



A Furukawa Company

Sheath Removal and Mid-Span Access for MiDia® Microcables

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1. General

1.1 The following procedure describes sheath removal and mid-span access for OFS MiDia® FX PLUS, MiDia FX, MiDia 2FX, and MiDia GX optical fiber microcables.

1.2 OFS MiDia cables are single jacket, reduced-diameter microcables. The cable types, fiber counts, and cable diameters are summarized in Table 1. Depending on the cable type and fiber count, the cable may contain 6, 8, 12, or 24 buffer tube positions. The gel-filled buffer tubes may contain 2, 4, 6, 8, 10, 12, or 24 fibers. MiDia cables are optimized for air-blown micro-duct applications. Please refer to OFS IP-055, *Microcable Installation*, for details regarding cable installation.

Table 1 – OFS MiDia Microcables						
Cable Type	Cable OD in (mm)	Maximum Rated Cable Load		Minimum Bend Diameters		
		Dynamic lb (N)	Static lb (N)	Dynamic in. (mm)	Static in. (mm)	Storage Coil in. (mm)
MiDia FX PLUS				40 x OD	20 x OD	
2 - 72 fibers	0.29 (7.3)	300 (1335)	90 (400)	12.0 (295)	6.0 (150)	18.0 (460)
74 – 96 fibers	0.34 (8.7)	300 (1335)	90 (400)	14.0 (350)	7.0 (175)	18.0 (460)
98 – 144 fibers	0.45 (11.3)	300 (1335)	90 (400)	18.0 (455)	9.0 (230)	18.0 (460)
MiDia FX				40 x OD	20 x OD	
12 – 72 fibers	0.25 (6.3)	300 (1335)	90 (400)	10.0 (255)	5.0 (130)	18.0 (460)
84 – 96 fibers	0.30 (7.6)	300 (1335)	90 (400)	12.0 (300)	6.0 (150)	18.0 (460)
108 – 144 fibers	0.38 (9.6)	300 (1335)	90 (400)	16.0 (385)	8.0 (195)	18.0 (460)
MiDia GX						
24 – 72 fibers	0.23 (5.8)	95 (440)	25 (130)	12.0 (300)	8.0 (180)	18.0 (460)
96 fibers	0.26 (6.5)	130 (590)	35 (175)	16.0 (390)	11.0 (260)	18.0 (460)
144 fibers	0.34 (8.6)	215 (960)	60 (285)	17.0 (420)	12.0 (280)	18.0 (460)
288 fibers	0.40 (10.2)	270 (1205)	80 (360)	21.0 (510)	13.0 (305)	18.0 (460)
MiDia 2FX						
96 – 144 fibers	0.25 (6.3)	175 (800)	45 (210)	12.0 (300)	6.0 (150)	18.0 (460)
192 fibers	0.30 (7.6)	245 (1100)	85 (400)	20.0 (500)	10.0 (250)	18.0 (460)
240 – 288 fibers	0.38 (9.6)	380 (1700)	130 (600)	20.0 (500)	12.0 (300)	18.0 (460)

2. Precautions

2.1 OFS *MiDia* FX *PLUS* and *MiDia* FX cables are compliant with Telecordia GR-20 requirements. *MiDia* GX and *MiDia* 2FX cables generally have lower strength ratings and are not compliant with Telecordia GR-20. Please refer to Table 1 for the maximum rated cable loads (MRCL) where the dynamic condition applies during cable installation and the static condition applies to an installed cable.

2.2 OFS microcables are designed for blown cable installation and should not be installed using cable winches. If hand pulling is required, breakaway pulling swivels should be used to assure that the MRCL is not exceeded. Cable lubricants are recommended for use in both air-blown and hand-pulling applications.

2.3 Care must be exercised during cable installation to ensure that the cable's minimum bend-diameter is not violated. Cable minimum bend diameters are shown in Table 1 for both dynamic and static conditions. In addition, the minimum storage coil diameter for all *MiDia* cables is 18 in. (460 mm).

3. Tools

3.1 The following tools and supplies are recommended for end-prep and mid-span cable access. **Caution:** Safety glasses should always be worn when working with optical fiber cables.

