



# COMPRESSION SPLICE FOR ACSR & ACSS CONDUCTORS

## INSTALLATION INSTRUCTIONS

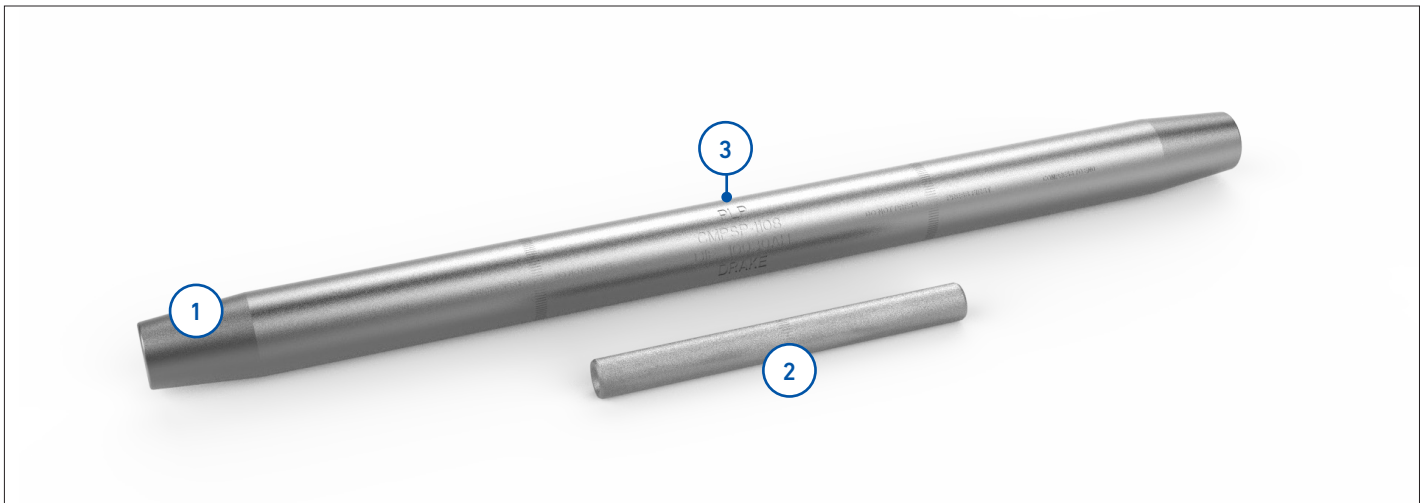


### IMPORTANT SAFETY INFORMATION

**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.

## PACKAGE COMPONENTS



1. Aluminum Alloy Splice Body
2. Galvanized Steel Forged Splice Body
3. Filler Port Ball

### Tools Required:

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

## PRODUCT COMPATIBILITY

These Installation Instructions are valid for Compression Splice (CMPSP) assemblies on ACSR and ACSS 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:** CMPSP-XXXXHT).

