



GUAM POWER
AUTHORITY
HAGATNA, GUAM

PREPARED BY THE ENGINEERING DEPARTMENT

SPECIFICATION No. E-011

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December 12, 2016

REV. 2

GUAM POWER AUTHORITY
P.O. BOX 2977
HAGATNA, GUAM 96932

TRANSMISSION & DISTRIBUTION SPECIFICATION
Specification No. E-011

FOR

**CONDUCTOR CLAMPS, CLEVIS,
AND SHIELD WIRE SUPPORT;
STRAIN, STRAIGHT, AND ANGLE**

EFFECTIVE DATE:

1/30/17

ISSUED:

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**CONDUCTOR CLAMPS, CLEVIS, AND
SHIELD WIRE SUPPORT; STRAIN,
STRAIGHT, AND ANGLE**

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1.0 SCOPE

To describe the design and technical features for the different types of conductor clamps used in GPA overhead construction.

2.0 DEVIATIONS AND NON-CONFORMANCE REQUIREMENTS

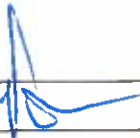

- 2.1 Deviations from this specification or changes in the material or design after the purchase order has been placed must be approved by the GPA Engineering department and acknowledged by a Purchase Order Amendment issued by GPA.
- 2.2 Units received with deviations or non-conformances that are not acknowledged per Section 2.1 are subject to rejection. The Supplier of rejected units is responsible for any corrective action including but not limited to materials, labor and transportation necessary to dispose of or make the units conform to the specification.
- 2.3 Notification of defective units discovered before or after installation that are believed to be inherent to manufacturing problems or workmanship shall be made and forwarded to the Supplier. The description of the item, documentation of the problem and the described information, disposition and/or follow-up (as appropriate) that GPA expects from the Supplier will be specified. The Supplier's response shall be made within thirty (30) days unless an extension is acknowledged and approved in writing by the GPA Manager of Engineering.