- Cable sheath knife
- Buffer tube stripper
- Snips (scissors)
- Cable shears
- Diagonal cutters (side cutters)
- Pliers
- Tape measure
- OFS Quick Split tool (mid-span access for *MiDia* FX *PLUS* cable)
- Ripley¹ MSAT Micro or Jonard Tools² MS-6 MidSpan Slitter (mid-span access for *MiDia* FX, GX, and 2FX cables)
- Lint free wipes
- Isopropyl alcohol
- Gloves
- Safety glasses

4. End Prep Sheath Removal For *MiDia* Cables

4.1 Consult the splice closure instructions for the required length of cable jacket that must be removed. Measure and mark the cable at the appropriate stripping length (Figure 1).

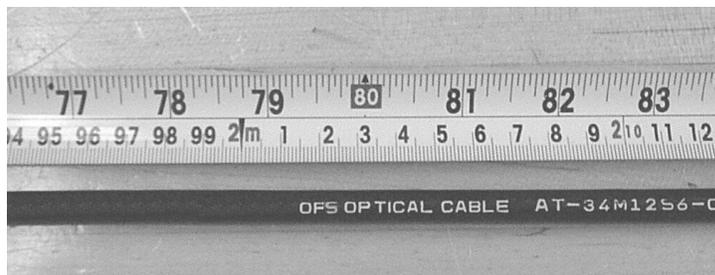


Figure 1 - Measure and mark the cable.

4.2 Use a cable sheath knife to ring cut the cable at the measured mark. Lightly score the polyethylene jacket (Figure 2).

¹ Ripley is a registered trademark of Ripley Tools, LLC, Cromwell,, CT.

² Jonard Tools is a registered trademark of Jonard Tools, Tuckahoe, NY.

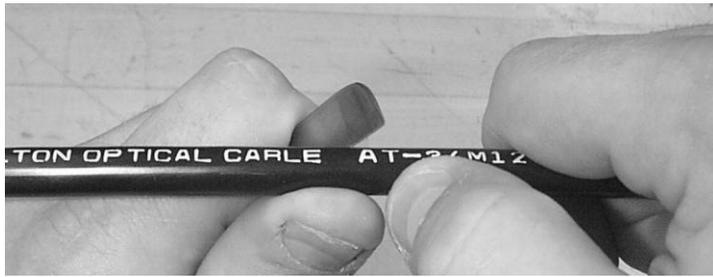


Figure 2 – Ring cut the cable jacket.

4.3 Gently flex the cable at the ring cut with a circular motion, being careful not to violate the minimum bend radius. The polyethylene sheath will separate at this point (Figure 3).

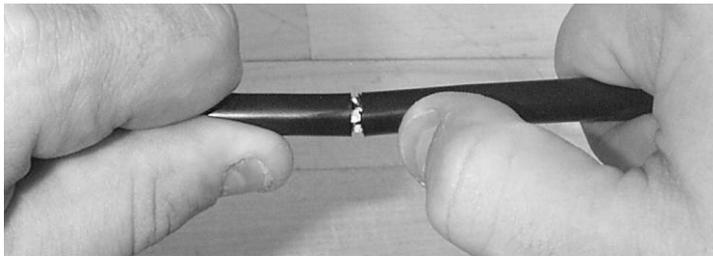


Figure 3 – Flex the cable to separate the sheath.

4.4 Make a second ring cut approximately 5 inches from the cable end. As in the previous step, gently flex the cable in a circular motion to separate the cable jacket at the ring cut.

4.5 Generally, the 5-inch section of outer jacket can be removed by sliding it over the end of the cable. If not, use a sheath knife to make a longitudinal cut between the ring cut and the end of the cable (Figure 4).



Figure 4 – If necessary, cut the cable jacket longitudinally before removal.

