COMPRESSION DEAD-END & JUMPER TERMINAL

FOR ACSR & ACSS CONDUCTORS

INSTALLATION INSTRUCTIONS

⚠ IMPORTANT SAFETY INFORMATION

READ AND COMPLETELY UNDERSTAND ALL INSTRUCTIONS BEFORE INSTALLING PRODUCT. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN PERSONAL INJURY OR DEATH.

This product is intended for use by trained technicians only. This product should not be used by anyone who is not familiar with and not trained to use it. When working in the area of energized lines, extra care should be taken to prevent accidental electrical contact. Be sure to wear proper safety equipment per your company protocol. These instructions are not intended to supersede any company construction or safety standards. These instructions are offered only to illustrate safe installation for the individual. PLP products are intended for the specified application only. Do not modify this product under any circumstances. Do not reuse or reinstall any PLP product unless that capability is expressly indicated in the product's Installation Instructions. For proper performance and personal safety, be sure to select the proper PLP product before installation. PLP products are precision devices. To ensure proper performance, they should be stored in cartons under cover and handled carefully.

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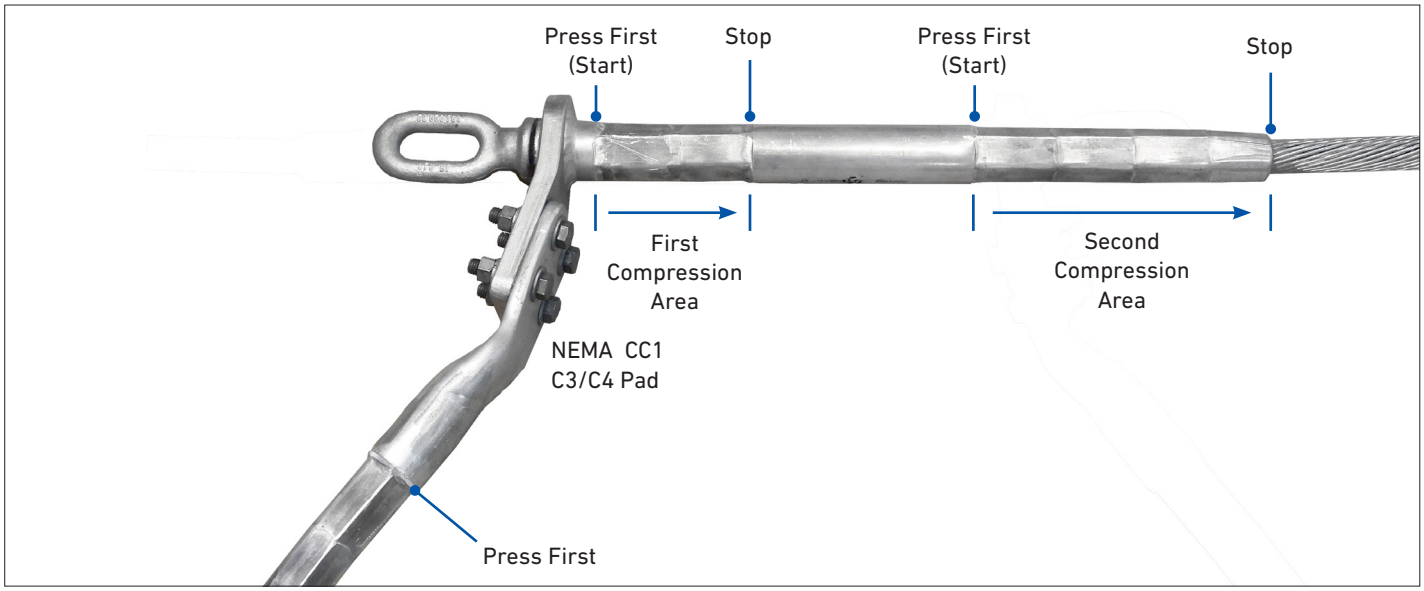
INSTALLATION OVERVIEW



NOTE: The product is imprinted with instructional words, such as "Press First," "Stop," and "Compress to End" to aid installation.

PRODUCT COMPATIBILITY

These Installation Instructions are valid for PLP Compression Dead-End Assemblies (CMPDE), Compression Jumper Terminal Assemblies (CMPTM) individually, or the Full Compression Dead-End with Jumper Terminal (CMPDEJ), which contains both procedures for ACSR conductors. For ACSS Conductors, the high-temperature version of these products is required. High-temperature products are denoted by catalog numbers with an "HT" suffix (**EXAMPLE:** CMPDE-XXXXHT, CMPTM-XXXXHT, CMPDEJ-XXXXHT).

PRECAUTIONARY MEASURES

CAUTION

Failure to follow the precautions, notes, and steps contained within these Installation Instructions represents a misapplication of the product. This product and application procedure are for ACSR & ACSS conductors.

(1) Ensure that the correct compression product has been selected for the conductor. Compare catalog numbers of the product with associated conductor size/range published in PLP literature.