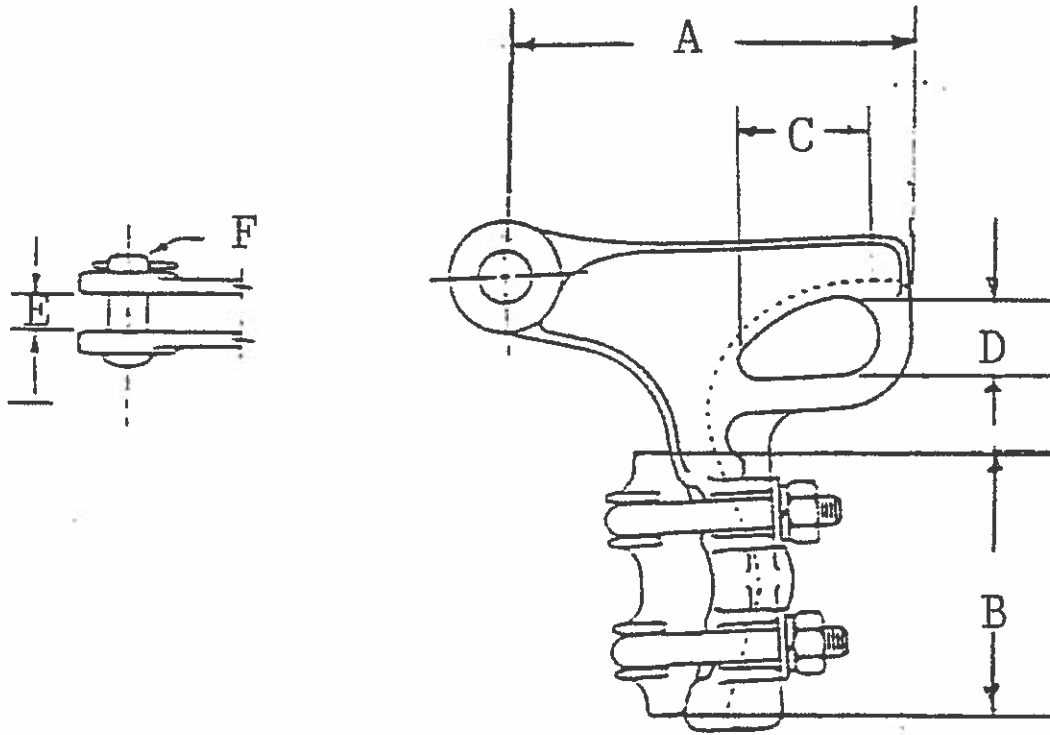
3.0 MATERIALS

- 3.1 Aluminum Clamps: The body and keeper shall be of high strength, heat treated, cast aluminum alloy. Connector fittings shall be malleable iron: bolts, U-Bolts, nuts, and lock washers, shall be steel. All the ferrous parts shall be hot dip galvanized. Cotter pins shall be stainless steel. All material shall be corrosion resistant and non-magnetic. Clamps are to be used with aluminum conductors.
- 3.2. Malleable Iron Clamps: The body, keeper and connector fittings shall be ASTM Grade No. 35018 malleable iron, and hot dip galvanized. The bolts, U-bolts, units, and lock washers shall be galvanized steel. The cotter pins shall be bronze. All materials shall be corrosion resistant. Clamps are to be used with copper conductors.

4.0 DESIGN

The clamps shall be lightweight, of rugged design, and have high and slip strength at least 90 percent of the rated breaking strength of any conductor within their size range. The clamp body and keeper shall be smooth surfaced with all wedges rounded to prevent conductor damage and formation of corona.

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CLAMP, STRAIN ALUMINUM

5.0 CLAMP, STRAIN ALUMINUM

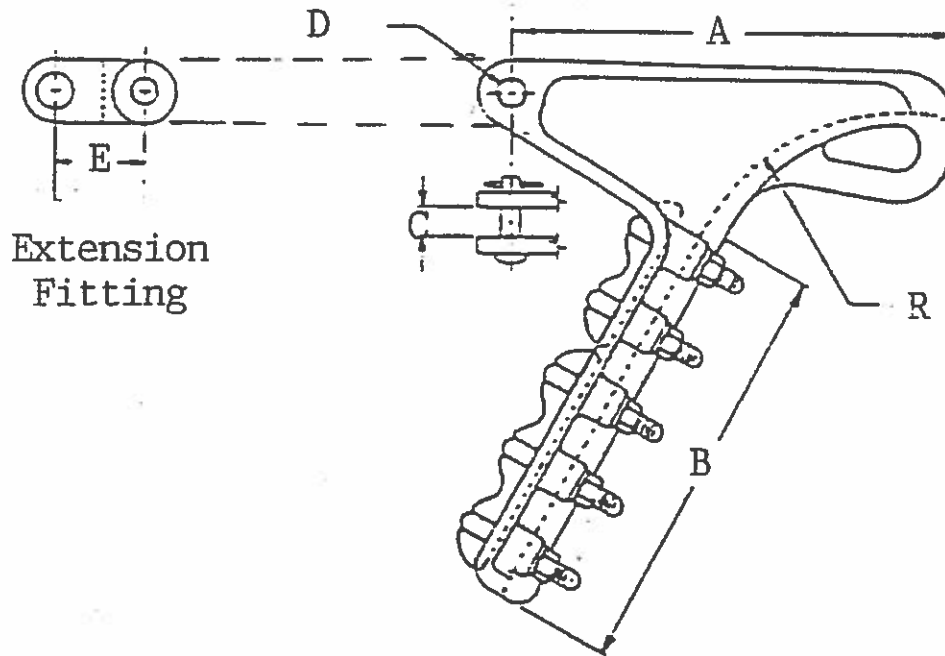
DESIGN FEATURES

- 5.1 The Body and Keeper shall be made of A356-T6 aluminum alloy; Hardware – Hot dip galvanized steel; Cotter Pin – Stainless Steel; Fittings – Ductile iron hot dip galvanized.
- 5.2 The clamp shall be clevis type to be connected to the insulator with a clevis eye.
- 5.3 The clamp shall be used for #2 to 2/O aluminum conductors.