4.6 Remove the 5 inch section to expose the rip cord (Figure 5)

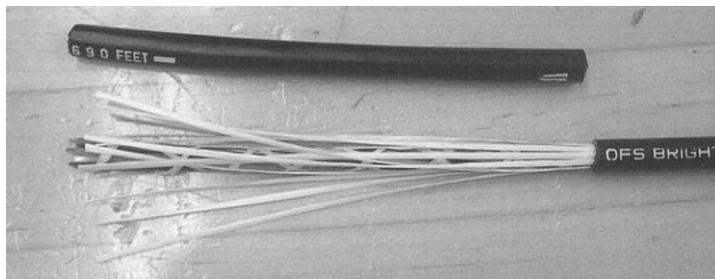


Figure 5 - Remove the 5-inch section to expose the ripcord.

4.7 Locate and pull the ripcord to the next ring cut (Figure 6). Sometimes a small starter slit is needed to start the ripcord. If desired, wrap the ripcord around a pair of pliers to grip the ripcord.

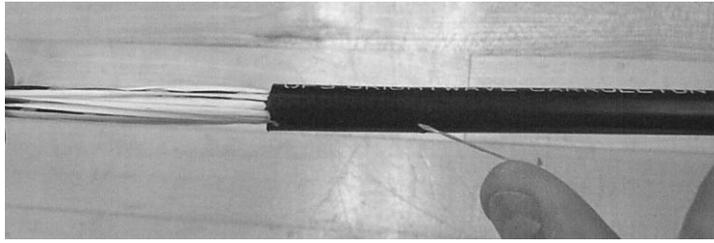


Figure 6 - Pull the ripcord to the next ring cut.

4.8 Remove the cable outer jacket to expose the core of the cable (Figure 7).



Figure 7 - Remove the outer jacket.

4.9 Consult the splice closure instructions to determine if the dielectric strength members are required for strain relief. Separate the dielectric strength members from the buffer tubes and cut them as required for fastening inside the splice closure (Figure 8).

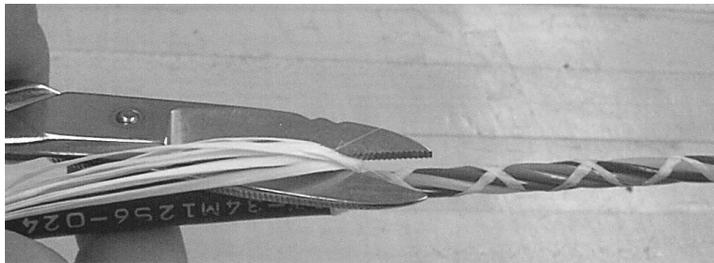


Figure 8 – Cut the dielectric strength members as required.

4.10 Unwrap the binder threads from the core and cut them flush with the outer jacket (Figure 9).

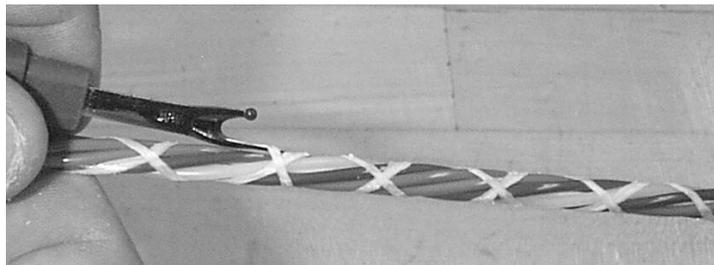


Figure 9 – Cut and remove the binder threads

4.11 Carefully unwrap the buffer tubes from each other and remove any water blocking threads between the tubes and the central member (Figure 10).

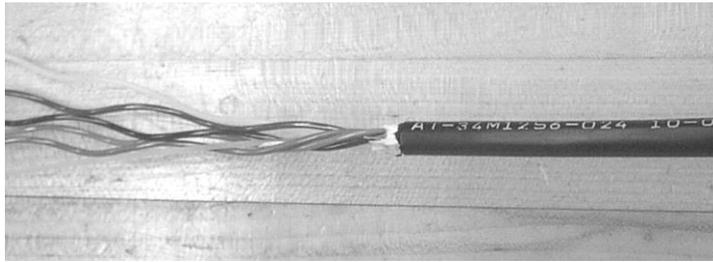


Figure 10 - Unwrap the buffer tubes.

