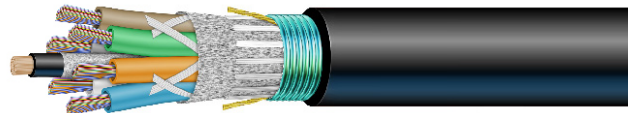


## MassLink™ Loose Tube Ribbon Cable Preparation & Handling Procedure

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### 1.0 Scope

This document provides instruction for the preparation and handling of MassLink™ ribbon in Loose Tube fiber optic cable. The instructions in this document explain how to prepare end openings and midspan openings of Loose Tube Ribbon fiber optic cable. When this cable is used in conjunction with splice closures, cabinets, pedestals, hardware, etc, the user must obtain installation procedures from the appropriate component manufacturers. Failure to adhere to preparation & handling procedures may void the cable warranty. **Please call if you have any questions at 1-800-669-0808**

### 2.0 Safety

- 2.1** Prysmian recommends the use of approved personal protective equipment in this procedure. .
- 2.2** Wear safety glasses and gloves, and use solvents in well-ventilated areas.
- 2.3** Never look directly into the end of a fiber that may be carrying laser light. Laser light may be invisible and can damage your eyes. Viewing it directly does not cause pain. The iris of the eye will not close involuntarily as when viewing a bright light. Consequently, serious damage to the retina of the eye is possible. Should accidental eye exposure to laser light be suspected, arrange for an eye examination immediately.
- 2.4** DO NOT use magnifiers in the presence of laser radiation. Diffused laser light can cause eye damage if focused with optical instruments. Should accidental eye exposure be suspected, arrange for an eye exam immediately.
- 2.5** A Material Safety Data Sheet (MSDS) for Fiber Optic Cable is also available. Call **1-800-669-0808**

### 3.0 Key Points

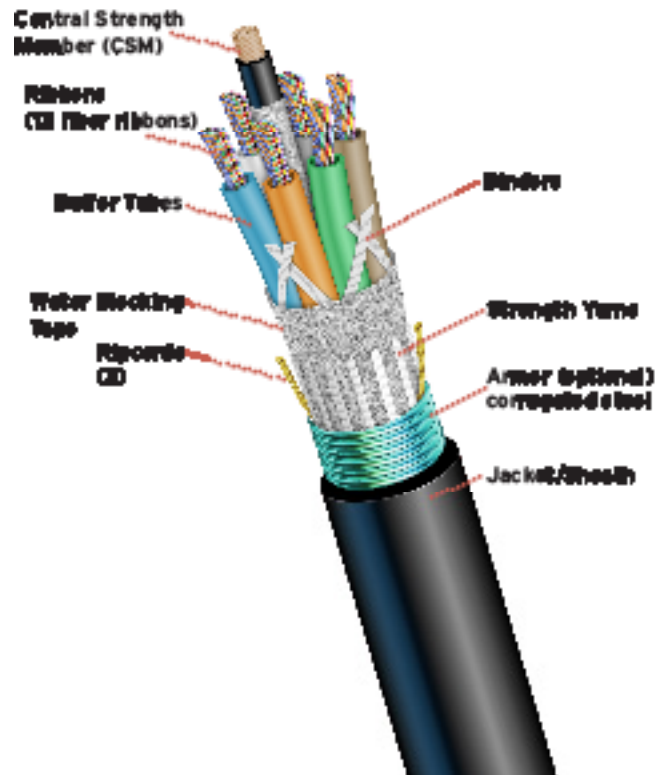
- 3.1** Do not allow blades or sharp edges to contact the ribbons or fibers.
- 3.2** Central strength member **MUST** be secured to prevent expansion/contraction and potential attenuation increase.
- 3.3** Jacket sheath **MUST** be secured inside the closure, pedestal, cabinet, etc to prevent expansion/contraction and potential attenuation increase.
- 3.4** Do not exceed the minimum bend radius.
- 3.5** Do not exceed the maximum pull tension.
- 3.6** When removing buffer tubes, keep ribbons pulled tight and straight when removing tubes to prevent fiber breaks. Pull the buffer tube off of the fibers rather than pushing. Do not attempt to remove more than 4 feet of buffer tube at a time.
- 3.7** Do not bend buffer tubes at sharp angles while removing the jacket, armor, yarns, or strength members.
- 3.8** Some closure, cabinet, pedestal manufactures recommend the use of B-sealants, RTV sealants, to seal off the end of the buffer tube to contain future leakage of gel filling compound. This is an acceptable practice.
- 3.9** A Prysmian Buffer Tube Slitter Tool is highly recommended for midspan access of fibers in buffer tubes to prevent fiber damage. **Call 1-800-669-0808 to order.**



