

Sheath Removal Procedure for FREEDM®/ LST Cables

1. General

1.1 This procedure describes how to remove the sheath of Corning Cable Systems' FREEDM/LST cable and prepare the cable's optical fibers for termination.

1.2 Corning Cable Systems FREEDM/LST cable is a rugged, craft friendly cable designed for use in indoor and outdoor environments. The cable contains between one and twelve fibers. The fibers are color coded and contained in a filled tube to ensure longitudinal water-blocking protection. Dielectric strength members around the central tube provide strength. The polyvinyl chloride (PVC) sheath provides for a lightweight and easily installable cable (Figure 1).

1.3 This issue reflects the introduction of Gel-free buffer tubes.

Important: Before starting this procedure, completely read and understand this document. Refer to the instructions provided with the hardware in which you will terminate the cable for required strip lengths for the sheath, strength members, and the buffer tube.

2. Precautions

2.1 Safety Precautions



Safety Gloves

CAUTION: The wearing of safety gloves to protect your hands from accidental injury when using sharp-bladed tools is strongly recommended. Use extreme care when the utility knife's blade is exposed. Dispose of used blades properly.



Safety Glasses

WARNING: The wearing of safety glasses to protect the eyes from accidental injury is strongly recommended when cutting central members and fiber.



Fiber-Clean Wipes

WARNING: Contains hydrocarbons. Apply in rooms having normal room ventilation. For prolonged and/or repeated use, gloves are recommended. Avoid eye contact. Keep away from open flames and ignition sources. If ingested, do not induce vomiting. Consult a physician. If contact with eyes, wash eyes with water for 15 minutes.

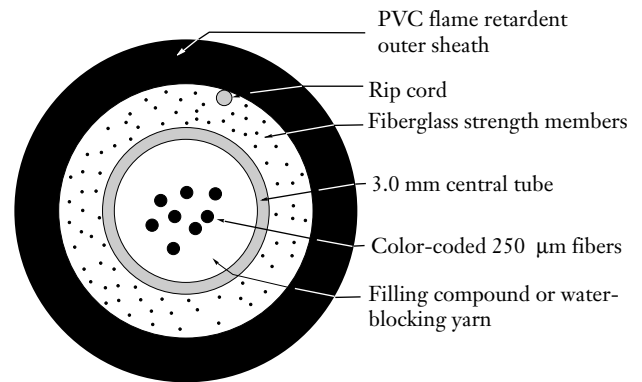


Figure 1



Sealing Paste or Tapes

CAUTION: Sealing paste or sealing tapes required by some cable closures may have an adverse effect on PVC cable sheathes. Corning Cable Systems recommends the application of Mylar® polyester tape over the appropriate area of FREEDM cable sheath prior to application of sealing paste or tape.



Isopropyl Alcohol

WARNING: Flammable. Flashpoint 59° F. Can cause irritation to eyes on contact. In case of eye contact, flush eyes with water for at least 15 minutes. Inhaling fumes may induce mild narcosis. In case of ingestion, consult a physician. Use with adequate ventilation.

2.3 Cable Handling Precautions



CAUTION: Fiber optic cable is sensitive to excessive pulling, bending and crushing forces. Consult the cable specification sheet for the cable you are installing. Do not bend cable more sharply than the recommended minimum bend radius. Do not apply more pulling force to the cable than specified. Do not crush the cable or allow it to kink. Doing so may cause damage that can alter the transmission characteristics of the cable- the cable may have to be replaced.

3. Tools and Materials

3.1 The following tools and materials are required to complete this procedure:

- Utility knife with hook-blade*
- Tape measure*
- Fiber-Clean® cleaning wipes if filling compound is present
- Scissors*
- Lint-free tissues*
- Electrician's tape*
- Small slotted screwdriver*
- Ideal co-axial cable stripper
- Needle-nose pliers
- Gloves
- Safety glasses
- Isopropyl alcohol
- Fiber optic stripping tool p/n 3205004-01
- Permanent marker pen*
- Mylar tape

*Items found in the M67-003 Fusion Splicing Tool Kit.

