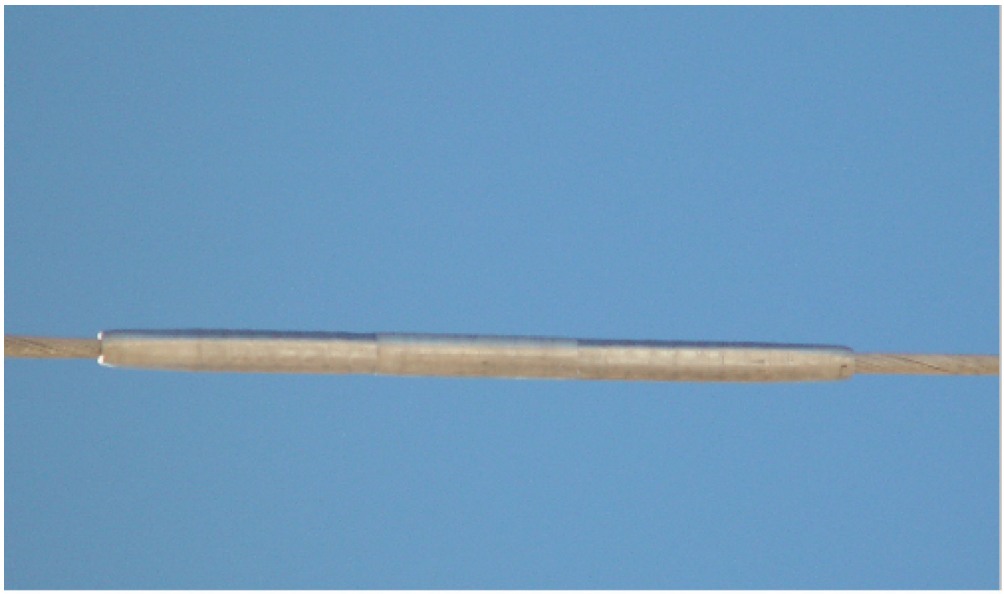
Installation Instructions for Compression Joint ACCR HT Conductor Installed on 3M Composite Core Conductor



NOTE:

Preparation

Prior to making connections, the conductor and accessory bore must be clean. Regardless of conductor condition, the strands need to be cleaned with a wire brush or abrasive cloth. Check accessory bore for foreign particles, removing if present.

Serve the conductor, prior to cutting, with tape to help maintain the round contour. Locate the tape approximately .25 inches from the end of the conductor. File approximately .09 inch chamfer on the end of the conductor. (The larger the chamfer, the easier the conductor will slide through the joint.)

Fig. 1

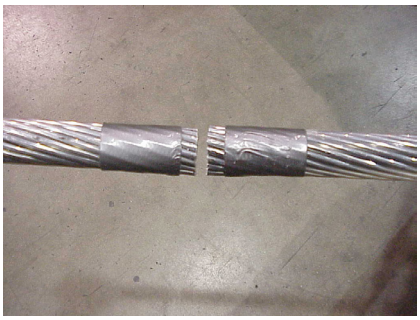
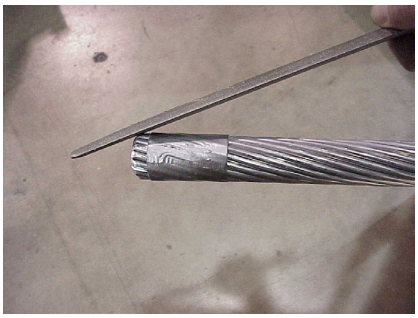


Fig. 2

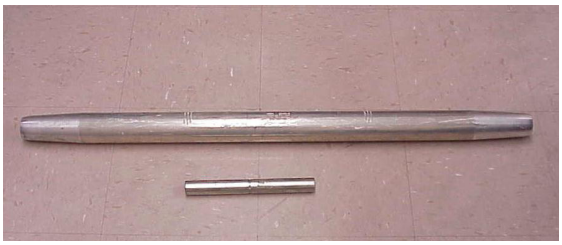


Straighten several feet of the conductor removing the set caused by the reel.

