

CentraLink CD and Central Loose Tube Applications Procedure

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1.0 Product Applications

The instructions in this document explain how to prepare end and mid-span openings of the Prysmian central loose tube fiber optic cable designs for termination. The document also outlines the procedure for installing a wire mesh pulling grip for installation via pulling in ducts. Instructions for the application of other fiber optic products, such as splice closures, distribution cabinets, etc., are included in the installation instructions for the device in question.

2.0 Cautions and Warnings

2.1 Prysmian strongly recommends the use of approved personal protective equipment in the performance of this procedure. Wear safety glasses and gloves, and use solvents in well-ventilated areas.

2.2 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.

2.3 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 examination immediately, serious damage to the retina of the eye is possible.

3.0 Key Points

3.1 In aerial applications, coupling loops are required next to the splice points.

3.2 DO NOT leave more than the rated length of exposed (bare) buffer tube in closures, cabinets, pedestals, etc. Exposing buffer tube beyond the rated length may lead to attenuation increase. If longer buffer tube storage length is needed, remove the buffer tube and place the fiber in splice trays or inside spiral wrap.

3.3 DO NOT allow blades or sharp edges to contact the fibers.

3.4 DO NOT exceed the minimum bend radius.

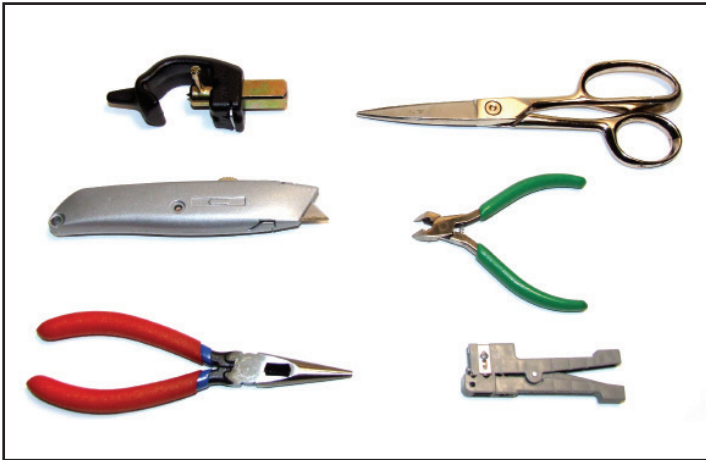
3.5 DO NOT exceed the maximum pull tension.

3.6 When removing buffer tubes, keep fibers pulled tight and straight 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.

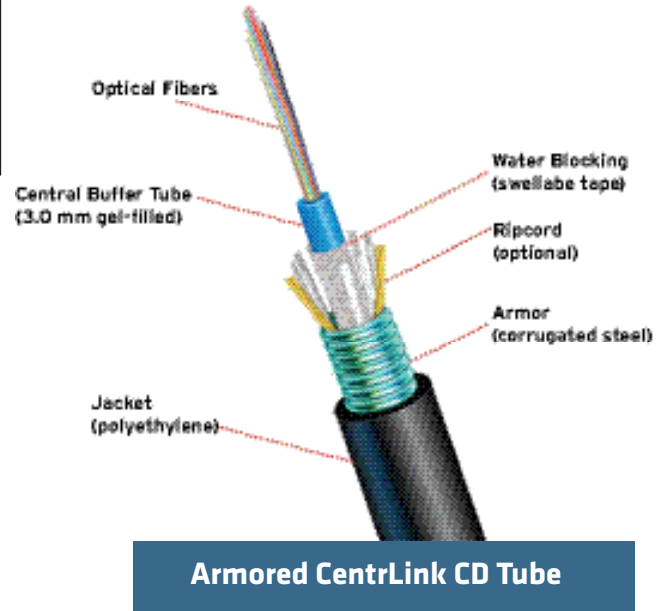
3.8 Prysmian's Buffer Tube Access Tool or Slitter Tool is highly recommended for midspan access of fibers in the buffer tubes to prevent fiber damage.

