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Fibrlok™ Optical Fiber Splicing System

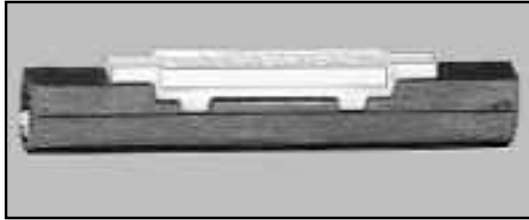
1.0 General

The 3M brand Fibrlok™ Optical Fiber Splicing System provides permanent mechanical splices for single or multi mode fiber having 125 μm diameter cladding. Three color coded versions of the Fibrlok Splice are available for splicing 250 μm and 900 μm diameter plastic coated fiber.

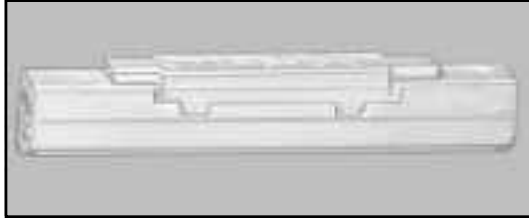
The Fibrlok 2525 Splice is for splicing 250 μm fiber to 250 μm fiber:



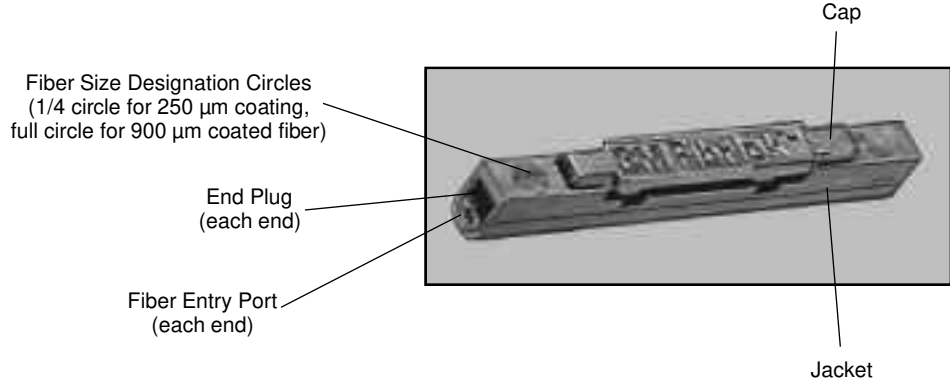
The Fibrlok 2590 Splice is for splicing 250 μm fiber to 900 μm fiber:



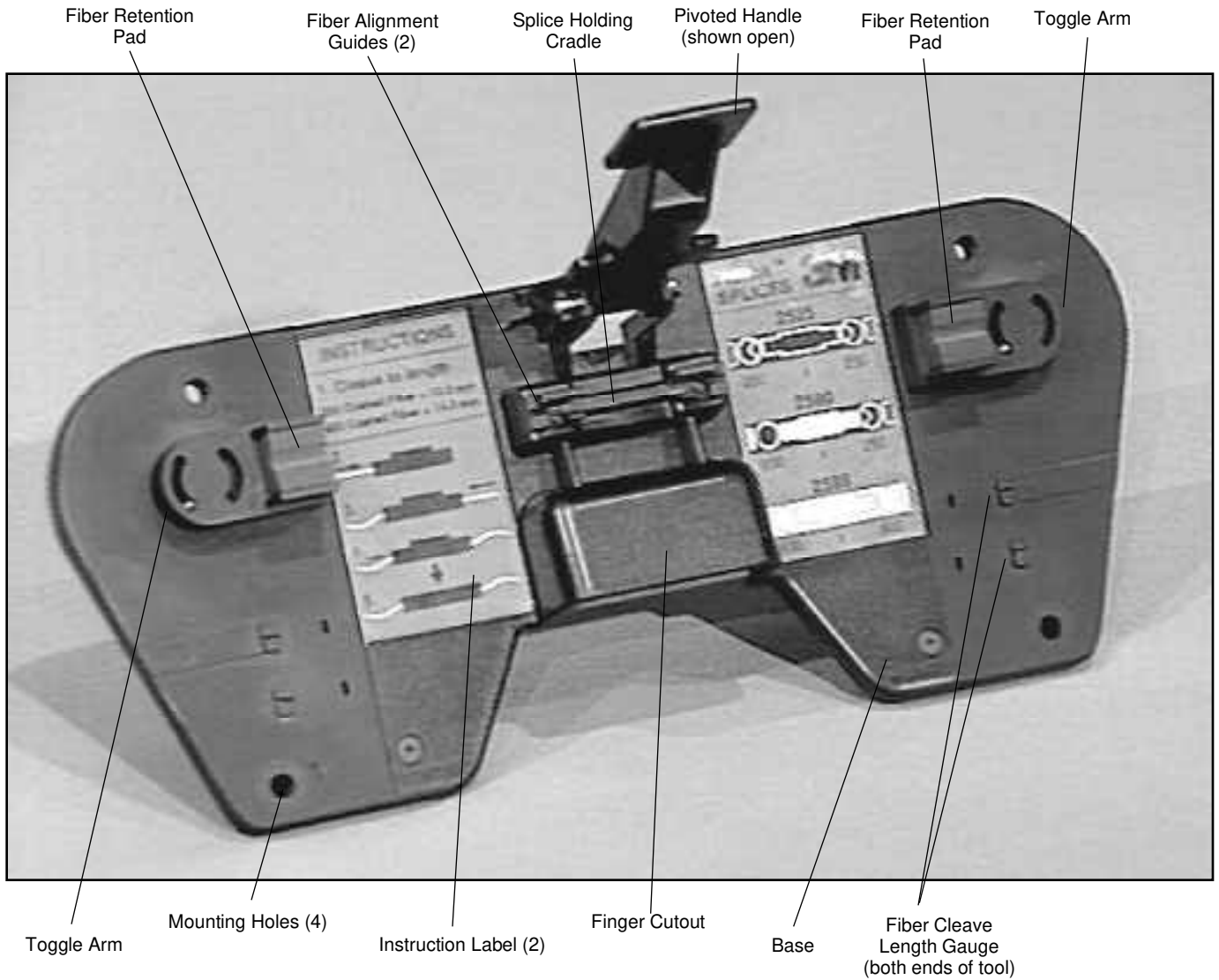
The Fibrlok 2599 Splice is for splicing 900 μm fiber to 900 μm fiber:



1.01 Fibrlok Optical Fiber Splice



1.02 Fibrlok 2501 Assembly Tool



1.03 Tools and Materials Required

Fibrlok™ 2500 or 2501 Assembly Tool
Plastic Coating (Buffer) Stripper
Reagent Grade Isopropyl Alcohol
Lint Free Wipes
Cleaver
Fibrlok 2505 Assembly Tool Mounting Adaptor (optional)
Fibrlok Video Instruction Tape (optional)
Tool Kit (optional)

1.04 Compatible Organizers

3M 2118, 3M 2524
AT&T UC-SS/M1
GTE Part 910470 0000, 910470 1000
Siecor M67-070

Others compatible with minor modifications:

DiTel UST 3000, UST 3010, UST 3500
AT&T 846 280 626, 846 280 634,
846 280 642, 846 280 659
Raychem FOSC 100/TK

2.0 Splicing Set-Up

2.01 The splicing area should be clean, dry and well-lighted. A clean, well organized splicing area will improve splicing efficiency and minimize the risk of contamination of fibers or splices.