NOTE: Care must be taken during straightening of cable. The 3M Composite Conductor has a minimum bend radius, which cannot be exceeded. Otherwise, damage to the conductor's core will result. Receive training from 3m personnel on proper straightening techniques.

Assembly

Fig. 3



Joint Assemblies consist of an aluminum body and steel sleeve as shown above in Fig. 3.

Steel Sleeves and Aluminum Bodies shown below in Fig. 4 and Fig. 5.

Fig. 4

Fig. 5

The sleeves are necessary to provide the proper "Area Reduction" over the Conductor during compression.

Installation

Measure back from each conductor and mark at a distance equal to 1/2 the length of the aluminum body.

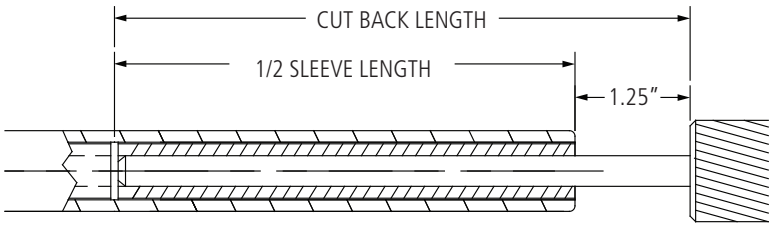
Slide aluminum body over the conductor and beyond mark until sufficient working length protrudes from barrel end (see Fig. 6).

Fig. 6

Cutting Back Aluminum Strands for Installation of Steel Forging

Prior to cutting back the aluminum strands, the depth of bore must be determined in the steel forging. Insert a clean object or length of core until it bottoms out in the forging. Measure bore depth and add 1.50 inches. This will be length to cut back aluminum strands.

Fig. 7



NOTE: It is extremely important not to nick the core strands during cutting back of the aluminum strands (see Fig. 8). If this is done, the ultimate strength of the Joint will be reduced. 3M suggests the following method of cutting back the strands. See page 4.

Fig. 8

3M Suggested Method of Cutting Back Aluminum Strands

1. Tape location where " cutting back" is needed.
2. Position RIGID cable trimmer around conductor at the tape location.
3. Cut outer aluminum strands by rotating tool (Fig. 9) until layer becomes loose.
4. Remove cut outer aluminum layer strand.
5. Bend inner layer wires back and forth until they fracture.
6. Remove the broken wires.

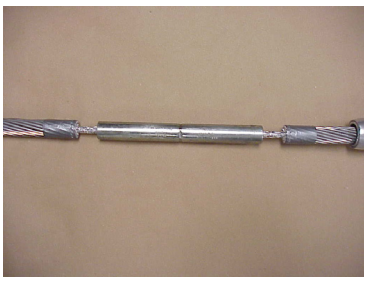
Fig. 9

After removal of the aluminum strands, the end of the core must be filed to remove any burrs resulting from the cutting process. Filing the chamfer in this manner will ensure an easy entrance into the steel's bore. Ensure the tape remains wrapped around the core (see Fig. 10).

Fig. 10

Insert conductor's core into steel joint making sure the ends butt solidly against center stop (see Fig. 11). Ensure distance from the end of barrel to aluminum strands is 1.25 inches.

Fig. 11



COMPRESSING

Suggested Arrangement of Compressor and Accessory During Field Installation of Joint

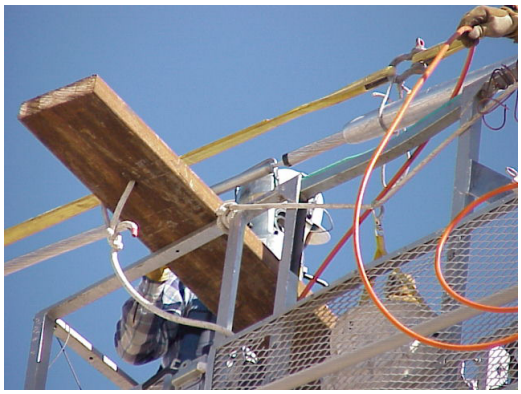
The photos below illustrate setups, which works well to ensure a straight compression and easy maneuverability of the compressor. The conductor has been "tied off" (tensioned with slings and chain hoist) to slacken the conductor at point of installation.