4.0 Recommended Tools and Materials



- [+] Cable ring cutter, sheath knife, or utility knife
(Alternative-Prysmian's Cable Jacket Slitter)
- [+] Pliers – needle nose, diagonal, or linesman
- [+] Protective gloves
- [+] Diagonal cutters
- [+] Scissors or snips
- [+] Safety glasses
- [+] Cable cleaning solution D' Gel
- [+] Lint free wipes
- [+] 99% Isopropyl alcohol
- [+] Disposable rags
- [+] Vinyl tape
- [+] Buffer tube stripper
- [+] Buffer tube mid-span access tool

5.0 Reference Drawing

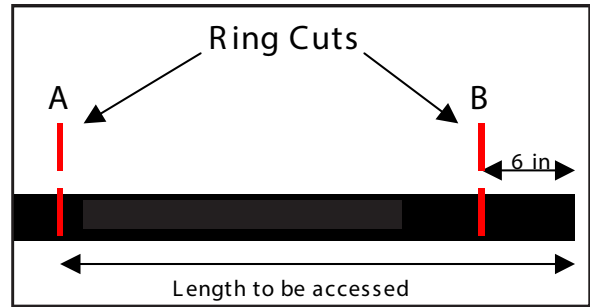


Armored CentrLink CD Tube

Step-by-Step: End Access Procedure

6.1 End Access Procedure (with ripcords)

Determine the length of cable to be accessed. Using the cable ring-cutter, make one ring-cut at the end of the access window (A) and a second ring cut (B) approximately 6 inches from the end of the cable. The ring-cut should be deep enough to cut through the jacket and score the armor. It is important to score the armor and not cut through. Flex the cable at each ring-cut make sure the jacket is cut and to break the armor.



6.2 Removal of Jacket

Remove the 6-inch section of jacket and armor by pulling the jacket off the end of the core.

NOTE: If the armor is sufficiently scored or cut, it should be very easy to slide the jacket and armor off the end of the core. It may be helpful to bend the cable back and forth at the ring cut to ensure the armor is sufficiently cut and is separated.



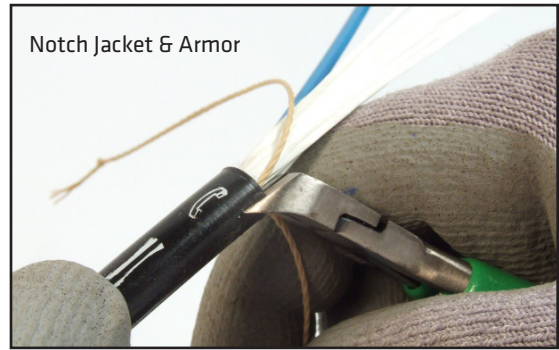
6.3 Ripcords Separation From Yarns

Locate the ripcords and separate them from the strength yarns. Tie a knot in each ripcord.



6.4 Notch Jacket

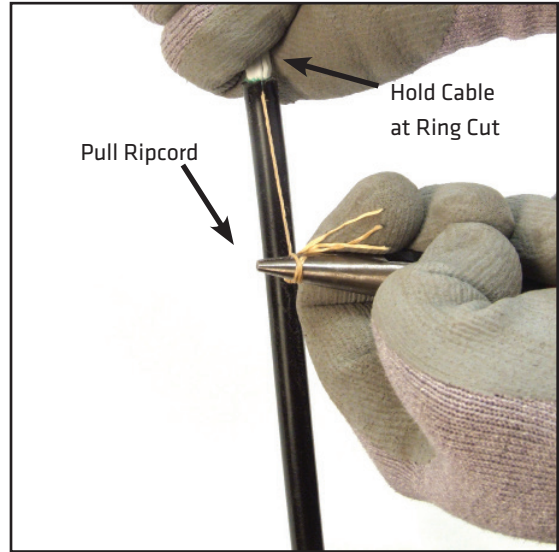
Using side cutters, make a notch in the jacket and armor just adjacent to each ripcord. This initiates the cut through which the ripcord will be pulled.



