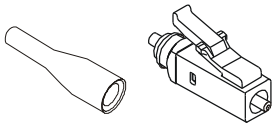
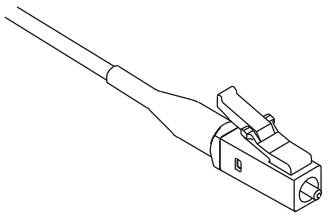
Fiber Optic Behind-The-Wall (BTW) Connectors

Epoxy and EZ Methods
Singlemode and Multimode Versions



Connector Components



Assembled Connector

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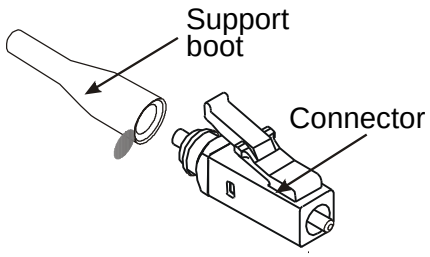
1.0 General

1.1 Connector Description

The ***LC™*** Behind-The-Wall (BTW) connector is used to terminate outside plant (OSP) cables as well as building cables. It is intended for use in central offices, local area networks (LANs), premises distribution systems such as ***SYSTIMAX®*** structured cabling systems, computer backplane connections, computer peripheral interconnections, device terminations, and other applications where quality, small-size, high-density, low-loss, and a low-cost infrastructure are required.



Note: In addition to the BTW connector for 0.9-mm buffered fiber, a simplex and duplex ***LC*** jumper connector is offered for 1.6-mm ***MiniCord***™ jumper cords. Installation of the jumper connector is **not** covered in this customer information product (CIP). The jumper connector can be used in the assembly of various lengths of patch cords.

When installed on typical fiber, the following performance should be obtained:

Multimode	Singlemode (not tuned)
Insertion loss (avg.) = 0.1 dB	Insertion loss (avg.) = 0.2 dB
Return loss ? 30 dB	Return loss ? 50 dB

1.2 Epoxy Consumables Kits for *LC* Connectors

Kit Type (Note)	Kit Number	Comcode	Kit Includes
Multimode	D-182983	108 340 811	Polishing paper, epoxy, and other materials required to assemble 200 multimode ***LC*** connectors.
Singlemode	D-182977	108 338 591	Polishing paper, epoxy, and other materials required to assemble 200 singlemode ***LC*** connectors.
Direct termination of OSP cables	D-181755	105 317 549	Buffer tubing and cable end prep materials for approximately 100 OSP fibers.
Note: Kits **do not** contain connectors, isopropyl alcohol, or nonozone-depleting canned air.			

1.3 Tool and Upgrade Kits Required for Epoxy Method

Choose one of the following tool kits:

Kit Type	Kit Number	Comcode	Kit Includes
Epoxy Tool Kit	1032B5	106 705 213	110-volt curing oven
Epoxy Tool Kit	1032B6	106 919 012	220-volt curing oven

In addition to the tool kit, choose one of the following upgrade kits:

Kit Type	Kit Number	Comcode	Kit Includes
Upgrade Kit	D-182905	107 852 139	BTW connectors
Upgrade Kit	D-182959	108 262 569	BTW and jumper connectors

1.4 EZ Consumables Kits for *LC* Connectors

Kit Type (Note)	Kit Number	Comcode	Kit Includes
Multimode	D-182984	108 340 829	Polishing paper, anaerobic adhesive, and other materials required to assemble 200 multimode ***LC*** connectors.
Singlemode	D-182985	108 340 837	Polishing paper, anaerobic adhesive, and other materials required to assemble 200 singlemode ***LC*** connectors.
Note: Kits **do not** contain connectors, isopropyl alcohol, or nonozone-depleting canned air.			

1.5 Tool and Upgrade Kits Required for EZ Method

Choose the following tool kit:

Kit Type	Kit Number	Comcode
EZ Tool Kit	1032F1	107 149 320

In addition to the tool kit, choose one of the following upgrade kits:

Kit Type	Kit Number	Comcode	Kit Includes
Upgrade Kit	D-182905	107 852 139	BTW connectors
Upgrade Kit	D-182959	108 262 569	BTW and jumper connectors

1.6 Ordering Information

Section **10** contains ordering information for the required tool kits and BTW connectors using the Epoxy assembly method.

Section **11** contains ordering information for the required tool kits and BTW connectors using the EZ assembly method.

2.0 Safety Precautions

- ?? Safety glasses should be worn at all times while performing these assembly instructions.
- ?? Avoid skin contact with the epoxy, adhesive, and the primer.
- ?? Place combustibles away from the curing oven when it is in operation. After the oven has reached its operating temperature, the oven ports are extremely **HOT** [266?F (130?C)].
- ?? Allow the oven to cool before handling or storing.
- ?? Optical fibers may emit radiation if the far end is connected with a working laser or light-emitting diode (LED). Never view the fiber end of a cable or plug with an optical

instrument until absolute verification is established that the fiber is disconnected from any laser or LED source.

3.0 Assembly Instructions for Epoxy Method

Note: For EZ method, see Section 4.

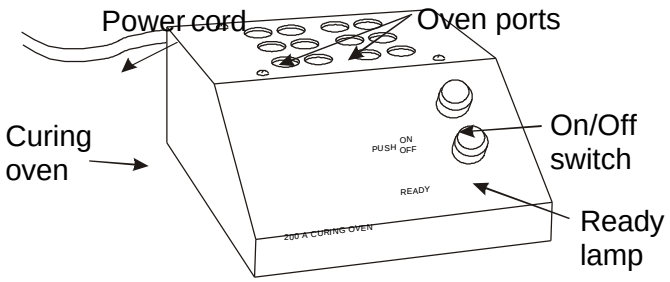
3.1 Set Up Curing Oven

1. Place oven on a level surface and away from combustibles.
2. Connect the power cord to a power source (120 V 60 Hz AC for the 200A oven and 220 V 50 Hz AC for the 200Al international oven).
3. Push the **ON/OFF** switch to the **ON** position (lamp in switch illuminates).

Note: A **READY** lamp will illuminate when the oven reaches its operating temperature of **266?F (130?C)**.

Caution 1: After the oven reaches its operating temperature, the oven ports will be extremely **HOT** [266?F (130?C)].

Caution 2: Allow the oven to cool before handling and storing.



3.2 Fiber Preparation

1. Remove cable sheath and outer jacket.

Caution: Be careful not to cut into fibers while removing cable sheath and outer jacket.

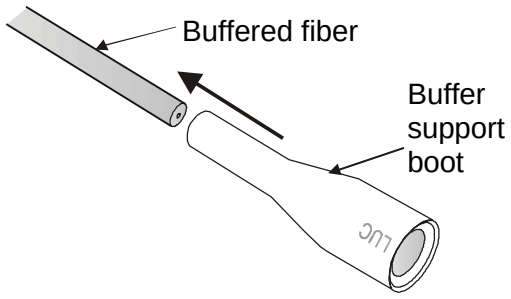
Note 1: For Lucent Technologies cable, use sheath removal tool R-4366.

Note 2: Be certain to expose enough buffered fiber to:

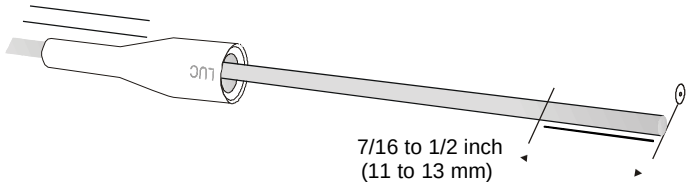
- ?? Allow access to the curing oven and other connector preparation functions
- ?? Prevent stress on fibers during connector preparation
- ?? Provide adequate fiber length for placement in associated equipment cabinet.

Typical working length for buffered fibers is 24 to 36 inches (0.6 to 0.9 meters).

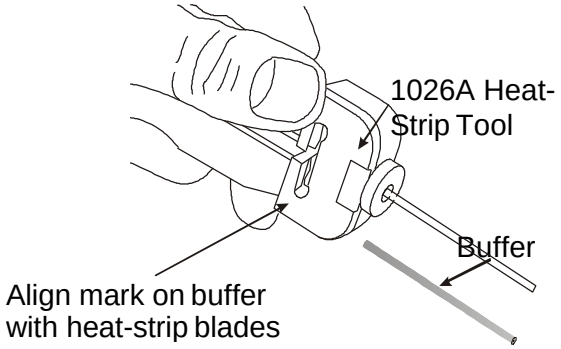
2. Install buffer support boot by slipping the small end of boot onto the buffered fiber.



3. Measure and mark the buffered fiber 7/16 to 1/2 inch (11 to 13 mm) from the end by using the scale or template provided in the tool kit.