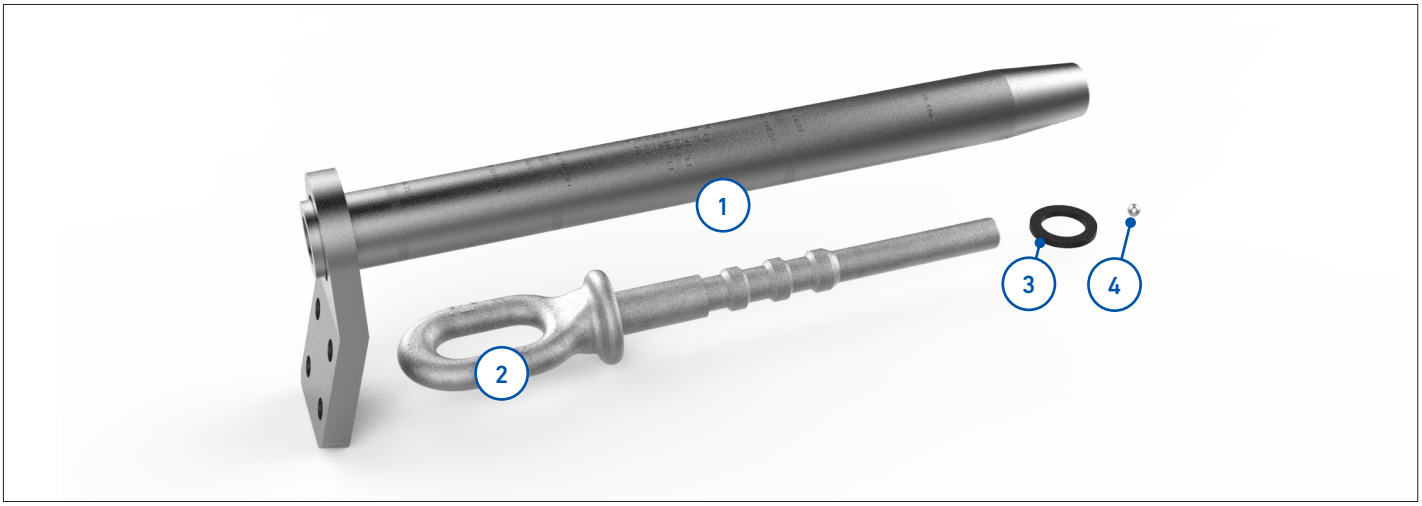
(2) Be certain that the dies being used to compress the fittings match the engraved sizes marked on the product surfaces. The dies will have markings on the surface of the die face or the edges of the die.

(3) The compression press and the dies **MUST** be inspected before use. Ensure that they are well lubricated; there are no hydraulic oil leaks; the press is of the correct size (60- or 100-Ton) to adequately compress the fittings; die surfaces mate completely when the press is fully extended; and that the dies are in good condition without significant damage or wear.

(4) Before installation, the mating surfaces of the products to be installed, such as the inner bore of the aluminum tube, the inner bore and outer surfaces of steel hardware, must be inspected for surface imperfections, etc. If any significant irregularities exist, the products **MUST** be discarded or returned to PLP. **Do NOT install defective or damaged compression hardware.**

PACKAGE COMPONENTS

COMPRESSION DEAD-END



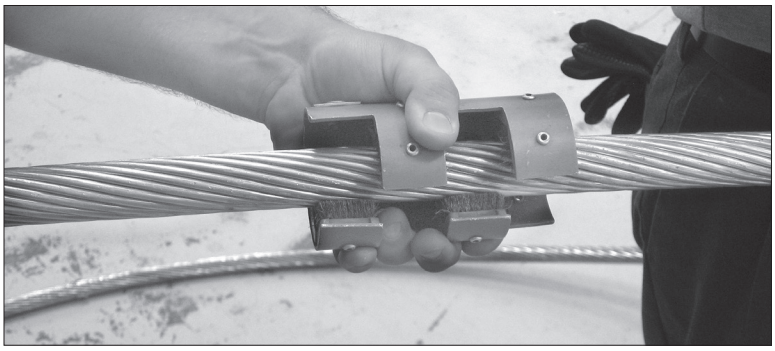
1. Aluminum Alloy Dead-End Body
2. Galvanized Steel-Forged Dead-End Eye
3. Seal
4. Filler Port Ball

Tools Required:

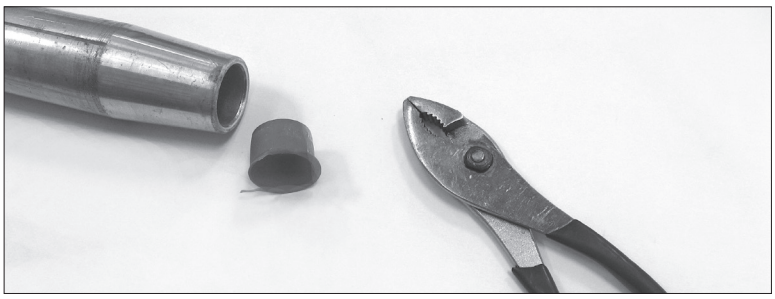
- 60- or 100-Ton Press
- Product-Specific Steel (SH) and Aluminum (AH) Dies
- Filler Compound (Rated for Application)
- Hammer
- File
- Measuring Tape
- Utility Knife

DEAD-END ASSEMBLY APPLICATION

1 Begin by cleaning/wire-brushing the entire area to be covered by the compression hardware per your standard company practices. Ensure that no residue or surface particles remain.

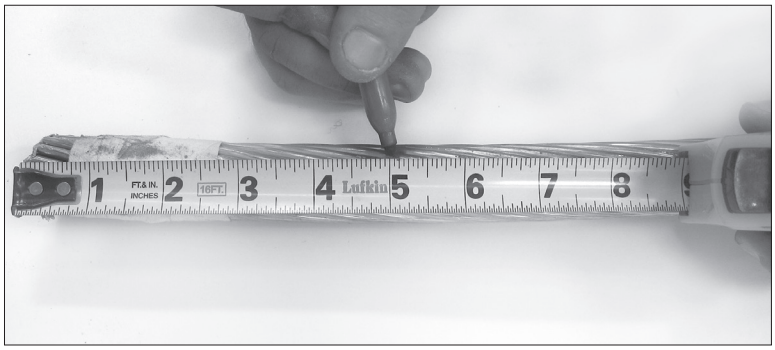


2 Remove the plastic plug from the dead-end body. Inspect the inside of the hardware to ensure that no sharp points or other imperfections remain.