GPA Index No.	Conductor Dia. Inches		"U"- Bolt Number Size		Ultimate Strength Lbs.
	Max.	Min.			
SSOC0157	.62	.25	2	½"	12,000

DIMENSIONS (INCHES)

A	B	C	D	E	F
5-7/8	3-15/16	1-1/2	1-1/8	15/16	5/8



CLAMP, STRAIN ALUMINUM

6.0 CLAMP, STRAIN ALUMINUM

DESIGN FEATURES

- 6.1 The Body and Keeper shall be made of A356-T6 aluminum alloy; Hardware – Hot dip galvanized steel; Cotter Pin – Stainless Steel; Fittings – Ductile iron hot dip galvanized.
- 6.2 The clamp shall be clevis type to be connected to the insulator with a clevis eye
- 6.3 The clamp shall be used for #4/O AWG to 927.2 MCM aluminum conductors.
- 6.4 Index No. SSOC0156 and SSOC0178 shall be for 4/O AWG to 336.4 MCM, and 927.2 MCM aluminum conductors respectively. The clamp for 927.2 MCM shall be provided with an extension fitting.

GPA Index No.	Conductor Dia. Inches		"U" Bolt		Ultimate Strength Lbs.
	Max.	Min.	Number	Size	
SSOC0156	.721	.30	4	1/2"	20,000
SSOC0178	1.318	.71	5	5/8"	30,000

Dimension – Inches

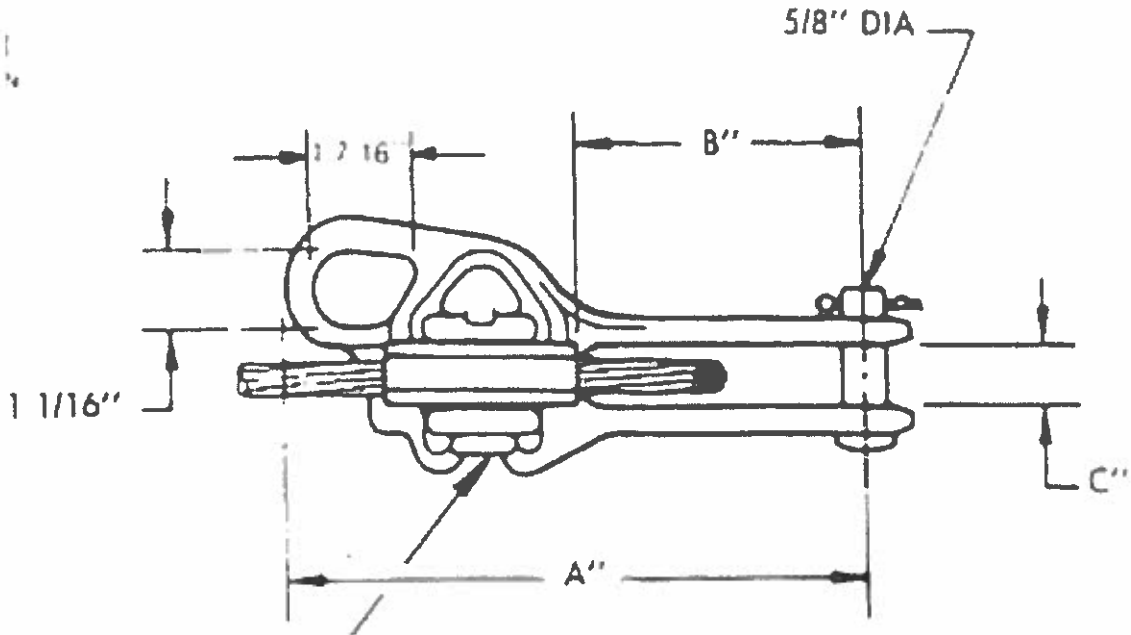
GPA Index No.	A	B	C	D	E	R
SSOC0156	10	9-1/2	1	5/8	-	3-3/4
SSOC0178	14-15/16	13-11/16	1-1/2	3/4	2-7/8	7-1/2

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CLAMP, STRAIGHT LINE SIDE OPENING DEADEND

7.0 CLAMP, STRAIGHT LINE SIDE OPENING DEADEND

DESIGN FEATURES

- 7.1 The Body and Keeper shall be made of A356-T6 aluminum alloy; Hardware – Hot dip galvanized steel; Cotter Pin & Compression Spring – Stainless Steel; Fittings – Ductile iron hot dip galvanized.
- 7.2 The clamp shall be clevis type to be connected to the insulator with a clevis eye
- 7.3 The clamp shall be used for #2 to 927.2 MCM aluminum conductors on GPA poles.
- 7.4 Index No. SSOC0150 and SSOC0151 shall be for #2 AWG to 336.4 MCM, and 927.2 MCM aluminum conductors respectively.