Setup 1 (Fig. 12): The compressor is attached to the sling by a large shackle (The compressor is suspended upside down). The accessory and cable are tied to the sling ensuring all parts are straight and inline. The compressor can easily be slid along to each successive compression.

Fig. 12

Setup 2 (Fig. 13): The compressor sits on a board, which sets on the rails of the high lift. The board and compressor can be slid along to each successive compression. The accessory and cable must be supported and all parts must be straight and inline or bowing will occur.

Fig. 13



Lubricate steel sleeve with "Accu-Lube" or similar lubricant to assist in a straight compression (see Fig. 14).

Fig. 14

Select die size for compressing steel sleeve. The die size on die set and die size marked on steel sleeve must be the same. **NOTE**: 100-ton dies are required when compressing ACCR Accessories.

Core must be straight as it enters bore (see Fig. 15). Support conductor while compressing to ensure a straight compression.

Compress steel barrel full length making initial compression at center of steel sleeve. Overlap each successive compression by approximately .50 inch (do not "skip bite"). **Complete die closure is required for each compression.** After completion in one direction, repeat in opposite direction.

Fig. 15

The aluminum sleeve will extrude beyond end of steel sleeve. The illustration shown in Fig. 16 is typical after compression.

Fig. 16

Remove tape from ends of aluminum strands and slide aluminum body over steel sleeve until end of barrel aligns with marks placed on the conductors. This should center the outer aluminum body over the inner steel sleeve.

Inject AFL Filler Compound into filler hole. AFL will specify amount needed based on accessory being used. Insert, then drive filler plug into hole and peen edge of hold over top surface of plug (see Fig. 17).

Fig. 17

Filler Compound Information

Filler Compound:

- Protects the compressed steel barrels from corrosion. Compressing removes galvanizing from the forging. The filler compound acts as a barrier to moisture.
- Contains aluminum particles, which clean the strands (removing oxides) while compressing. Compressing forces the compounds within the strands.
- Blocks moisture, which can wick up through the strands. Compressing forces the compound throughout the conductor strands.
- Aids in the holding strength of the accessory.

NOTE: Main reason for accessory failure is inadequate amount of filler compound in the accessory.

Select die size to compress aluminum dead end body. Die size for aluminum dead end body and die size marked on the die must be the same.
NOTE: 100-ton dies are required when compressing ACCR accessories.

The Joint will bow during compression unless reasonable care is taken to have about 15 ft. (4.5 m) of the conductor supported straight out from the end of the Joint.

Lubricate area to be compressed from "Start" knurl to end of barrel as illustrated with "Accu-Lube" or similar lubricant. Lubricate both ends of Joint (see Fig. 18).

Fig. 18

Make initial compression on either side of aluminum body starting at the "Start" knurl. Make the second compression on the opposite end of the body at the other "Start" knurl. Continue making compressions to the end of the body. Overlap each successive compression by approximately .50 inch (do not "skip bite").

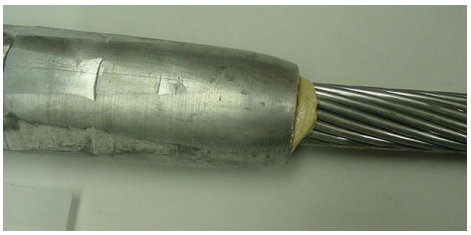
Complete die closure is required for each compression. Go back and complete the compressions on the opposite end.

The center portion of the body is not compressed (see Fig. 19).

Fig. 19

Filler Compound should be visible at end of the barrel during the final compressions if adequate amount has been applied (see Fig. 20).

Fig. 20



Compressed portion of the joint should have a smooth uniform appearance. Remove flash, if present, with file or emery cloth.

Fig. 20

CAUTION: ***Follow installation instructions carefully. Improper installation can result in mechanical failure of the cable system and possible injury to persons handling or in the vicinity of the cable systems.***