

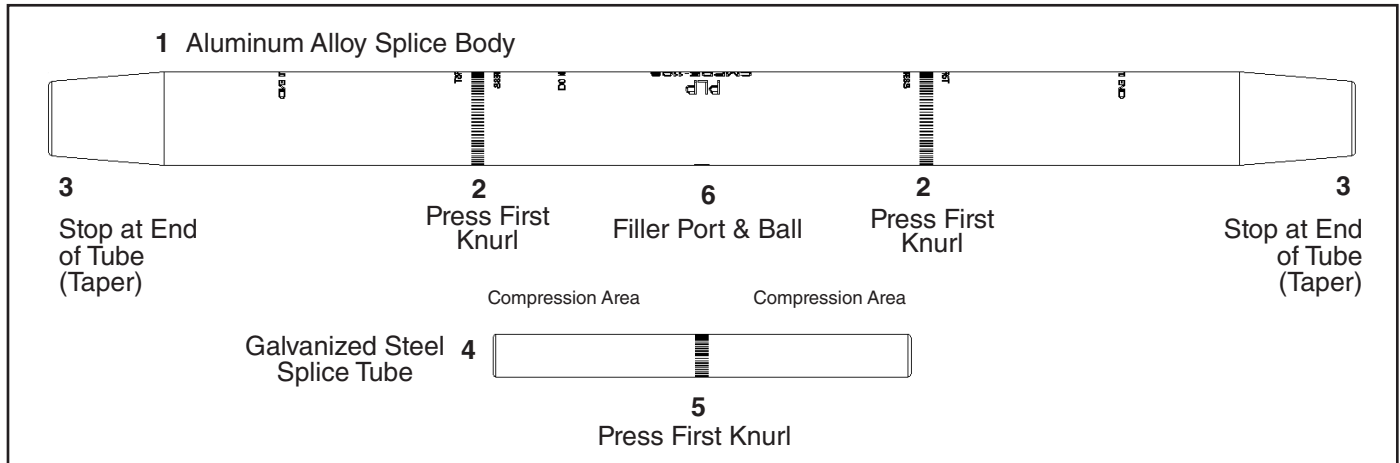


PLP Compression Splice for ACSR & ACSS Conductors

Be sure to read and completely understand this procedure before applying product.

Be sure to select the proper PREFORMED™ product before application.

CAUTION: ACSR FITTINGS CANNOT BE USED ON ACSS CONDUCTORS



CONSIDERATIONS:

This Application Procedure is valid for PLP Compression Splice (CMPSP) Assemblies on ACSR & 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 (i.e., CMPSP-XXXXHT).

NOMENCLATURE

1. Aluminum Alloy Splice Body
2. Press First Knurl
3. Stop at End of Tube
4. Galvanized Steel Splice Tube
5. Press First Knurl
6. Filler Port & Ball

TOOLS REQUIRED:

- Compression Press with Dies
- Conductor Cutter/Strand Removal Tool
- Compression Filler Compound
- Caulking Gun
- Conductor Wire Brush
- Hammer
- Flat-head Screwdriver
- Pliers
- File
- Measuring Tape
- Utility Knife

PRECAUTIONARY MEASURES:

CAUTION: BEFORE INSTALLING ANY PRODUCTS, THE FOLLOWING PRECAUTIONS MUST BE TAKEN:

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. **NOTE:** 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

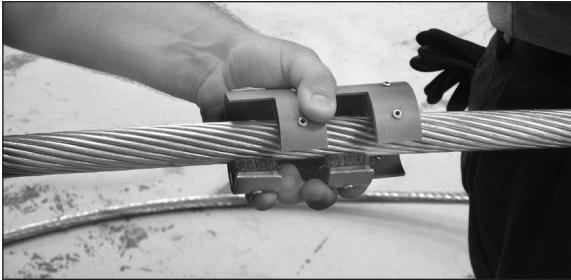
when the press is fully extended, and that the dies are in good condition without significant damage or wear.

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 defects, etc. If any significant irregularities exist, the products **MUST** be discarded or returned to PLP. **DO NOT** INSTALL DEFECTIVE OR DAMAGED COMPRESSION HARDWARE.

