

Loose Tube Cable Mid-Span Access for Splicing

For Series 11D, 1GD, 12D, 1AD, 1DD, 1CD,
11, 1G, 12, 12L, 1A, 1D, 1C, 1NY, 13, 1H, HZD and HZA

NOTE: These installation instructions have been written for qualified, experienced personnel. Please read them thoroughly before starting assembly work. Superior Essex disclaims any liability or responsibility for the result of improper or unsafe installation practices.

This procedure details the necessary steps to access a Superior Essex Loose Tube Optical Fiber Cable mid-span for splicing. This procedure assumes that sufficient cable slack is available and is not intended for taut-line access. The cable may be a “dry” type cable design or a gel flooded design. This procedure does not include methods to prepare and splice the fiber or to perform splice testing. Cable access and splicing must be performed by personnel who are trained and familiar with handling optical fiber cables, cable components, and splicing accessories. Mishandling of fiber cables can cause damage to the fiber and result in cable length cuts or system degradation.

This procedure applies to the following Superior Essex Loose Tube Optical Fiber Cable Series:

- Dri-Lite® Loose Tube Single Jacket All Dielectric, Series 11D
- Dri-Lite Loose Tube Double Jacket Non-Armor, Series 1GD
- Dri-Lite Loose Tube Single Jacket Single Armor, Series 12D
- Dri-Lite Loose Tube Double Jacket Single Armor, Series 1AD
- Dri-Lite Loose Tube Double Jacket Double Armor, Series 1DD
- Dri-Lite Loose Tube Triple Jacket Double Armor, Series 1CD
- Loose Tube Single Jacket All Dielectric, Series 11
- Loose Tube Double Jacket Non-Armor, Series 1G
- Loose Tube Single Jacket Single Armor, Series 12
- Loose Tube Single Jacket Single Armor, Series 12L
- Loose Tube Double Jacket Single Armor, Series 1A
- Loose Tube Double Jacket Double Armor, Series 1D
- Loose Tube Triple Jacket Double Armor, Series 1C
- Loose Tube Single Jacket All Dielectric Nylon, Series 1NY
- Loose Tube Indoor/Outdoor, Series 13
- Heavy Duty Loose Tube, Series 1H
- Loose Tube Single Jacket All Dielectric Indoor/Outdoor LSZH, Series HZD
- Loose Tube Single Jacket Single Armor Indoor/Outdoor LSZH, Series HZA

Materials Required



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| 1. Loose buffer tube cable shaving tool | 5. Diagonal cutters | 10. Hook-blade razor knife |
| 2. Tape measure | 6. Needle nose pliers (preferably with rounded side edges) | 11. Lint-free wipes (for gel-filled cables) |
| 3. Yellow china marker (or equivalent) for marking cable jacket | 7. Cable snips | 12. Alcohol or gel cleaner |
| 4. Aramid shears | 8. Rotary cable splitter | 13. Safety glasses |
| | 9. Fiber tube scorer | 14. Gloves |

Getting Started

Proper safety requirements should always be followed and local practices maintained. It is recommended that the installer wear protective eye gear and gloves during many of the installation steps to avoid the possibility of bodily injury.

Ensure all required materials are on hand. It is recommended that the processes of mid-span access, fiber splicing, and splice closure assembly be performed from beginning to end with minimal interruption. If for any reason actions are interrupted, ensure fiber cable and fibers are adequately protected.

Procedure

1. Determine the location on the cable where the splice point is to be located.

NOTE: If the cable has multiple jackets, they must be removed in order using steps 1 through 11, repeating as necessary.



2. Adjust the cutting depth of the rotary cable slitter to approximately 90% of the jacket thickness. If the cable is armored, adjust the blade to cut through the jacket and score the armor. Ring cut the jacket/armor at the approximate midpoint of the intended splice location.



3. Flex the cable slightly at the cut to complete the opening of the jacket. If necessary, adjust the cutting depth and repeat the process until the jacket/armor is cut completely through.



4. Ring cut the jacket/armor approximately 2 inches (50 mm) from the cut completed in the previous step. Flex the cable slightly at the cut to complete the opening of the jacket. If necessary, adjust the cutting depth and repeat the process until the jacket/armor is cut completely through..



