LE215-AB-06-T-SA2)
<b>2/0 AWG</b>	038-83334	83334	0.406" (10.32 mm)	0.816" (20.73 mm)	0.882" (22.40 mm)	1.090" - 1.190" (27.69 - 30.23 mm)	<b>Elastimold</b> (162LR-B5250-SG3) <b>EATON</b> (LE215-AB-07-T-SA2)
<b>4/0 AWG</b>	038-00877	54684	0.512" (13.00 mm)	0.899" (22.83 mm)	0.989" (25.12 mm)	1.139" - 1.297" (28.9 - 32.9 mm)	<b>Elastimold</b> (162LR-C5270-SG3) <b>EATON</b> (LE215-CC-09-T-SA2)

— End of Specification —



## Appendix

## Appendix 1: Table of Compliance

Line	Description	Pass/Fail	Comments
1	The Proponent complies with the corresponding specification document (4350.183).		
2	The Proponent complies with the industry standards established in the specification document. (IEEE 386)		
3	Tech. info., tests & drawings provided.		
4	Load Break		
5	Housing Material <ul style="list-style-type: none"> <li>• Rubber or EPDM</li> <li>• Fully shielded &amp; watertight</li> </ul>		
6	Internal components shall be suitable for copper & aluminum conductors.		
7	Hot-Stick operable at energized circuits.		
8	Cable Shield Adapter or a Grounding Kit for the corresponding conductor size (Table 1).		
9	Test Point		
10	Suitable for conductors described in Table 1 of the specification document with sizes indicated in Table 1 of the same document.		
11	Electrical Requirements <ul style="list-style-type: none"> <li>• Operating Voltage: 13.2kV</li> <li>• Voltage Class: 15kV</li> <li>• Basic Insulating Level: 95kV BIL</li> <li>• Current Capacity: 200A</li> <li>• Frequency: 60Hz</li> </ul>		

**NOTE: This table is only a checklist for reference. The compliance shall be with the complete document. Marking a PASS in the table won't be accepted as a compliance without the technical information required to certify it.**










# 4350.183 Elbow Connector 200A - Load Break (10-25-2024)

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