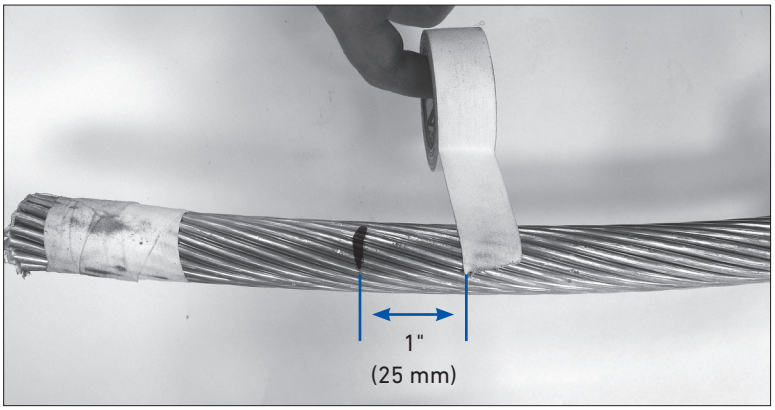
3 Look for the words "Press First" printed on the dead-end eye tube. Measure from the "Press First" knurl to the end of the tube. Add 1" (25 mm) to this length and mark that distance on the aluminum strands of the conductor; this will be your cutting mark.

NOTE: The extra 1" (25 mm) allows for aluminum strand expansion when the dead-end body is compressed.



4 Apply tape approximately 1" (25 mm) back from the cutting mark.

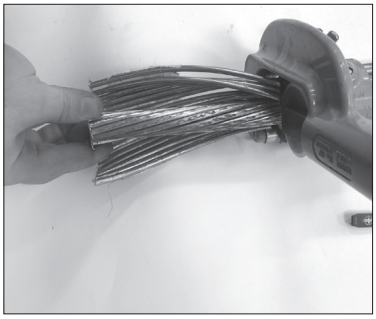
NOTE: This is to secure the aluminum strands and maintain the conductor diameter after the cut is made.

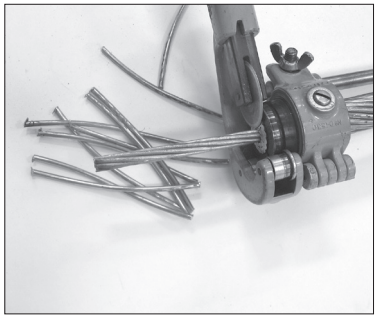


5 Cut the outer aluminum strands at the cutting mark to expose the steel core. Take care not to damage the steel core strands during this process. Safety glasses are recommended when cutting.

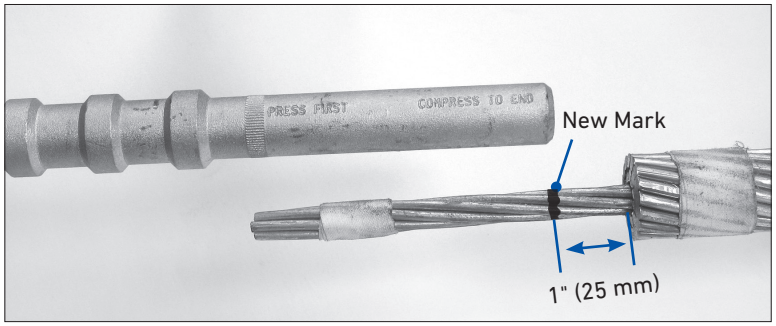
CAUTION

To help prevent damage to the conductor core, use a utility-approved trimming tool to cut the strands. Deformation of the outer strands caused during cutting may make it difficult to assemble the fittings.





6 On the steel core strands, place a mark 1" (25 mm) from the cut made in Step 5. Secure the core strands with tape, if desired.

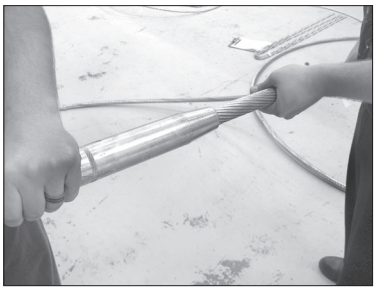


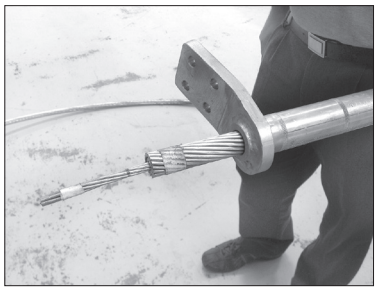
7 Slide the aluminum dead-end body all the way over the conductor. Once the conductor is through, apply a new piece of tape to the end to keep the strands in place.

NOTE: The aluminum alloy dead-end body will be slid back down after compressing the steel dead-end eye.

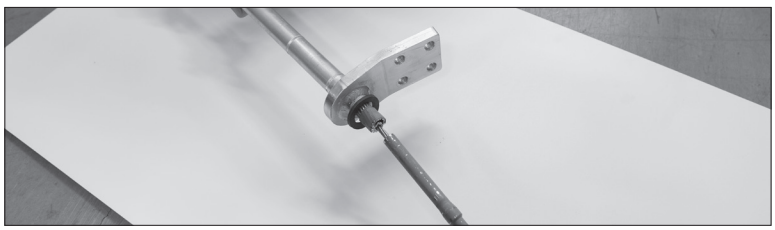
To assist installation, the tip of the conductor should be inserted slightly into the aluminum tube to secure the strands. The tape should then be removed as the strands are not captured by the aluminum dead-end body. To better slide the tube over the conductor, turn the tube with the lay direction of the conductor strands to help keep them tight.

Occasionally, there will be curvature in the conductor from the reel. To straighten, apply one quarter of the fitting length of the aluminum dead-end body to the conductor and bend in the opposite direction every one quarter of the length of the aluminum dead-end body until the conductor is straightened and fully inserted through the tube.