4.12 Consult the splice closure instructions to determine the length of central strength member that is required for strain relief. Separate the central member from the tubes taking care not to kink or damage the tubes. Cut the central member to the required length (Figure 11)

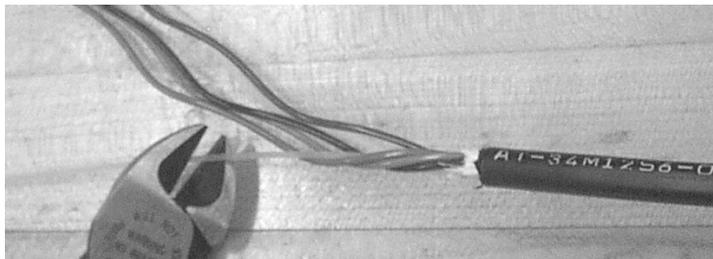


Figure 11 – Cut the central strength member to the required length.

4.13 Consult the splice closure instructions to determine the length of fiber that must be exposed. Use a buffer tube stripper to score the buffer tubes (Figure 12) at the required length. Make only one revolution around the tube. The tube should be scored rather than cut.

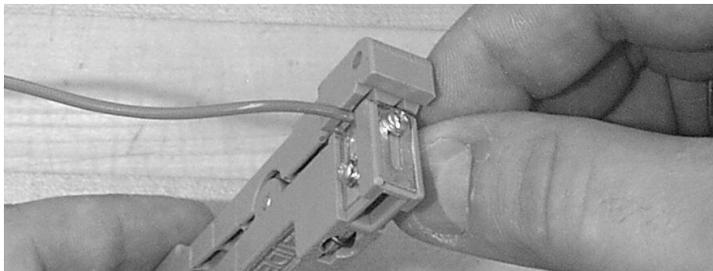


Figure 12 – Score the buffer tubes.

4.14 Grasp the tube on both sides of the score mark and gently flex to separate the tube (Figure 13).

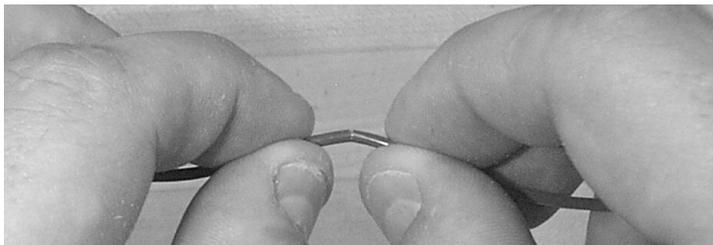


Figure 13 – Flex and separate the tube at the score mark.

4.15 Remove the buffer tube with steady pulling force to expose the fibers (Figure 14). When removing a long length of tube it is recommended to remove the tube in 14 to 18 inch sections.

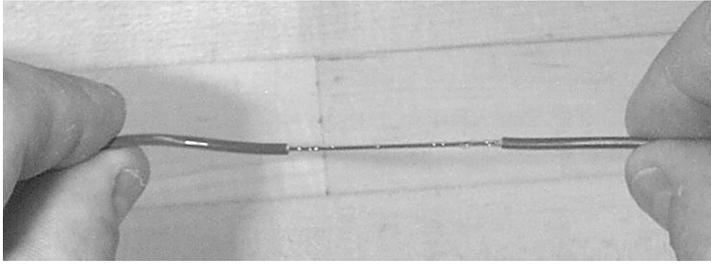


Figure 14 – Remove the buffer tube from the fibers.

4.16 Carefully clean the exposed fibers using a lint-free wipe soaked with isopropyl alcohol (Figure 15).

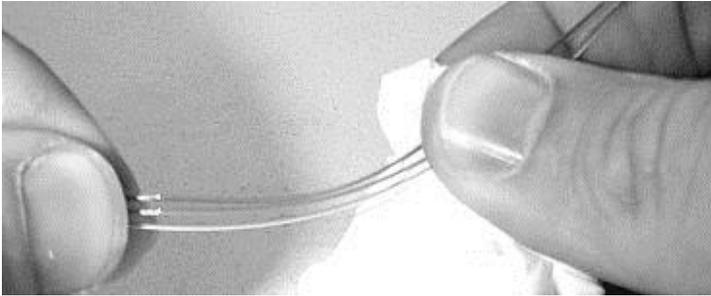


Figure 15 – Carefully clean the fibers.

