

**GENERAL ..... 4-2**

**PREPARATION INSTRUCTIONS AND JACKET REMOVAL ..... 4-2**

    Jacket Removal - Jacketed Non-flooded Cable ..... 4-2

    Jacket Removal - Jacketed Flooded Cable ..... 4-2

    Jacket Shrinkage In Flooded Cable..... 4-3

**PREVENTING JACKET MOVEMENT DUE TO SHRINKAGE..... 4-3**

**ARMOR REMOVAL ..... 4-3**

**ALUMINUM OUTER CONDUCTOR REMOVAL AND DIELECTRIC CORING4-3**

    Combination Coring/Stripping Tool ..... 4-4

**CENTER CONDUCTOR PREPARATION ..... 4-4**

    Cleaning..... 4-4

    Trimming..... 4-4

# Section 4 Preparation For Connectorization of Semiflex Cables

## GENERAL

Quality workmanship in the preparation of Semiflexible CATV cable for connectors is extremely important for the optimum performance of a cable system.

The majority of system problems in a new cable system are attributed to poor workmanship during the preparation of cable for connectors. Some of the problems include:

- The cable is not cut to proper length as recommended by the connector manufacturer.
- Connectors are not installed correctly, or not properly tightened.
- The cable is bent at too sharp an angle.
- The cable is contaminated with water or dirt.
- Seizure screws are not tightened or over tightened.
- The cable is scored and improperly cleaned center conductors (the most common problem).

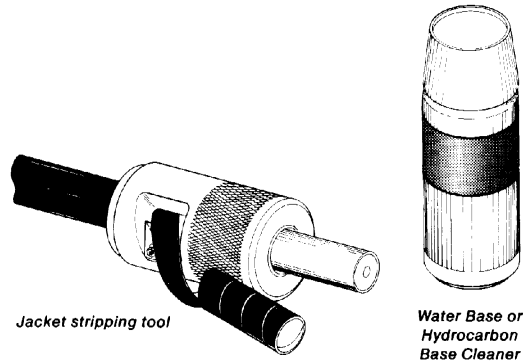
## PREPARATION INSTRUCTIONS AND JACKET REMOVAL

Remove sufficient jacket so that it will not interfere with connector installation. The amount of jacket that should be removed depends on the type of connector that will be used and the length of center conductor that will be exposed. ***Always refer to the connector manufacturers current recommendations for cable strip back dimensions.*** The jacket should not be trimmed back too far because additional heat shrink tubing will be necessary to protect the exposed aluminum outer conductor.

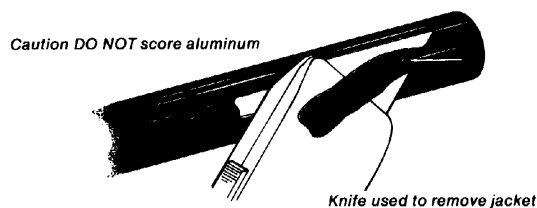
### **Jacket Removal - Jacketed Non-flooded Cable**

In non-flooded jacketed constructions, the jacket is bonded to the aluminum outer conductor. 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 ordered specifically for the cable type being used. Tools intended for standard jacketed cable cannot be used on cable with an extra thick jacket. (Extra thick

jacket is noted by an X in the part number, for example, T10500JX).



***Use of a knife for jacket removal is not recommended.*** However, if a knife is used, cut the jacket longitudinally in one or more places, holding the knife blade flat to the cable. Be careful not to score, scrape or in any way mark the aluminum outer conductor. 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 1/2 of the jacket thickness.



### **Jacket Removal - Jacketed Flooded Cable**

Before attempting to remove the jacket, make sure the cable is straight. With underground flooded cable (indicated by clear viscous flooding compound and JB in the cable part number, for example, T10500JB), or aerial flooded cable (indicated by black non-viscous asphaltic flooding compound and JBF in the cable part number, for example, T10500JBF), remove the jacket with a jacket stripping tool. Clean off the flooding compound with an appropriate flooding compound remover intended for existing temperature conditions.