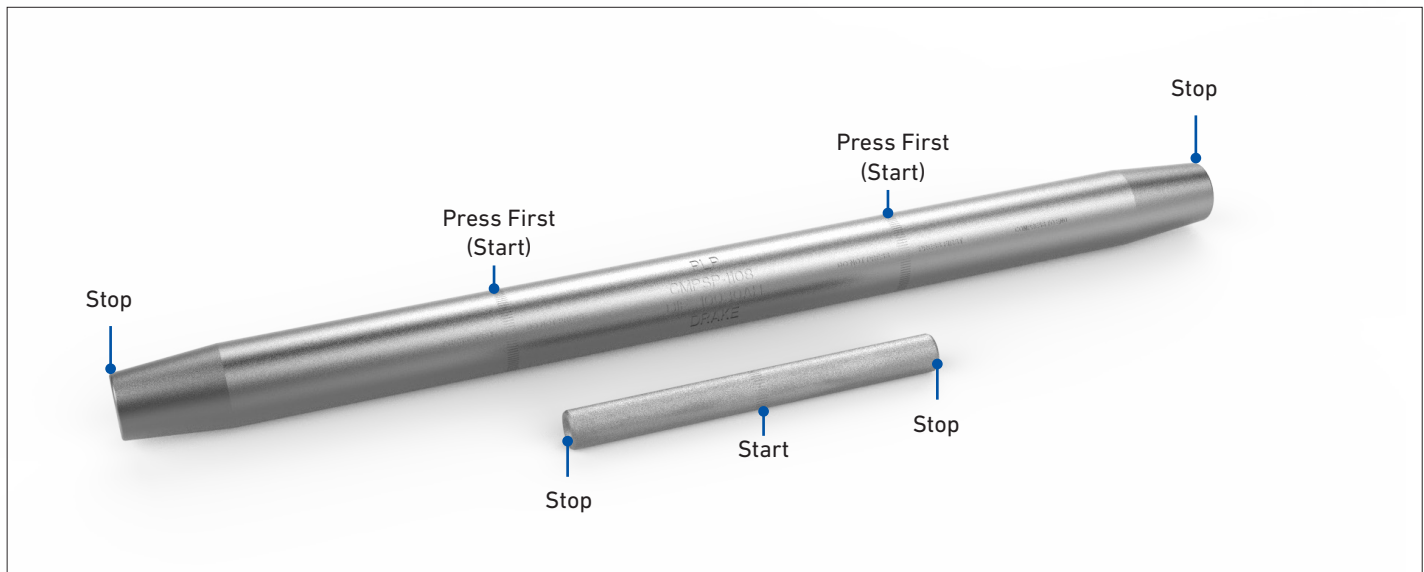
## PRECAUTIONARY MEASURES

### 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 the 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 and 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.**

## INSTALLATION OVERVIEW

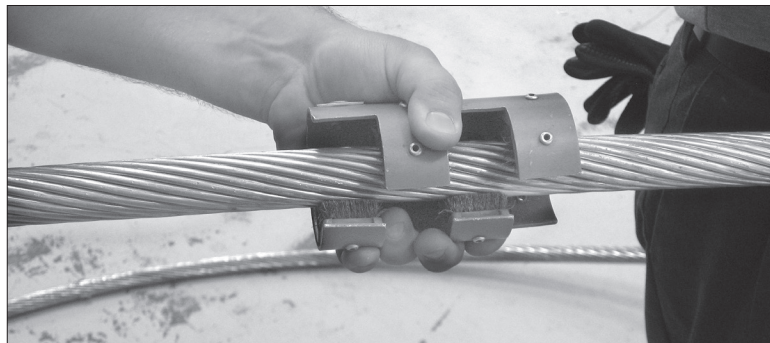


**NOTE:** The product is imprinted with instructional words, such as "Press First," "Stop," and "Compress to End" to aid installation.

## SPLICE ASSEMBLY APPLICATION

1

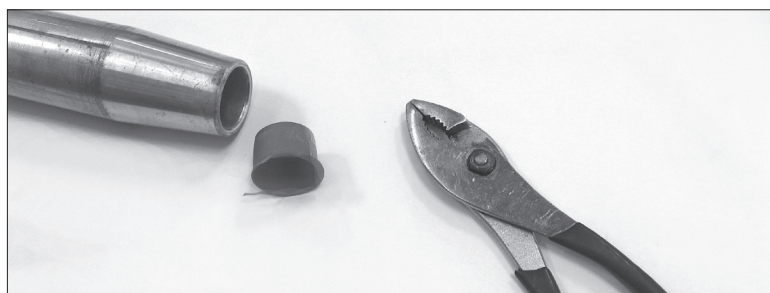
Begin by cleaning/wire-brushing the entire area to be covered by the compression hardware per your standard company practices. Ensure that no residue or surface particles remain.



2

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

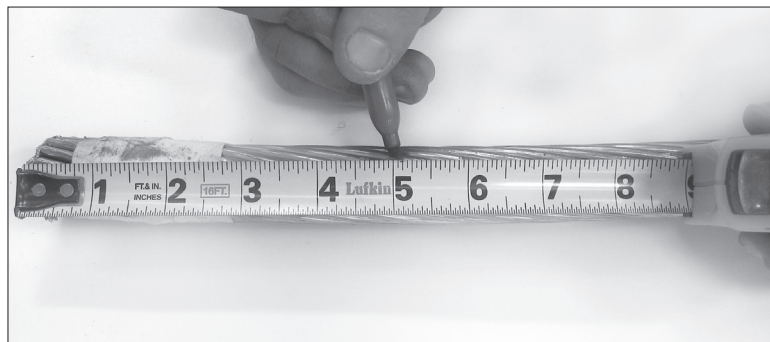
**NOTE:** There may be some flash or small aluminum bits on the inside of the tube where the filler hole is drilled, which may make it difficult to insert the conductor. If this is present, clear it with a spare conductor piece.