NOTE: FAILURE TO FOLLOW THE PRECAUTIONS, NOTES AND STEPS CONTAINED WITHIN THIS APPLICATION PROCEDURE REPRESENTS A MISAPPLICATION OF THE PRODUCT. THIS PRODUCT AND APPLICATION PROCEDURE ARE FOR ACSR & ACSS CONDUCTORS.

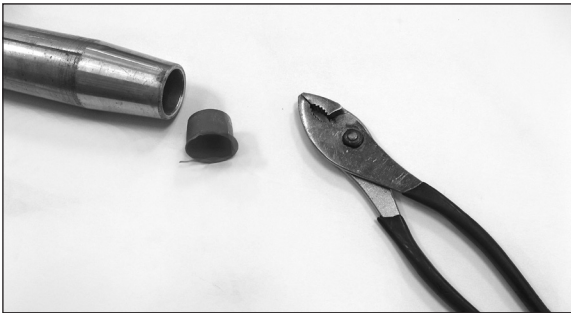
SPLICE ASSEMBLY APPLICATION

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

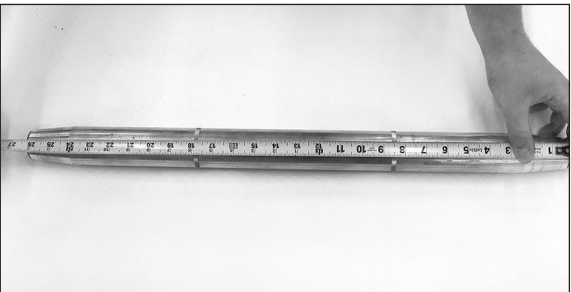


Step #2 Remove the plastic plug from the aluminum body. Inspect the inside bores of the hardware to ensure that there are no sharp points or other defects.

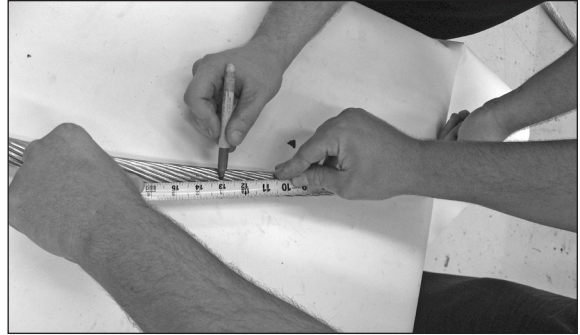
NOTE: As the compound filler hole on the bottom of the aluminum body is drilled, there may be some flash or small aluminum bits on the inside of the tube which may make it difficult to insert the conductor. If this is present, please clear with a spare conductor piece.



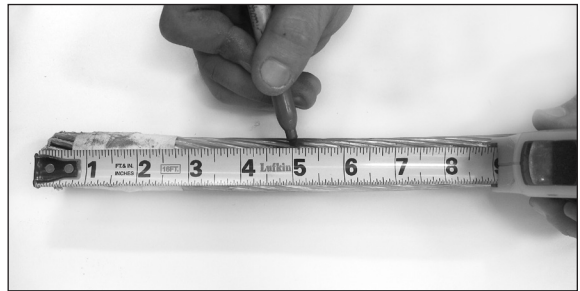
Step #3 Measure the length of the aluminum splice body.



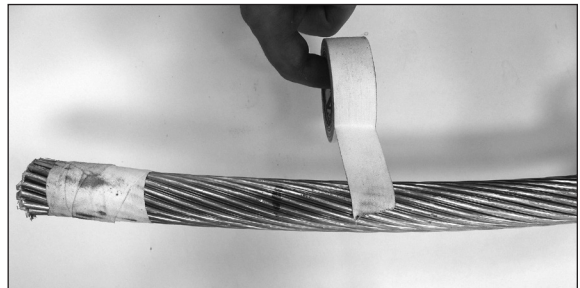
Step #4 Measure and mark half this length on the conductor from the cut strand ends. This will be important later when centering the splice.