## 4.0 Tools and Materials Needed

- [+] Cable ring cutter, sheath knife, or utility knife  
(Alternative-Prysmian's Cable Jacket Slitter)
- [+] Pliers – needle nose, diagonal, or linesman
- [+] Diagonal cutters
- [+] Scissors or snips
- [+] Flat-tip screwdriver
- [+] Cable cleaning solution D'Gel
- [+] Lint free wipes
- [+] 99% propanol alcohol
- [+] Disposable rags
- [+] Tape measure

## 5.0 Reference Drawing



## 6.0 End of Cable Access Procedure

### Quick Reference Checklist

#### 1. Remove jacket and armoring (if applicable)

- [+] Measure access length and make ring cuts.
- [+] Score armor, flex and pull off 6" section from cable end
- [+] Notch armor/sheath and pull ripcords.
- [+] Remove jacket and armor.

#### 2. Prepare the cable core.

- [+] Cut and remove yarns, binders, unnecessary filler rods.
- [+] Separate buffer tubes from central strength member (CSM).
- [+] Cut CSM to proper length.

#### 3. Prepare buffer tubes and fibers.

- [+] Score & remove buffer tubes in < 4 foot sections.
- [+] Clean fibers and prepare for splicing.

## Step-by-Step: End of Cable Access

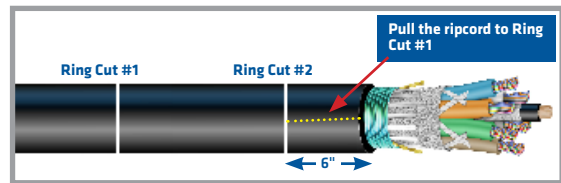
### 6.1 Measure and Ring Cut #1

Determine the length of cable needed to access by referring to the instructions of the closure, pedestal, cabinet, etc manufacturer. Make a ring cut at this distance from the end of the cable. Flex the cable at the ring cut to separate the jacket.

**CAUTION:** Only a shallow cut is necessary to remove the jacket. Cutting too deeply through the jacket may result in damage to the ripcords, armor, buffer tubes, and fibers.

### 6.2 Ring Cut #2

Make a second ring cut 6 inches (15 cm) from the end of the cable, again being careful not to cut too deeply. Flex the cable at the ring cut to separate the jacket.



### 6.3 Remove the Jacket

Using a slitter or utility knife, slit the jacket at the Ring Cut #2 to the end of the cable



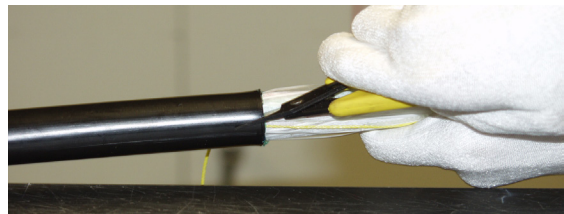
### 6.4 Remove the Armor (if applicable)

Use a utility knife to score the armor (ring cut #2). Use pliers to peel away the armor.



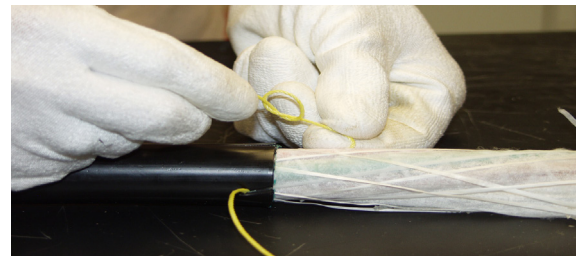
### 6.5 Ripcord Notches

Use diagonal cutters to notch the jacket (and armor, if applicable) near the ripcords. This helps start the pull of the ripcords and prevents breaking ripcord.