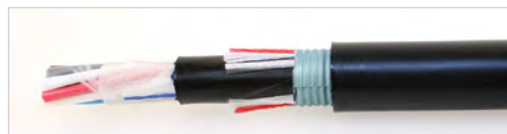
5. With the cable knife or utility razor, cut the jacket/armor longitudinally between the two ring-cuts. Cut completely through the jacket/armor, but be careful not to cut the buffer tubes underneath.



6. Pry the jacket/armor open at the longitudinal cut and remove it from the cable core. If a second jacket/armor exists, repeat the same process as listed in steps 4 and 5.



7. Locate a rip cord below the jacket or armor at the end of the cable. There will be one or two rip cords (typically yellow, blue, orange or red, depending on the cable type) that will be a different color from the white yarns utilized in the cable. Also, the rip cord(s) will be longitudinally applied just under the jacket or armor rather than wrapped around the cable core. Using the aramid shears, cut the rip cord(s) in the middle of the opening.



8. Using the diagonal cutters, cut a notch in both exposed ends of the jacket/armor next to the rip cord(s).



- Using round-edge needle nose pliers, grab one end of a rip cord and wrap it around the pliers' jaws. With the rip cord in the notch created in the previous step, continue rotating the pliers, winding the rip cord around the pliers' jaws. This will pull the rip cord through the jacket/armor down the length of the cable. After pulling the rip cord with this method for 3-4" (75-100 mm), it may be more efficient to grab the pliers in a T-handle fashion with the rip cord between your fingers and simply pull along the length of the cable. Continue until the rip cord has been pulled a total of approximately 12" (30 cm).

NOTE: Rounded edges on pliers will prevent the pliers from cutting through the rip cord during initial pulling.



- If two rip cords exist under the jacket, repeat for second rip cord to split the jacket.
- Peel back the jacket material to expose the cable core. For single rip cord cables, gently pull the cable core through the opening created by the rip cord. Do not exceed the cable's minimum bend radius.



- Using the aramid shears or cable snips, carefully cut the yarns covering the cable core at the approximate mid-section of the exposed core.



13. Locate the switchback point of the buffer tubes (the center of the area where the buffer tubes reverse the direction of wind around the cable axis). If necessary, use the rip cord(s) to expose more of the cable core until the switchback point is revealed (depending on cable design, distance between switchback points will be between 24" (60 cm) and 41" (104 cm)). The switchback point is now the new center of the splice location.



14. Determine the length of cable to be stripped according to the manufacturer's recommendations for the splice/termination system utilized.
15. Measure and mark the recommended length of cable, centered around the switchback point located during the previous step.



Using the final cutting depth determined previously, ring cut the jacket/armor at the marks and flex the cable slightly to complete the opening of the jacket at both locations.

NOTE: If the cable has multiple jackets, they must be removed in order using steps 16 through 19 and repeating as necessary.

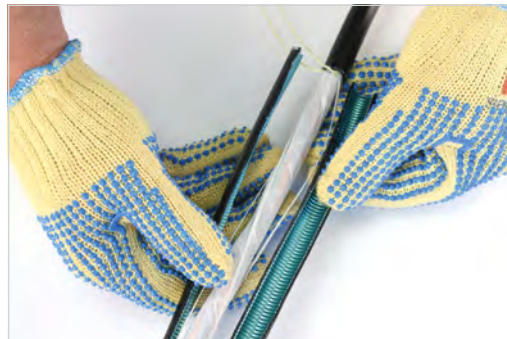


16. Locate a rip cord below the jacket/armor and slit the cable from ring cut to ring cut.



17. If two rip cords exist under the jacket, repeat for second rip cord to split the jacket.

18. Remove the jacket material between the ring cuts to expose the cable core. For single rip cord cables, gently pull the cable core through the opening created by the rip cord. Do not exceed the cable's minimum bend radius.