4. Cable Sheath Removal

4.1 Determine the proper sheath removal length for the hardware being used. Add 10 cm (4 in.) to this distance and mark a point at this distance from the end of the cable sheath with a wrap of tape (Figure 2).

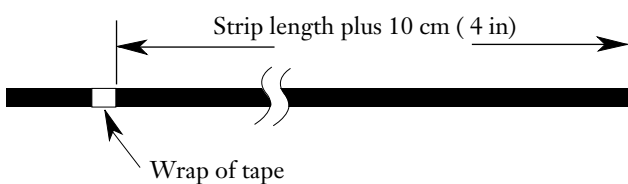


Figure 2

4.2 Taking care not to cut the buffer tube, use the hook blade knife to make a ring cut through the black outer sheath at the tape mark.

4.3 Use the hook blade to make a ring cut 10 cm (4 in.) from the end of the cable (Figure 3). Gently flex the cable at this second ring cut to break the sheath.

Note: The hook blade may damage the buffer tube and fibers in this 10 cm (4 in) section. Remember to inspect this section before you begin splicing.

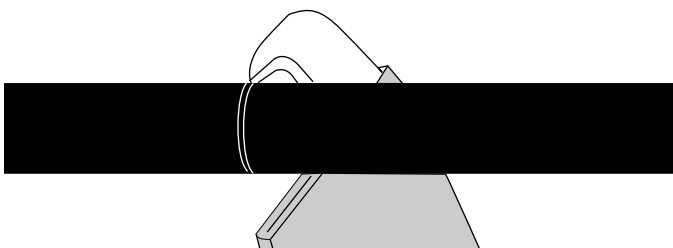


Figure 3

4.5 Position the blade of the hook blade knife at the ring cut so that it can travel down the cable between the sheath and the cable core towards the cable end.

Hold the knife at a 45° angle to the cable to prevent the blade from slipping out of the sheath.

Slit the 10 cm (4 in.) section of cable sheath by holding the arm which has the knife out straight and pulling the cable "through" the hook blade with your other hand (Figure 4).

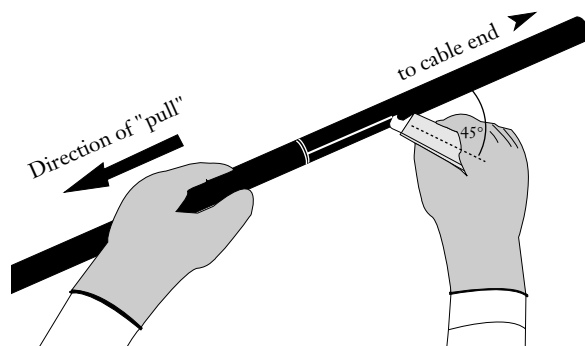


Figure 4

4.5 Slide the 10-cm (4 in.) section of sheath off the cable and discard it (Figure 5).

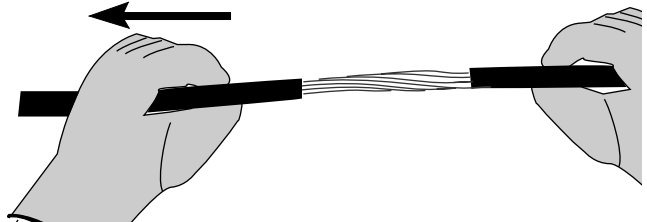


Figure 5

4.6 At the cable end, separate the rip cord from the strength members of the cable (Figure 6).

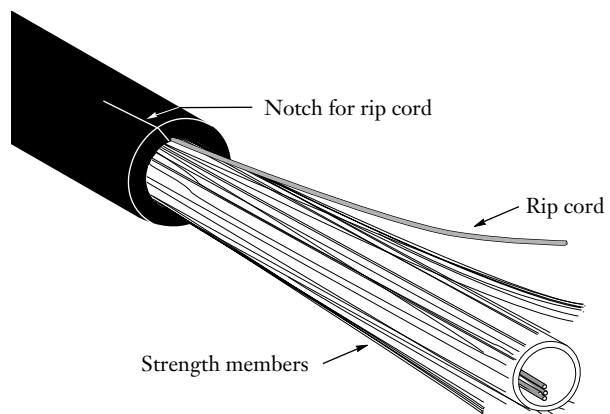


Figure 6

4.7 Use the hook blade knife to cut a starting notch for the rip cord in the cable sheath. *Use care during this step to avoid cutting the rip cord or damaging the central tube.*

4.8 Wrap the rip cord around the shaft of a screwdriver, short section of scrap cable, or other object which can serve as a handle.