6.5 Pulling Ripcords

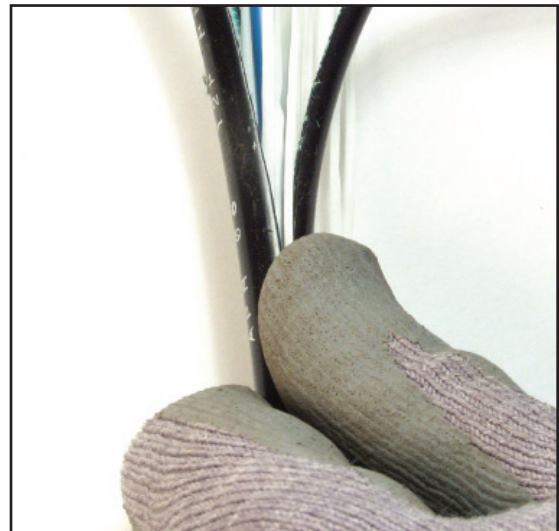
Wrap one ripcord through and around the needle nose pliers. With one hand holding the cable right at the ring cut (B), use the other hand pull the ripcord with the pliers. Start the pull in the notch and pull all the way to the end of the access window just beyond ring cut (A). Repeat this step for the second ripcord.

NOTE: It is important to use one hand to hold the cable right near the ring cut (B) to hold the cable and core in place. When pulling the second ripcord, make sure that the core does not slide through the first ripcord opening. This will prevent kinking of the buffer tube.



6.6 Separation From Cable Core

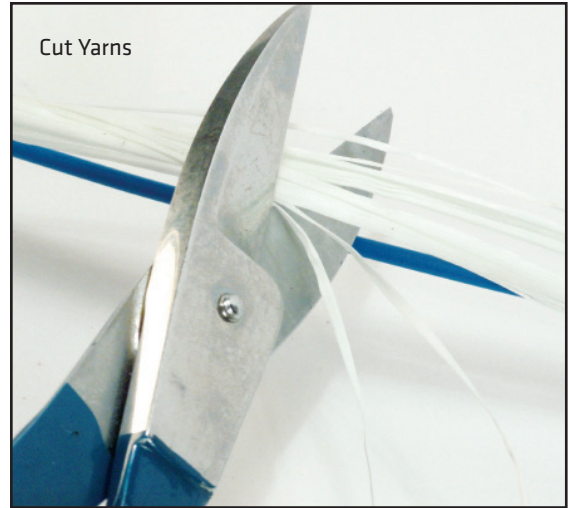
Peel away the two halves of jacket & armor from the cable core.



6.7 Cut Yarns

Cut the strength yarns to desired length as specified by local practices or the closure manufacturer.

NOTE: The strength yarns need to be secured in the closure. Because this cable design does not have any rigid strength members, the strength yarns must be tied to the support mechanism as recommended by the closure manufacturer.

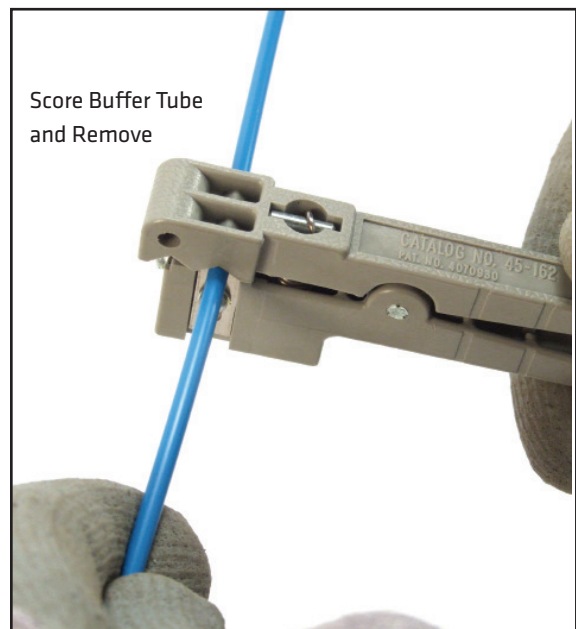


6.8 Score & Buffer Tube Removal

Determine the length of fibers to be accessed and score the buffer tubes using a rotary buffer stripper (similar to a coaxial cable stripper). Remove 12 to 15 inches (30 to 40 cm) increments until the desired length of fiber is exposed. Snap the buffer tube at the score location and slide it off the fibers. Clean fibers using lint-free wipes and alcohol in preparation for splicing.

CAUTION: Set the blade depth of the buffer tube stripper such that it does not cut through the tube, but only scores the tube. If the blade depth is too deep, it is possible to nick the fibers and cause damage.