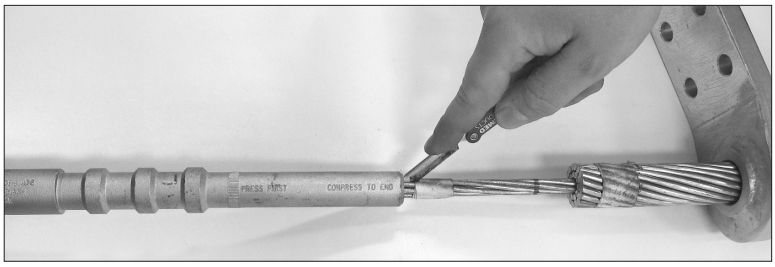




8 Ensure that the aluminum tube seal in position. See image for placement.

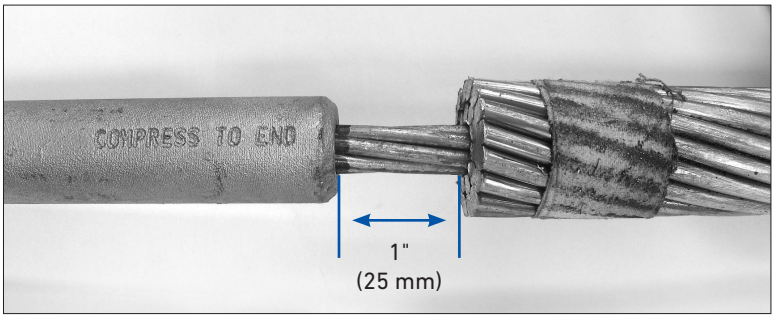


9 Place the end of the steel core strands in the steel tube and remove any tape from the steel core strands, if applied.



10 Slide the steel core of the conductor into the dead-end eye tube. Make sure that the steel core goes in at least as far as the mark so that roughly a 1" (25 mm) gap remains between the tube and the aluminum strands.

NOTE: The gap will allow for expansion of the aluminum during compression.



11 Prepare the compression press and install the correct die. The die size required is marked on the body.

PRECAUTIONARY MEASURES - READ BEFORE BEGINNING COMPRESSIONS

CAUTION

Failure to follow the precautions, notes, and steps contained within these Installation Instructions represents a misapplication of the product.

To be a correct application, compression curvature must be kept to a minimum, preferably less than 1/2 the aluminum tube diameter from the centerline. For the steel, curvature should not be visible. Excessive compression hardware curvature is a misapplication of the product. Uneven lubrication on the dies can result in curvature. Take care that either die is not overly lubricated.
Curvature occurs due to an unequal friction and material expansion between the top and bottom dies of the press.

To prevent curvature, the following steps can be taken:

(1) Evenly lubricate the compression dies and then wipe the dies clean with a cloth.

(2) As an alternative to traditional lubricants, the plastic bag originally containing the compression hardware may be reapplied over the fittings and then compressed. The bag in this instance serves the same purpose as a lubricant and it allows equal expansion of the material underneath the compression press.

(3) Steady the material when applying compressions. Apply compressions slowly and ensure that the hardware runs through the centerline of the press.

(4) Overlap succeeding compressions by approximately 1/3 to 1/2 of their lengths to ensure that they are evenly applied and compressed to the fullest extent.

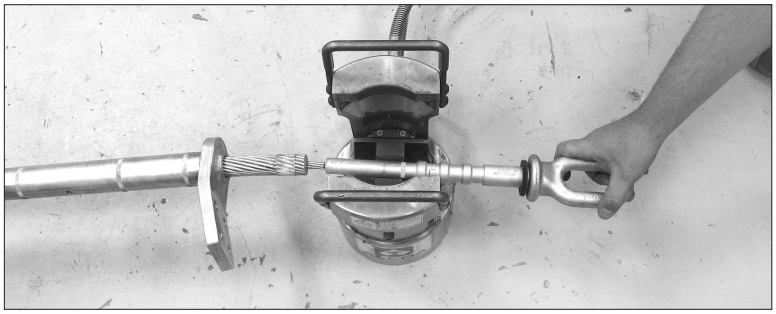
(5) Slight curvature of steel hardware may be straightened using the press; this procedure is **NOT** acceptable for the aluminum tube.

12 Ensure that the compression die surfaces are clean and free of burrs or debris. If it assists application, lubricate the compression dies with a lubricant of your choice and wipe excess off with a cloth.

CAUTION

Clean dies and sufficient but not excessive lubrication are the most important factors in applying proper compressions and avoiding curvature.

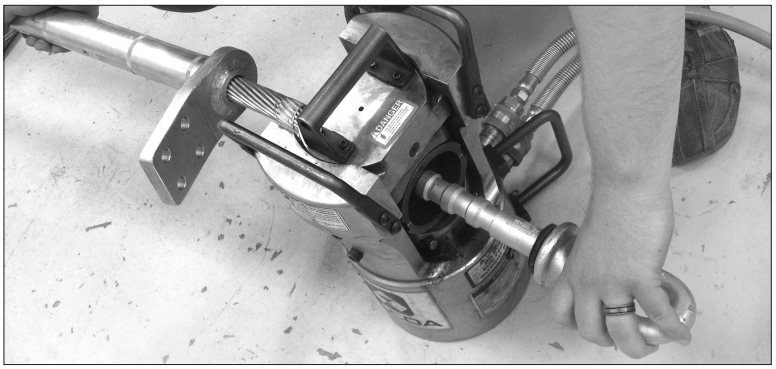
13 Insert the assembly into the compression press. Ensure the proper alignment of the steel eye with the dead-end body.



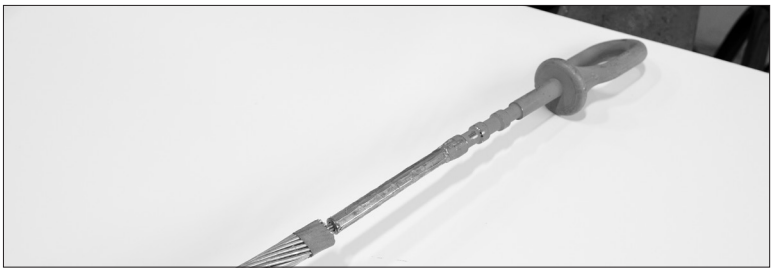
14 Starting at the knurl next to the words "Press First" on the dead-end eye tube, compress the steel dead-end eye onto the steel conductor core, and work out towards the conductor.