### 6.6 Knot the Ripcords

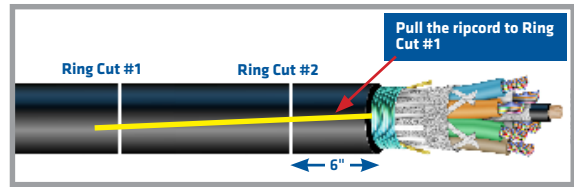
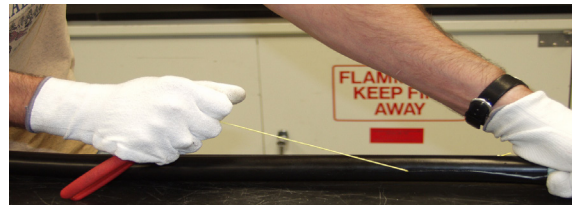
Tie a knot in the end of each ripcord. This will help hold the ripcord in the jaws of the pliers.



### 6.7 Pull Ripcords

Grasp one end of a ripcord in the jaws of needle nose pliers. Twist the pliers to wrap the ripcord around them, pull the ripcord through the jacket to Ring Cut #1.

**NOTE:** For armored cable, consult the closure, pedestal, cabinets, or hardware manufacturer procedure and make sure to leave enough armor in front of the ring-cut to be used for grounding. You may need to pull the ripcord several more inches to leave adequate armor for grounding.



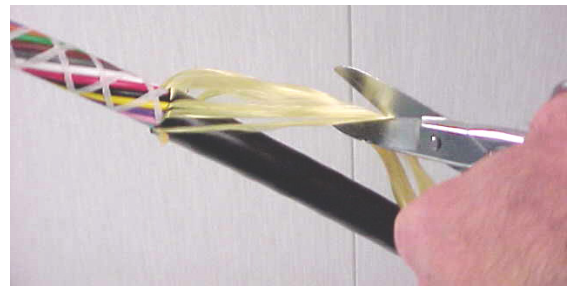
### 6.8 Remove Jacket/Armor

Peel the jacket and armor (if applicable) away from the cable core and discard it. Start at the end of the cable and work toward Ring Cut #1.



### 6.9 Remove Strength Yarns & Water Swellable Tape

Refer to the closure, pedestal, cabinets, and hardware manufacturer procedure to determine how much strength yarn to leave exposed for anchoring. Use snips to cut and remove the excess length of yarns from the cable core.



### 6.10 Remove Binders

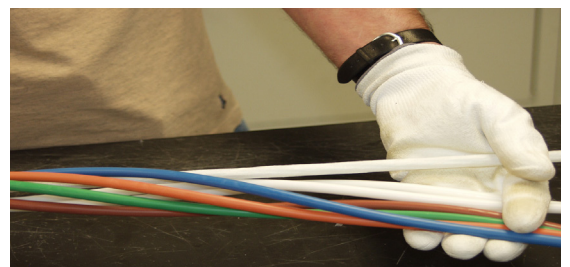
Use scissors and/or diagonal cutters to cut and remove binders from cable core. Binders form a criss-cross pattern to hold the core together.

**CAUTION:** Take care to avoid piercing or cutting the buffer tubes.



### 6.11 Separate Buffer Tubes

Separate the individual buffer tubes from the central strength member (CSM) and filler rods. Keep the buffer tubes straight as possible to prevent fiber breaks.

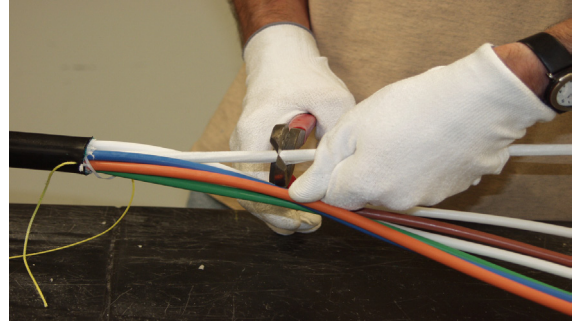




### 6.12 Central Strength Member (CSM)

Refer to the closure, pedestal, or cabinet manufacturer procedure to determine how much CSM to leave exposed for anchoring. When in doubt, leave 6 inches of CSM past the end of the jacket. Using lineman's pliers, cut the excess CSM, filler rods, and water swellable elements and then remove them from the cable core.