3

Measure from the "Press First" knurl in the middle of the steel splice body to the end and add 1" (25 mm). Then, mark this total length (L+1) on the conductor; this will be your cutting mark.

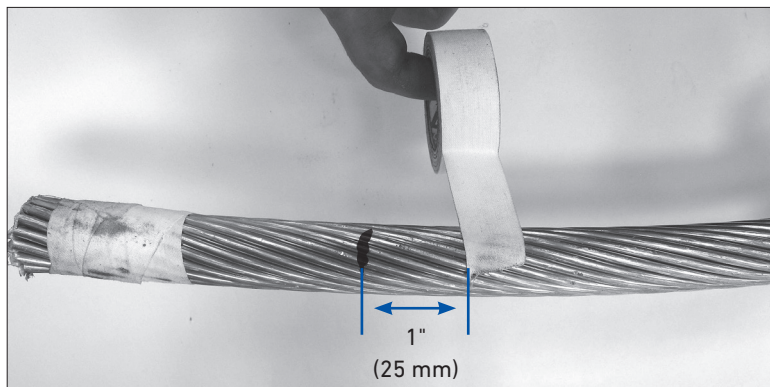
**NOTE:** The cutting mark is where the aluminum strands will be cut back in order to fit the core strands into the steel splice. The extra inch is to give the aluminum strands room to expand as they are compressed in the steel splice body.



4

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

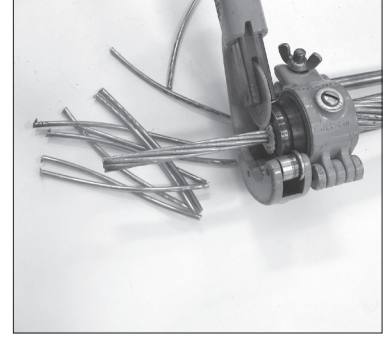
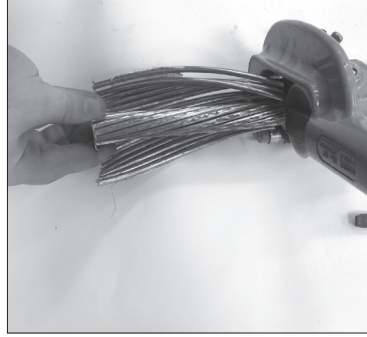
**NOTE:** This is to secure the aluminum strands and maintain the conductor diameter after the cut is made.



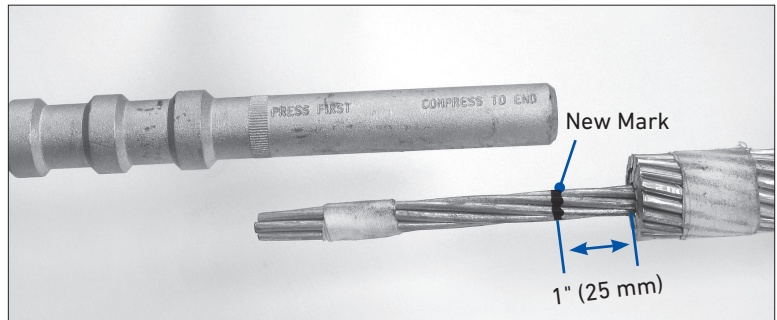
- 5 Cut the outer aluminum strands at the cutting mark while taking care **NOT** to damage the steel core strands. After the strands are removed, any flash or burrs on the outside can be removed with a file.

#### 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 conductor core strands with tape, if desired.

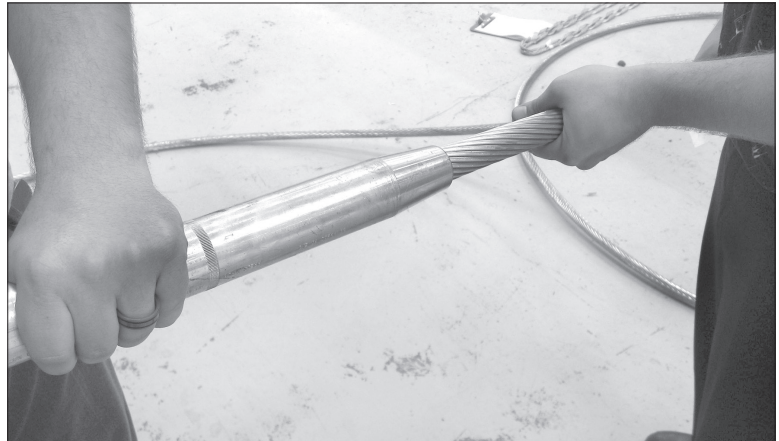


- 7 Apply the aluminum splice body over the conductor.