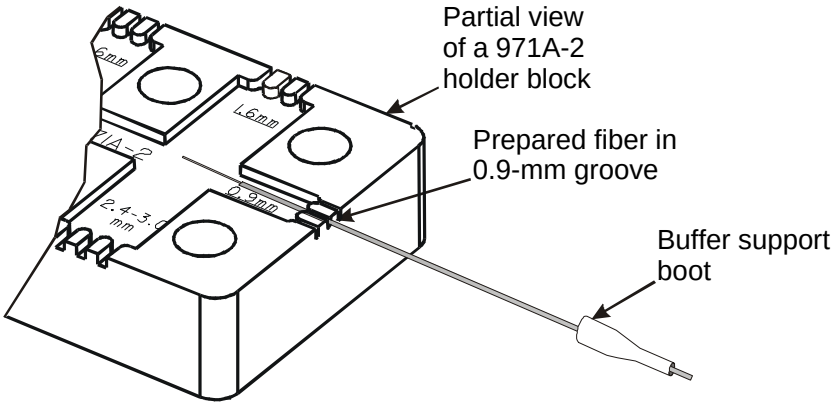


4. Locate 1026A Heat-Strip Tool (105 514 764) provided in the Tool Kit.
   Note: Refer to 1026A Heat-Strip Tool operating instructions for setup.
5. Strip 7/16 to 1/2 inch (11 to 13 mm) of the buffered fiber.



6. Clean stripped fiber by saturating a wipe with isopropyl alcohol (>91% 2-propanol + water) and wiping the fiber from the edge of the buffer toward the end of the fiber.

   Note: If residue remains on the fiber, use a clean wipe saturated with isopropyl alcohol to wipe the fiber again.
7. Place prepared buffer into the grooves of the 971A-2 holder block to avoid breaking or contamination of the fiber (holder blocks are provided in the D-182959 Upgrade Kit).



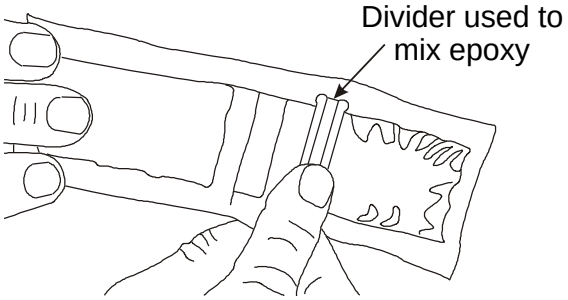
3.3 Epoxy Preparation

The supplied epoxy comes in a two-part package. A divider separates the resin from the hardener. The divider must be removed to allow the epoxy to be mixed. The epoxy is then loaded into a syringe. Both the epoxy package and the syringe are furnished with the D-182977 (108 338 591) and the D-182983 (108 340 811) Kits of Consumables. See ordering information in Section 8 of this manual.

Caution: Avoid contact of epoxy with skin.

1. Locate the epoxy package in the D-182977 or D-182983 Kit.
2. Remove the divider between the resin and the hardener.
3. Mix the epoxy using the divider.

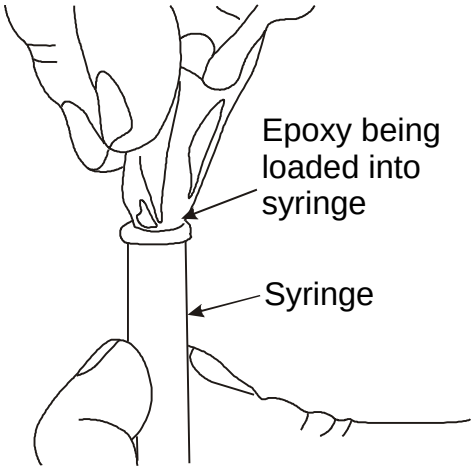
   Note: The epoxy must be thoroughly mixed until both parts are blended into a smooth uniform color.



4. Locate the syringe in the D-182977 or D-182983 Consumables Kit.

5. Place the syringe tip on the syringe and twist to lock in place.
6. Remove the plunger from the syringe.
7. Fold the epoxy package in half and cut off one of the package corners.
8. Squeeze the mixed epoxy into the syringe.

Note: A ¾-inch (19 mm) length of epoxy will be enough for about 50 connectors.



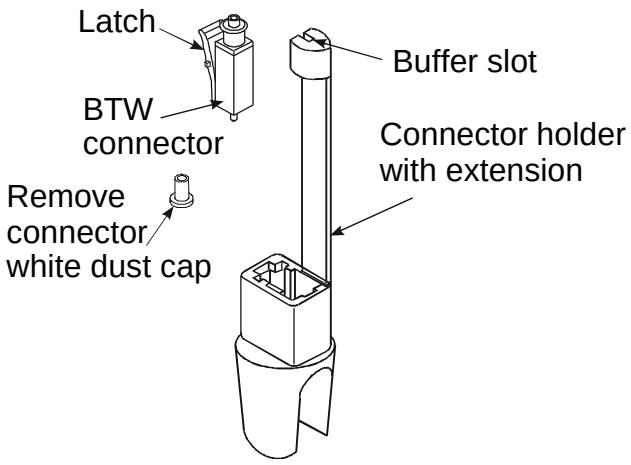
9. Replace the plunger into the syringe.
10. Remove air pockets from the syringe by holding the syringe tip upward and ejecting epoxy until the air pockets are removed.

3.4 Connector Installation

Connectors are provided in packages that must be ordered by product codes (see Section 8 for ***LC*** Connector Product Codes). Each connector is fitted with a white dust cap to protect the connector tip from damage and contamination. During the connector installation process, a holder with extension (provided in both the D-182905 and D-182959 Upgrade Kits) is used to protect the fiber protruding from the connector tip and to aid in the handling of the small connectors. The slot in the extension holds the buffer in the correct position until the epoxy sets.

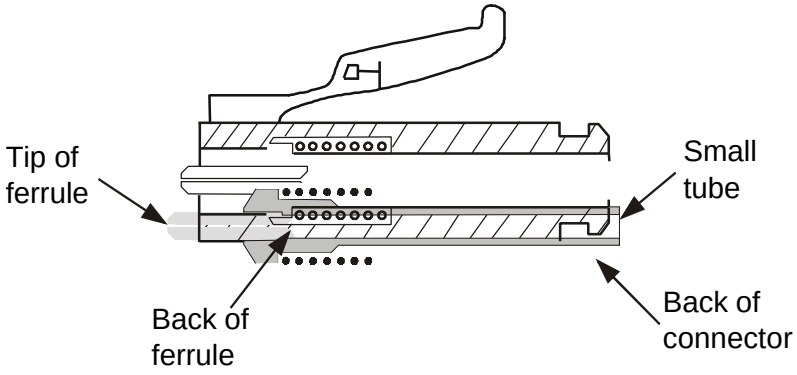
3.4.1 Prepare the Connector

1. Locate the connector to be installed and remove the white dust cap.
2. Hold the connector towards the light and check to make sure the hole and the tip are clear.
   If necessary, clear the hole using the music wire (furnished).
3. Locate a connector holder with extension (107 852 493) from the upgrade kit.
4. Snap connector into the holder.



3.4.2 Apply Epoxy

Epoxy is injected into two areas of the connector: (1) inside of the ferrule and (2) at the back of the ferrule. The syringe is first used to inject epoxy into the ferrule. This epoxy bonds the stripped fiber to the ferrule. Before removing the syringe from the connector, epoxy must next be deposited at the back of the ferrule. This epoxy bonds the buffer at the back of the ferrule.
DO NOT apply an excessive amount of epoxy to either the ferrule or at the back of the ferrule.

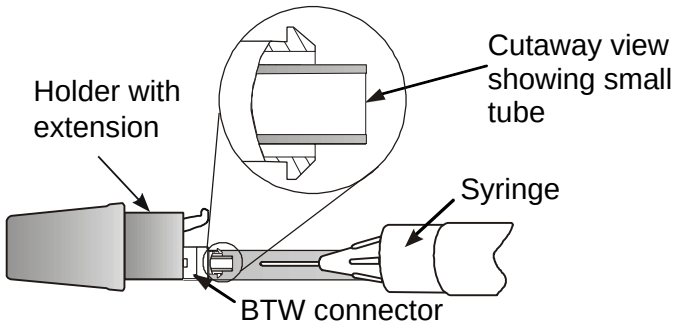


1. Locate the small tube inside the back of the connector.
2. Carefully insert the tip of the syringe into the small tube until it bottoms.

   Caution: In the following step, do not apply excess epoxy to the tip of the ferrule.
3. Inject epoxy into the ferrule by slowly pressing the syringe plunger until the epoxy **just** appears at the connector tip (face of the ferrule).
4. Deposit epoxy at the back of the ferrule by pulling the tip of the syringe back slightly and momentarily injecting a small amount of epoxy at the back of the ferrule.

   Caution: When removing syringe from the connector in the following step, do not allow epoxy on syringe tip to contaminate the small tube or the back of the connector.