Step #5 Measure from the "Press First" Knurl in the middle of the galvanized steel splice tube to the end. Add 1" to this length to allow for aluminum strand expansion when the splice tube is applied. Mark this length ("cutting length") on the conductor to cut back the aluminum strands of the conductor.

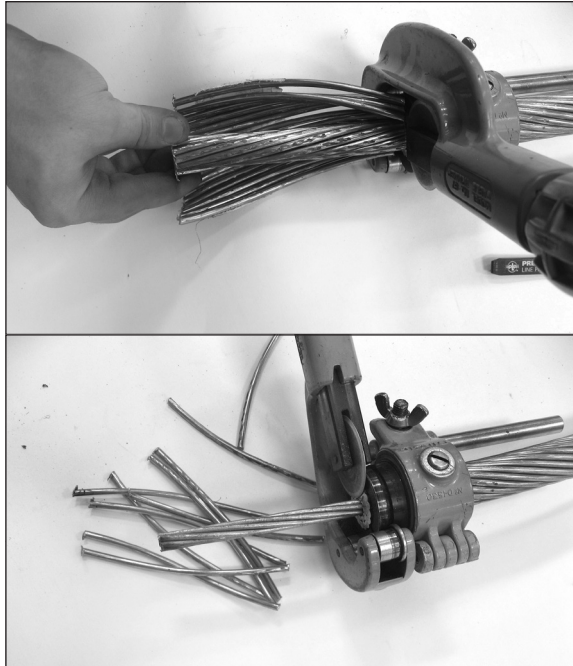


Step #6 Apply tape approximately 1" back from the cutting mark to secure the aluminum strands and maintain the conductor diameter after the cut is made.



Step #7 Cut the outer aluminum strands at the cutting mark to expose the steel core.

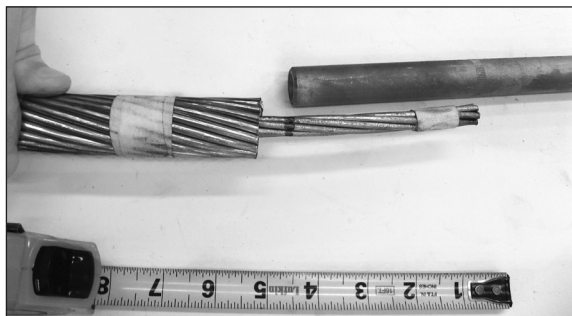
NOTE: Take care not to damage the steel core strands during this process.



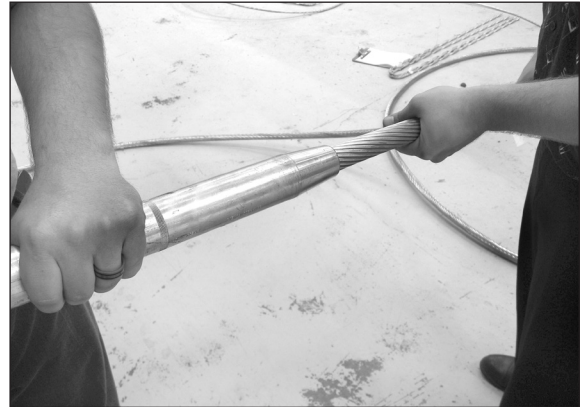
PLP TIP: To ensure no damage to the steel core and for rapid installation, PLP recommends the use of a Utility Approved Trimming Tool. After the strands are removed, any flash or burrs on the outside can be removed with a file.

Step #8 Secure the conductor core strands with tape. Mark the depth of the steel tube to the “Press First Knurl” on the conductor core strands.

NOTE: Any deformation of the O.D. or strands caused during cutting may make it difficult to assemble the fittings.