CAUTION

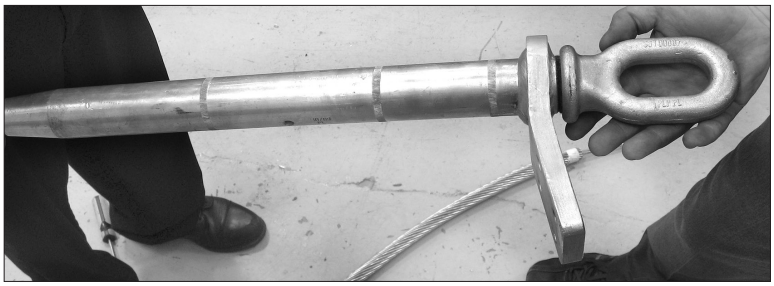
Full compressions must be applied from the knurl to the end of the dead-end eye tube. Failure to do so constitutes a misapplication of the product.



15 Remove the tape from the outer aluminum strands.



16 Slide the aluminum dead-end body and seal back against the dead-end eye. Rotate the dead-end eye so that it is properly positioned for your attachment application.



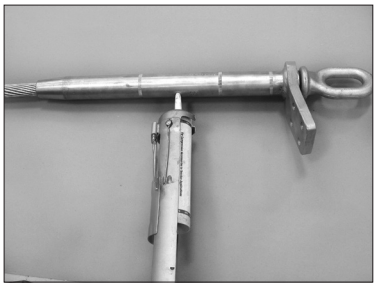
17 Apply appropriate inhibitor (filler) compound through the filler hole in the aluminum body.

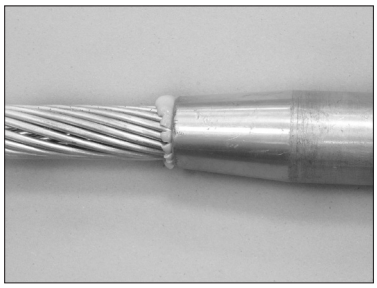
Cease application when filler compound seeps out of the tapered end of the dead-end body.

NOTE: The filler compound will continue to seep out as compressions are made.

⚠ WARNING

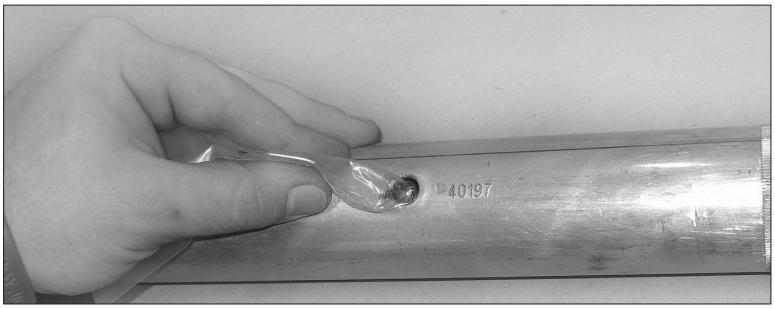
For ACSS conductors, the inhibitor must be rated for temperatures up to 250°C.



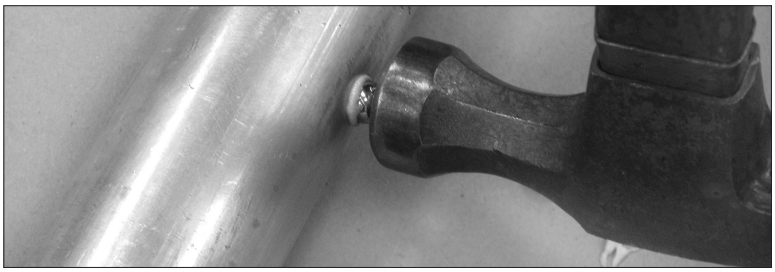


18 Seal the filler hole by inserting the stainless steel ball.

NOTE: The plastic bag containing the ball can be used to more easily position and avoid dropping the ball.

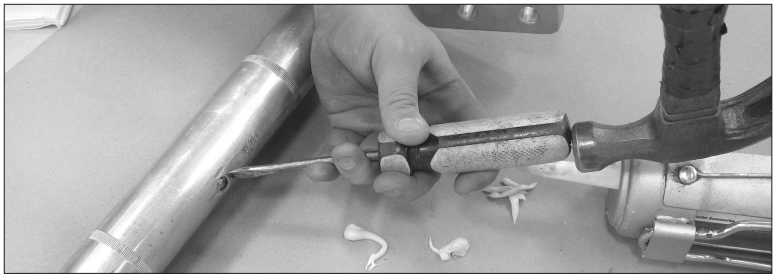


19 Tap the ball into the filler hole using a hammer until the ball is flush with the outer surface of the aluminum tube. Remove the plastic bag, if used.



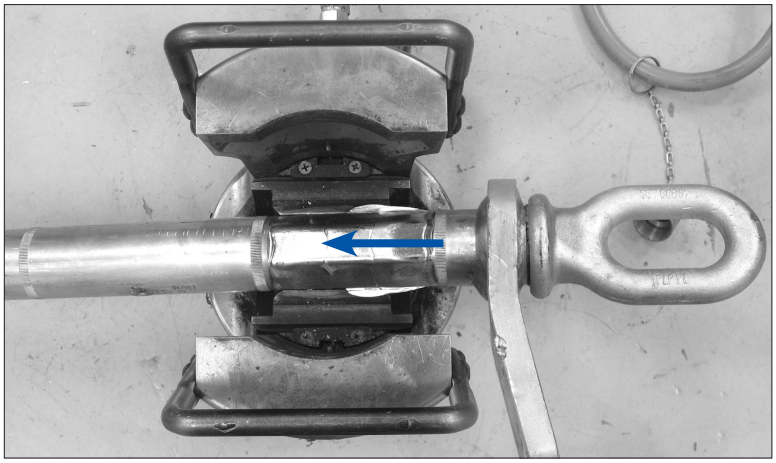
20 Peen over the aluminum edges of the filler hole with a hammer and flat head screwdriver to secure the ball into place.