GPA Index No.	Conductor Dia. Inches		"U" Bolt		Ultimate Strength Lbs.
	Max.	Min.	Number	Size	
SSOC0150	0.880	0.250	2	1/2"	10,000
SSOC0151	1.160	0.680	4	1/2"	27,000

Dimension – Inches

GPA Index No.	A	B	C
SSOC0150	12.38	7	0.94
SSOC0151	19.88	8	1.25

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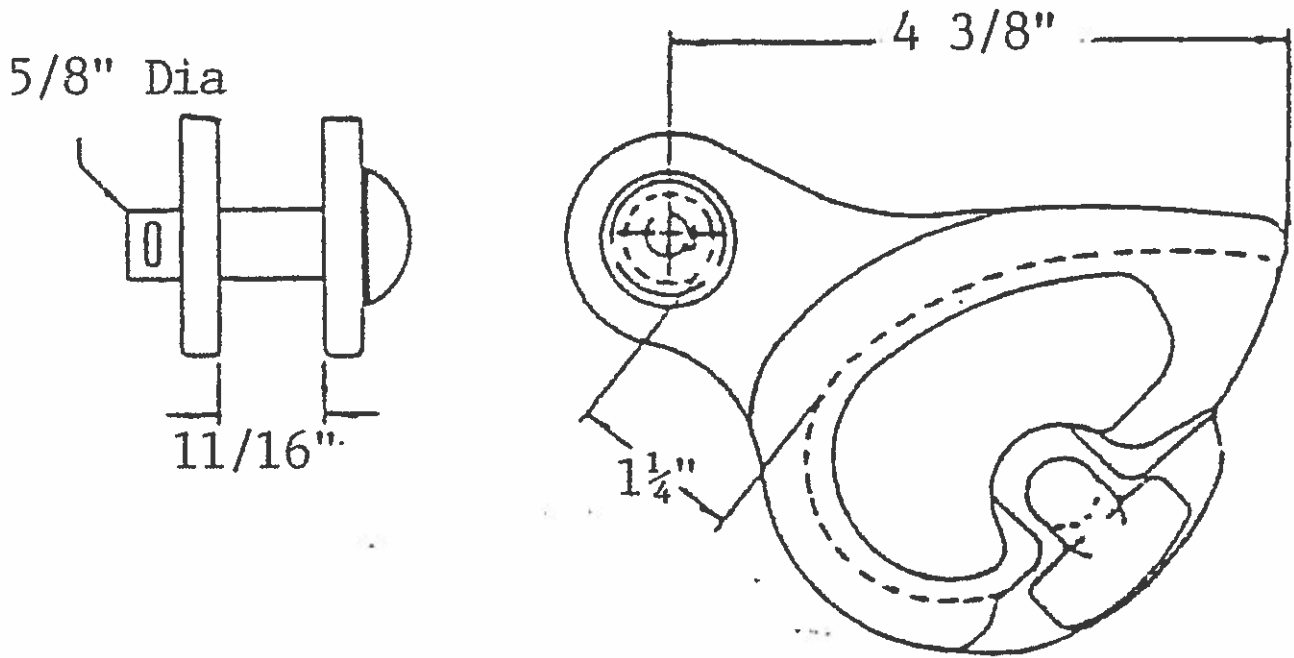
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CLAMP, STRAIN GALVANIZED