***Use of a knife for jacket removal is not recommended.*** However, if a knife is used to remove the jacket, hold it flat against the cable and cut the jacket longitudinally, being careful not to score, scrape or in any way mark the

aluminum outer conductor. Scrapes and scoring of the outer conductor can cause a high stress point which may eventually crack. At warm temperatures the jacket can readily be peeled off, while at colder temperatures repeated longitudinal cuts may be necessary. (A jacket stripping tool is effective at all temperatures and limits the possibility of damage to the aluminum outer conductor.) If a knife is used to cut the jacket in a radial direction, the knife should not be allowed to cut through more than 1/2 of the jacket thickness.

### Jacket Shrinkage In Flooded Cable

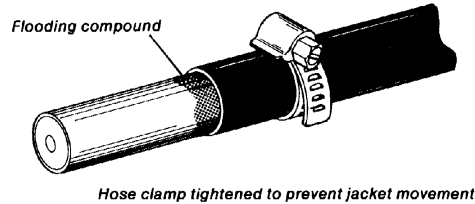
A jacket is applied to the cable core by heating pellets of polyethylene to the melting point in an extruder. The melted material is routed through the extruder into the extruder crosshead which forms the melted polyethylene jacket over the unjacketed cable core. After exiting the extruder crosshead, the jacketed cable is immediately quenched in cold water. This quench operation prevents the cable core from being exposed to excessive heat. It also cools the jacket so it will not deform, but will maintain the wall thickness and dimensions defined by industry specifications.

This rapid cooling locks longitudinal stresses into the polyethylene jacket. These are relieved in the field by daily environmental heating and cooling. This process of stress relief manifests itself by longitudinal shrinkage of the jacket material relative to the cable outer conductor. Shrink-back is most pronounced when the jacket is directly exposed to heating by the sun. In extreme cases, where no action has been taken to secure the jacket against movement, up to 12" of outer conductor may be exposed.

### PREVENTING JACKET MOVEMENT DUE TO SHRINKAGE

Jacket movement due to shrinkage may be prevented during the preparation of the cable for connectors. All strip dimensions remain the same as indicated in the manufacturers instructions for the connector being used.

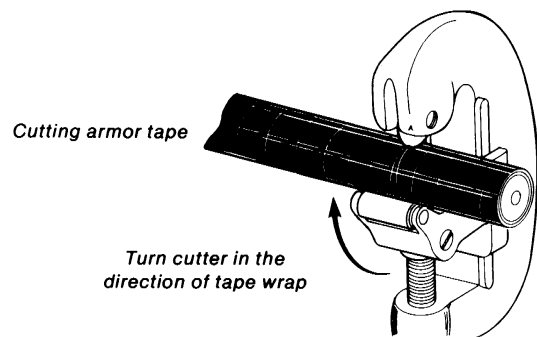
After stripping back the cable jacket, secure a hose clamp approximately 1/2 inch from the end of the cable jacket to prevent shrink back. When connectorization is complete, heat-shrink tubing should cover the hose clamp, cable and connector.



**Caution:** The hose clamp must not be over tightened or deformation of the outer conductor and signal degradation may result.

### ARMOR REMOVAL

The best way to remove armor is to use a tubing cutter to cut through the outer jacket and steel armor. (Note: Armored cable is always flooded and has two jackets -- an inner jacket and an outer jacket.) The tubing cutter should be tightened a very small amount each turn until the steel tape is cut through. If the cutter is tightened too much, the tape will catch and pull out of the jacket. After the tape is cut through, remove the outer jacket with a knife and unwind the tape. **Be careful!** The tape has sharp edges and it is easy to get cut while handling it. Remove the inner jacket as described previously.