4.17 The cable is now ready for testing and/or splice closure preparation.

5. Mid-Span Sheath Removal for *MiDia* Cables

5.1 Measure and mark two points 10 inches apart on the area of sheath to be removed for mid-span access (Figure 16).

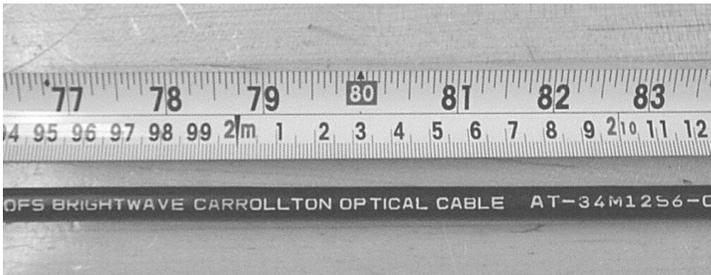


Figure 16 - Measure and mark the cable.

5.2 Use a cable sheath knife to ring cut around the cable at one of the measured marks. Lightly score the cable jacket rather than cut all the way through (Figure 17).

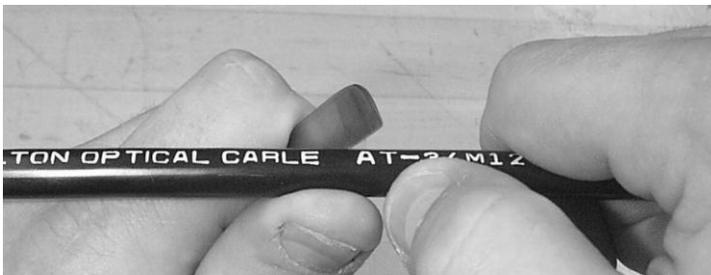


Figure 17 – Ring cut the cable jacket.

5.3 Using a circular motion, gently flex the cable at the score mark to separate the outer jacket (Figure 18). Be careful not to violate the minimum bend radius of the cable.

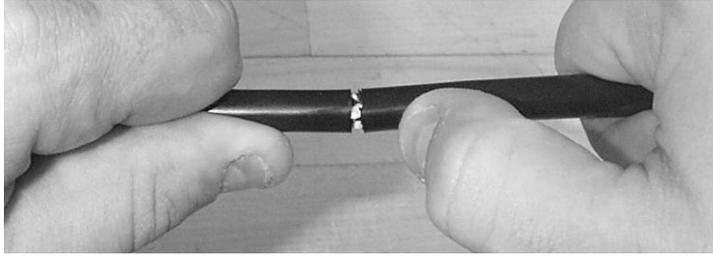


Figure 18 – Flex the cable at the score mark to separate the outer jacket.

5.4 Repeat steps 5.2 and 5.3 at the other measured mark.

5.5 Use a sheath knife to make a longitudinal cut between the two ring cuts (Figure 19).



Figure 19- Make a longitudinal cut between the two ring cuts.

5.6 Remove the 10-inch section of outer jacket to expose the dielectric strength elements and the cable core. (Figure 20).



Figure 20 – Remove the 10-inch section of outer jacket.

5.7 Locate the cable ripcord and cut it in the middle (Figure 21).

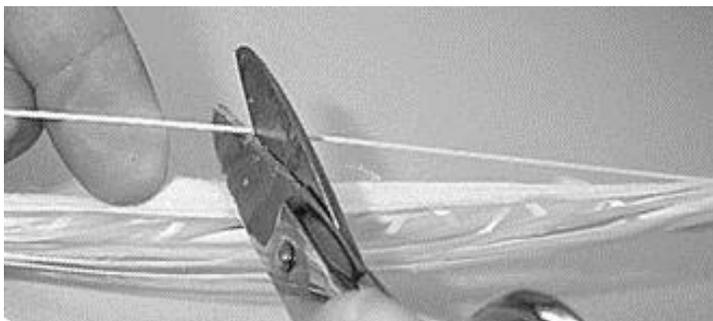


Figure 21 – Cut the ripcord.