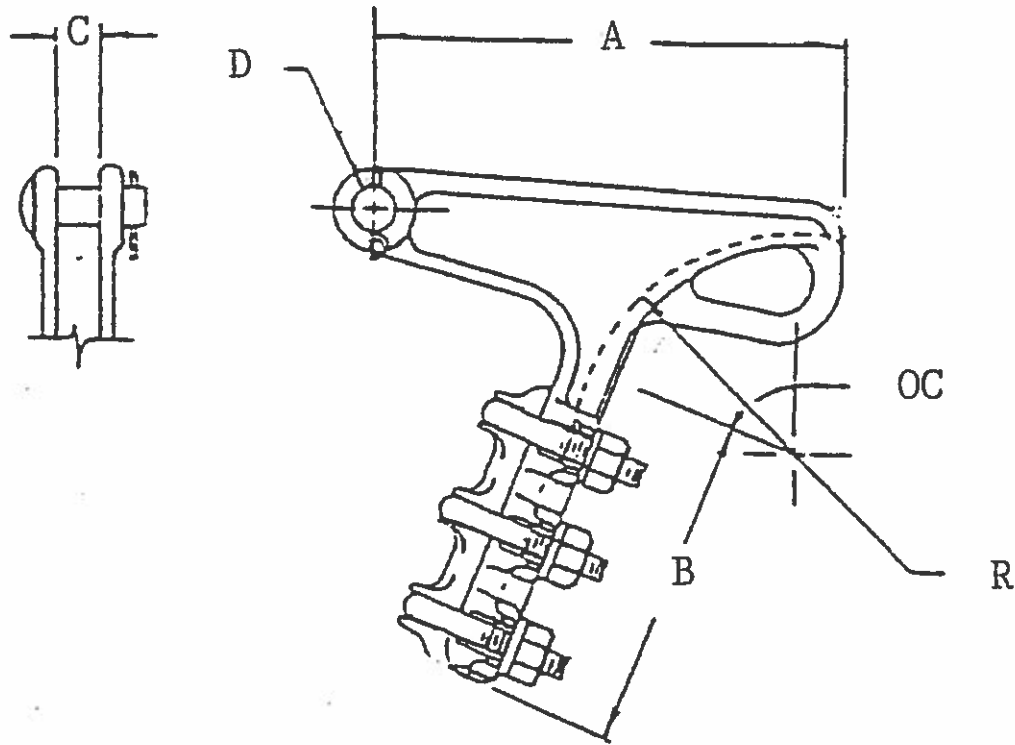
8.0 CLAMP, STRAIN GALVANIZED

DESIGN FEATURES

- 8.1 Clamp shall be made of cast malleable iron and the J-bolt keeper from drop forged steel. Ferrous parts shall be hot dip galvanized.
- 8.2 The clamp shall be clevis type to be connected to the insulator with a clevis eye.
- 8.3 The clamp shall be used for #6 to 1/O copper conductors.

GPA Index No.	Conductor Diameter (Inches)		Ultimate Strength Lbs.
	Max	Min	
SSOC0159	.375	.156	8,000

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CLAMP, STRAIN GALVANIZED

9.0 CLAMP, STRAIN GALVANIZED

DESIGN FEATURES

- 9.1 The Body and Keeper shall be made of hot dip galvanized ductile iron; Hardware – Hot dip galvanized steel; Cotter Pin – Stainless Steel; Fittings – Ductile iron hot dip galvanized.
- 9.2 The clamp shall be clevis type to be connected to the insulator with a clevis eye.
- 9.3 The clamp shall be used for #2 to 4/O copper conductors.

GPA Index No.	Conductor Dia. Inches		"U" Bolt		OC DEG.	Ultimate Strength Lbs.
	Max.	Min.	Number	Size		
SSOC0158	.68	.30	3	1/2"	80	20,000

Dimension – Inches

GPA Index No.	A	B	C	D	E	R
SSOC0158	10	9-1/2	1	5/8	-	3-3/4

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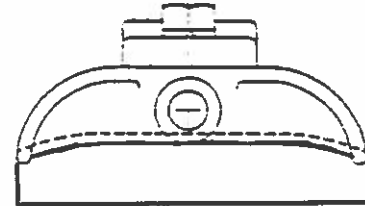
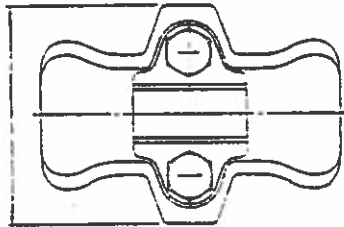
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3-7/8"



5-1/4"

CLAMP LINE POST STRAIGHT

10.0 CLAMP, LINE POST STRAIGHT

DESIGN FEATURES

- 10.1 Clamps are for uses with both upright and horizontally mounted clamp top line post insulators. Clamp shall accommodate conductor diameters ranging from .35" through 1.50".
- 10.2 Clamps shall be mounted on a metal cap cemented to the top of the line post porcelain.
- 10.3 Straight line clamps shall be designed to hold conductors without damage on tangents and line angles up to 15 degrees when the clamp is installed to bisect the angle (7-1/2 degrees on each side).
- 10.4 The clamps shall accommodate vertical angles up to a maximum of 40 degrees (20 degrees each side of clamp).