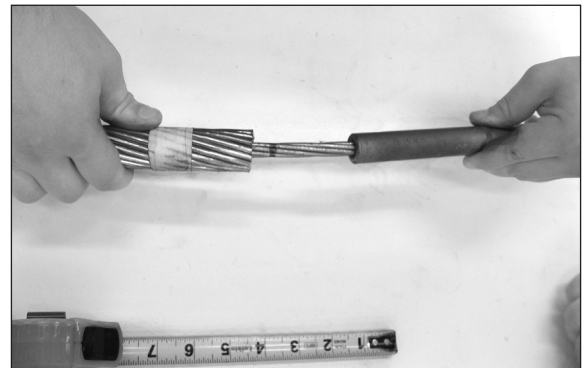


Step #9 Apply the aluminum splice body over the conductor, pushing it completely through the other end before compressing the steel core splice.



PLP TIP: Occasionally there will be curvature in the conductor from the reel. To assist in the application of the splice body, the aluminum tube can be leveraged to help straighten the conductor. To straighten, apply one quarter of the fitting length to the conductor and bend in the opposite direction of the curvature. Next, slide the fitting onto one half of its length and repeat the opposite bending process every one quarter of the length until the conductor is straightened and fully inserted through the tube. 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 now captured by the aluminum splice body. To better slide the tube over the conductor, turn the tube with the lay of the conductor strands which helps keep them tight. Once the conductor is through, apply a new piece of tape to the end to keep the strands in place.

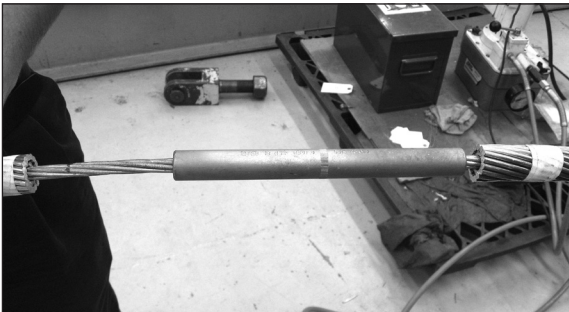
Step #10 Once the aluminum splice body is on the conductor, remove the tape from the steel core to apply the steel core splice tube.



Step #11 Insert the steel core of the conductor into the bore of the steel splice tube. Make sure that the steel conductor core is fully inserted into the tube to the mid “Press First” knurl point and extends to the mark made earlier. The end of the core strands must be in the middle of the steel splice tube near the “Press First” knurl. Roughly a 1" gap should remain between the aluminum strands of the conductor and the edge of the steel splice tube, as this allows room for material expansion underneath the press.



Step #12 Setup the other piece of conductor to be spliced by repeating the conductor preparations found in Steps 3 through 8, 10 & 11. Once complete, fully insert the second conductor's steel core into the steel splice tube. 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.



NOTE: THE STEEL CORE OF THE CONDUCTOR MUST BE FULLY INSERTED INTO THE STEEL CORE SPLICE TUBE. FAILURE TO PROPERLY FILL AND COMPRESS THE CORRECT LENGTH OF THE STEEL CONDUCTOR CORE WITHIN THE STEEL CORE SPLICE TUBE IS A MISAPPLICATION OF THE PRODUCT.

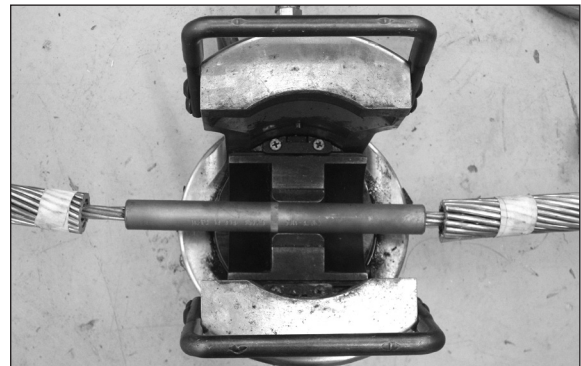
Step #13 Prepare the compression press and install the die sizes marked on the steel core splice tube.

Step #14 Ensure that the compression die surfaces are clean and have no burrs. This is the most critical factor in applying proper compressions. If it assists the application, lubricate the compression dies with desired lubricant and then wipe the dies clean with a cloth to ensure that the dies slide easily together and that the fitting hardware material slides underneath the dies. Excessive lubricant that is left on the bottom die only can cause curvature of the steel eye during compression.