4.9 Pull the rip cord through the sheath to the wrap of tape (Figure 7). Unwrap the rip cord from the “handle.”

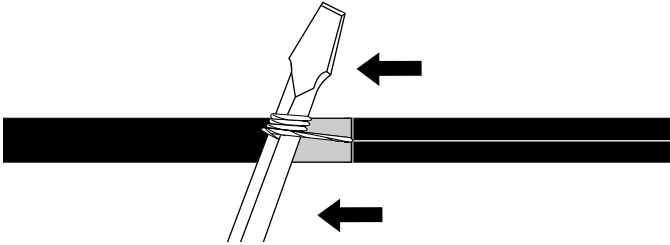


Figure 7

4.10 Use scissors to cut the rip cord flush with the tape mark.

4.11 Starting at the end of the cable, separate the black outer sheath from the core of the cable.

To prevent kinking the buffer tube, hold the core of the cable straight and in tension. Apply tension by clamping the cable to an immovable object. Be careful not to exceed the cable's minimum bend radius.

Pull the outer sheath away from the core to the ring cut .

4.12 At the ring cut, carefully flex the sheath and remove it. Side cutters may be helpful in removal (Figure 8).

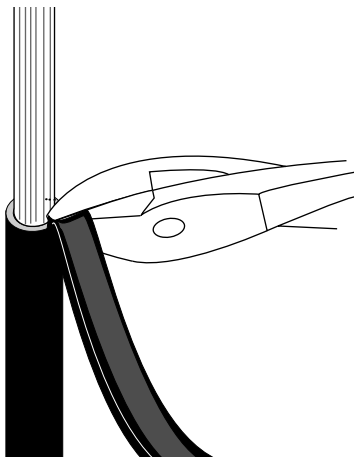


Figure 8

4.13 Use scissors to cut the fiberglass yarn to the length required for your particular installation. Remove the wrap of tape from the cable sheath.

5. Accessing the Buffer Tube

5.1 This section describes how to use an Ideal coaxial cable stripper (see Figure 10) to score the buffer tube found in FREEDM/LST cable. Scoring the circumference of the tube will enable you to make a clean break in the tube with minimal risk to the fibers inside.

5.2 Before using the stripper, make sure that it is properly adjusted. Use a small screwdriver to adjust *one* of the blades on the side of the buffer tube cutter so that it seats against the lower jaw but does not force the jaw open (Figure 9).

Leave the blades on the front and other side of the tool fully retracted.

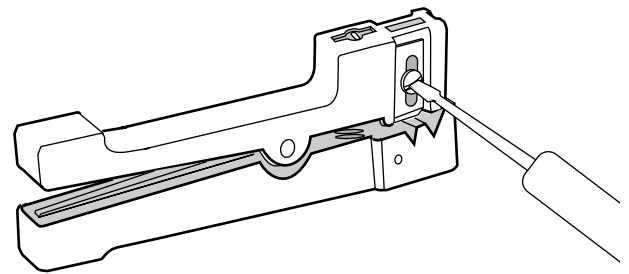


Figure 9

Note: Use the last 2 to 3 inches (5 to 7.5 cm) at the free end of the buffer tube to determine the sharpness of the stripper's blade and how many turns of the tool will be required to score the tube. To minimize damage to the fibers inside the tube, always use the tool to score the tube, **not** ring cut it.

5.3 To score a FREEDM/LST cable buffer tube:

- Open the tool by squeezing its handles together and place the stripper's blade on the tube no more than 46 cm (18 in.) from the end of the tube.
- Hold the tube with one hand to prevent it from twisting.
- Make enough turns with the cutter to *score* the buffer tube (Figure 10).

One or two turns may be adequate with a sharp blade.

