



Curved Washer, Galvanized

1. Introduction

This is a general specification that covers the minimum requirements for galvanized curved washers 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 mechanical characteristics of the material.

2. Special Requirements

Samples shall be furnished as requested by LUMA Energy. Vendors that have supplied this material to LUMA on previous orders, will not have to furnish samples at bid opening. The 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. Quantity/Literature

Descriptive and technical literature must be supplied by 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. For products described in this specification as requiring qualification, awards will be made only for such products that, prior to the time for opening of bids, had been tested and/or approved by LUMA. Evidence of PREPA's and/or LUMA Energy's approval of the equipment or material shall be supplied by vendor if requested by LUMA Energy.

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. Equal or Approved Equal to

For suggested manufacturer and model see table 1.

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.

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7. Number Per Package (Logistics)

See table 1 or as requested by LUMA.

8. Acceptance Criteria

- 8.1. Test required: certified by external qualified laboratories.
- 8.2. Latest applicable codes, standards, and other regulations:
 - a. ASME B18.2.2 - Standard for the complete general and dimensional data for the various types of inch series square and hex nuts, including machine screw nuts and coupling nuts.
 - b. ASTM A29/A29M-16 - Standard specification for general requirements for steel bars, carbon, and alloy hot-wrought.
 - c. IEEE C135.1 – Standard for Zinc-Coated Steel Bolts and Nuts for Overhead Line Construction.
 - d. ASTM A153/A153M or ASTM F2329/F2329M – Standard specification for zinc coating (hot dip) on iron and steel hardware.

9. Description

- 9.1. Curved square washers are used for eye bolts on poles curved surfaces.
- 9.2. Material must be low carbon steel conforming to ASTM A29/A29M.
- 9.3. Must be square hot dip galvanized steel as per ASTM A153 without sharp edges.
- 9.4. Shall have a center hole and no nail holes.
- 9.5. For sizes (length X width X thickness) and hole diameter see table 1.

10. Inspection

The acceptance of any material or equipment 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 materials were found later to be defective.

11. Table 1: Warehouse and Asset Suite Identification Number

Item	Hole	Warehouse Catalog #	Asset Suite #	Package	Weight	Equal of Approved Equal to
2-1/4" x 2-1/4" x 3/16" (5.7 x 5.7 x 0.5 cm)	11/16" (1.7 cm)	002-82655	82655	200/box 9,600/pallet	0.2 lbs (0.09 kg)	Hubbell (681012) MacLean (J6821)
3" x 3" x 1/4" (7.62 x 7.62 x 0.63 cm)	13/16" (2.1 cm)	002-07027	57588	2,400/pallet	0.7 lbs (0.33 kg)	Hubbell (682212) MacLean (J6823)

— End of Specification —

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Document History

Item	Version
002-82655	1
002-07027	4

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Reviewer Rafael Torres

Approver Manager Ricardo Castro



Three horizontal lines with handwritten signatures in blue ink. The first signature is above the Author line, the second is above the Reviewer line, and the third is above the Approver Manager line.

Equipment Specification
Document No.: 4350.122
Originating Department: Distribution Engineering

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Appendix

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Appendix 1: Table of Compliance

Line	Criteria	Description	Pass/Fail (P / F)	Comments
1	Specification	The Proponent complies with the corresponding specification document (4350.122).		
2	Industry Standards	The Proponent complies with the industry standards established in the specification document. (ANSI/ASTM, ASME)		
3	Material	<ul style="list-style-type: none">• Low Carbon Steel as per ASTM A29/A29M• Hot Dip Galvanized as per ASTM A153		
4	Shape	Curved		
5	Measurements (Length X Width X Thickness)	<ul style="list-style-type: none">• 002-82655: (2-1/4 x 2-1/4 x 3/16) in.; (11/16 in. Hole)• 002-07027: (3 x 3 x 1/4) in.; (13/16 in. Hole)		