

OVERVIEW

T10 and TX10 trunk and feeder cable designs include a bond between the foamed dielectric and the aluminum sheath and a bond between the center conductor and the dielectric. The bonding treatment insures high core-to-sheath adhesion at cold temperatures, provides protection against center conductor pull-outs, and improves handling characteristics.

In the unflooded jacketed version, the jacket is bonded to the aluminum sheath. The bonded jacket provides enhanced corrosion protection, increased jacket toughness, higher pull strengths and avoidance of hidden damage to the underlying aluminum.

As with any high quality foamed cable, increased core-to-sheath adhesion makes it more difficult to pull off the aluminum sheath to expose the center conductor during cable preparation. Methods to facilitate the removal of the aluminum sheath to expose the center conductor are provided herein. Conventional techniques for removing the jacket, flooding compound, and center conductor coating are also provided. Even though the adhesive increases core-to-sheath adhesion, the dielectric can still be cored out cleanly, allowing the use of standard connectors.

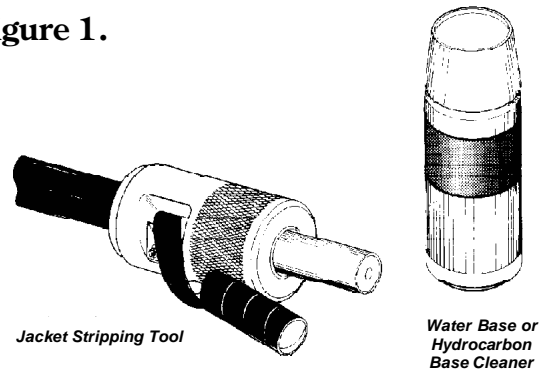
JACKET REMOVAL

Jacketed Flooded Cable

Sufficient jacket should be removed so that the jacket will not interfere with connector installation. Thus the length of jacket that should be removed depends on the type of connector that will be used and the length of center connector that will be exposed. The jacket should not be trimmed back too far because additional heat-shrink tubing will be necessary to protect the bare aluminum outer conductor.

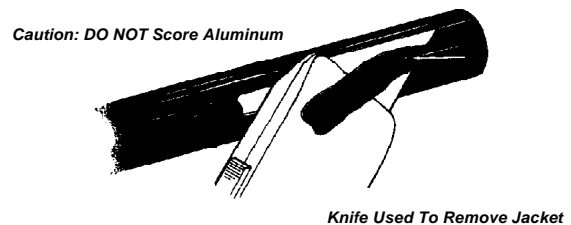
Before attempting to remove the jacket, assure that the cable is straight. With underground flooded cable (clear viscous flooding compound), or aerial flooded cable (black non-viscous asphaltic flooding compound), remove the jacket with a jacket stripping tool and clean off the flooding compound with an appropriate flooding compound remover intended for existing temperature conditions. See Figure 1.

Figure 1.



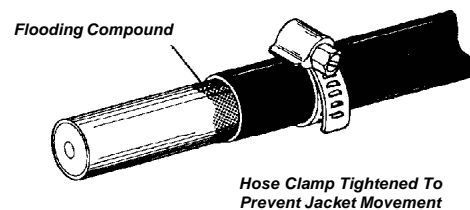
If a knife is used to remove the jacket, hold the knife flat against the cable and cut the jacket longitudinally being careful not to score the aluminum sheath radially. A radial score can cause a high stress point which may eventually crack. At warm temperatures the jacket can be peeled off while at cold temperatures repeated longitudinal cuts are necessary. (A jacket stripping tool is effective at all temperatures and limits the possibility of scoring the aluminum sheath).

Figure 2.



On underground cable, with clear viscous flooding compound, a hose clamp should be tightened on the jacket about 1/2 inch from the end to prevent the jacket from shrinking back. Heatshrink tubing will cover the clamp, cable and connector when the job is complete.

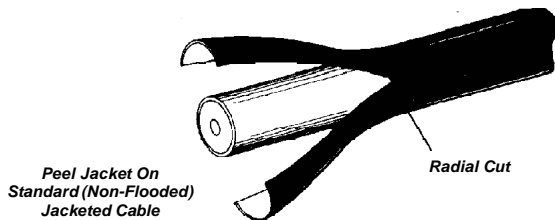
Figure 3.