5. Release pressure on plunger, wait a moment, and then remove the syringe from the connector.

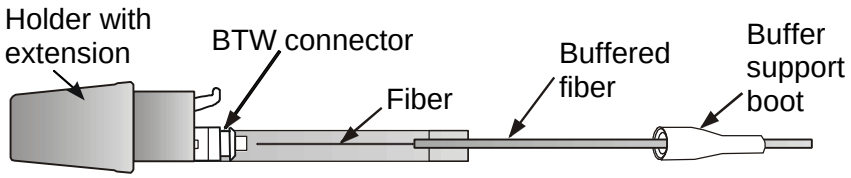


3.4.3 Insert Fiber

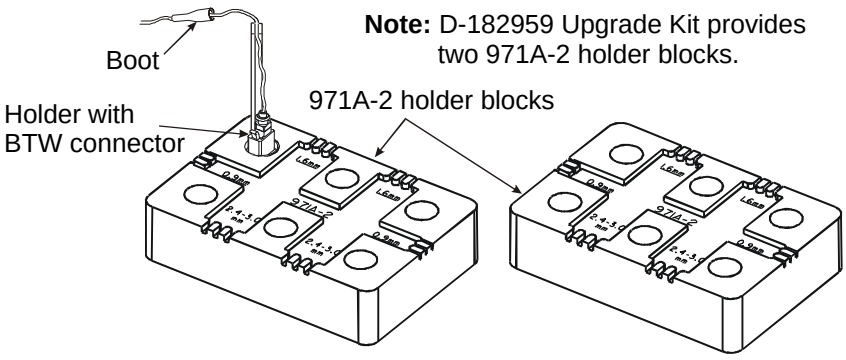
1. Remove prepared fiber from holder block.
2. Insert the exposed fiber into the small tube inside the connector and carefully feel for the opening in the ferrule.

   Note: Rotating the fiber or the connector assembly may help to locate the opening.

   Caution: Only perform the following step once.
3. When the fiber is seated, pull it back slightly and watch for fiber movement at the tip of the connector to make sure the fiber is not broken.
4. Reposition the fiber back into the connector and lock buffer in the slot at the end of the holder extension.
5. Ensure that the buffer support boot is pushed back on cable.



6. Place buffer in slot on holder extension.
7. Store up to 12 BTW connectors in the 971A-2 holder blocks.



3.4.4 Cure Connector Assemblies

1. When the desired number of connectors has been prepared, place the holder block next to the preheated oven.
2. Place prepared connector assemblies into the oven ports.
3. Ensure that the connector assemblies are sitting at the bottom of the oven ports.
4. Remove the assemblies from the oven after they have cured for 10 minutes.

3.4.5 Cool Connector Assemblies and Attach Buffer Support Boot

1. Place cured assemblies back into the holder block to cool.
2. Select a connector assembly and remove the fiber buffer from the holder slot.
3. Push the cable support boot onto the connector.
4. Repeat Steps 2 and 3 for each connector assembly.

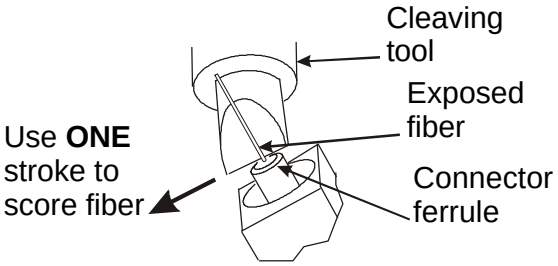
3.4.6 Score the Fiber

1. Remove the connector from the connector holder.
2. Obtain the 975A cleaving tool from the 1032B5 Tool Kit or from the 1032B6 Tool Kit.

   Note: In the following step, score the fiber as close to the ferrule as possible while at the same time being careful not to break the fiber.
3. Place the cleaving tool against the ferrule and exposed fiber.
4. Using one stroke of the cleaving tool, gently score the exposed fiber.
5. Remove the exposed fiber by gently pulling straight away from the cable.

   Note: If fiber did not readily pull off, score fiber again on opposite side and gently pull fiber.
6. Dispose of the fiber scraps in a safe manner.

   Note: The adhesive surface on a piece of tape is a convenient place to hold fiber pieces until disposal.



3.4.7 Polish Fiber End—Multimode and Singlemode

Caution: Contaminates on polishing materials can cause scratches on the end face of the fiber/ferrule. Throughout the entire polishing process, keep work area and all polishing materials clean. Clean polishing papers between each step using a wipe moistened with alcohol. This is especially true for the type F (yellow) and type K (gray) polishing papers because they can be repeatedly cleaned and reused.

Note 1: Tables A for multimode and B for singlemode provide a quick reference for polishing.

Note 2: Cut one sheet of type J polishing paper (purple) into four pieces.

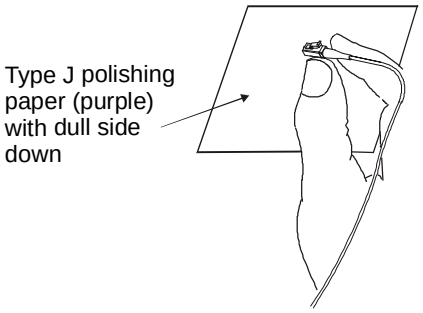
Step 1. Remove Fiber Stub

a. In one hand, hold one of the cut pieces of type J polishing paper (dull side down).

b. In the other hand, hold the connector with the tip pointing upward.

Note: When performing the following step, be careful not to break the fiber stub.

c. Air polish using light circular motions about 1 inch in diameter; carefully polish off fiber stub.



Step 2. Remove Excess Epoxy

a. Use canned air to clean the back and front of a full piece of type J polishing paper (purple).

b. Saturate a wipe with isopropyl alcohol (>91% 2-propanol + water).

c. Obtain a glass plate and a polishing tool (T2000A or T2001A) from D-182959 Upgrade Kit.

d. Clean the glass plate and polishing tool with the saturated wipe.

e. Use canned air to blow dry the glass plate and the polishing tool.

f. Insert the ***LC*** connector into the T2000A or T2001A polishing tool.

g. Place one clear spacer sheet on the glass plate, then place a sheet of type J polishing paper (purple) on the glass plate with the dull side up.

h. Gently place the polishing tool and connector onto the polishing paper.

Note: In the following step, you should **not** feel any drag between the fiber and the paper.

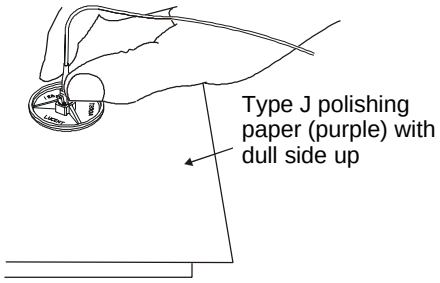
Start with light pressure and use figure-8 strokes that are approximately 2 inches high and 1 inch wide. The figure-8 strokes must be well rounded to ensure complete removal of the epoxy from the end of the ferrule.

i. Using light pressure, polish the connector for 20 figure-8 strokes.

Danger: Optical fibers may emit radiation if the far end is connected with a working laser or light-emitting diode (LED). Never view the fiber end of a cable or plug with the naked eye or any optical instrument until absolute verification is established that the fiber is disconnected from any laser or LED source.

j. Using a 7X eye loupe or ***LC*** microscope supplied in the D-182905 or D-182959 Upgrade Kit, check the tip of the ferrule. No excess epoxy should surround the fiber.

Note: If excess epoxy is found, continue to use type J polishing paper (purple) to remove the excess epoxy.



Step 3. Dome Ferrule End

a. Place the following consumables on the glass plate: one white foam pad, five clear spacers, and on top place a sheet of type F polishing paper (yellow).

Note: Type F polishing paper can be reused by cleaning with alcohol and wipes.

b. Using light pressure, polish the connector for 20 figure-8 strokes.

Note: Step 3 concludes the polishing procedure for multimode fibers. Steps 4 and 5 are to be performed for singlemode fibers only.

Step 4. Singlemode — Improve Dome Surface Finish

a. Replace the sheet of type F (yellow) polishing paper with a sheet of type K (gray) dull side up. Leave the five clear spacers and foam pad on glass plate.

b. Polish the connector for 20 additional figure-8 strokes.

Step 5. Singlemode — Final Polish

a. Remove all polishing material from glass plate and replace with type L felt polishing pad (purple).

Note: Step 5b is critical for excellent return loss. Perform carefully by guiding the polishing tool and plug slowly and gently, **never** increasing pressure.

b. Dampen one-fourth of sheet with distilled water (do not flood). Buff polish 20 light figure-8 strokes, approximately 3 inches high and 1 ½ inches wide.

c. Clean fiber end with wipe dampened with water, then with a second wipe dampened with alcohol.

d. The felt can be stored damp in a clean plastic bag and reused. The glass plate should be immediately cleaned with water and dried completely before storage to prevent polishing residue from permanently drying on glass plate.

Note: Step 5 provides the necessary steps for high performance return loss. Type L felt polishing pad (purple) is imbedded with ultrafine polishing material.