5.8 Locate a buffer tube reversal point by removing the outer cable jacket in 12 inch sections. The reversal point is the point where the twist of the buffer tubes changes direction (Figure 22). Alternately remove (to the left and right) 12-inch sections of the outer cable jacket until the reversal point is located.

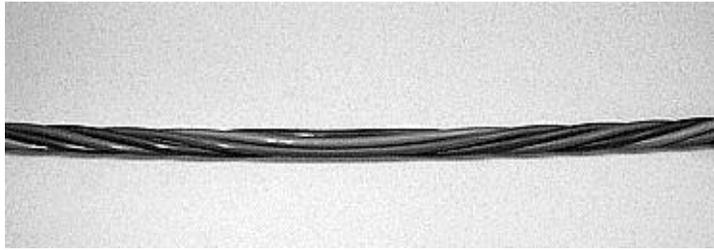


Figure 22 – Reversal Point

5.9 Consult the splice closure instructions to determine the length of outer cable jacket that must be removed for the mid-span splice. Center the sheath opening at the reversal point. Measure equal distances from the reversal point and mark the sheath opening (Figure 23).

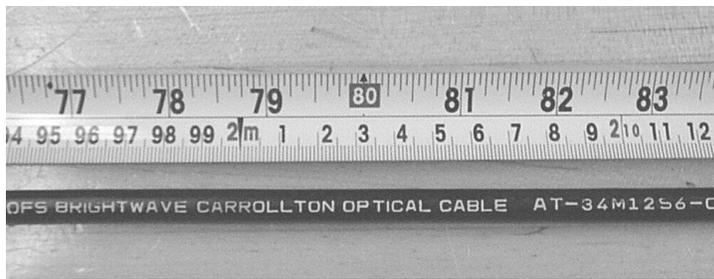


Figure 23 - Measure and mark the mid-span sheath opening

5.10 Use a cable sheath knife to ring cut the cable at one of the measured marks. Lightly score the outer cable jacket rather than cut all the way through (Figure 24).

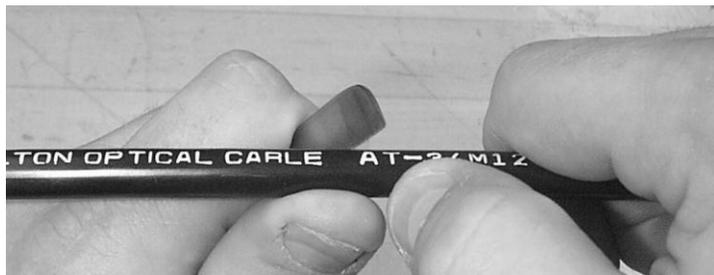


Figure 24 – Ring cut the outer cable jacket.

5.11 Gently flex the cable at the score mark to separate the cable jacket (Figure 25). Be careful not to violate the minimum bend radius.

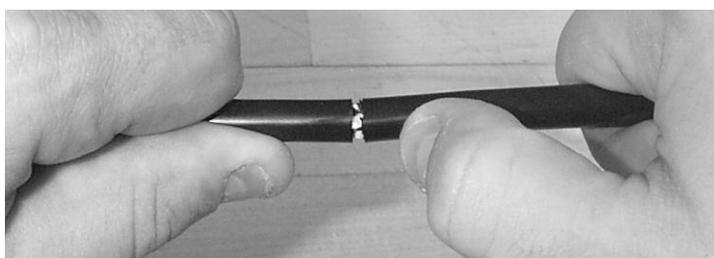


Figure 25 – Flex the cable to separate the sheath.

5.12 Repeat steps 5.10 and 5.11 at the other measured mark.

5.13 Locate and pull each ripcord to the ring cut (Figure 26). Sometimes a small starter slit is needed to start the ripcord. If desired, wrap the ripcord around a pair of pliers to grip the ripcord. Remove the outer cable jacket.