**CAUTION:** Securing the central strength member inside the closure, pedestal, or cabinet is a critical element to prevent expansion/contraction and potential attenuation increases.



### 6.13 Buffer Tube Scoring

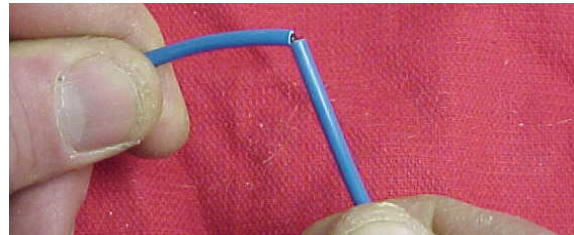
Starting from the end of the tube, measure 1 to 4 feet, then score each tube individually with rotations of the coaxial ring cutter. (Ideal models are recommended. Avoid using Miller strippers.)

**CAUTION:** Care must be exercised in this step to prevent cutting or breaking fibers while removing the buffer tube.



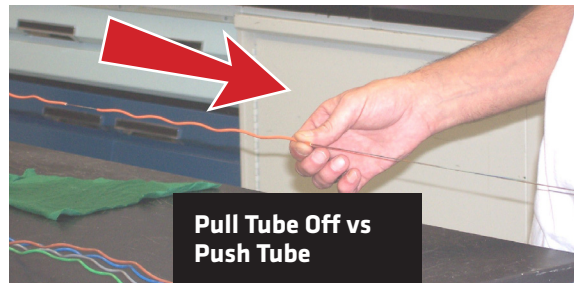
### 6.14 Removing the Buffer Tube and Exposing Fibers

Grasp the tube on each side of the score mark. Flex the tube in all directions to separate the tube at the scored mark.



**CAUTION:** Hold the buffer tube tight and straight while pulling the tube off the fibers. Apply back-tension to the fibers while pulling the tube off. It is NOT recommended to push off the tube.

Repeat the removal of tubes in 1 to 4 foot sections as described in steps 13 and 14 until the desired length of fiber is exposed.



### 6.15 Fiber Cleaning

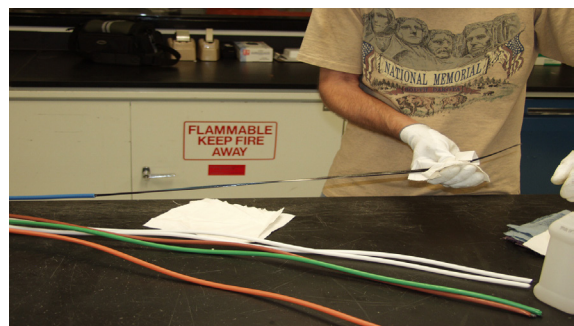
Clean the fibers (for example, clean using lint-free wipes with D-Gel, followed by a lint-free wipe with 99% propanol alcohol)

### 6.16 Get Blocking

The use of sealants (B-sealants, RTV sealants, etc.) or other commercially available gel blocking kits is recommended as additional protection to provide a seal around the ribbons and the end of the buffer tube to prevent leakage of the gel filling compound.

### 6.17 Routing Ribbon Tubes

Prysmian MassLink buffer tubes can be routed inside closures with a large enough tube storage diameter (ie. Tyco 600D for ≤ 864 fibers)