NOTE: These steps are taken to prevent curvature.



Step #15 Insert the assembly into the compression press on one side of the “Press First” knurl. After, ensure that the proper alignment of the steel core splice tube is still maintained with both pieces of the conductor remaining properly inserted into the splice tube.



Step #16

Starting at the "Press First" knurl, compress the steel core splice tube onto the steel conductor core, applying compressions first at the knurl and working out towards the aluminum conductor strands.

NOTE: FULL COMPRESSIONS (WITH THE DIES PUSHED TO THEIR MAXIMUM EXTENT IN THE PRESS) MUST BE APPLIED TO THE ENTIRE PORTION OF THE STEEL CORE SPLICE TUBE FROM THE KNURL ALL THE WAY TO THE END. FAILURE TO APPLY FULL COMPRESSIONS TO THE ENTIRE PORTION OF THE STEEL CORE SPLICE TUBE FROM KNURL TO END REPRESENTS A MISAPPLICATION OF THE PRODUCT.

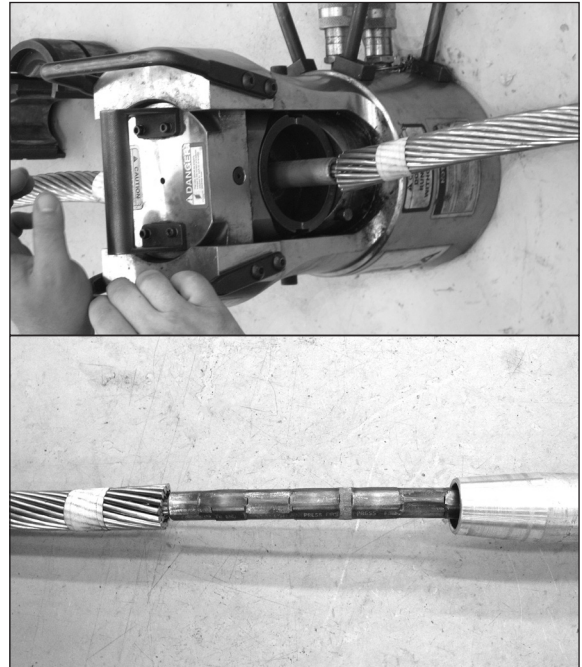


PRECAUTION: TO BE A CORRECT APPLICATION, COMPRESSION CURVATURE MUST BE KEPT TO A MINIMUM, PREFERABLY LESS THAN 1/2 THE ALUMINUM TUBE DIAMETER FROM THE CENTERLINE. FOR THE STEEL, CURVATURE SHOULD NOT BE VISIBLE. EXCESSIVE COMPRESSION HARDWARE CURVATURE IS A MISAPPLICATION OF THE PRODUCT.

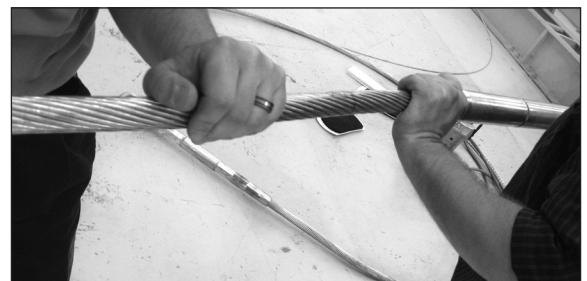
PLP TIP: To prevent curvature, the following steps can be taken:

1. Evenly lubricate the compression dies and then wipe the dies clean with a cloth. **PLP Tip: Excessive lubricant that is left on the bottom die only can cause curvature of the steel eye during compression.** 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. Rotate the hardware or press by 90° between compressions. This step reduces curvature, but **NOTE** that this also increases the "flash" and sharp surfaces left on the compressed tube. Please check with your local utility practices when taking this step as some suggest this step and others will not approve it.
5. Overlap succeeding compressions by approximately one quarter of their lengths to ensure that they are evenly applied and compressed to the fullest extent.
6. Slight curvature of steel hardware may be straightened using the press; this procedure is **NOT** acceptable for the aluminum tube.