2.02 Open the buffer tubes, expose and clean the fibers per company practice.

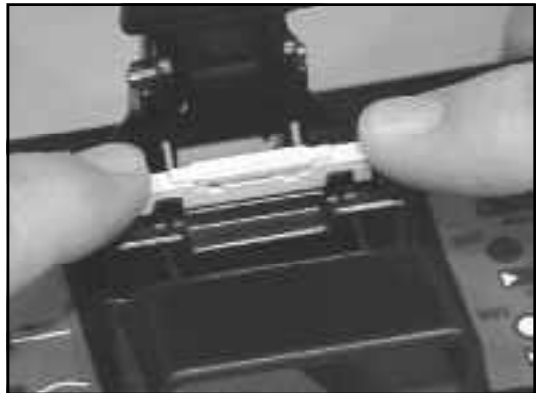
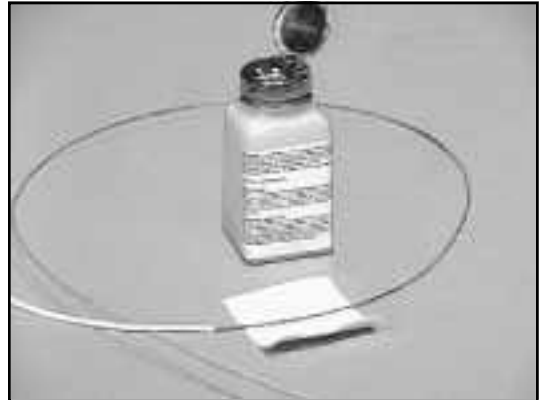
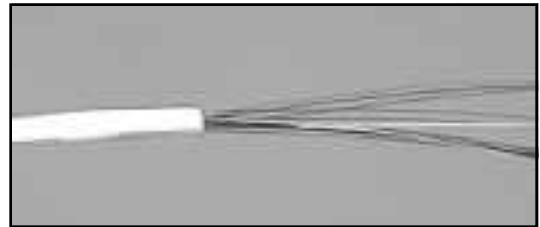
Note: *Storage, use and disposal of isopropyl alcohol should be per company health and safety instructions. Refer to solvent label or Material Safety Data Sheet.*

2.03 See Section 5.0 for recommended procedures for fiber organization and splice storage.

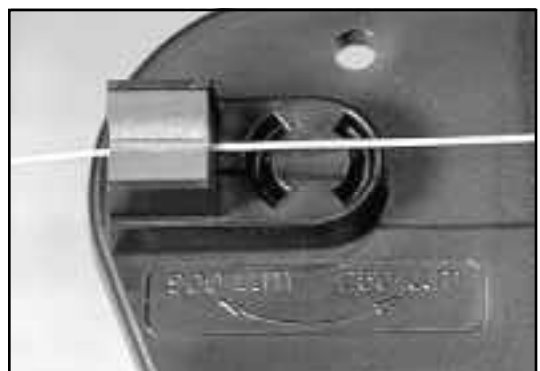
2.04 Remove Fibrlok splice from protective package. Load the splice into the assembly tool by pressing firmly at the ends of the splice.

Note: *Carefully follow health and safety information on Fibrlok Splice label or Material Safety Data Sheet.*

2.05 If using the Fibrlok 2501 Assembly Tool, rotate the toggle arms for the appropriate fiber size.



Inward - 250 μ m



Outward - 900 μ m

3.0 Fiber Preparation

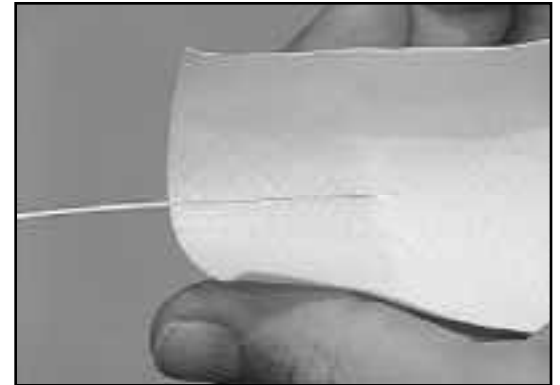
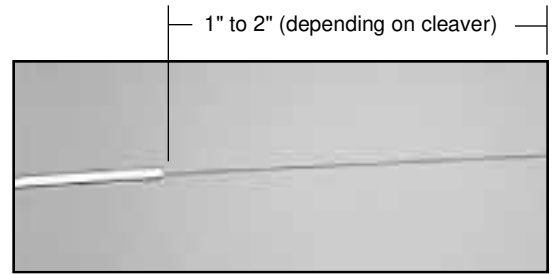
3.01 Remove the minimum length of fiber required to prepare and splice the fibers.

3.02 Strip approximately 1 to 2 inches (2.5 to 5 cm) of plastic coating from the fiber using a mechanical stripper.

Note: *The stripper used should be in good operating condition to prevent scratches or other damage to the glass cladding.*

3.03 Clean the bare glass by pulling the fiber through an alcohol soaked lint-free wipe. This will remove any fragments or dirt remaining on the fiber.

