Installation Instructions for Dead Ends

(Eye Type and Clevis Type)

Installed on 3M ACCR Composite Core

Conductor with Terminal

PROJECT NOTE:

TESTING SHOWS TAPE SHOULD BE AROUND CORE TO ENSURE THE CORE DOES NOT CRACK.

NOTE:

Preparation

Prior to making connections, the conductor and accessory bore must be clean.

Clean conductor strands thoroughly with wire brush or abrasive cloth. ("New" conductors must also be cleaned with wire brush.) Check accessory bore for foreign particles, removing if present.

Serve the conductor, prior to cutting, with tape to help maintain the round contour making it easier to slide the end through the aluminum dead end.

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. Obtain training from 3M personnel on proper straightening techniques.

Assembly

Fig. 1

Dead end assemblies consist of an aluminum body and steel eye or clevis forging. (Felt washer is included as part of forging.)

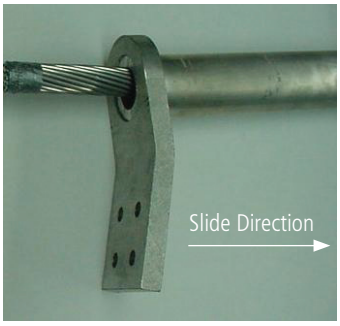
Fig. 2

Fig. 3

Dead end aluminum bodies may have factory installed (fixed) aluminum sleeves. The sleeves are necessary to provide the proper "Area Reduction" over the conductor.

Slide aluminum dead end body (barrel first) over the conductor until sufficient working length protrudes from tongue end (see Fig. 4) .

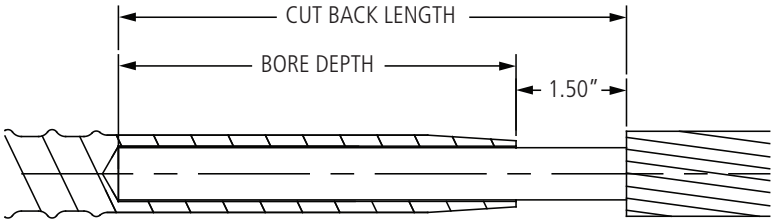
Fig. 4



Cutting Back Aluminum Strands for Installation of Steel Forging

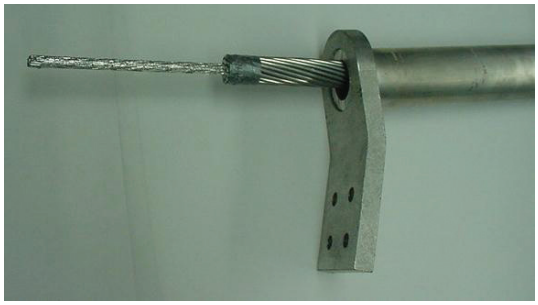
Prior to cutting back the aluminum strands, the depth of bore must be determined in the steel forging. Insert a clean object or length of core until it bottoms out in the forging. Measure bore depth and add 1.50 inches. This will be length to cut back aluminum strands.

Fig. 5



NOTE: It is extremely important not to nick the core strands during cutting back of the aluminum strands. If this is done, the ultimate strength of the dead end will be reduced. 3M suggest the following method of cutting back the strands.

Fig. 6



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 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. 7

Suggested Arrangement of Compressor and Accessory During Field Installation of Dead End

Fig. 8 illustrates a setup, which works well to ensure a straight compression and easy maneuverability of the compressor. The conductor has been "tied off" to the tower with a sling and chain wench. The compressor is then 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. 8

Compressing

After removal of the aluminum outer 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. 9).

Fig. 9

Insert conductor's core into steel forging. Ensure distance from the end of barrel to aluminum strands is 1.50 inches.

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

Lubricate barrel with "Accu-Lube" or similar lubricant to ensure a straight compression (see Fig. 10).

Fig. 10

Core must be straight as it enters bore. Support conductor while compressing to ensure a straight compression.

Compress steel barrel full length making initial compression adjacent to corrugations. Overlap each successive compression by approximately .50 inch (do not "skip bite"). Complete die closure is required for each compression (see Fig. 11).

Fig. 11

Fig. 12

Aluminum sleeve will extrude beyond end of steel barrel. The illustration shown in Fig. 12 is typical after compression.