**NOTE:** This will be slid back down after compressing the steel splice body.

To assist installation, the tip of the conductor should be inserted slightly into the aluminum splice body to secure the strands. The tape should then be removed. To better slide the tube over the conductor, turn the tube with the lay of the conductor strands to help keep them tight. Once the conductor is through, apply a new piece of tape to the end.

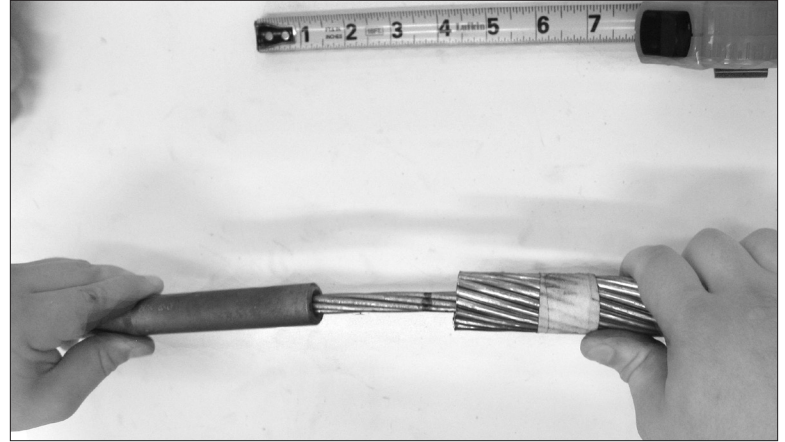
Occasionally, there will be curvature in the conductor from the reel. To straighten, apply one quarter of the fitting length of the aluminum splice body to the conductor and bend in the opposite direction every one quarter of the length until the conductor is straightened and fully inserted through the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





8

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



9

Slide the steel core of the conductor into the steel splice body. Make sure the steel core goes in at least as far as the mark. Also make sure that roughly a 1" (25 mm) gap remains between the tube and the aluminum strands. The gap will allow for expansion of the aluminum during compression.

#### CAUTION

The steel core of the conductor must be inserted all the way to the knurl in the steel core splice body. Failure to properly fill and compress the correct length of the steel conductor core within the steel core splice body is a misapplication of the product.



10

Set up the other piece of conductor to be spliced by repeating the conductor preparations found in Steps 3 - 8, 10, and 11. Once complete, fully insert the second conductor's steel core into the steel splice body. Make sure that both cores are now fully inserted to the middle of the splice tube near the "Press First" knurl, with the ends of the steel tube falling at the marks made on the conductor core.



11

Prepare the compression press and install the die sizes marked on the steel core splice 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 body, no curvature should be visible. Excessive compression hardware curvature is a misapplication of the product. To prevent curvature, the following steps can be taken:

- (1) Evenly lubricate the compression dies and then wipe the dies clean with a cloth. 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.
- (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 fully compressed.
- (5) Slight curvature of steel hardware may be straightened using the press; however, this procedure is **NOT** acceptable for the aluminum splice body.

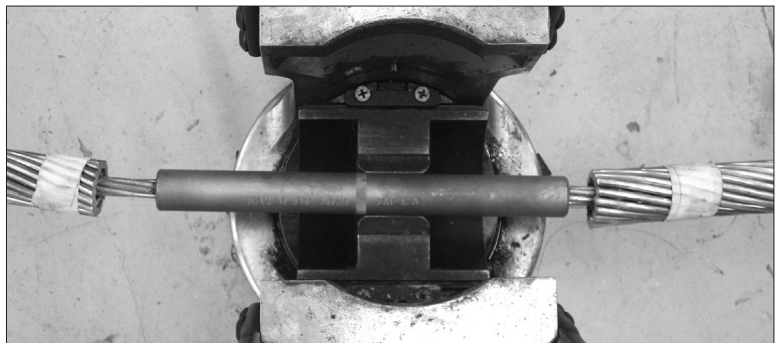
- 12 Ensure that the compression die surfaces are clean and free of burrs or debris. If it assists application, lubricate the compression dies with a lubricant of your choice and wipe excess off with a cloth.

### CAUTION

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



- 13 Place the assembly into the compression press on one side of the center knurl. Ensure the proper alignment of the steel splice body with both pieces of the conductor remaining properly inserted.