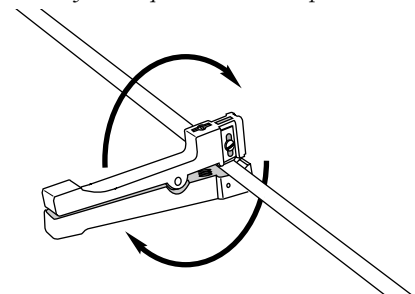


Figure 10

- Remove the cutter from the tube.

- e) Snap the tube at the scored area (Figure 11). Pull off the severed tube. **USE CARE TO AVOID DAMAGING THE FIBERS.**

If the tube bends rather than snaps at the score point, apply more turns of the tool. If this has no effect, replace the blade.

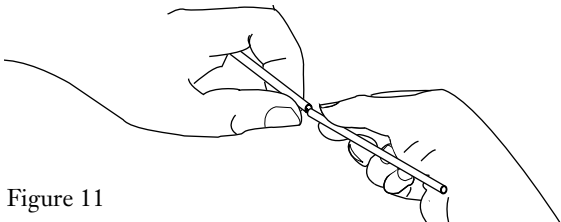


Figure 11

- f) Repeat steps a-e in 46 cm (18-inch) increments until you have removed the required length of buffer tube.

5.4 If the buffer tube is Gel-free, carefully cut out the water block yarns and proceed to step 6.1. If filling compound is present, use a Fiber-Clean wipe to clean the fibers. Use a dry tissue for final cleaning. (Figure 12).

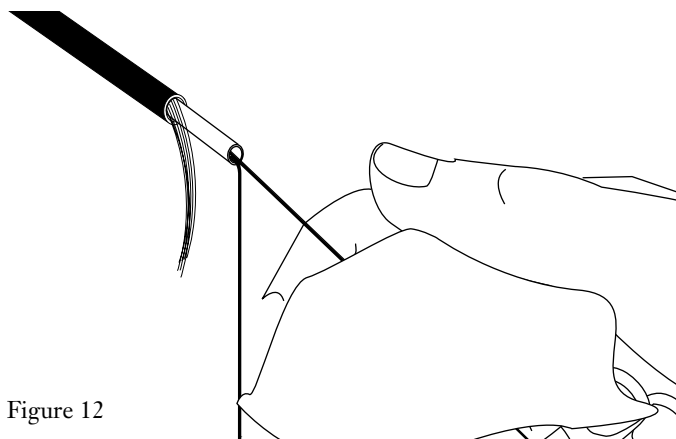


Figure 12



CAUTION: *If filling compound remover or other solvents are used to clean the fibers, wipe away excess solvent with a clean, dry tissue or cloth. NEVER ALLOW OPTICAL FIBERS TO SOAK IN SOLVENTS FOR EXTENDED PERIODS OF TIME— DAMAGE TO THE FIBER COATING CAN OCCUR.*

6. Fiber Preparation

6.1 To remove the 250 µm coating from the fiber, use the fiber optic stripping tool:

- Determine the bare fiber length needed for the connector or splice method you are using. Measure and mark this distance on the coating with a permanent marker.
- Starting at the mark, place the fiber in the V-notch of the tool.
- Hold the tool perpendicular to the fiber.
- Squeeze the tool shut and strip the fiber coating with a smooth, straight pull (Figure 13).

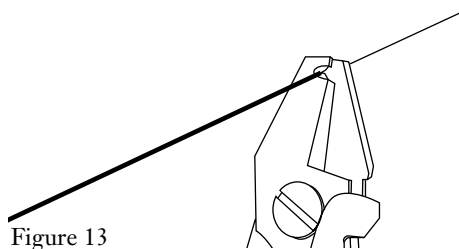


Figure 13

6.2 Using a lint-free tissue soaked with alcohol, clean the stripped fiber. Avoid handling the cleaned area of fiber.

6.3 Terminate or splice the fiber according to the instructions provided with the connector or appropriate to the splicing method you are using.

*Special Note:
Fiber Optic
Training
Programs*

Corning Cable Systems offers comprehensive, integrated training programs. Courses are structured for: Telephony, CATV, LAN, Intelligent Transportation Systems and Power Utilities.

For information on Engineering Services Training call: 800-743-2671.

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