Note: *Do not wipe the fibers more than two times, and limit the time that the bare fiber is exposed to the atmosphere.*

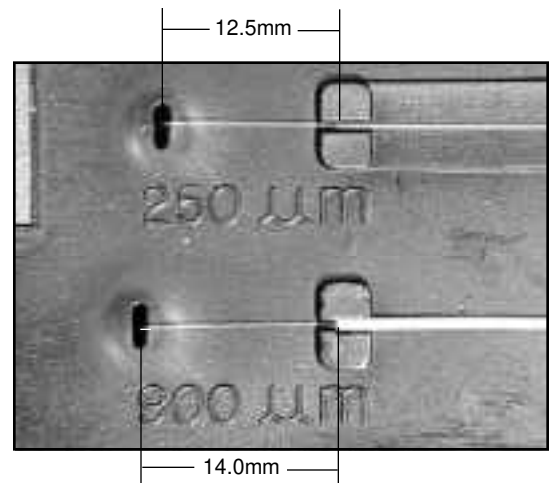


3.04 Cleave fiber to the length indicated on the chart.

Fibrlok Splice Designation	Cleave Length for End of Splice with Black Plug & ⊙ Symbol	Cleave Length for End of Splice with White Plug & ○ Symbol
3M Fibrlok 2525 (250 μm x 250 μm)	12.5 mm ± 0.5 mm (.492 in. ± .020 in.)	
3M Fibrlok 2590 (250 μm x 900 μm)	12.5 mm ± 0.5 mm (.492 in. ± .020 in.)	14.0 mm ± 0.5 mm (.551 in. ± .020 in.)
3M Fibrlok 2599 (900 μm x 900 μm)		14.0 mm ± 0.5 mm (.551 in. ± .020 in.)

Note: *The cleaver should be in good operating condition and used in accordance with the manufacturer's instructions. A cleaver that produces cleaved ends within 2° of perpendicular and free of major defects is recommended. Dispose of cleaved fiber ends per company practice.*

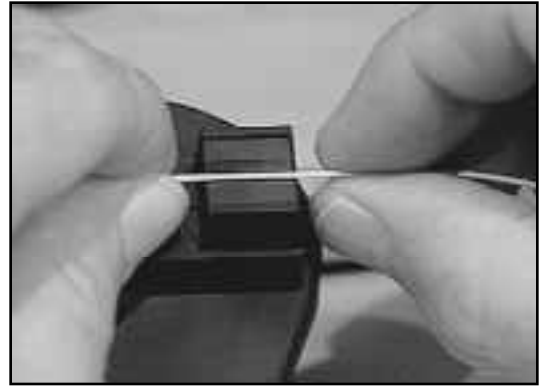
3.05 Check the cleave length using the cleave length gauge on the Fibrlok Assembly Tool. Adjust the cleaver to provide the prescribed cleave lengths. Check cleave lengths periodically during subsequent splicing operations. Do not allow cleaved end to contact tool.



4.0 Splice Assembly

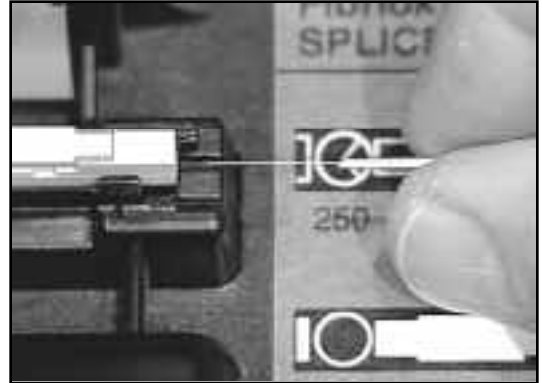
4.01 Push the fiber down into the fiber retention pad on the proper side of the splice.

Note: *Hold the coated portion of the fiber ONLY. Do not allow the cleaved end to contact any surface before insertion into the splice.*



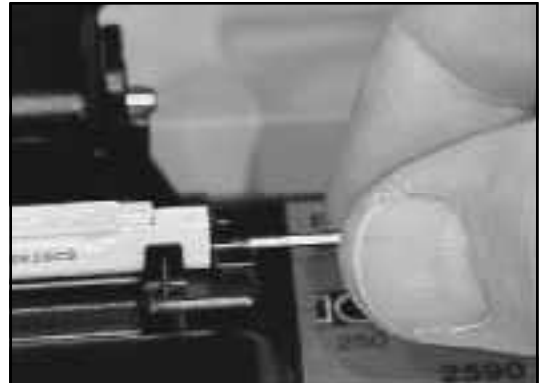
4.02 Grasp the coated fiber about .25 inches (6 mm) from the bare glass and move the fiber end onto the fiber alignment guide on the Assembly Tool such that the end is resting on the alignment guide outside of the splice.