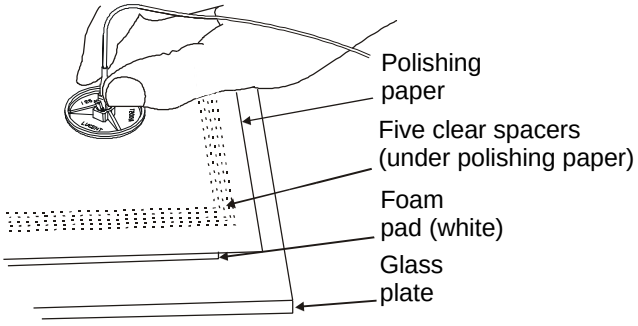


Table A. Overview—Polishing Multimode—EPOXY

Step	Polishing Materials	No. of Figure-8 Strokes	Notes
1	Type J, purple	As Required	Air polish to remove fiber stub.
2	Type J, purple One spacer (clear)	20, then as required	Dry polish on glass plate to remove excess epoxy.
3	Type F, yellow Five spacers (clear), foam pad	20	Dry polish on glass plate to dome ferrule.
Repair polish, only if needed	Type F, yellow One spacer (clear)	As required to remove flaw	Repair polish. Dry polish on glass plate. After flaw is removed, repeat Step 3.

Table B. Overview—Polishing Singlemode—EPOXY

Step	Polishing Materials	No. of Figure-8 Strokes	Notes
1	Type J, purple	As Required	Air polish to remove fiber stub.
2	Type J, purple One spacer (clear)	20, then as required	Dry polish on glass plate to remove excess epoxy.
3	Type F, yellow Five spacers (clear), foam pad	20	Dry polish on glass plate to dome ferrule.
4	Type K, gray Five spacers (clear), foam pad	20	Dry polish on glass plate to improve dome surface finish.
5	Type L, purple felt	20 light	Dampen felt with distilled water for final finish.
Repair polish, only if needed	Type F, yellow One spacer (clear)	As required to remove flaw	Repair polish. Dry polish on glass plate. After flaw is removed, repeat Step 3.

3.4.8 Repair Polishing Only

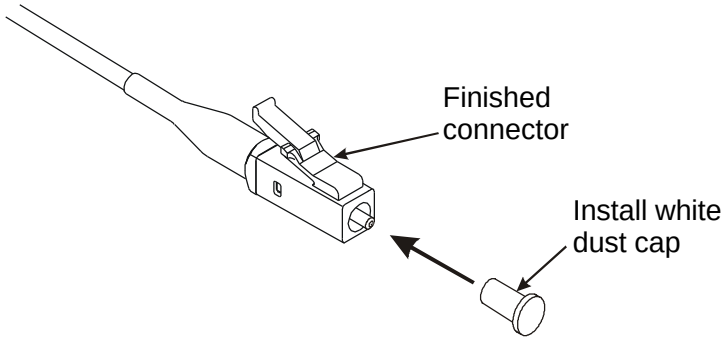
1. Place a sheet of type F paper and one clear spacer over the glass plate.
2. Using little or no pressure, polish the connector until the flaw has been removed.
3. Repeat Step 3 in Section 3.4.7.

Note: Do not over polish. Approximately one-third of the chamfer length can be polished away. This concludes the repair procedure for multimode fibers.

4. For singlemode fibers only, repeat Steps 4 and 5 in Section 3.4.7.

3.4.9 Final Assembly

Once the polishing is finished and the end finish is acceptable, cover the end of the connector with a white dust cap.



4.0 Assembly Instructions for EZ Method

4.1 Fiber Preparation

1. Remove cable sheath and outer jacket.

   Caution: Be careful not to cut into fibers while removing cable sheath and outer jacket.

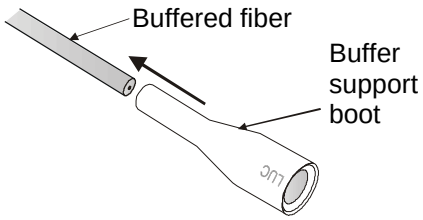
   Note 1: For Lucent Technologies cable, use sheath removal tool R-4366.

   Note 2: Be certain to expose enough buffered fiber to:

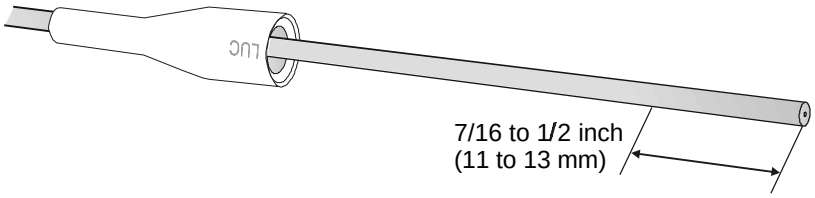
   - Allow access to the curing oven and other connector preparation functions
   - Prevent stress on fibers during connector preparation
   - Provide adequate fiber length for placement in associated equipment cabinet.

   Typical working length for buffered fibers is 24 to 36 inches (0.6 to 0.9 meters).

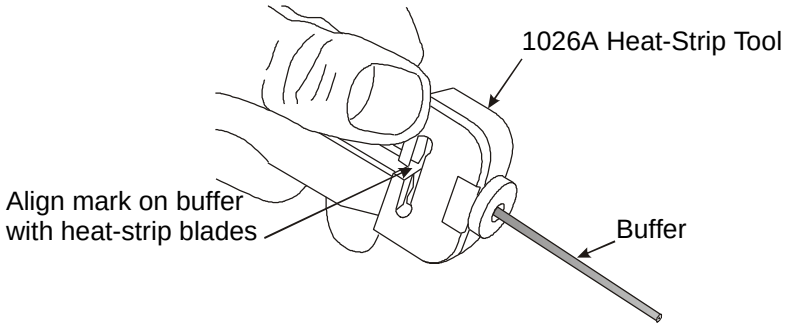
2. Install buffer support boot by slipping the small end of boot onto the buffered fiber.



3. Measure and mark the buffered fiber 7/16 to 1/2 inch (11 to 13 mm) from the end by using the scale or template provided in the tool kit.



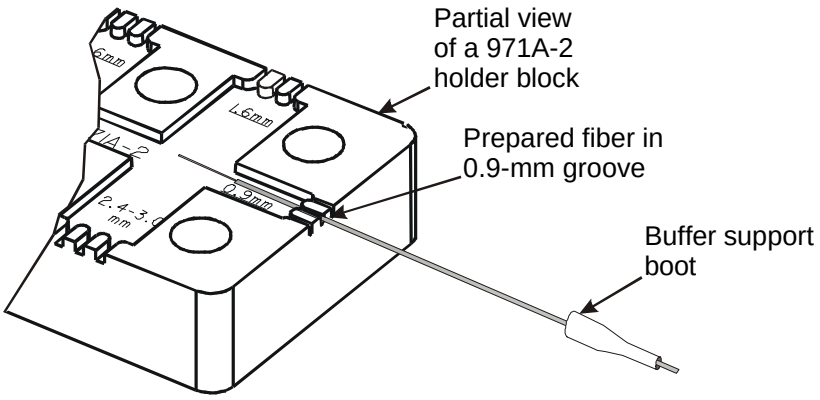
4. Locate 1026A Heat-Strip Tool (105 514 764) provided in the Tool Kit.
   Note: Refer to 1026A Heat-Strip Tool operating instructions for setup.
5. Strip 7/16 to 1/2 inch (11 to 13 mm) of the buffered fiber.



6. Clean stripped fiber by saturating a wipe with isopropyl alcohol (>91% 2-propanol + water) and wiping the fiber from the edge of the buffer toward the end of the fiber.

   Note: If residue remains on the fiber, use a clean wipe saturated with isopropyl alcohol to wipe the fiber again.

7. Place prepared buffer into the grooves of the 971A-2 holder block to avoid breaking or contamination of the fiber (holder blocks are provided in the D-182959 Upgrade Kit).



4.2 Prepare Adhesive

Caution: Avoid contact of adhesive with skin.

Note: Refer to **Table C** for recommended adhesive temperatures.

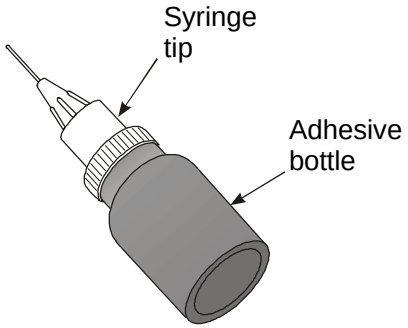
Table C. Recommended Usage Temperatures for Adhesive

Condition	Temperature
Storage	-5?C to 30?C (23?F to 86?F)
Installation	0?C to 38?C (32?F to 100?F)
Operating	-40?C to 75?C (-40?F to 167?F)

1. Shake the bottle of adhesive vigorously.
2. Remove the cap from the bottle.

   Note: If bottle has not been opened, use a straight pin to make a hole in the tip of nozzle.

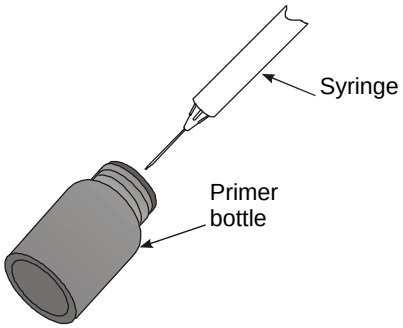
3. Twist a syringe tip onto the nozzle of the bottle making sure that it fits snugly.



4.3 Prepare Primer

Caution: Avoid contact of primer with skin.