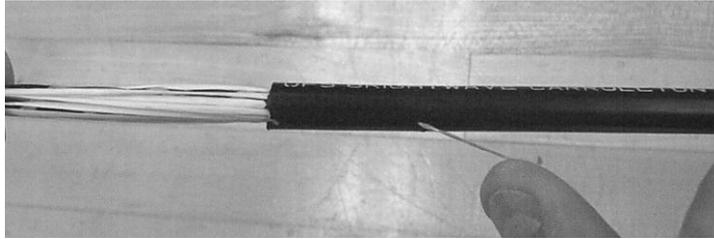


Figure 26 – Pull the ripcord to open the outer cable jacket.

5.14 Consult the splice closure instructions to determine if the dielectric strength members are required for strain relief. Separate the dielectric strength members from the buffer tubes and cut them to the required length (Figure 27).

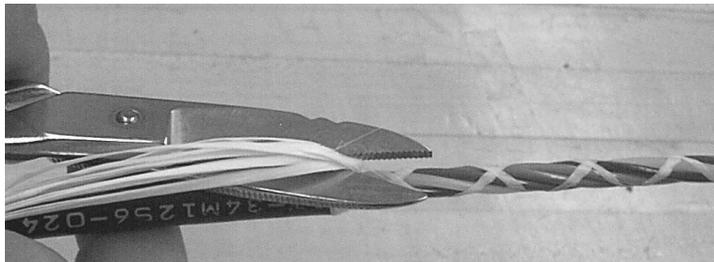


Figure 27 – Cut the dielectric strength elements to the required length.

5.15 Unwrap the binder threads from the buffer tubes and cut them flush with the outer jacket (Figure 28).

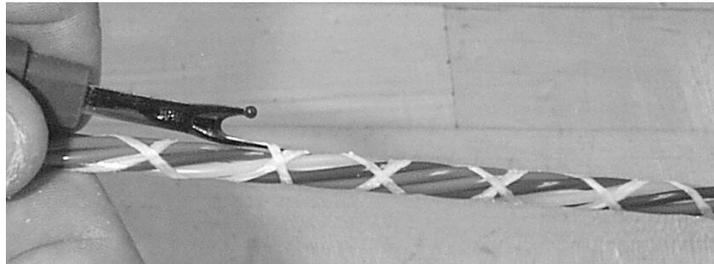


Figure 28 – Cut and remove the binder threads from the buffer tubes.

5.16 Carefully unwrap the buffer tubes from each other. Remove any water blocking threads from between the tubes and the central strength member (Figure 29).

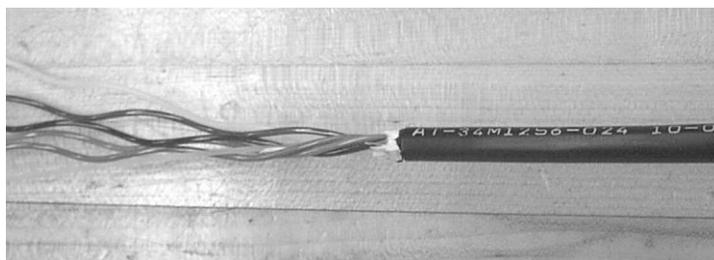


Figure 29 - Unwrap the buffer tubes.

5.17 Consult the splice closure instructions to determine the length of central strength member that is required for strain relief. Separate the central strength member from the buffer tubes and cut it to the required length (Figure 30).

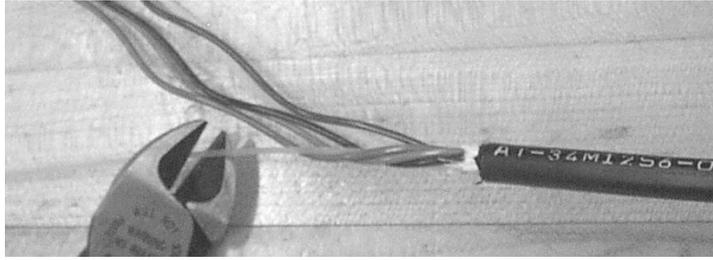


Figure 30 – Cut the central strength member.