Note: *Fiber should be inserted into the splice immediately following cleaning and placing in retention pad to minimize exposure to the atmosphere and reduce the risk of contamination.*



Note: *Push fiber straight into fiber alignment guide. . .*

Not at an angle. . .



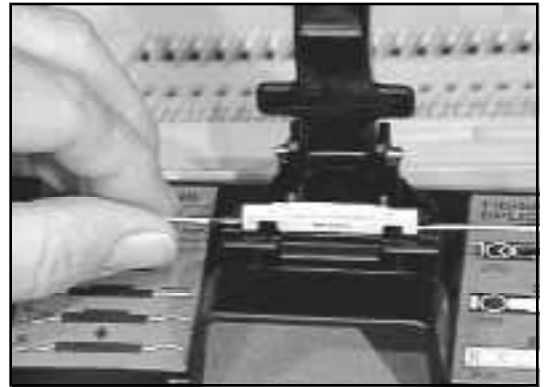
4.03 Gently continue pushing the fiber into the splice until resistance is felt. When fully inserted, the first fiber should be straight or have a slight bow - up to .1 inch (3 mm).

Note: *If properly inserted, bare glass should not be visible outside of splice. If bare glass is visible, pull back slightly on fiber and continue insertion until resistance is met. Never fully remove fibers from splice after initial insertion. Do not pull on fiber after it has been properly inserted.*

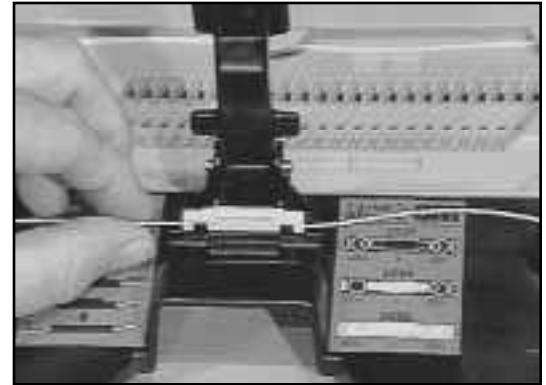


4.04 Prepare second fiber (strip, clean and cleave) as described in Section 3.

4.05 Lay fiber into foam retention pad and begin to insert the fiber end into the splice, as in 4.01 and 4.02.



4.06 Gently push the second fiber in small increments straight through the alignment guide into the fiber entry port. As the coating of the second fiber enters the fiber entry port, watch for the bow in the first fiber to increase. This occurs when the end face of the second fiber contacts the first fiber and pushes the first fiber slightly back out of the splice. Continue gently pushing the second fiber until it meets resistance. Following proper insertion, the second fiber will be approximately straight but may have up to a .1 inch (3 mm) maximum bow. At this point, the first fiber will have a larger bow than the second fiber and larger than it had initially.



4.07 Push the first fiber back against the second fiber until there are equal bows in both fibers.

Note: *Do not pull on either of the fibers following establishment of the bows in the first and second fibers. The fiber ends must be held together by the compressive forces induced by the bows to produce a low loss splice.*



4.08 Pivot the handle of the Fibrlok Assembly Tool down until it contacts the cap of the Fibrlok Splice. **Squeeze the handle of the assembly tool as shown in order to close cap and actuate the splice. When possible, secure the tool to a work surface for added support.** A snap sound will be heard when the splice is actuated.



4.09 Remove the Fibrlok Splice from the Assembly Tool by first removing the fibers from the foam retention pads and then lifting the splice from the splice holding cradle.

Note: *Do not attempt to “tune” or optimize the splice as this may result in higher splice loss. Fibrlok splices optimize fiber alignment within the metal element inside the splice when properly installed per the previous instructions.*

*If fiber bows are NOT observed as described, repeat steps 4.02 - 4.07 of Splice Assembly but **DO NOT** fully remove fibers from splice. If bows are **still** not observed, remove fibers, strip, and recleave checking for proper cleave length. Resplice per splicing procedure using a new splice.*

In the event a splice must be refabricated, simply cut the fibers at each end of the splice (this will remove 1 1/2" of fiber from the loop) and resplice per instructions. Splice refabrication will require a length of 2 inches on each fiber.