GPA Index No.	Conductor Diameter Maximum Inches	Conductor Diameter Minimum Inches
SSOC0172	.84	.35
SSOC0175	1.50	1.00

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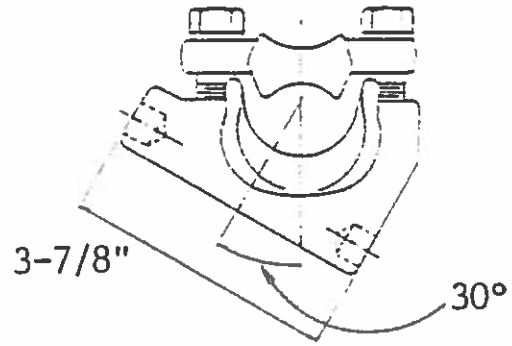
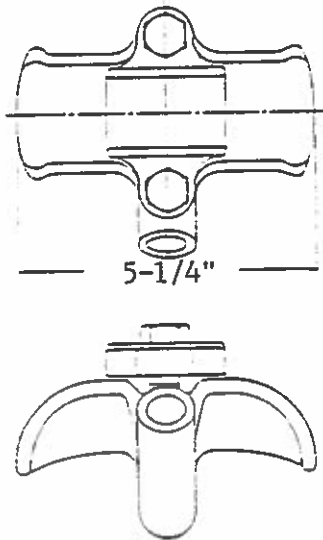
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CLAMP, LINE POST ANGLE

11.0 CLAMP, LINE POST ANGLE

DESIGN FEATURES

- 11.1 Angle clamps are used for turning larger angles than are possible with standard clamp.
- 11.2 Clamps shall be interchangeable with standard clamp top line clamps designed for use on upright or horizontally mounted.
- 11.3 Angle clamps shall be designed to accommodate line angles up to 30 degrees when clamp is installed to bisect line angle (15 degrees each side) and vertical angles to 40 degrees.

GPA Index No.	Conductor Diameter Maximum Inches	Conductor Diameter Minimum Inches
SSOC0173	.84	.35
SSOC0176	1.65	1.00

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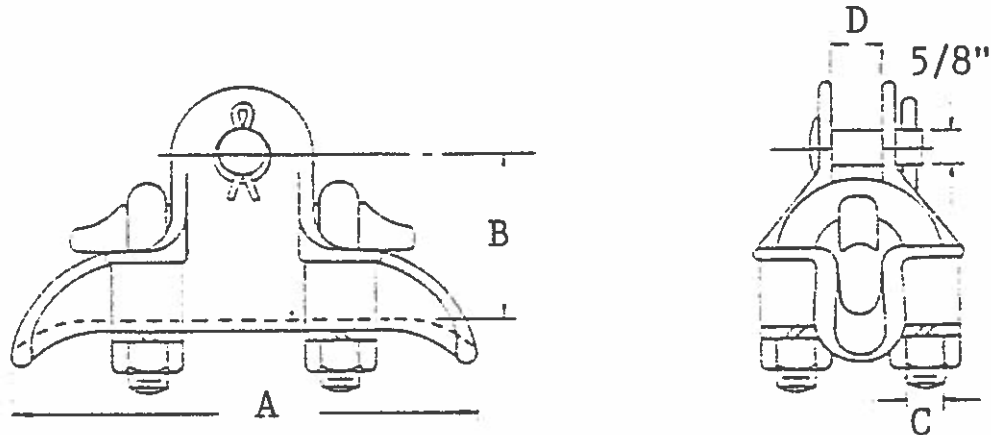
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CLAMP, STATIC STRAIGHT

12.0 CLAMP, STATIC STRAIGHT

DESIGN FEATURES

- 12.1. The clamp body, keeper, and connector fittings shall be malleable iron, hot dip galvanized. The cotter pin shall be bronze.
- 12.2. Clamp shall be attached to the structure with any standard link or shackle.
- 12.3. Dimensions and requirements are shown on the table below.