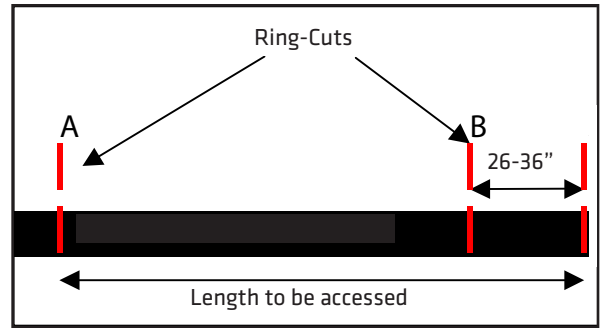
Bonding & Grounding: If it is necessary to bond & ground this cable, a length of armor must be exposed. This can be accomplished by making a ring-cut at the desired length and two longitudinal cuts from the ring cut to the end of the jacket. The two jacket halves of jacket can be peeled away and the armor will be exposed. Refer to local practices for appropriate bonding and grounding procedures.



7.0 End Access Procedure (no ripcords)

7.1 Access

Determine the length of cable to be accessed and marked this as point A.



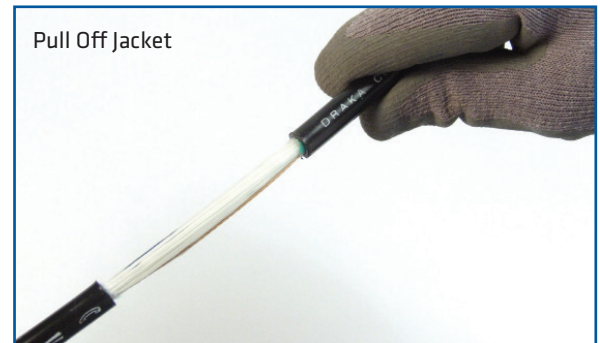
7.2 Ring-Cut

Using the cable ring-cutter, make one ring-cut approximately 24\" to 36\" from the cable end. The ring-cut should be deep enough to cut through the jacket and score the armor. It is important to score the armor and not cut through. Flex the cable at each ring-cut make sure the jacket is cut and to break the armor.



7.3 Jacket Separation

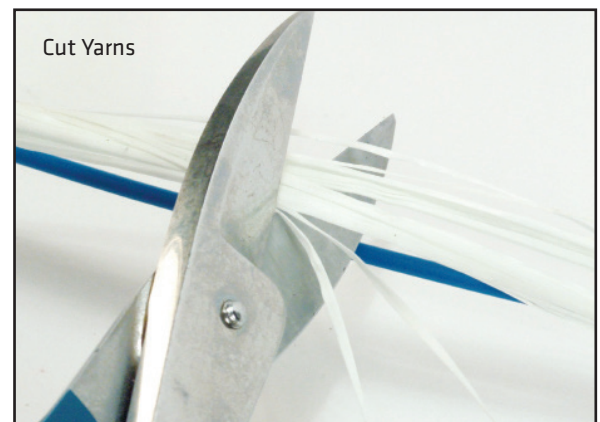
Pull off the jacket from the cable core.



7.4 Cut Yarns

Cut the strength yarns to desired length as specified by local practices or the closure manufacturer.

NOTE: The strength yarns need to be secured in the closure. Because this cable design does not have any rigid strength members, the strength yarns must be tied to the support mechanism as recommended by the closure manufacturer.



7.5 Tube and Fiber Access

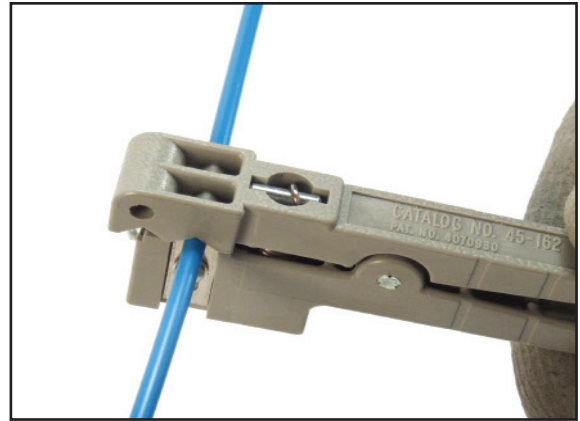
Repeat steps 2 through 4 until point A is reached. This should provide the desired length of tube/fiber to be accessed. Leave enough strength yarn to secure to the closure termination points

NOTE: The strength yarns need to be secured in the closure. Because this cable design does not have any rigid strength members, the strength yarns must be tied to the support mechanism as recommended by the closure manufacturer.