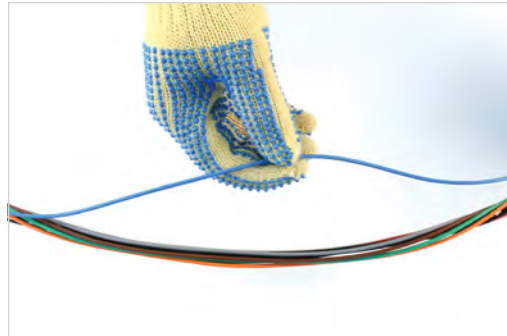
19. With the aramid shears, cut off the strength yarns, rip cords, and other materials covering the tubes, leaving about 12 inches (30 cm) of each from each end of the jacket (these will be cut to length during assembly of the splice closure). Be careful not to cut any of the buffer tubes.



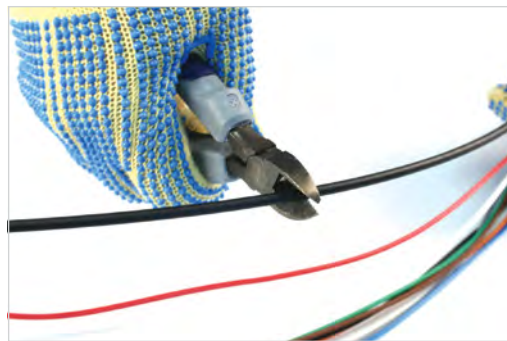
20. Using the cable knife or utility razor, cut the helically-applied binder yarns at approximately 3" (75 mm) intervals. Remove the binder yarns from the cable to within 3" (75 mm) of the jacket on both ends. Make additional cuts in the binder yarns if necessary.



21. Beginning at the switchback point, carefully unwind and separate the buffer tubes from the core one at a time. Be careful not to kink the tubes during handling. If the tubes are covered with filling gel, clean them with an appropriate gel remover. If necessary, cut any remaining yarns or strings wrapped around the core of central strength rod.



22. With the diagonal cutters, cut the central strength rod leaving about 12" (30 cm) from each end of the jacket (the rod will be cut to length during assembly of the splice closure). Be careful not to cut any of the buffer tubes.



23. Review manufacturer's assembly instructions for the splice closure to be used. Follow the splice closure assembly instructions to build the closure unit, attach the cable ends, and fabricate the end seal around the cables to be spliced. Repeat the above steps for all cables that are planned to enter the closure so that closure base seal and fabrication is complete.
24. If the cable is armored, bond the armor of each end of the cable to an approved ground via a suitable bond clamp or shield connector. Follow the manufacturers' instructions. It may be necessary to use the rip cords to split more of the jacket/armor in order to install the bond clamp or shield connector.

25. To breakout fibers from the buffer tubes, use the appropriate size tube shaver or splitter and follow the manufacturer's instructions.

NOTE: Superior Essex part number T-OSPF-25 pictured right.

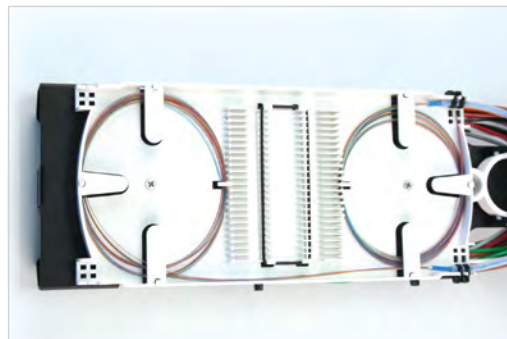


26. Remove fibers from buffer tube. Use dry, lint-free wipes to remove the PFM™ buffer tube gel from the exposed fibers.

If desired, the fibers may be wiped with a reagent-grade 99% isopropyl alcohol-soaked wipe to remove any remaining gel residue.

27. Follow closure assembly instructions and build specifications to route the buffer tubes to the appropriate splice tray.

28. Prepare and splice fiber per the instructions of the applicable splice/equipment manufacturer. Store fiber splice and excess fiber in splice tray per closure manufacture instructions.



29. After completion of the splicing operation, assemble the splice enclosure in accordance with the manufacturer's instructions.

For Superior Essex Splice closure information and installation procedures, please visit our website at <http://ce.superioressex.com/>. Under the Resources tab, you will find installation guidelines and videos for Superior Essex optical fiber splice closures.