5.18 The cable can now be fastened into the splice closure.

5.19 If all fibers in a particular tube are to be spliced, cut the tube free at the appropriate location.

5.20 Use a buffer tube stripper to score the buffer tube (Figure 31). Make only **one** revolution around the tube. The tube should be scored rather than cut.

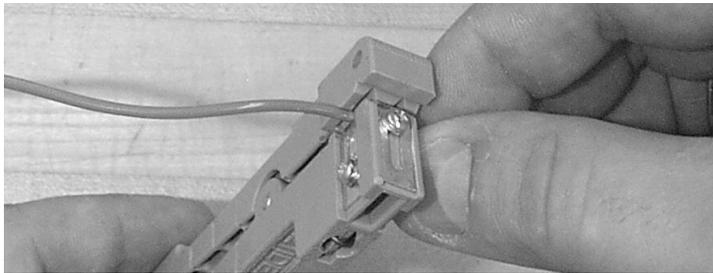


Figure 31 – Score the buffer tube.

5.21 Grasp the tube on both sides of the score mark and gently flex the tube to separate it (Figure 32). Remove the buffer tube to expose the fibers. If a long section of buffer tube must be removed, it is recommended that the tube be removed in several short pieces about 14 to 18 inches in length.

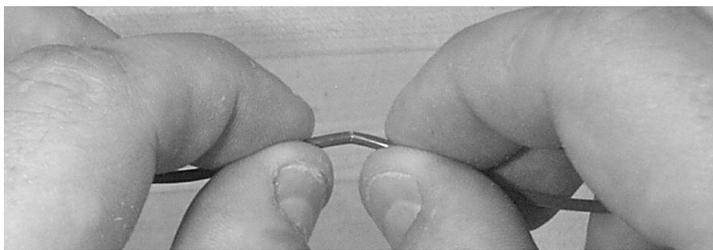


Figure 32 – Separate the buffer tube.

5.22 Clean the exposed fibers using a lint free wipe soaked with isopropyl alcohol (Figure 33). Fasten the tube(s) to their corresponding splice organizing tray.

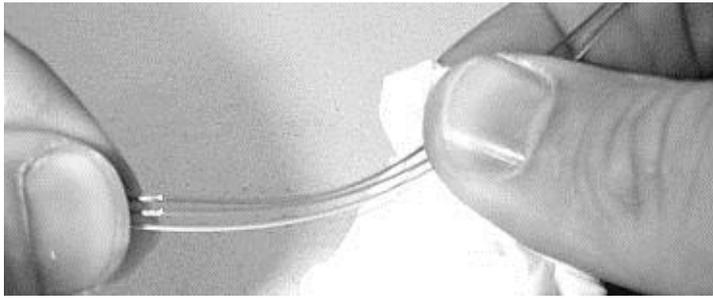


Figure 33 – Clean the optical fibers.

5.23 The fibers are now ready for splicing.

5.24 If select fibers in a particular tube are to be spliced to a tap or drop cable, and other fibers in the same tube are to remain continuous, a mid-span access tool is required to open the buffer tube. Refer to Table 2 for the mid-span access tool that is recommended for the various MiDia cable types and to the tool manufacturer's instructions for details regarding use of the tools. For *MiDia FX PLUS* cable, please refer to OFS IP-031, *Use & Care of OFS Quick Split*, for instructions regarding the OFS QuickSplit tool (Figure 34).

Table 2 – Recommended Mid-Span Access Tools		
Cable Type	Buffer Tube OD	Mid-Span Access Tool
MiDia FX <i>PLUS</i>	1.9 mm	OFS QuickSplit
MiDia FX	1.7 mm	Ripley MSAT Micro
MiDia GX	1.5 mm	or Jonard Tools MS-6
MiDia 2FX	1.7 mm	MidSpan Slitter



Figure 34 – Quick Split tool.

5.25 After opening the buffer tube, clean the fibers using lint free wipes soaked with isopropyl alcohol. Fasten the buffer tube(s) to their appropriate splice organizing tray.

For additional information please contact your sales representative. You can also visit our website at www.ofsoptics.com or call 1-888-FIBER-HELP (1-888-342-3743) from inside the USA or 1-770-798-5555 from outside the USA.

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