JACKETED NON-FLOODED CABLES

In unflooded jacketed constructions, the jacket is bonded to the aluminum. A special adhesive has been used to allow easy jacket removal and assure that no residue is left on the aluminum surface. Use a jacket stripping tool intended for the cable to remove the jacket. If a knife is used, longitudinally cut the jacket in one or more places, holding the knife blade flat to the cable. Again be careful not to score the aluminum sheath radially. Once the jacket is cut, simply grip it and peel it off. If a knife is used to cut the jacket in a radial direction, the knife should not be allowed to cut through more than 2/3 of the jacket thickness.

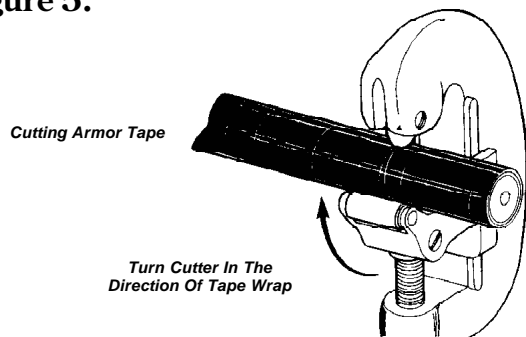
Figure 4.



ARMOR REMOVAL

If the cable is armored, the best approach is to use a tubing cutter to cut through the outer jacket and steel armor. The tubing cutter should be tightened a very small amount each turn until the tape is cut through. If the cutter is tightened too much the tape will catch and pull out of the jacket. After the steel tape is cut through, remove the outer jacket with a knife, and unwind the steel tape. Be careful, the tape has sharp edges and it is easy to get cut. Remove the jacket as described above.

Figure 5.



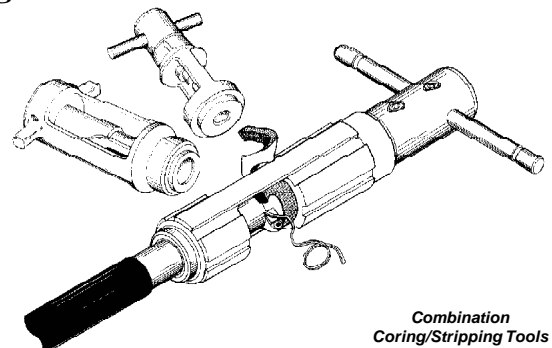
ALUMINUM SHEATH REMOVAL AND CORING METHODS

Several methods exist in the industry for coring standard trunk and feeder cables. These methods fall into three basic categories. All three are applicable to T10 and TX10, except as noted.

Method 1: Combination Coring/Stripping Tool

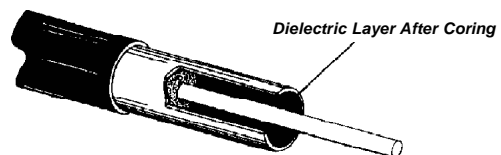
In this method the aluminum sheath is removed, the dielectric cored, and the center conductor is exposed to the proper length in one step by using a power or manually operated combination coring/stripping tool. Determine the length the center conductor must extend from the end of the cable from the connector manufacturer's recommendation.

Figure 6.



If when using the combination coring/stripping tool to trim the aluminum and expose the center conductor, a thin layer of plastic may remain inside the outer conductor and interfere with the integral sleeve of the connector. This sometimes occurs with the combination coring/stripping tool, but usually never with the coring (only) tool.

Figure 7.



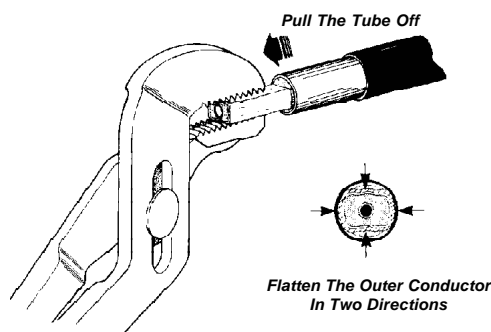
If this occurs, method 2 or 3 may be used, or simply cut off the cored aluminum tube with the plastic layer inside with a tubing cutter, and then core the cable only to core depth removing only that part of the aluminum tube that is flared inward due to the tubing cutter.