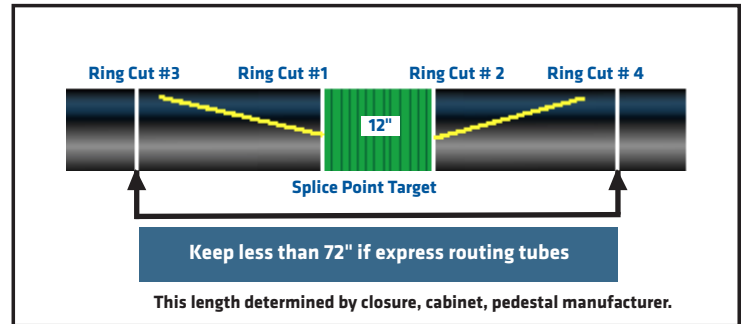
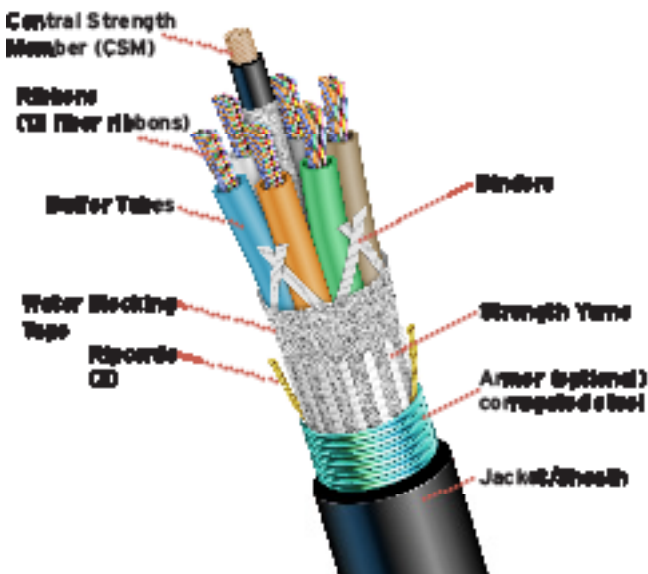
END OF PROCEDURE

## 7.0 Midspan Access Procedure



### Tools and Materials Needed

- [+] Cable ring cutter, sheath knife, or utility knife (alternatively, cable jacket slitter)
- [+] Needle nose pliers
- [+] Diagonal cutters
- [+] Scissors or snips
- [+] Flat-tip screwdriver
- [+] Pliers
- [+] Procedure for closure, cabinet, pedestal hardware
- [+] Prysmian buffer tube slitter tool
- [+] Cable cleaning solution or D'Gel
- [+] Cleaning rags
- [+] Lint free wipes
- [+] 99% propanol alcohol
- [+] Tape measure



**NOTE:** The switchback point on a loose tube ribbon cable is approximately 18-24" apart.

### Quick Reference Checklist

#### 1. Remove jacket and armoring

- [+] Determine access point and make 2 ring cuts 12" inches apart.
- [+] Slit jacket between ring cuts & remove.
- [+] Cut and pry away the armor (if present).
- [+] Notch jacket and pull ripcords an equal distance both directions from switchback to desired length.
- [+] Remove jacket and armor (if applicable).

#### 2. Prepare the cable core.

- [+] Cut and remove yarns and binders.
- [+] Separate buffer tubes from central strength member (CSM).
- [+] Cut CSM and remove filler rods (if present).

#### 3. Prepare buffer tubes and fibers.

- [+] Clean buffer tubes (as needed).
- [+] For mid-span tube entry, refer to the procedure using Prysmian's buffer tube slitters.

Call 1-800-669-0808 to order

## Step-by-Step: Midspan Access

### 7.1 Ring Cut #1:

Determine the access/splice point location and make a ring cut at this location.

**CAUTION:** Only a shallow cut is necessary to remove the jacket. Cutting too deeply through the jacket can result in unintentional damage to the ripcords or buffer tubes.

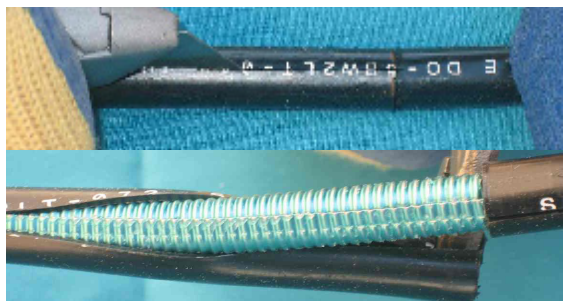
### 7.2 Ring Cut #2

Make a second ring cut 12" (30 cm) from the first ring cut, again being careful not to cut too deeply.



### 7.3 Slit & Remove the Jacket

Use a cable splitter or utility knife to slit the outer jacket between Ring Cut #1 and Ring Cut #2. Make several shallow cut passes. Remove the jacket in a single piece.