1. Place the 1-inch long (25 mm) syringe tip onto the syringe and twist to lock in place.
2. Shake the bottle of primer vigorously.
3. Remove the cap from the bottle.
4. Place the tip of the syringe into the bottle and draw 0.5 cc of primer into syringe.



Note: Once the installation procedure has been completed, any extra primer in the syringe may be placed back into the original bottle; however, the syringe tip should be thrown away to avoid getting adhesive, which may be on the tip, mixed in with the primer.

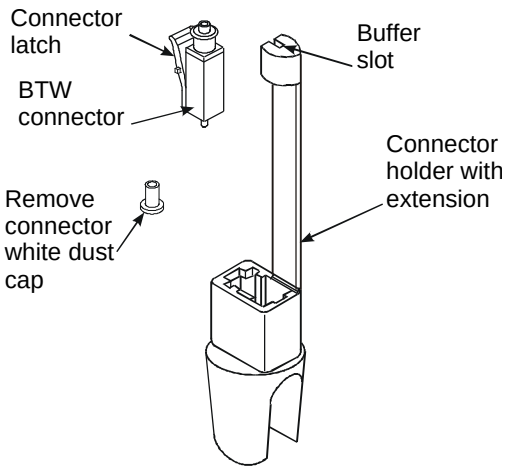
4.4 Connector Installation

Connectors are provided in packages that must be ordered by product codes (see Section 9 for ***LC*** Connector Product Codes). Each connector is fitted with a white dust cap to protect the connector tip from damage and contamination. During the connector installation process a holder with extension (provided in both the D-182905 and D-182959 Upgrade Kits) is used to protect the fiber protruding from the connector tip and to aid in the handling of the small connectors. The slot in the extension holds the buffer in the correct position until the adhesive sets.

4.4.1 Prepare the Connector

1. Locate connector and connector holder with extension (107 852 493).
2. Remove the white dust cap from tip of connector.
3. Snap connector into the connector holder.

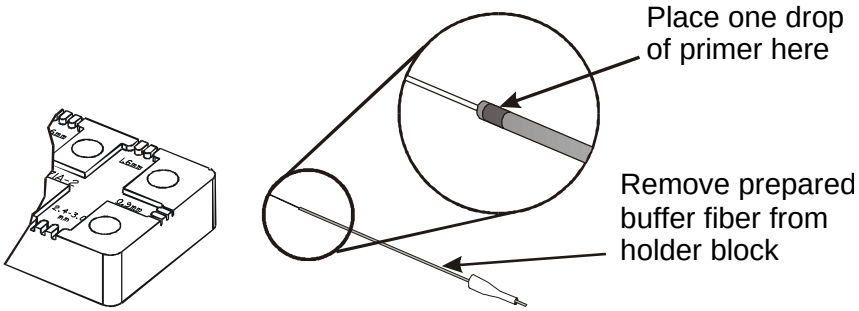
4.4.2 Apply Primer to Buffer



Caution 1: DO NOT get primer on the fiber or the holder block.

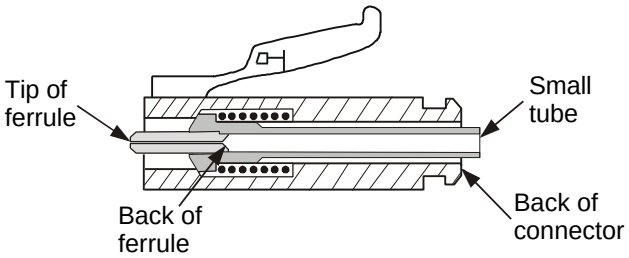
Caution 2: DO NOT put primer on the connector ferrule.

1. Remove the prepared buffer fiber from the holder block.
2. Carefully place one drop of primer onto buffer just back from where the buffer was stripped.
3. Replace prepared buffer fiber in holder block.



4.4.3 Apply Adhesive to Connector

1. Locate the small tube at the back of the connector.
2. Carefully insert syringe tip (with attached adhesive bottle) into the small tube until tip bottoms at the back of the ferrule.



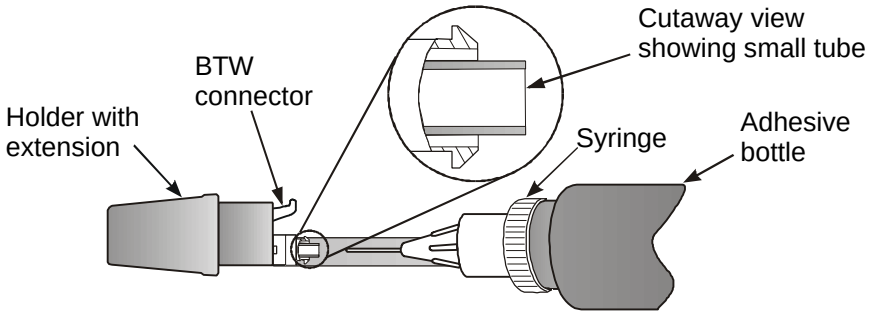
Caution: In the following step, do not apply excess adhesive to connector tip of ferrule.

3. Inject adhesive into the ferrule by slowly pressing the adhesive bottle until a bead of adhesive just forms at the connector tip.

4. Deposit adhesive at the back of the ferrule by pulling the tip of the syringe back slightly and momentarily injecting a small amount of adhesive at the back of the ferrule.

   Caution: When removing syringe from the connector in the following step, do not allow adhesive on syringe tip to contaminate the small tube or the back of the connector.

5. Release pressure on bottle, wait a moment, and then remove syringe tip from the connector.



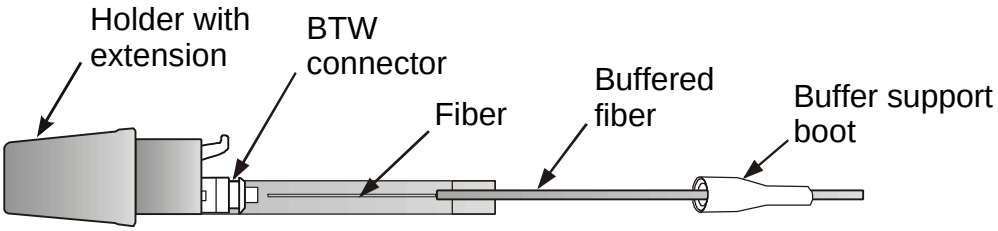
4.4.4 Insert Fiber into Connector

1. Remove prepared fiber from holder block.
2. Insert the exposed fiber into the small tube inside the connector and carefully feel for the opening in the ferrule.

   Note: Rotating the fiber or the connector assembly may help to locate the opening.

   Caution: Only perform the following step once.

3. When the fiber is seated, pull it back slightly and watch for fiber movement at the tip of the ferrule to make sure the fiber is not broken.
4. Reposition the fiber back into the connector and lock the buffer in the slot on the holder.
5. Ensure the buffer support boot is pushed well away from the holder extension slot.
6. Place the connector holder into holder block.



4.4.5 Cure Adhesive and Attach Buffer Support Boot

1. Allow adhesive to cure for 1 minute.
2. Remove the connector from connector holder.

   Caution: In the following step, exercise care not to break the exposed fiber.

3. Use the edge of a wipe to clean any uncured adhesive from around the fiber where it protrudes from the ferrule tip.
4. Push the cable support boot onto the connector.

   Note: Exercise care not to break the exposed fiber.

4.4.6 Score the Fiber

1. Obtain the 975A cleaving tool from the 1032B5 Tool Kit or from the 1032B6 Tool Kit.

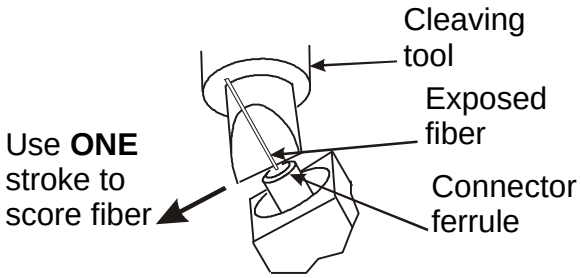
   Note: In the following step, score the fiber as close to the ferrule as possible while at the same time being careful not to break the fiber.

2. Place the cleaving tool against the ferrule and exposed fiber.
3. Using one stroke of the cleaving tool, gently score the exposed fiber.
4. Remove the exposed fiber by gently pulling straight away from the cable.

   Note: If fiber did not readily pull off, score fiber again on opposite side and gently pull fiber.

5. Dispose of the fiber scraps in a safe manner.

   Note: The adhesive surface on a piece of tape is a convenient place to hold fiber pieces until disposal.



4.4.7 Polish Fiber End—Multimode and Singlemode

Caution: Contaminates on polishing materials can cause scratches on the end face of the fiber/ferrule. Throughout the entire polishing process, keep work area and all polishing materials clean. Clean polishing papers between each step using a wipe moistened with alcohol. This is especially true for the type F (yellow) and type K (gray) polishing papers because they can be repeatedly cleaned and reused.

Note 1: Table E (multimode) and **Table F** (singlemode) provide quick overviews for polishing.