DO NOT REUSE FIBRLOK SPLICES.

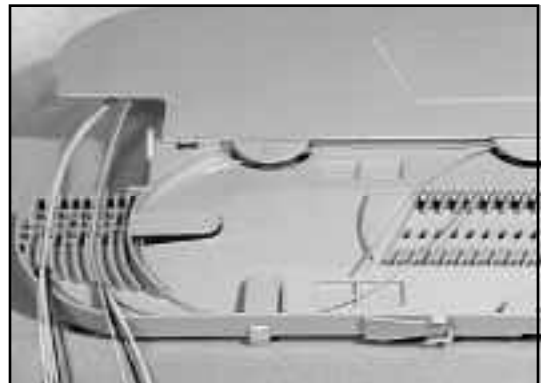


5.0 Fiber Organization and Splice Storage

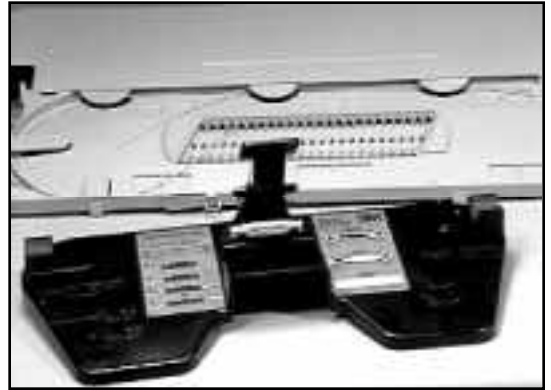
When storing fiber slack in a splice tray, the spliced fiber ends will twist one full turn for each full loop of fiber being stored. This rotation places stress on the fibers. This rotational stress makes fiber organization more difficult and may affect fiber/splice performance, particularly in 900 μm coated fibers. The stiffness of the 900 μm fiber does not distribute this stress in the same manner as 250 μm coated fiber. The following procedure is strongly recommended when splicing 900 μm coated fibers and will improve fiber organization when splicing all fiber types.

5.01 Secure the buffer tubes of the fibers to be spliced to the tray so that the fibers are free to rotate through the point of attachment.

5.02 Select the first two fibers to be spliced and lay them into the tray. Trim the fibers so they are the right length for splicing plus approximately 1 to 2 inches (2.5 to 5 cm) for fiber end preparation.



5.03 Place the splice assembly tool close to or on top of the splice tray. Match the orientation of the tool to that of the splice holder or tray whenever possible.



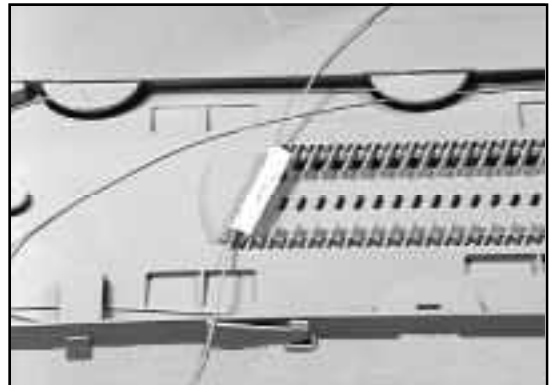
5.04 Remove the minimum amount of fiber required for fiber preparation and splicing. Remove less than one loop if possible.



5.05 Prepare fibers and complete splice as described in Section 3 and 4.



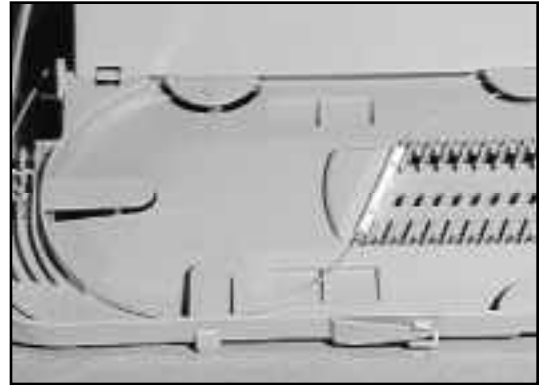
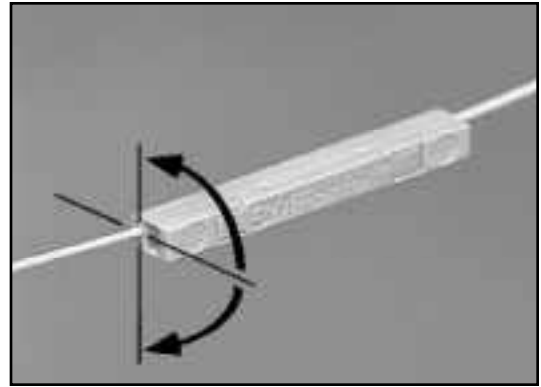
5.06 Carefully lay the splice on top of the holder without securing the splice into the holder.