7.6 Determine Length

Determine the length of fibers to be accessed and score the buffer tubes using a rotary buffer stripper (similar to a coaxial cable stripper). Remove 12 to 15 inch (30 to 40 cm) increments until the desired length of fiber is exposed. Snap the buffer tube at the score location and slide it off the fibers. Clean fibers using lint-free wipes and alcohol in preparation for splicing.

CAUTION: Set the blade depth of the buffer tube stripper such that it does not cut through the tube, but only scores the tube. If the blade depth is too deep, it is possible to nick the fibers and cause damage.

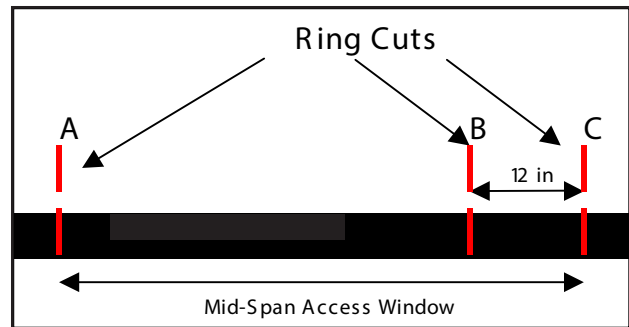


Bonding & Grounding: If it is necessary to bond and ground this cable, a length of armor must be exposed. This can be accomplished by making a ring-cut at the desired length and two longitudinal cuts from the ring cut to the end of the jacket. The two jacket halves of jacket can be peeled away and the armor will be exposed. Refer to local practices for appropriate bonding and grounding procedures.

8.0 Mid-Span Access Procedure 600lbs & 300lbs designs with ripcords

8.1 Ring Cut

Determine the length of cable to be accessed. Make a ring-cut at each end of the access window (A) and (C) and make a third ring cut (B) approximately 12 inches from ring cut C.



8.2 Slit Jacket

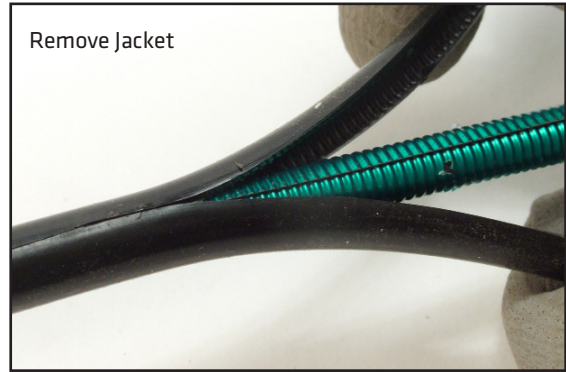
Make two longitudinal cuts through the jacket on the 12-inch section (B to C), 180 degrees apart. The cuts should be through the jacket, but not through the armor.



8.3 Remove Jacket

Use side cutters or needle-nose pliers to peel the two halves of the jacket off the 12-inch section.

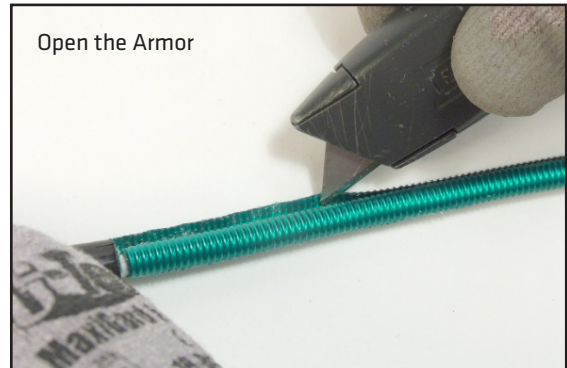
NOTE: Although not required, it may be helpful to use a heat gun to heat the jacket over this section. This softens the jacket and makes it easy to peel off.



8.4 Open The Armor

Peel open and remove the armor over the 12 inch section using a sheath knife, exposing the core and ripcords.

CAUTION: Be careful not to cut or kink the buffer tube when removing the armor and during handling.



8.5 Knot The Ripcords

Cut each ripcord near end C, on the opposite side of the remaining cable to be accessed. Tie a knot in each ripcord.