- 14 Starting from the center knurl, compress the steel core splice tube onto the steel conductor core and work out towards the aluminum conductor strands.

### CAUTION

Full compressions must be applied to the entire portion of the steel splice body from the knurl all the way to the end. Failure to do so constitutes a misapplication of the product.



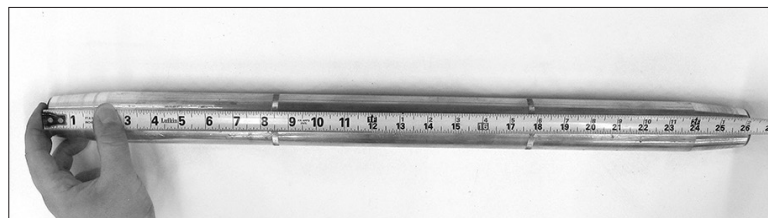
- 15 Once the first piece of core is compressed, move the press back to the center knurl and repeat the compression process for the other core.



- 16 Slide the aluminum splice body towards the steel splice body. When the edge of the tube is close to the taped strand areas, remove the tape as the aluminum splice tube will now hold the conductor strands in place.

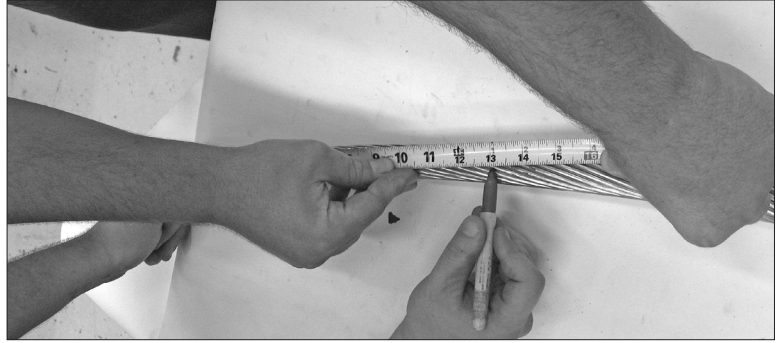


- 17 Measure the length of the aluminum splice body.



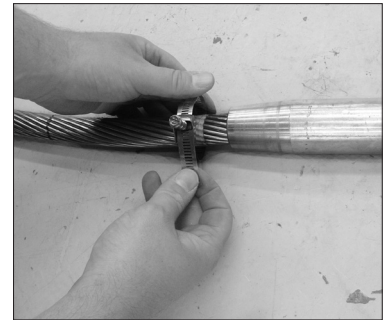
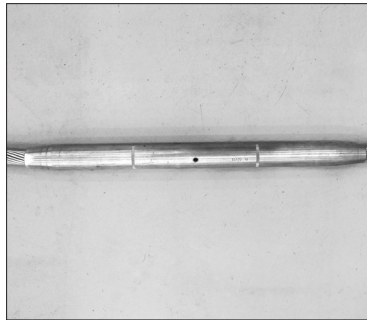
- 18 Measure and mark half this length on the conductor from the cut strand ends.

**NOTE:** This will be important later when centering the aluminum splice.



- 19 Center the aluminum splice body over the two pieces of conductor and the steel splice body.

If any difficulty is encountered sliding the aluminum splice body over the second piece of conductor, the aluminum strand ends can be filed again to remove any burrs. Also, to compress or make the strands more concentric, a small hose clamp may be applied temporarily while the tube is slid over the aluminum strand ends.



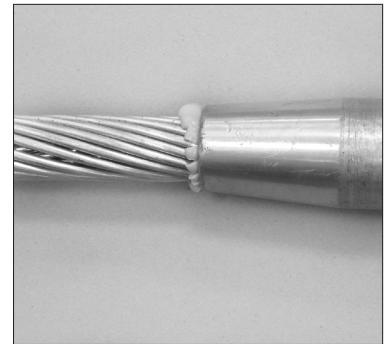
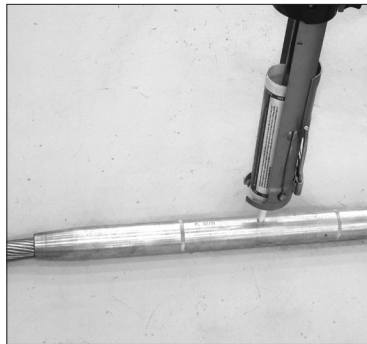
#### CAUTION

The tapered ends of the aluminum splice body should be at the marks made earlier, indicating that the splice is centered over the two conductor sides. Failure to properly center either the steel or aluminum splice bodies is a misapplication of the product.