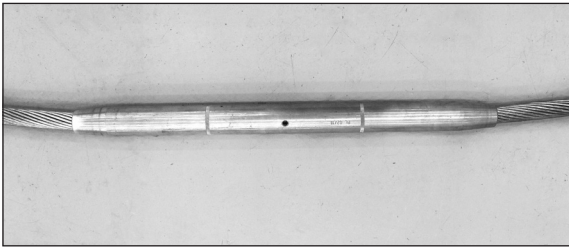
Step #17 Once the first piece of conductor is compressed, move the press back to the "Press First" knurl and repeat the splice core compression process for the other conductor piece.



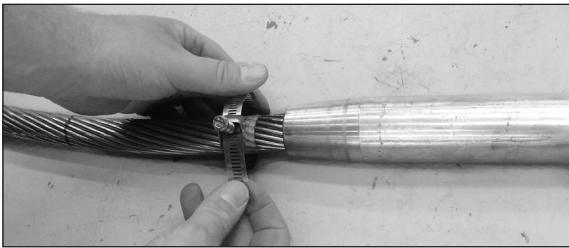
Step #18 Slide the aluminum splice body towards the steel core splice tube. When the edge of the tube is close to the taped strand areas, remove the tape as the aluminum splice tube will now hold the conductor strands in place.



Step #19 Center the aluminum splice body over the two pieces of conductor and the steel core splice tube.

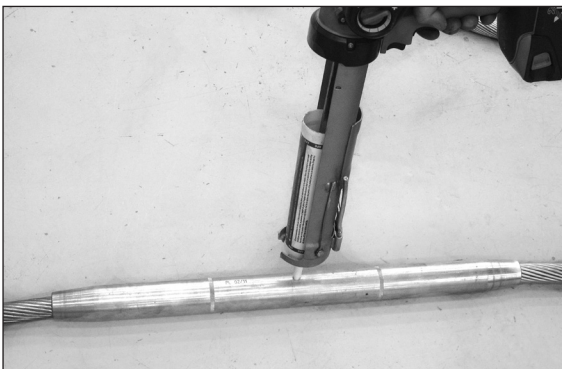


NOTE: The tapered ends of the aluminum splice body should be at the marks made earlier, indicating that the splice is centered over the two conductor sides. **FAILURE TO PROPERLY CENTER EITHER THE STEEL OR ALUMINUM SPLICE TUBES IS A MISAPPLICATION OF THE PRODUCT.**



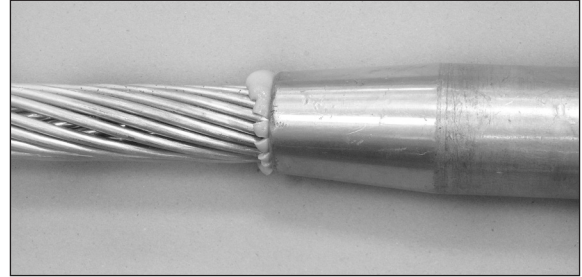
PLP TIP: If any difficulty is encountered sliding the aluminum splice body over the second piece of conductor, the aluminum strand ends can be filed again to remove burr. Also, to compress or make the strands more concentric, a small hose clamp may be applied temporarily while the tube is slid over the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

Step #20 Apply appropriate inhibitor (filler) compound through the filler hole in the aluminum body. **For ACSS Conductors, the inhibitor must be rated for temperatures up to 250°C.**



Step #21 Cease application when filler compound seeps out the tapered “conductor facing” end of the hardware.

NOTE: When installing compression hardware correctly, the inhibitor compound will continue to ooze out the end as the compressions are applied from the “Press First” knurl outward toward the tapered ends of the aluminum splice body. Clean off with paper towels or follow your standard company practices.



Step #22 Seal the filler hole by inserting the stainless steel ball.



PLP TIP: The plastic bag containing the ball should be used to more easily position the ball into place than by hand and to avoid dropping the ball.

Step #23 Tap the ball into the filler hole using a hammer until the ball is flush with the OD of the aluminum tube. Remove the plastic bag if used.