8.6 Notch Jacket & Armor

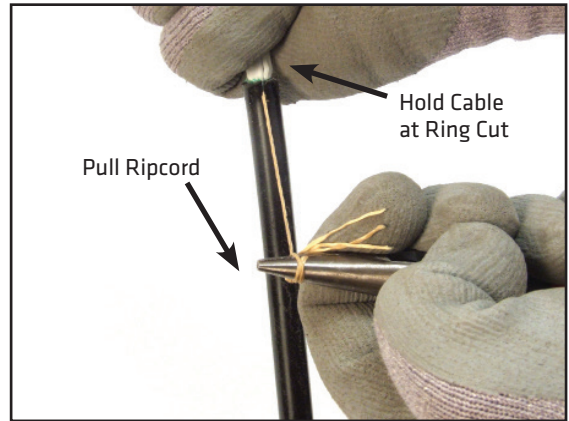
Using the side cutters, make a notch in the jacket and armor just adjacent to each ripcord. This initiates the cut through which the ripcord will be pulled.



8.7 Pull Ripcords

Wrap one ripcord through and around the needle nose pliers. With one hand holding the cable right at the ring cut (B), use the other hand pull the ripcord with the pliers. Pull the ripcord all the way to the end of the access window just beyond ring cut (A). Repeat this step for the second ripcord.

NOTE: It is important to use one hand to hold the cable right near the ring cut (B) to hold the cable and core in place. When pulling the second ripcord, make sure that the core does not slide through the first ripcord opening. This will prevent kinking of the buffer tube.



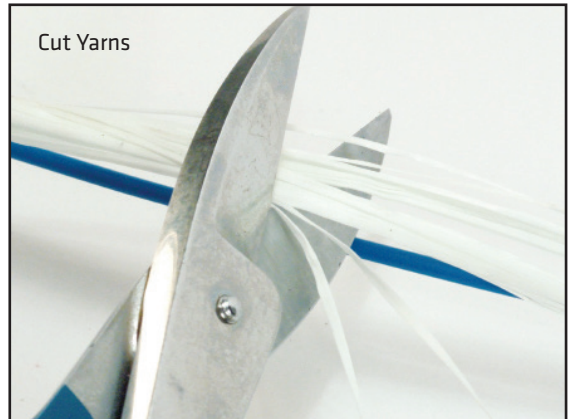
8.8 Peel away the two halves of jacket & armor from the cable core

8.9 Cut the strength yarns to desired length as specified by local practices or the closure manufacturer.

NOTE: The strength yarns need to be secured in the closure. Because this cable design does not have any rigid strength members, the strength yarns must be tied to the support mechanism as recommended by the closure manufacturer.

8.10 Access the buffer tube using an appropriate mid-span access tool.

Bonding & Grounding: If it is necessary to bond & ground this cable, a length of armor must be exposed. This can be accomplished by making a ring-cut at the desired length and two longitudinal cuts from the ring cut to the end of the jacket. The two jacket halves of jacket can be peeled away and the armor will be exposed. Refer to local practices for appropriate bonding and grounding procedure.



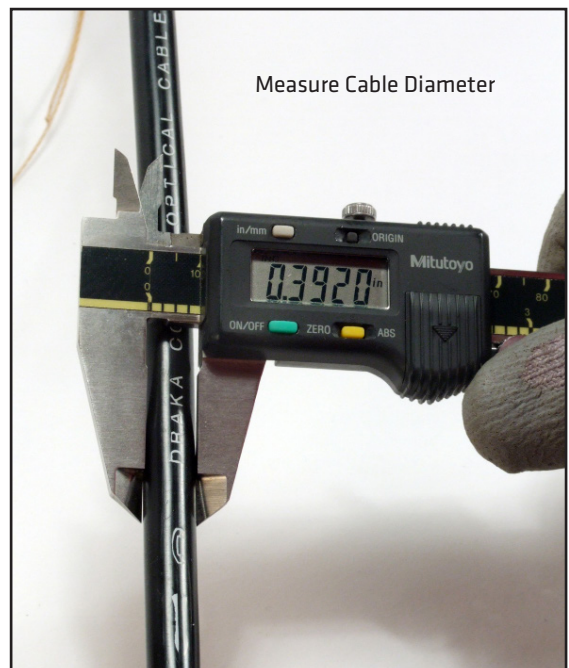
9.0 Pulling Grip Attachment

Scope

The following procedure outlines the method to install a wire-mesh design pulling grip onto the Prysmian armored central loose tube fiber optic cable designs.