Aluminum must be peened around ball in order to retain.

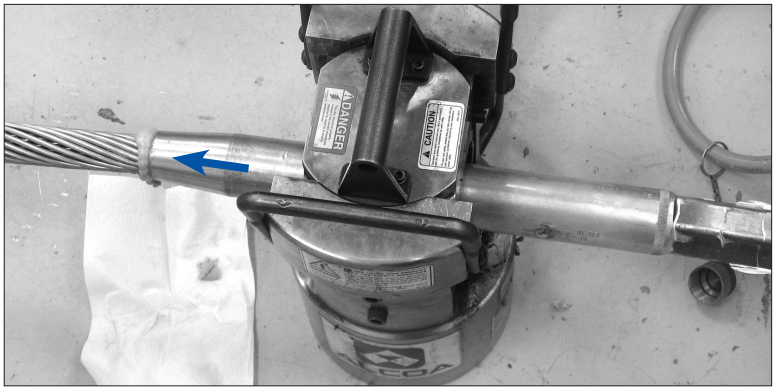


21 Insert the dead-end body into the press at the knurl near the dead-end's steel eye marked with the words "Press First" while maintaining the alignment of the hardware.

22 Compress the aluminum body over the steel eye from the "Press First" knurl to the "Stop" knurl in the First Compression Area. The First Compression Area is located near the dead-end eye. See image at right or refer to the Installation Overview image on page 1.

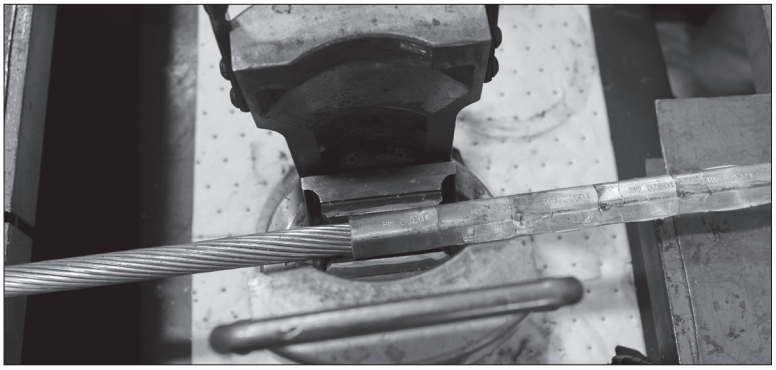


23 Position the dead-end body into the press at the Second Compression Area's knurl marked with the words "Press First."



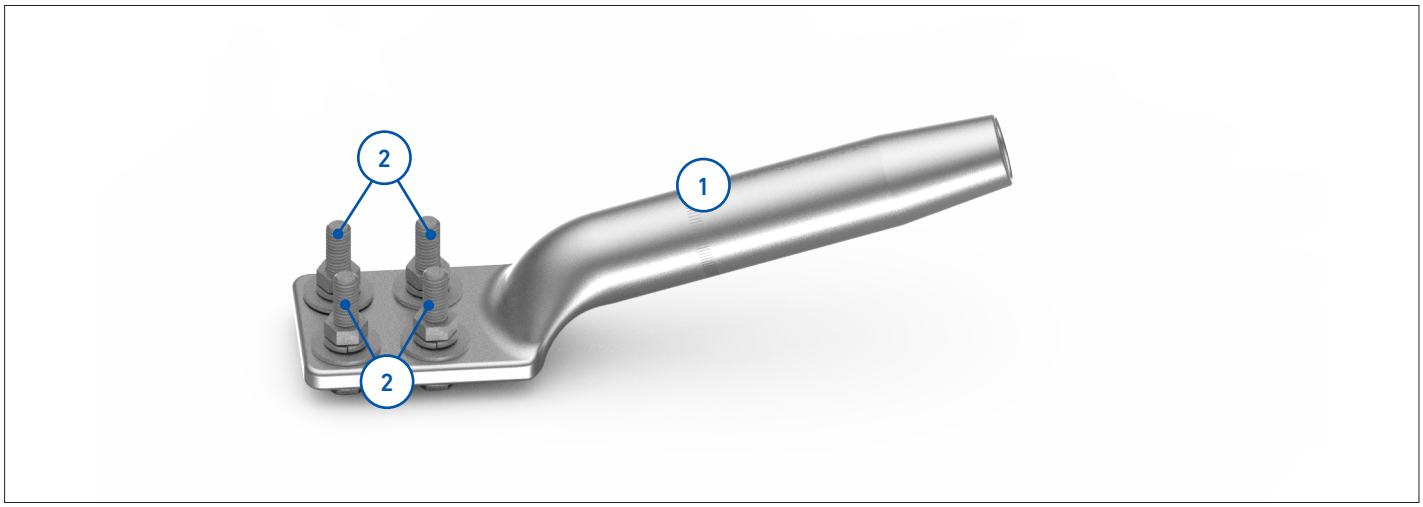
24 Compress the dead-end body from the knurl next to the words "Press First" (printed on the body) all the way out to the tapered end. Each successive compression should overlap the previous compression by 1/3 to 1/2 of a compression.

NOTE: The dual graduated taper of the aluminum tube end is designed to be compressed over. Doing so gradually reduces the strain on both the conductor and hardware and makes the connection more resistant to vibration and future strand damage.