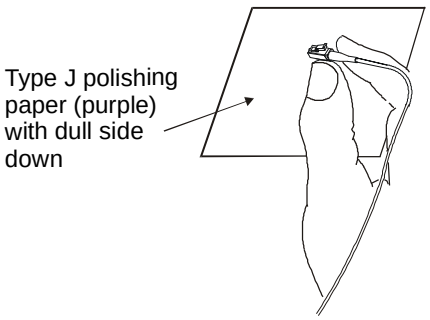
Note 2: Cut one sheet of type J polishing paper (purple) into four pieces.

<u>Step 1. Remove Fiber Stub</u>

a. In one hand, hold one of the cut pieces of type J polishing paper (dull side down).
b. In the other hand, hold the connector with the tip pointing upward.

   Note: When performing the following step, be careful not to break the fiber stub.

c. Air polish using light circular motions about 1 inch in diameter; carefully polish off fiber stub.



Step 2. Remove Excess Epoxy

a. Use canned air to clean the back and front of a full piece of type J polishing paper (purple).

b. Saturate a wipe with isopropyl alcohol (>91% 2-propanol + water).

c. Obtain a glass plate and a polishing tool (T2000A or T2001A) from D-182905 or D-182959 Upgrade Kit.

d. Clean the glass plate and polishing tool with the saturated wipe.

e. Use canned air to blow dry the glass plate and the polishing tool.

f. Insert the ***LC*** connector into the T2000A or T2001A polishing tool.

g. Place one clear spacer sheet on the glass plate, then place a sheet of type J polishing paper (purple) on the glass plate with the dull side up.

h. Gently place the polishing tool and connector onto the polishing paper.

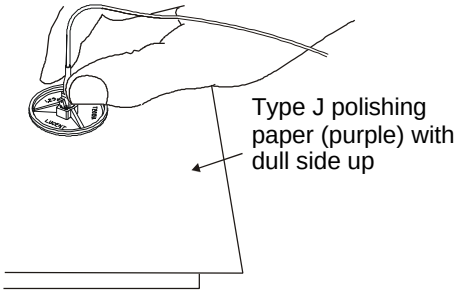
Note: In the following step, you should **not** feel any drag between the fiber and the paper. Start with light pressure and use figure-8 strokes that are approximately 2 inches high and 1 inch wide. The figure-8 strokes must be well rounded to ensure complete removal of the epoxy from the end of the ferrule.

i. Using light pressure, polish the connector for 20 figure-8 strokes.

Danger: Optical fibers may emit radiation if the far end is connected with a working laser or light-emitting diode (LED). Never view the fiber end of a cable or plug with the naked eye or any optical instrument until absolute verification is established that the fiber is disconnected from any laser or LED source.

j. Using a 7X eye loupe or ***LC*** microscope supplied in the D-182905 or D-181259 Upgrade Kit, check the tip of the ferrule. No excess epoxy should surround the fiber.

Note: If excess epoxy is found, continue to us type J polishing paper (purple) to remove the excess epoxy.



Step 3. Dome Ferrule End

a. Place the following consumables on the glass plate: one white foam pad, five clear spacers, and on top place a sheet of type F polishing paper (yellow).

Note: Type F polishing paper can be reused by cleaning with alcohol and wipes as needed.

b. Using light pressure, polish the connector for 20 figure-8 strokes.

Note: Step 3 concludes the polishing procedure for multimode fibers. Steps 4 and 5 are to be performed for singlemode fibers only.

Step 4. Singlemode — Improve Dome Surface Finish

a. Replace the sheet of type F (yellow) polishing paper with a sheet of type K (gray) dull side up. Leave the five clear spacers and foam pad on glass plate.

b. Polish the connector for 20 additional figure-8 strokes.

Step 5. Singlemode — Final Polish

a. Remove all polishing material from glass plate and replace with type L felt polishing pad (purple).

Note: Step 5b is critical for excellent return loss. Perform carefully by guiding the polishing tool and plug slowly and gently, never increasing pressure.

b. Dampen one-fourth of sheet with distilled water (do not flood). Buff polish 20 light figure-8 strokes, approximately 3 inches high and 1 ½ inches wide.

c. Clean fiber end with wipe dampened with water, then with a second wipe dampened with alcohol.

d. The felt can be stored damp in a clean plastic bag and reused. The glass plate should be immediately cleaned with water and dried completely before storage to prevent polishing residue from permanently drying on glass plate.

Note: Step 5 provides the necessary steps for high performance return loss. Type L felt polishing pad (purple) is imbedded with ultrafine polishing material.

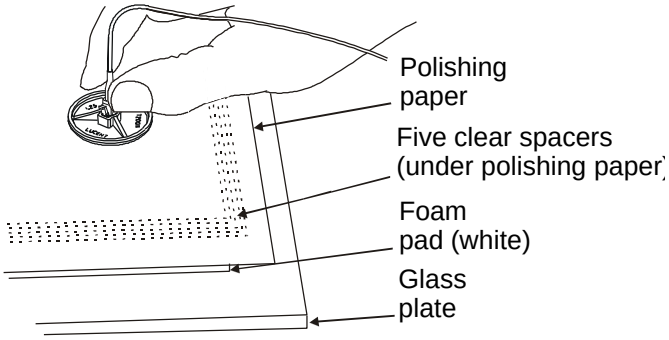


Table D. Overview—Polishing Multimode—EZ

Step	Polishing Materials	No. of Figure-8 Strokes	Notes
1	Type J, purple	As Required	Air polish to remove fiber stub.
2	Type J, purple One spacer (clear)	20, then as required	Dry polish on glass plate to remove excess epoxy.
3	Type F, yellow Five spacers (clear), foam pad	20	Dry polish on glass plate to dome ferrule.
Repair polish, only if needed	Type F, yellow One spacer (clear)	As required to remove flaw	Repair polish. Dry polish on glass plate. After flaw is removed, repeat Step 3.

Table E. Overview—Polishing Singlemode—EZ

Step	Polishing Materials	No. of Figure-8 Strokes	Notes
1	Type J, purple	As Required	Air polish to remove fiber stub.
2	Type J, purple One spacer (clear)	20, then as required	Dry polish on glass plate to remove excess epoxy.
3	Type F, yellow Five spacers (clear), foam pad	20	Dry polish on glass plate to dome ferrule.
4	Type K, gray Five spacers (clear), foam pad	20	Dry polish on glass plate to improve dome surface finish.
5	Type L, purple felt	20 light	Dampen felt with distilled water for final finish.
Repair polish, only if needed	Type F, yellow One spacer (clear)	As required to remove flaw	Repair polish. Dry polish on glass plate. After flaw is removed, repeat Step 3.

4.4.8 Repair Polishing Only

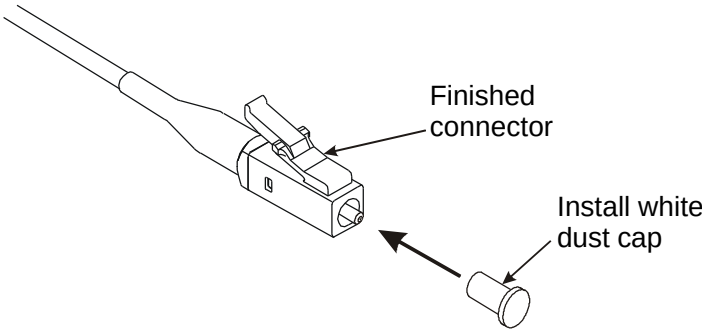
1. Place a sheet of type F paper and one clear spacer over the glass plate.
2. Using little or no pressure, polish the connector until the flaw has been removed.
3. Repeat Step 3 in Section 4.4.7.

Note: Do not over polish. Approximately one-third of the chamfer length can be polished away. This concludes the repair procedure for multimode fibers.

4. For singlemode fibers only, repeat Steps 4 and 5 in Section 4.4.7.

4.4.9 Final Assembly

Once the polishing is finished and the end finish is acceptable, cover the end of the connector with a white dust cap.



5.0 Assembly on Nonbuffered Fiber

Note: Use the appropriate procedures for preparing outside plant (OSP) cable. See **636-299-110** for more information on grounding, blocking, and buffering fiber optic cable.

1. Follow the instructions in the D-181755 Kit for direct termination.

   Note 1: To prevent cutting the fiber by mistake, do not attempt to remove the fiber coating until a buffer tube has been placed over the bare fiber.

   Note 2: The fiber should extend 5/8 inch (15.9 mm) beyond the end of the buffer tube.
2. Clean blade area on mechanical stripper and adjust the stop to remove 5/8 inch (15.9 mm) of coating from the fiber.
3. Insert the fiber through the guide tube until the fiber butts against the stop.
4. Close the tool handles and gently pull the fiber from the tool to strip the coating.
5. Complete the connector assembly on nonbuffered fiber by using Section 3 (Epoxy Method) or Section 4 (EZ Method).