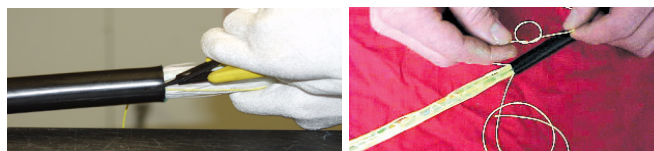
### 7.4 Armor Removal (if applicable)

Once the jacket is removed, pry open the armor and use diagonal cutters/snips to remove armor between the ring cuts. Locate the ripcords.



### 7.5 Ripcord

Cut the ripcords in the center of the opening. Use diagonal cutters to notch the jacket (and armor, if applicable) near the ripcords. This helps start the pull of the ripcords.

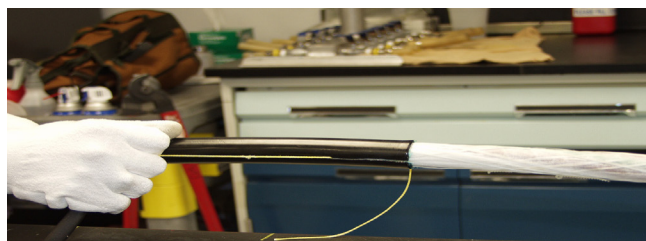


### 7.6 Knot in the Ripcords

Tie a knot in the end of each ripcord.

### 7.7 Pull Ripcord and Find Switchback Point

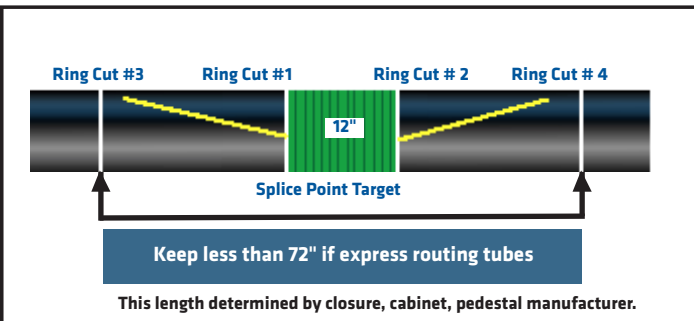
Grasp one end of a ripcord in the jaws of needle nose pliers. Turn the pliers to wrap the ripcord around them, then pull the ripcords through the jacket to the nearest switchback point (stranding reversal point). Switchbacks will occur every 18-24". Pull each ripcord separately.



### 7.8 Make Ring Cuts #3 & #4 on Equal Sides of the Switchback

Refer to the closure, pedestal, cabinet, and hardware manufacturer's procedure to determine the required midspan length. Mark equal distance on both sides of the switchback, then make Ring Cuts #3 & #4.

**CAUTION:** Only a shallow cut is necessary to remove the jacket. Cutting too deeply through the jacket can result in unintentional damage to the ripcords or buffer tubes.



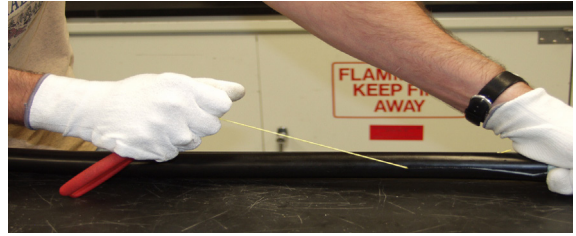
**NOTE:** The switchback point on a loose tube ribbon cable is approximately 16-24 inches apart.



### 7.9 Pull Ripcords to Ring Cut #3 and #4

Pull the ripcords through the jacket and open the jacket to Ring Cut #3 and #4. Remove the jacket and armor.

**NOTE:** For armored cable, consult the closure, pedestal, cabinet, or hardware manufacturer's procedure and make sure to leave enough armor in front of the ring cut to be used for grounding.



### 7.10 Remove Strength Yarn & Water Blocking Tape

Refer to the closure, pedestal, cabinet, or hardware manufacturer's procedure to determine how much strength yarn to leave exposed for anchoring. Use snips to cut and remove the excess length of yarns from the cable core.



### 7.11 Remove Binders

Use a Scissors and/or diagonal cutters to cut and remove binders from around the cable core. Binders form a criss-cross pattern to hold the core together.