- 5.07 Storing 250 μm to 250 μm and 900 μm to 900 μm splices:
1. Store the shorter of the two fibers in the tray.
 2. Observe how the splice lays in its relaxed state. Rotate the splice through the smallest possible angle to install it in the tray.
 3. Store the second fiber.

Storing 250 μm to 900 μm splices:

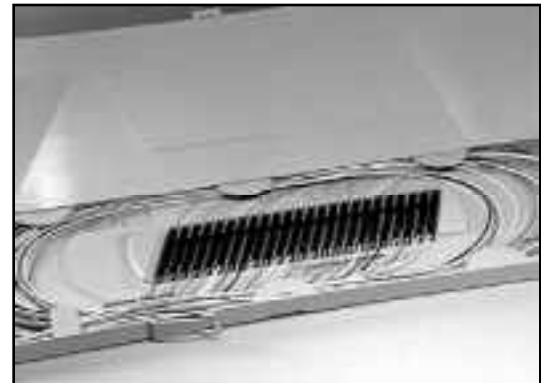
1. Store the 900 μm fiber first.
2. Grasping the splice by the 900 μm fiber, observe how the splice lays in its relaxed state. Rotate the splice through the smallest possible angle to install it into the tray.
3. Store the 250 μm fiber.



6.0 Splicing Accessories

- 6.01 The 3M Fibrlok™ 2524 Splice Organizer Tray holds up to 24 Fibrlok Splices and provides superior fiber and splice organization. Easily installed, the tray will accommodate up to eight buffer tubes holding up to 48 fibers (250 μm or 900 μm coated fibers) and can be adapted for fusion splice storage.

The 2524 Splice Tray fits and mounts into the 3M 2177 Fiber Optic Splice Closure, the 3M 2178 Fiber Optic Splice Case and the 3M 2190 PST Fiber Optic Splice Closure. It is also compatible with a variety of non-3M closures.



- 6.02 The 3M Fibrlok™ 2505 Assembly Tool Mounting Adapter permits mounting of the Fibrlok Assembly Tool on standard 3M MS²™ Splicing Rigs, conventional camera-type tripods, and other standard telco splicing rig components. The 2505 Mounting Adapter provides the ability to mount the Fibrlok Assembly Tool on a variety of surfaces, and in any orientation, for splicing in difficult locations such as manholes, aerial splice points, pedestals and distribution frames.



6.03 3M Fiber Preparation Kits provide all the tools necessary for the assembly of the Fibrlok Splice. Fiber Splice Preparation Kits are available in a variety of combinations with or without the Fibrlok Assembly Tool and/or the cleaving tool, for those who may already own these splicing tools:



Fiber Splice Preparation Kits:

3M Stock Number

#2530 Kit with all components listed below and Thomas & Betts Cleave Tool

80-6104-5390-6

#2531 Kit with all components listed below

80-6104-5317-9

#2533 Kit with all components listed below excluding Fibrlok Assembly

80-6104-5319-5

Splice Kits Components Listing

(available seperately)

Fibrlok Assembly Tool

80-6105-8187-0

Cable Strippers

80-6104-4314-7

Cleaning Alcohol Bottle

80-6104-4329-5

Scissors

80-6104-4754-4

No-Nik Stripper (.008)

80-6104-4808-8

Micro-Stripper (.006)

80-6105-7250-7

Lint Free Cloth (100/pkg.)

80-6104-4324-6

Magnifier, Cleaved Fiber Inspection

80-6104-4799-9

Coaxial Cable Stripper

78-8073-7415-8

Instruction Manual

78-6900-1905-0

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