GPA Index No.	Connector Fitting	Cable Diameter, Inches		Dimensions, Inches				Ultimate Strength Pounds
		Max.	Min.	A	B	C	D	
SSOC0155	Clevis	.70	.30	7	2-1/4	1/2	25/32	18,000

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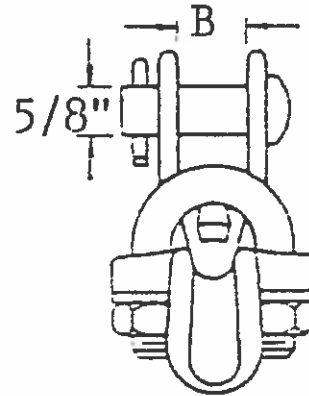
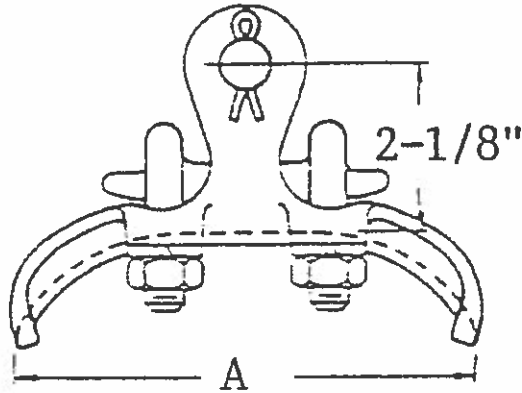
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CLAMP, STATIC ANGLE

13.0 CLAMP, STATIC ANGLE

DESIGN FEATURES

- 13.1 The clamp body, keeper, and connector fittings shall be malleable iron, hot dip galvanized. The cotter pin shall be bronze.
- 13.2 Clamp shall be designed for ground wire support where construction requires turning up to 120 degrees.
- 13.3 Clamp shall be attached to the structure with any standard link or shackle.
- 13.4 Dimensions and requirements are shown on the table below.

GPA Index No.	Cable Diameter, Inches		Dimensions, Inches		Ultimate Strength Pounds
	Max.	Min.	A	B	
SSOC0161	.70	.30	6	1-1/8	18,000

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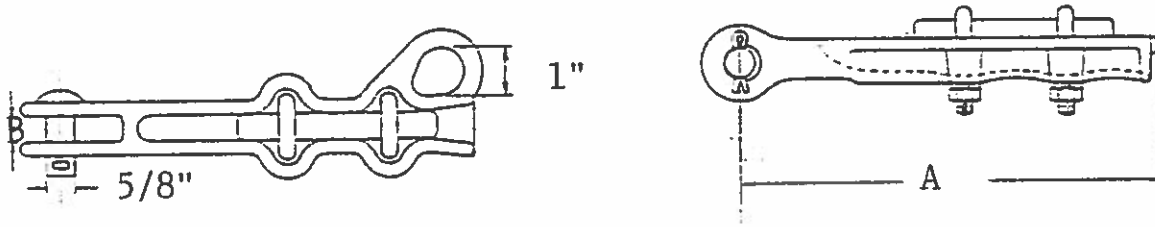
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CLAMP, STRAIN STATIC

14.0 CLAMP, STRAIN STATIC

DESIGN FEATURES

- 14.1 The clamp body, keeper, and connector fittings shall be malleable iron, hot dip galvanized. The cotter pin shall be bronze.
- 14.2 Clamp shall be used for dead-ending distribution static wire where a strong clamp is required.
- 14.3 Clamp shall develop ample holding power for a wide range of copper, aluminum or ACSR primary feeder conductor sizes.
- 14.4 Dimensions and requirements are shown on the table below.