6.0 Fiber Inspection and Ferrule Endface Geometry

6.1 Fiber Inspection

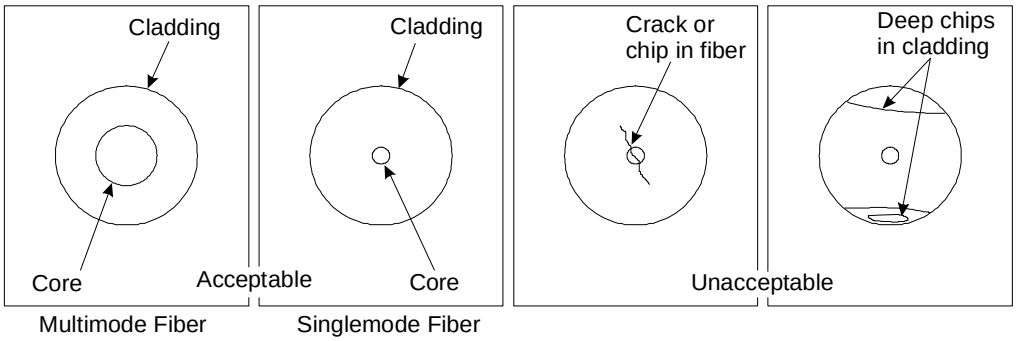
Danger: Optical fibers may emit radiation if the far end is connected with a working laser or light-emitting diode (LED). Never view the fiber end of a cable or plug with the naked eye or any optical instrument until absolute verification is established that the fiber is disconnected from any laser or LED source.

Note: The fiber endface should be clean and contaminant free.

1. Dampen a wipe with isopropyl alcohol (>91% 2-propanol + water).
2. Clean the end of the ferrule with the dampened wipe, followed by a dry wipe.
3. Blow the ferrule dry with canned air.
4. Locate the ***LC*** microscope supplied in the D-182905 or D-182959 Upgrade Kit.
5. Insert the ferrule end of the connector into the microscope adapter (center hole).

   Danger: A high-intensity light may be used at the other end of the fiber to illuminate fiber core.

6. Open the microscope barrels to illuminate the connector tip and use the side wheel to focus.



6.2 Ferrule Endface Geometry

The dimensions in Table F are for reference only and apply after all polishing procedures have been completed.

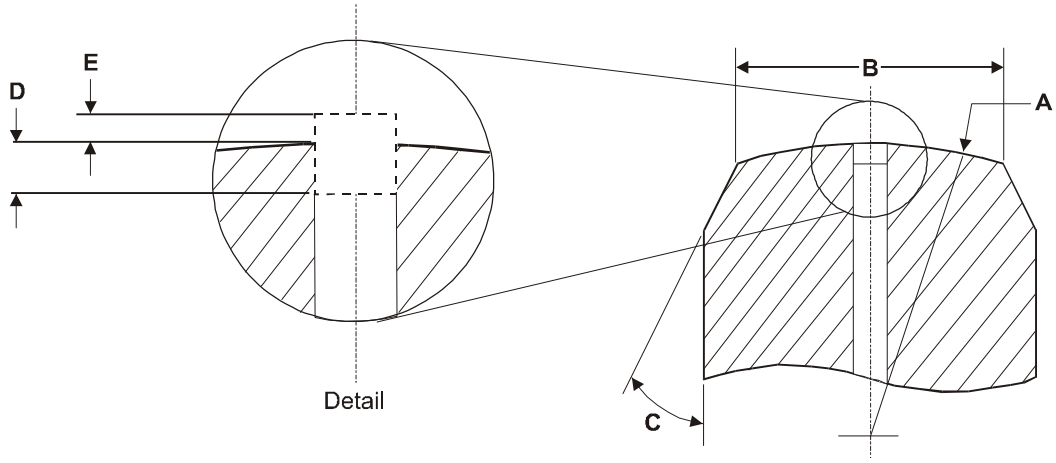
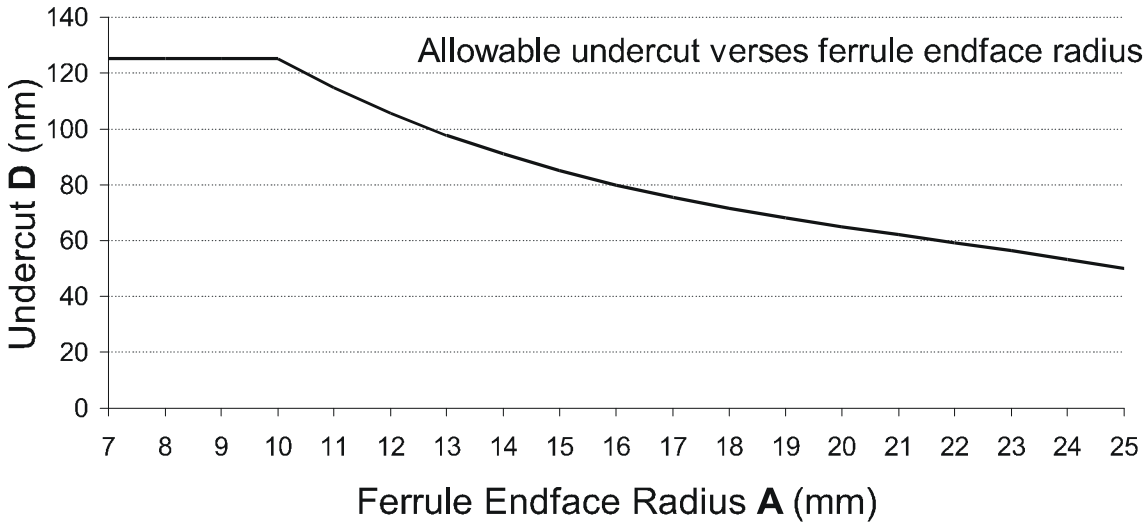


Table F. Recommended Singlemode Ferrule End Geometry

Item	Reference	Minimum	Nominal	Maximum	Dimensions
Radius	A	7	12	25	mm
Pedestal	B	0.8	0.9	1.0	mm
Dome Ecc	—	0	—	0.050	mm
Chamfer	C	25	30	35	degrees
Undercut	D	—	—	See Graph A	nm
Protrusion	E	—	—	50	nm

Graph A. Recommended Fiber Undercut (Reference D)



7.0 Cleaning Instructions

7.1 *LC* Connector

1. Dampen a wipe with isopropyl alcohol (>91% 2-propanol + water).
2. Clean the end of the ferrule with the dampened wipe.
3. Blow the ferrule dry with canned air.

Caution: Signal performance **will** be affected if the connector tip is not thoroughly cleaned.

7.2 *LC* Adapter

1. If access to the adapter is only available from one side, use canned air to blow inside of adapter.
2. If access is available from both sides of the adapter, clean the adapter with an ***LC*** adapter brush moistened with alcohol followed by canned air. The brush can be cleaned with alcohol and canned air.

Caution 1: Do not try to clean the inner adapter sleeve with a standard pipe cleaner. The inner diameter of the sleeve is too small.

Caution 2: Do not try to clean the adapter with an ***LC*** adapter brush if a connector is mounted in the adapter.

8.0 Tuning Instructions (Singlemode Simplex Only)

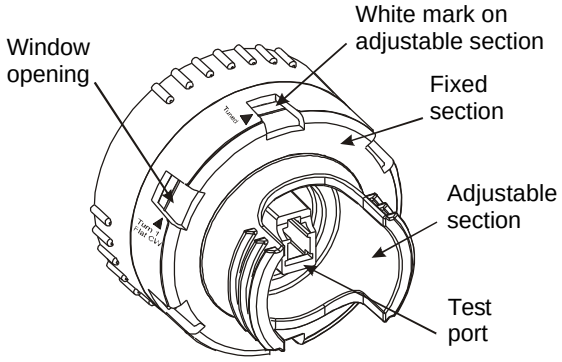
8.1 General Information

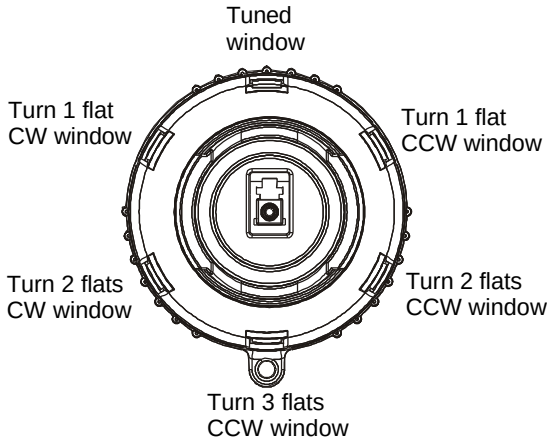
The D-183017 ***LC*** Tuning Kit[?] (108 476 094) is comprised of the following:

- ?? Tuning Index Tool
- ?? Tuning Wrench
- ?? Singlemode Offset Tuning Jumper
- ?? Hard case with foam insert
- ?? Instruction card.