PACKAGE COMPONENTS

JUMPER TERMINAL



1. Aluminum Alloy Jumper Body
2. Fastener Kit

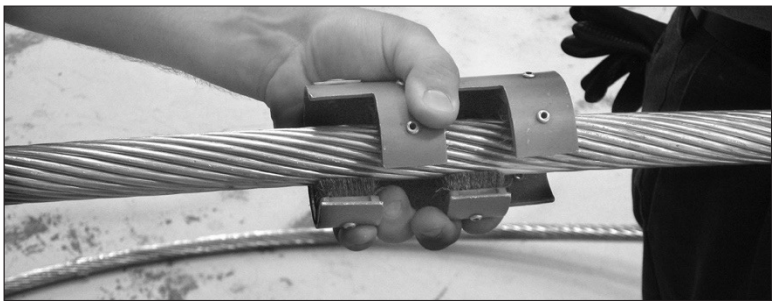
Tools Required:

- 60- or 100-Ton Press
- Product-Specific Steel (SH) and Aluminum (AH) Dies
- Filler Compound (Rated for Application)
- Caulking Gun
- File
- Measuring Tape
- Utility Knife

JUMPER TERMINAL APPLICATION

1

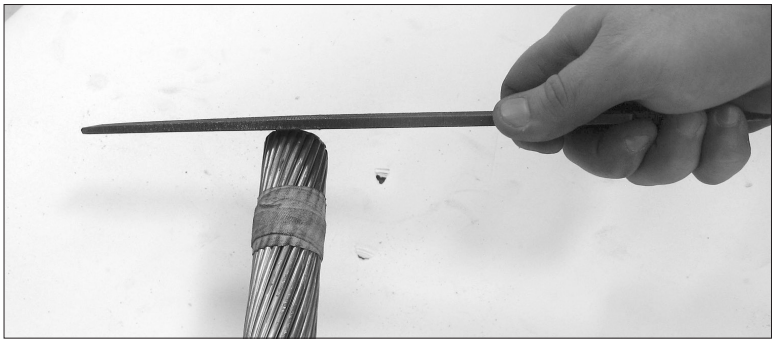
Begin by cleaning/wire-brushing the entire area to be covered by the compression per your standard company practices. Ensure that no residue or surface particles remain. Conductor strands may be taped to help hold in place.



2

If necessary, file down the conductor to ease insertion into the jumper terminal.

NOTE: In order to maintain the outer diameter of the conductor and ease installation, PLP suggests that the outer aluminum strands should be first trimmed back using a utility-approved trimming tool. After, the steel core should then be trimmed back even with the aluminum strands per your standard company practices.



3

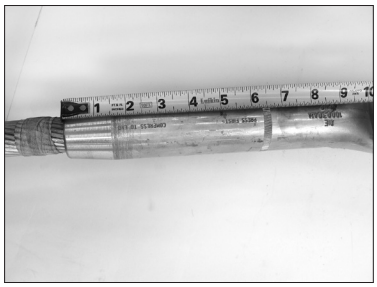
Remove the plastic plug (if present) from the aluminum body. Inspect the inside of the hardware to ensure that there are no sharp points or other imperfections.

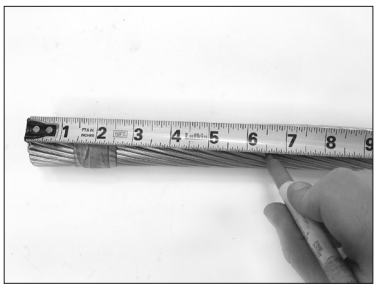
4

Measure the terminal from the taper to the knurl to check depth.

Mark the conductor with this measurement.

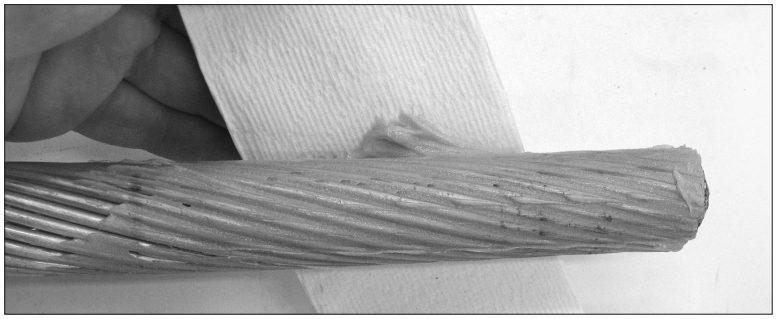
NOTE: This is to ensure that it is inserted into the jumper terminal to the right depth.





5 Apply filler compound to the aluminum conductor strands back to the mark.

> **⚠ WARNING**
>
> For ACSS conductors, the inhibitor must be rated for temperatures up to 250°C.



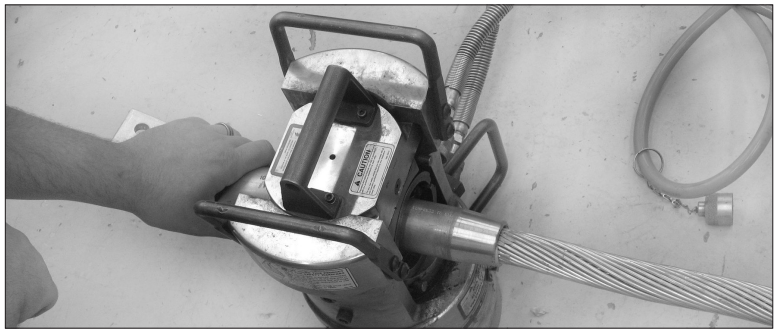
6 Fully insert the conductor into the jumper terminal.

NOTE: To assist installation and better slide the tube over the conductor, turn the tube with the lay direction of the conductor strands to help keep them tight.

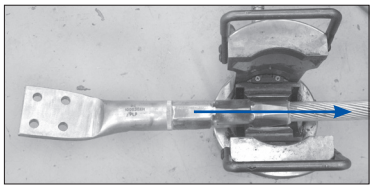
7 Ensure that the conductor is seated and that the terminal is oriented properly.