GPA Index No.	Connector Fitting	Cable Diameter, Inches		Dimensions, Inches		U-Bolts No. Size		Ultimate Strength Pounds
		Max.	Min.	A	B	No.	Size	
SSOC0154	Clevis	.62	.30	8-3/8	3/4	2	1/2	10,000

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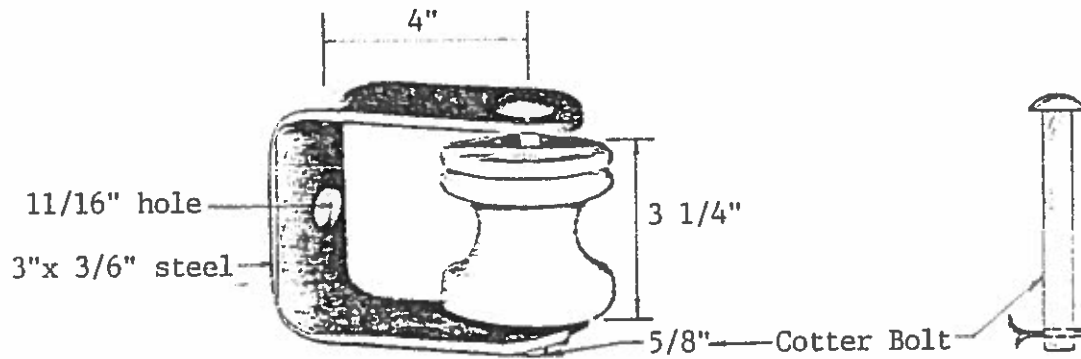
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CLEVIS, SECONDARY

INDEX No. SSOC0190

15.0 CLEVIS, SECONDARY

DESIGN FEATURES

- 15.1. Clevis shall be made of hot dipped galvanized steel with cotter bolt and pin.
- 15.2. Mechanical strength shall be made 3,000 pounds.

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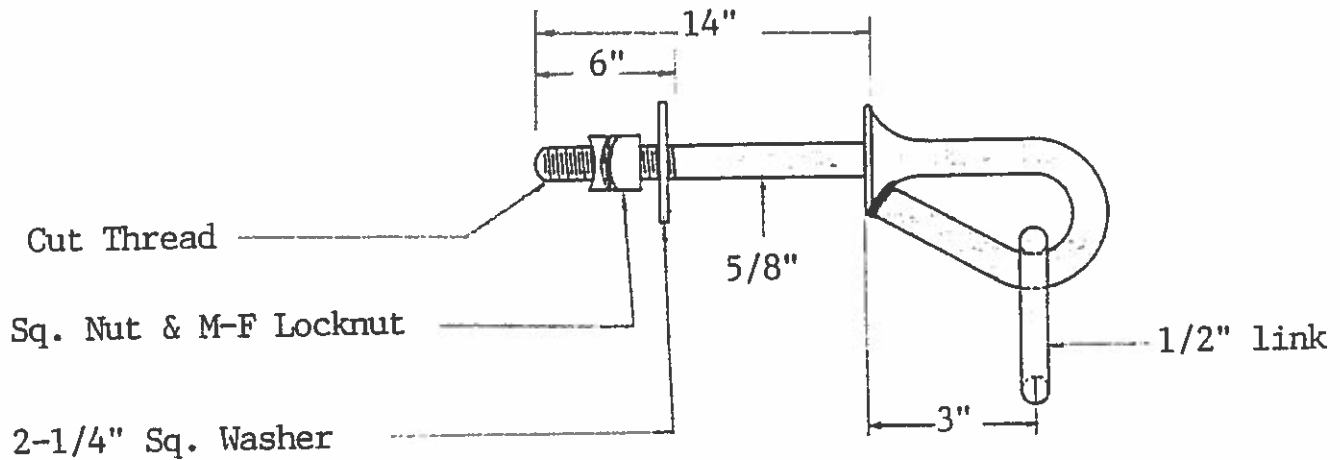
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SHIELD, STATIC WIRE SUPPORT

16.0 SHIELD, STATIC WIRE SUPPORT

DESIGN FEATURES

- 16.1 Shield wire supports provide an efficient and inexpensive means for supporting static wire clamps.
- 16.2 Bracket portion is forged in one piece and the loop and solidly welded compete with link, square washer, square nut and lock nut as shown.
- 16.3 Shield wire support shall be hot dip galvanized.
- 16. Shank length 14 inches and thread length 6 inches.
- 16.5 GPA Index No. SSOS1166.

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