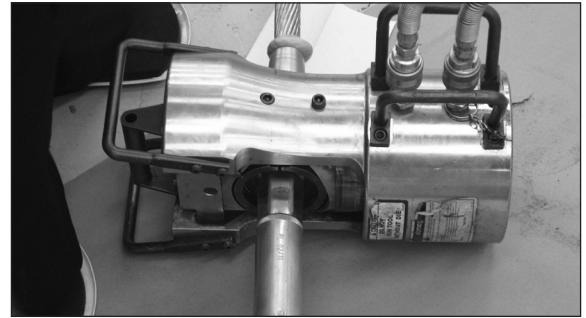


Step #24 Peen over the aluminum edges of the filler hole with a hammer and flat head screwdriver to secure the ball into place.

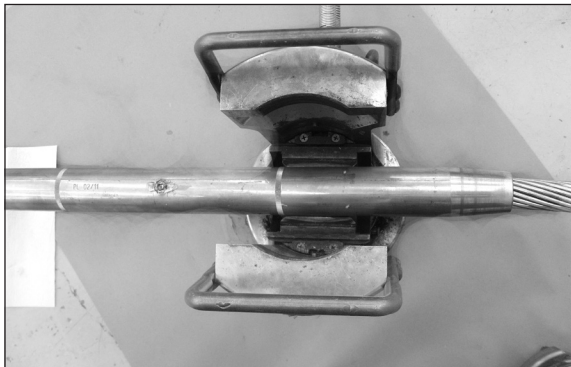


Step #26 Starting at the “Press First” knurl, compress the aluminum splice body over the conductor, applying compressions first at the knurl and working all the way to the end of the aluminum tube.

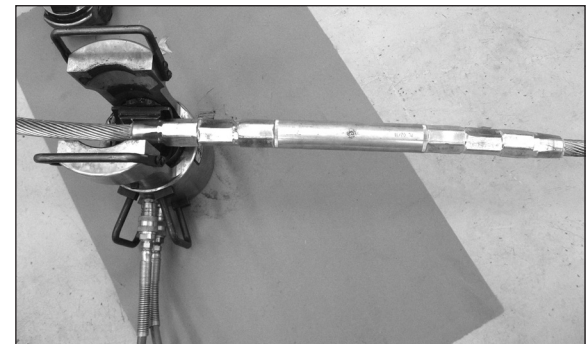
NOTE: “COMPRESS TO END” means that compressions are applied over the taper as well. This special dual “graduated taper” is designed to be compressed over as doing so gradually reduces the strain on both the conductor and hardware making the connection more resistant to vibration and future strand damage. PLEASE DO NOT SKIP THIS STEP.



Step #25 While ensuring alignment of all hardware, insert the conductor splice into the compression press installed with the appropriate die size (marked on aluminum splice body) at the “Press First” knurl.

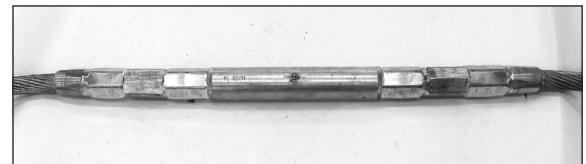


Step #27 Once the first piece of conductor is compressed, move the press back to the “Press First” knurl and repeat the aluminum splice body compression process for the other conductor piece.



NOTE: The section of the tube marked “DO NOT PRESS” should not be compressed.

Step #28 Clean off any excess tape or inhibitor. Any flash from the aluminum tube 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.



SAFETY CONSIDERATIONS

This application procedure is not intended to supersede any company construction or safety standards. This procedure is offered only to illustrate safe application for the individual. **FAILURE TO FOLLOW THESE PROCEDURES MAY RESULT IN PERSONAL INJURY OR DEATH.**

This product is intended for a single (one time) use and for the specified application.
Do not reuse or modify this product under any circumstances.

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.

For proper performance and personal safety, be sure to select the proper size PREFORMED™ product before application.

PREFORMED products are precision devices. To insure proper performance, they should be stored in cartons under cover and handled carefully.



PREFORMED LINE PRODUCTS

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