8 Insert the jumper terminal into the press and compress it starting from the “Press First” knurl and moving out to the edge of the tube.

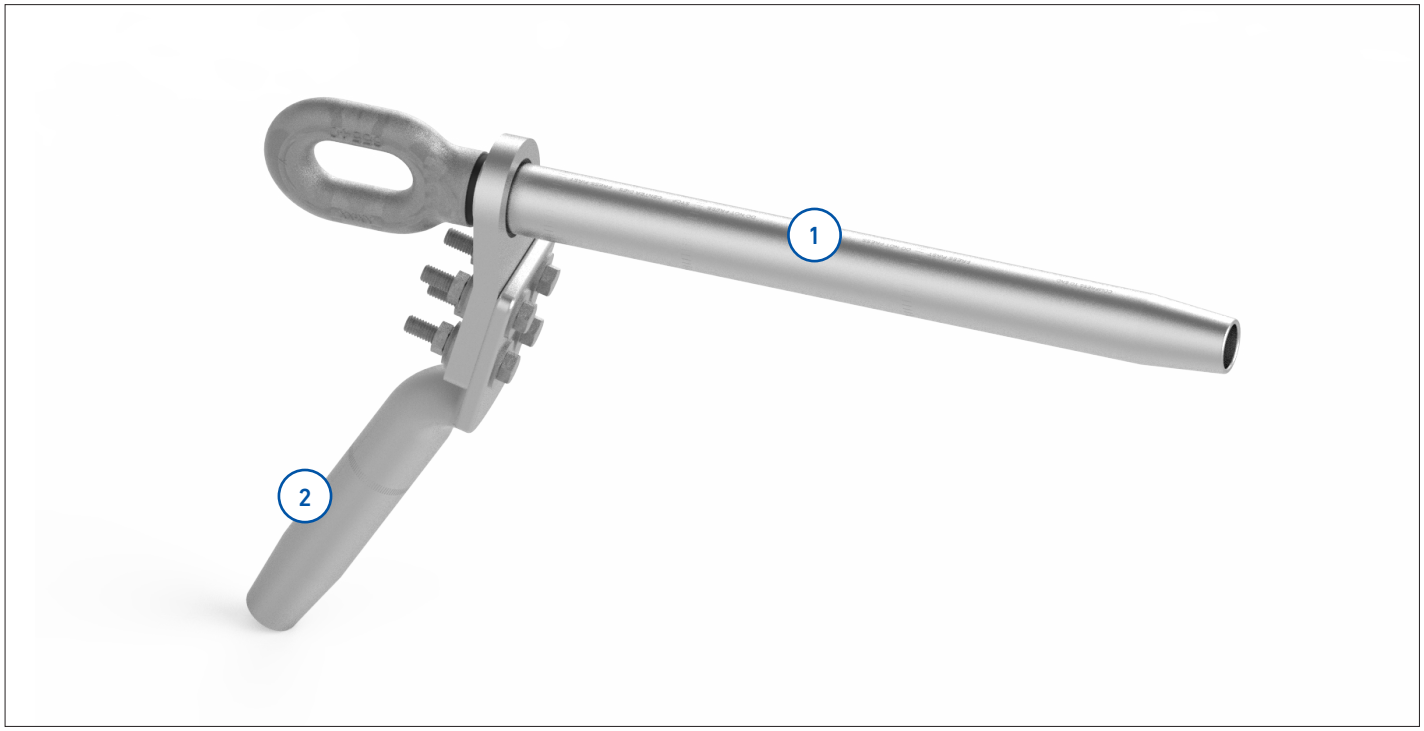
NOTE: For more details on proper compression, consult the Dead-End Assembly instructions provided in a previous section of this document.



9 Each successive compression should overlap the previous compression by 1/3 to 1/2 of the die size.



DEAD-END JUMPER ASSEMBLY



1. Dead-End
2. Jumper Terminal

Tools Required:

- Ratchet Wrench
- Socket
- Torque Wrench
- File
- Measuring Tape
- Utility Knife

FULL DEAD-END ASSEMBLY APPLICATION

1. Check that the pad connections are free from damage and residue. Thoroughly clean the pads of both the dead-end and the jumper terminal with a wire brush to remove any oxidation.

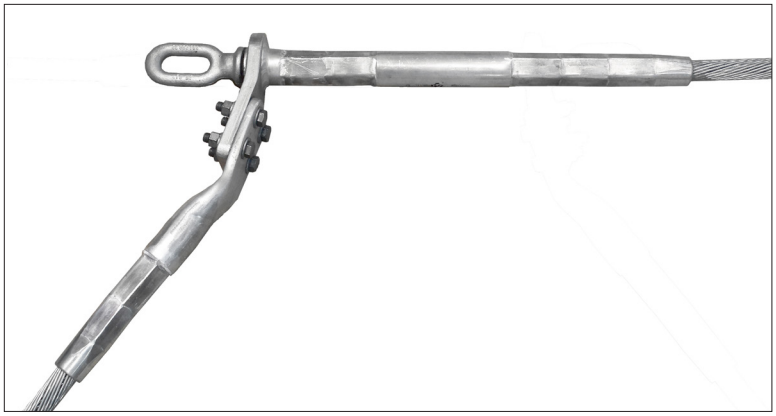
2. Coat the dead-end terminal pad with conductive electrical joint compound. Spread the compound evenly over the pad to ensure total coverage.

CAUTION

DO NOT use inhibitor (filler) compound that is used to fill the compression dead-end before compressions.

3. Insert a flat washer onto each bolt and thread through the pad. On the opposite end, apply the other flat washer, then lockwasher, then nut, and hand-tighten. Once tight, torque the bolts to at least 40 ft-lb (54 Nm), revisiting each bolt several times to ensure that the pad is fully compressed and that all bolts are tightened to the proper specification.

4. Completed Dead-End and Jumper Terminal assembly.



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