Method 2: Sheath Removal with Tubing Cutter

In this technique the bond is broken by crushing. Score the aluminum sheath with a tubing cutter about 2/3 of the way through. The score should be made a distance from the end of the cable to correspond to the length the center conductor must extend from the end of the cable. Determine the length the center conductor must extend from the end of the cable from the connector manufacturer's recommendations. Grasp the end of cable with Channel Locks and gently rock the cable end breaking the aluminum sheath at the scored groove. The rocking action will usually break the bond between the dielectric and outer conductor so that the aluminum tube can be pulled straight off.

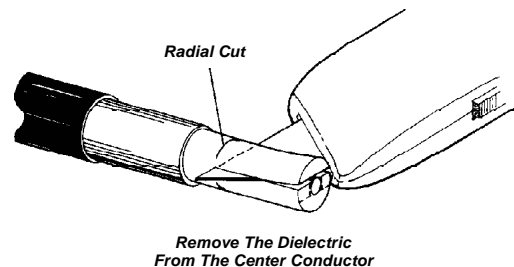
If the tube can not be pulled straight off, use Channel Locks to flatten the aluminum down to the center conductor in one direction to break the bonding between the dielectric and outer conductor then flatten the aluminum in the other direction to break the bond in the other direction. Form the flattened aluminum tube into a rough round shape. Pull off the aluminum tube with the Channel Locks. If the tube does not pull off with moderate force, do not twist the tube but instead flatten the tube again making sure that it is flattened down to the center conductor. Reshape the tube and pull the tube off.

Figure 8.



Longitudinally cut the dielectric along two sides of the center conductor being careful not to cut the center conductor. Cut radially 2/3 of the way through the dielectric at the end of the aluminum tube being careful not to cut through to the center conductor. Break off the dielectric. Longitudinally cut along the center conductor on the remaining two sides and break off the dielectric.

Figure 9.



Method 3: Sheath Removal with Tubing Cutter and Coring Tool

In this technique the coring tool is used to eliminate the bond between the dielectric and outer conductor. Flush cut the cable and core 1 inch. Then remove 1 inch of aluminum sheath with a tubing cutter. The length the center conductor must extend from the end of the cable is determined from the connector manufacturer's recommendations. If additional center conductor must be exposed, repeat the previous step. When the desired length of the center conductor has been exposed, core the cable for the connector.

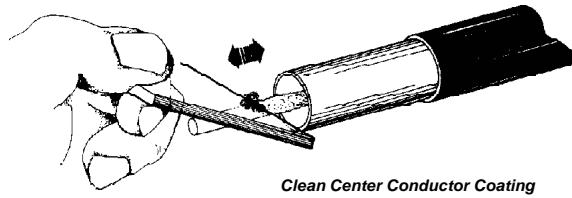
Note: Coring tools should be periodically examined to make sure that they do not damage, scrape, or deform the cable's interior or exterior surfaces.

CENTER CONDUCTOR PREPARATION

Cleaning

After coring the cable, a thin layer of dielectric material will remain coating the exposed center conductor. The center conductor is made of copper covered aluminum and can be damaged very easily if care is not taken to clean the conductor. A plastic center conductor cleaning tool (or piece of Plexiglas™) can be used to scrape the coating off the center conductor. See Figure 9.

Figure 10.

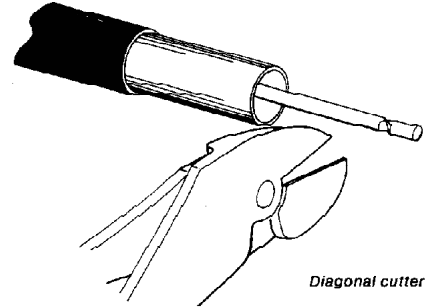


The use of hard materials such as knives, razor blades, or sand paper to clean the coating off may score or abrade the copper clad aluminum center conductor. If the conductor is scored or abraded, it will be weakened and can break in the future after it is exposed to cyclic stress. Another possible problem is that if the aluminum is exposed, a galvanic cell can form and eventually result in the loss of electrical contact due to corrosion.

Trimming

After the center conductor is cleaned, cut the center conductor to its final length. Cut the center conductor with diagonal cutters 1/2 to 2/3 of the way through. Rotate the cutters 90 degrees and cut through completely. This should leave the center conductor with a slightly triangular shaped end. Straighten the center conductor and follow the connector manufacturer's recommendations for installing the connector.

Figure 11.



Caution: The connector should slide into the cable easily. The connector can be damaged if excessive force is used. The connector should never be hammered onto the cable.