- 20 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 aluminum splice body.

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



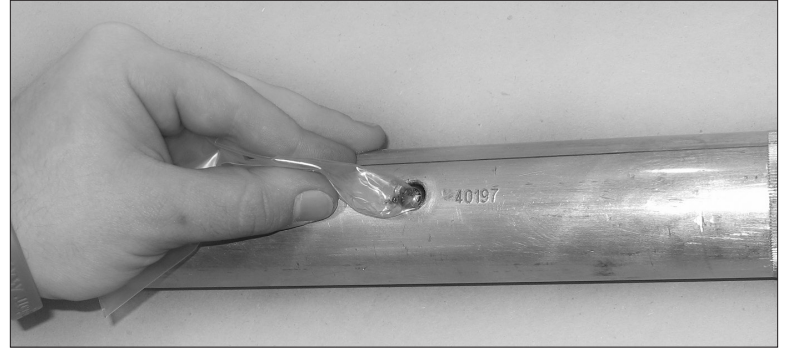
#### WARNING

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



- 22 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.

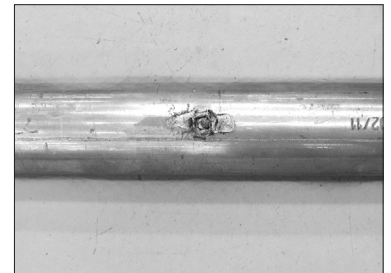


- 23 Tap the ball into the filler hole using a hammer until the ball is flush with the surface of the aluminum body. Remove the plastic bag, if used.

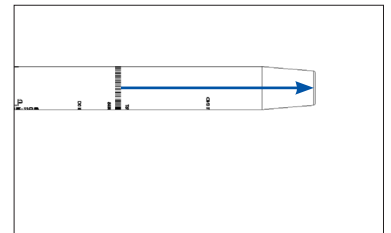


- 24 Peen over the edges of the filler hole with a hammer and flat head screwdriver to secure the ball into place.

Aluminum must be peened around the ball in order to retain it.



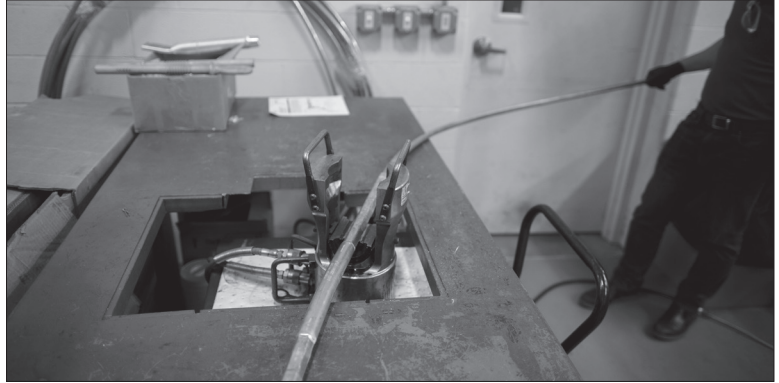
- 25 Install the dies for the aluminum splice body and insert it into the compression press at the "Press First" knurl. Ensure the alignment of the hardware.



26

Compress the aluminum splice body starting at the "Press First" knurl all the way to the end of the tube. Each successive compression should overlap the previous compression by  $\frac{1}{3}$  to  $\frac{1}{2}$  of a compression.

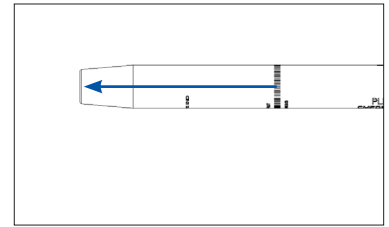
**NOTE:** The dual graduated taper of the aluminum splice body end is designed to be compressed over. Doing so gradually reduces the strain on both the conductor and hardware and makes the connection more resistant to vibration and future strand damage.



27

Once the first piece of conductor is compressed, move the press back to the other side of the tube to the "Press-First" knurl and repeat the aluminum splice body compression process for the other conductor.

**NOTE:** The section of the tube marked "Do Not Press" should not be compressed.



28

Clean off any excess tape or inhibitor. Any flash from the aluminum splice body compressions should be removed with pliers and any sharp edges should be filed to a smooth finish. Once compressed and cleaned, the splice application is complete.