Remove tape from ends of aluminum strands and slide aluminum dead end body over steel forging until tongue butts solidly against felt washer and shoulder of steel forging. Align clevis or eye with tongue of dead end to ensure proper positioning when dead end is fastened to insulator hardware.

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.

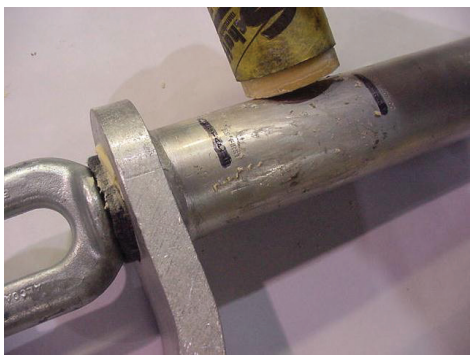
Inject AFL Filler Compound into filler hole until compound emerges at the felt washer. Insert and drive filler plug into hole and peen edge of hole over top surface of plug.

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 dead end 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 dead end.

Lubricate area to be compressed from "Start" knurl to "Stop" knurl (see Fig. 13).

Fig. 13



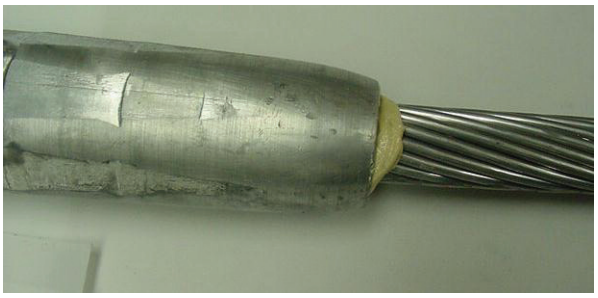
Make initial compression on the dead end body over the steel shank beginning at the "Start" knurl nearest the dead end tongue. Continue making compressions to the "Stop" knurl, overlapping the previous compression by approximately .50 inch. Complete die closure is required for each compression (see Fig. 14).

Fig. 14

Press the dead end body over the conductor. Lubricate area to be compressed from "Start" knurl to end of barrel. Make the initial compression at the start knurl. Continue making compressions to the end of the dead end body, overlapping the previous compression by approximately .50 inches. Complete die closure is required for each compression.

Filler Compound should be visible at end of the barrel during the final compressions if adequate amount has been applied (see Fig. 15).

Fig. 15



Compressed portion of the dead end should have a smooth uniform appearance. Remove flash, if present, with file or emery cloth (see Fig. 16).

Fig. 16

Filler Compound Information

Terminal assemblies consist of Terminal Connector and attachment hardware (see Fig. 17). See "Preparation" on page 2 for notes on preparation of conductor.

Fig. 17

Insert conductor full depth into terminal bore and mark the conductor at end of barrel. Remove conductor after marking.

Inject sufficient filler compound in the end of the terminal bore and on the conductor to ensure that excess compound will be visible at terminal end when barrel is completely compressed (see Fig. 18).

Fig. 18

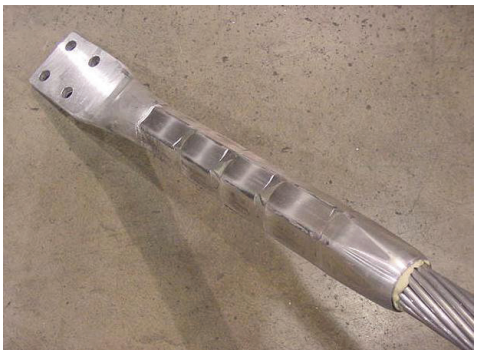
Insert conductor end into terminal barrel to the mark on the conductor.

Select die size to compress Terminal Connector. Die size for Terminal Connector and die size marked on the die must be the same. Note: 100-ton dies are required when compressing ACCR Accessories (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. Compressed portion of the terminal connector should have a smooth uniform appearance. Remove flash, if present, with file or emery cloth (see Fig. 20).

Fig. 20



Clean contact surface of terminal connector and dead end pad.

Coat surfaces with AFL No. 2 Electrical Joint Compound (EJC#2), and then wire brush through compound. Do not remove coating. (**DO NOT USE** Filler Compound on the pad).

Bolt terminal connector to dead end pad. Partially tighten all bolts and then re-tighten each bolt to recommended torque.
Aluminum bolts: (1/2"bolts – 25 lbf-ft (34 N-m); 5/8"bolts – 40 lbf-ft (54 N-m).

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.