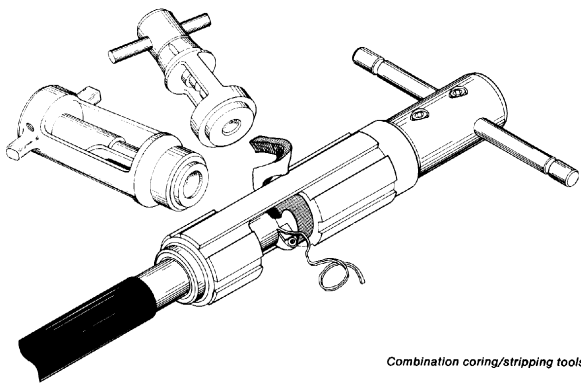
### ALUMINUM OUTER CONDUCTOR REMOVAL AND DIELECTRIC CORING

Several methods are used in the industry for coring trunk and feeder cable. The combination coring/stripping method is recommended.

# Section 4 Preparation For Connectorization of Semiflex Cables

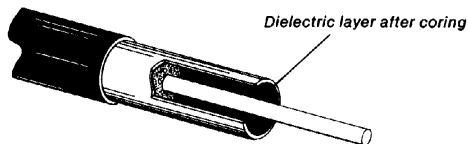
## Combination Coring/Stripping Tool

In this method the aluminum outer conductor is removed, the dielectric is cored and the center conductor is exposed all in one step by using a power or manually operated combination coring/stripping tool (see Figure 6.) If the coring/stripping tool includes the optional strip stop, it will core and strip the cable, and cut the center conductor to the proper length. No matter what method is used to cut the center conductor to length, that dimension must always conform with the connector manufacturer's recommendation.



Combination coring/stripping tools use heat-treated steel coring bits, which wear out. If the bit wears out it may flare the end of the outer conductor, potentially causing damage to the connector and degrading signal transmission. The coring/stripping tool manufacturer can provide replacement bits.

When using the combination coring/stripping tool to trim the aluminum outer conductor and expose the center conductor, a thin layer of plastic may remain on the inside diameter of the outer conductor and interfere with the integral sleeve of the connector. This sometimes occurs with the combination coring/stripping tool, but rarely with the coring (only) tool.



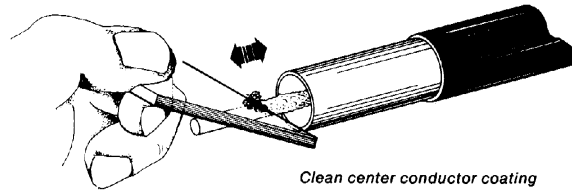
If this occurs simply cut off the cored aluminum tube with the plastic layer inside using a tubing cutter. Then core the cable again, removing only that part of the outer conductor that is flared inward due to the tubing cutter.

*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 outer surface of the exposed center conductor. The conductor is made of copper-clad aluminum and can be very easily damaged if proper care is not taken while cleaning the conductor of any remaining dielectric material. A plastic or fiber center conductor cleaning tool must be used to scrape the coating off the center conductor.



Do not use materials harder than copper, such as pocket knives, razor blades, or sand paper, to clean off the dielectric coating. They 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. Also, if aluminum is exposed, a galvanic cell may form and eventually result in the loss of electrical contact due to corrosion.

Flame should never be used to clean the center conductor of remaining dielectric material since overheating and carbonization of the dielectric may occur and result in degraded signal transmission.

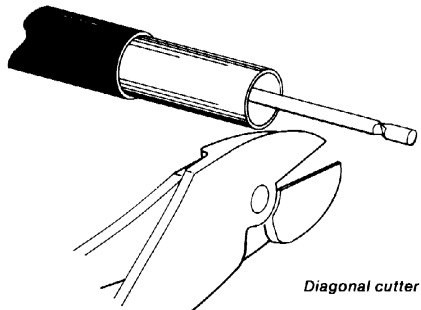
### Trimming

After the center conductor is cleaned, trim it 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.

## Section 4

## Preparation For Connectorization of Semiflex Cables

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