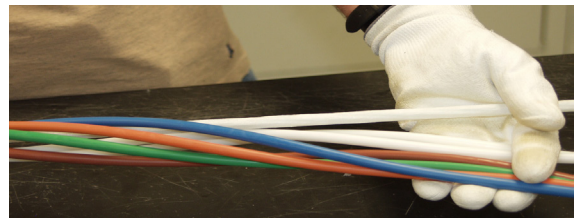
**CAUTION:** Take care to avoid piercing or cutting the buffer tubes.



### 7.12 Central Strength Member (CSM)

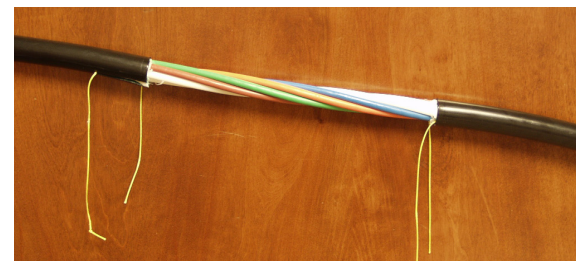
Refer to the closure, pedestal, cabinet, or hardware manufacturer's procedure to determine how much CSM to leave exposed for anchoring. Using lineman's pliers, cut the excess CSM and filler rods and remove them from the cable core.

**CAUTION:** Securing the central strength member inside the closure, pedestal, or cabinet is a critical element to prevent expansion/contraction & potential attenuation increases.



### 7.13 Gel Blocking

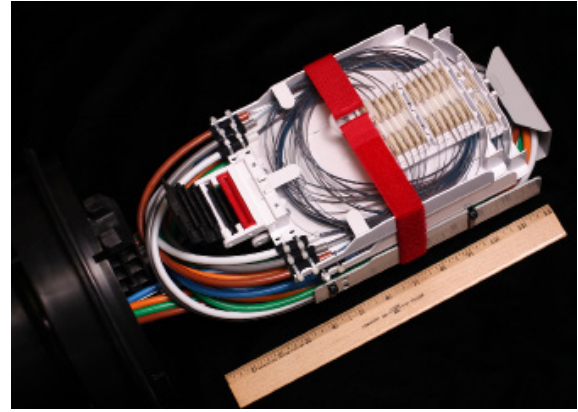
The use of sealants (B-sealants, RTV sealants, etc.) or other commercially available gel blocking kits is recommended as additional protection to provide a seal around the ribbons and the end of the buffer tube to prevent leakage of the gel filling compound.





### 7.14 Routing Ribbon tubes

Prysmian MassLink buffer tubes can be routed inside a closure with a large enough tube storage diameter.(ex. Tyco 600 D closure)  
A maximum tube length of 72" is recommended.



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## 8.0 Prepare to open the buffer tubes

### 8.1 Open The Appropriate Buffer Tube Per Procedure PR17

Using the tool matching the tube diameter.

**8.2** Use snips to carefully cut off the stripped buffer tube

**8.3** Flex the tube at the scored points at ring cut #1 and #2 to snap the opened tube from the intact core tube. Separate the opened shaved tube from the ribbons and removed it.

### 8.4 Final Preparation

Using lint-free wipes and isopropyl alcohol, clean the ribbons.

**8.5** Remove gel filling compound at the central tube using a Q-tip or similar swabbing tool. Remove gel 1 inch inside the central tube.

**8.6** Apply B-sealants, RTV sealants, etc. to seal off the end of the buffer tube to contain future leakage of gel filling compound.

**8.7** The cable is now ready for ribbon breakout and/or anchoring. Refer to that procedure.



**END OF PROCEDURE**

DISCLAIMER OF WARRANTIES AND  
LIMITATION OF LIABILITIES

The practices contained herein are designed as a guide. Since there are numerous practices which may be utilized, Prysmian has tested and determined that the practices described herein are effective and efficient. The recommended practices are based on average conditions.

In addition, the materials and hardware referenced herein appear as examples, but in no way reflect the only tools and materials available to perform these evaluations.

Prysmian makes no representation of nor assumes any responsibility for its accuracy or completeness. Local, State, Federal and Industry Codes and Regulations, as well as manufacturers requirements, must be consulted before proceeding with any project. Prysmian disclaims any liability arising from any information contained herein or for the absence of same.

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