Procedure

9.1 Measure the cable outer diameter and select a wire-mesh pulling grip designed for this diameter fiber optic cable.



9.2 Pulling Cable

Push the cable all the way through the grip and out the pulling end. 18 to 24 inches should be pushed through the grip. A pumping motion will assist the cable through the grip.

NOTE: If the grip design does not provide sufficient separation in the wire mesh to push the cable through, steps 3-5 must be completed prior to the cable being inserted into the grip.



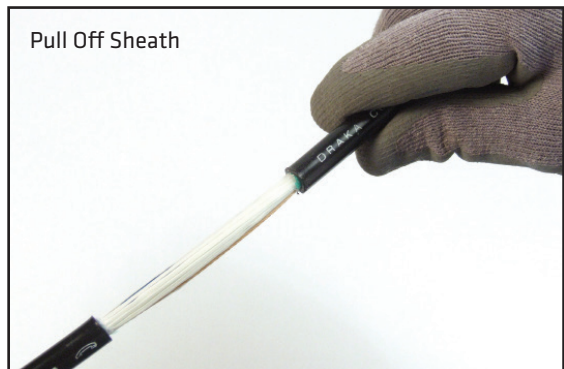
9.3 Ring-Cut

Ring cut the jacket and armor at a distance of 2/3 the grip length from the end of the cable. If the grip has a double weave section followed by a single weave section, make sure that enough jacket is cut back to ensure that the double weave section will not be in contact with the outer jacket.



9.4 Pull Off Sheath

Remove the section of jacket and armor off the cable core by sliding the jacket off the end. If the armor is sufficiently scored or cut, it should be very easy to remove the jacket and armor. It is helpful to bend the section back and forth after the initial ring cut is made to ensure the armor is sufficiently cut.



9.5 Tape Core End

Tape the exposed yarns together with the ripcords and buffer tube for a few wraps at the end of the core. It is important to keep the yarns taut when the cable is being installed.

9.6 Slide the end of the cable back into the grip such that the end of the cable is at the end of the grip.

NOTE: Special care must be taken not to disturb the yarns during this step.

9.7 Starting 3 inches beyond the end of the grip, tightly wrap vinyl tape around the grip for the entire grip length. It is especially important to wrap the tape tightly around the yarns as they will support the tension during installation.

9.8 Connect the pulling grip to an approved swivel. It is highly recommended to use a break-away swivel in order to ensure that the maximum rated tension of the cable is never exceeded.

NOTE: Cut off and discard the length of cable that was used in grip.



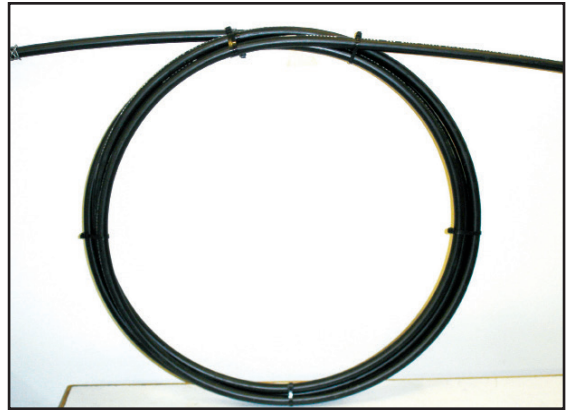
10.0 Aerial Applications Coupling Procedure

10.1 The coupling coil must be placed next to any cable termination point if the cable is installed in an aerial application. This prevents any fiber retraction that can take place from aerial wind or ice loading on the cable/messenger.

10.2 Determine a suitable location to place the coupling coil that is non-intrusive and does not cross into other rights-of-way.

10.3 Make a cable coil with at least 4 loops of cable. The coil diameter must be greater than 20 times the cable diameter.

10.4 Secure the coil together by applying cable ties equally spaced around the coupling coil. It is recommended that tie wraps be placed at the entrance and exit point of the coil as well as a minimum of 3 places evenly spaced around the coil. Using less than 4 cable ties may result in the coil unraveling.



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.

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