8.1.1 Tuning Index Tool

The Tuning Index Tool is used to determine which of six ferrule positions yields the lowest insertion loss in both jumper and Behind-The-Wall (BTW) connectors. The tool is made of high impact plastic with one fixed section and one adjustable section. These two sections are held together by an interior coil spring that maintains an inward tension on the two sections to keep them in a stationary position. Both sections are equipped with a test port that is used to install the Singlemode Offset Tuning Jumper and the jumper or BTW connector to be tuned. There are six window openings located around the rim of the fixed section. These window openings are 60 degrees apart and are used to view a white reference mark on the inner rim of the adjustable section. Stamping beside each window provides the number of turns needed to tune the connector ferrule of the jumper or BTW connector being tuned. The "flat" or "flats" reference in the window stamping indicates one of the six flat positions in the hexagon handle of the Tuning Wrench that is provided in the Tuning Kit. To move the Tuning Index Tool from its stationary position, pull the adjustable section away from the fixed section and rotate clockwise or counterclockwise in increments of 60 degrees.





8.1.2 Tuning Wrench

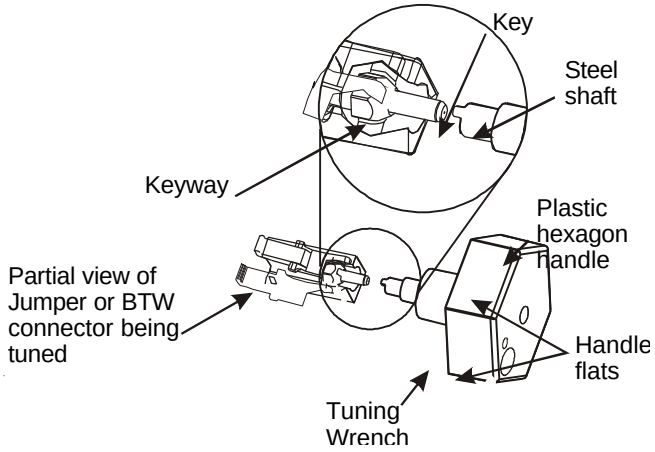
The Tuning Wrench is used to rotate the barrel/ferrule of the connector being tuned to a position that will yield the lowest insertion loss. The Tuning Wrench is comprised of a steel shaft molded into a plastic hexagon handle. Two keys are milled into the end of the steel shaft and these keys are used to engage the keyways located in the barrel/ferrule of the connector being tuned. To rotate the barrel/ferrule, you must first place the Tuning Wrench keys in the barrel/ferrule keyways, second press in on the Tuning Wrench until it bottoms out on the face of the connector housing, and third turn the wrench to the desired flat. The

[?] Patents Pending.

number of flats and the direction to be turned is obtained from the printing on the rim of the fixed section of the Tuning Index Tool [for example, Turn 2 flats CW (clockwise) or Turn 2 flats CCW (counterclockwise)].

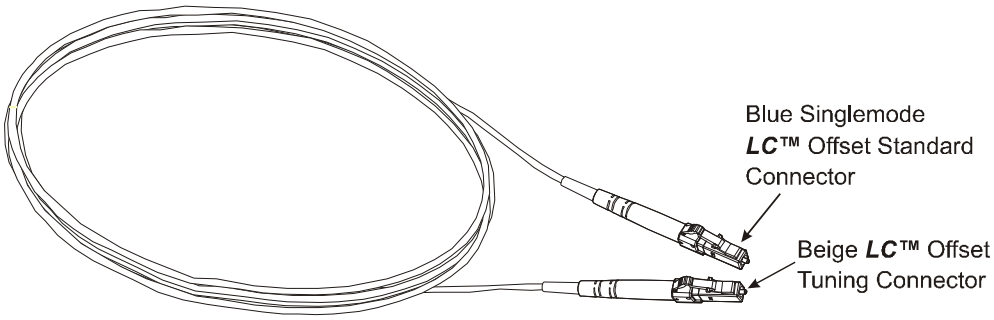
Caution 1: Damage will occur to the Tuning Wrench or the connector barrel/ferrule if the Tuning Wrench is rotated without the wrench being bottomed against the connector housing.

Caution 2: Damage may occur to a jumper connector if the barrel/ferrule is rotated more than 180 degrees (three flats) in either the clockwise or counterclockwise direction.



8.1.3 Singlemode Offset Tuning Jumper

The Singlemode Offset Tuning Jumper is used to make the connection between the insertion loss test set and the test port in the adjustable section of the Tuning Index Tool. The jumper consists of one beige ***LC*** tuning connector and one blue standard singlemode connector mounted on approximately 10 feet (3 m) of yellow cordage. The beige connector with the black trigger is the offset tuning end of the jumper.



8.1.4 Hard case with foam insert

The hard case provides a safe and convenient way to transport the ***LC*** tuning kit. It is made of high impact plastic with a foam insert.

8.1.5 Instruction card

The instruction card provides an abbreviated procedure for tuning ***LC*** singlemode connectors.

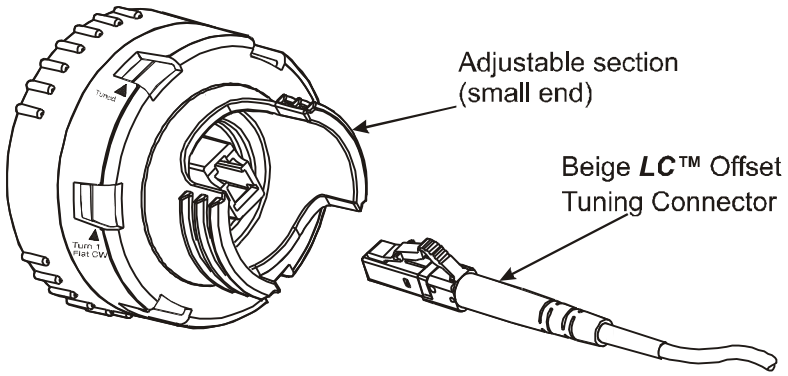
8.2 Safety Information

- Safety glasses should be worn at all times while working with ***LC*** connectors.
- Optical fibers may emit radiation if the far end is connected with a working laser or light-emitting diode (LED). Never view the fiber end of a cable or plug with an optical instrument until absolute verification is established that the fiber is disconnected from any laser or LED source.

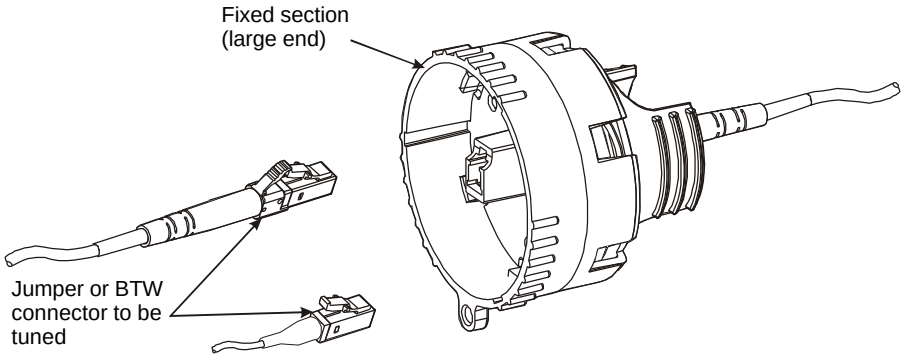
8.3 Tuning Procedure

Note: Before starting the tuning measurements, make a copy of the tuning sheet on the following page.

1. Install the beige ***LC*** Offset Tuning Connector into test port of the adjustable section (small end) of Tuning Index Tool.



2. Install jumper or BTW connector to be tuned into the test port of the fixed section (large end) of Tuning Index Tool.



3. Make insertion loss measurement and record in appropriate column on copied tuning sheet.

Note: It is not necessary to remove the tuning jumper or the jumper/BTW connector from the Tuning Index Tool until Step 10.

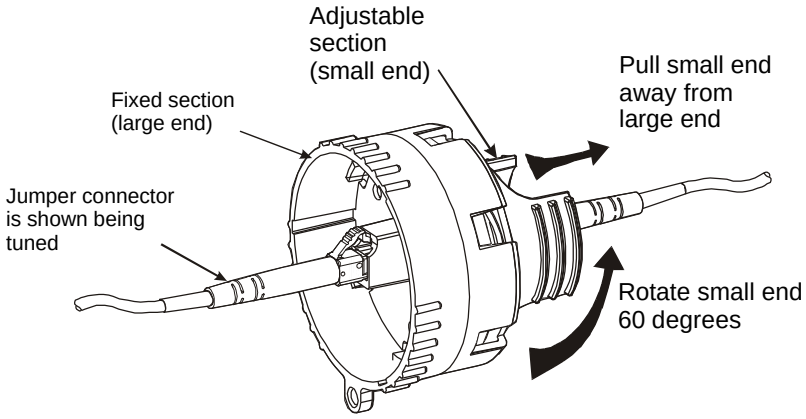
Jumper No.	Tuning Index Tool Position					
	Tuned	**Turn 1 Flat CCW**	**Turn 2 Flats CCW**	**Turn 3 Flats CCW**	**Turn 2 Flats CW**	**Turn 1 Flat CW**
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						

23						
24						

4. Grasp the small end of the Tuning Index Tool with one hand and large end of the Tuning Index Tool with the other hand.
5. Pull small end away from large end and rotate small end 60 degrees in clockwise direction.

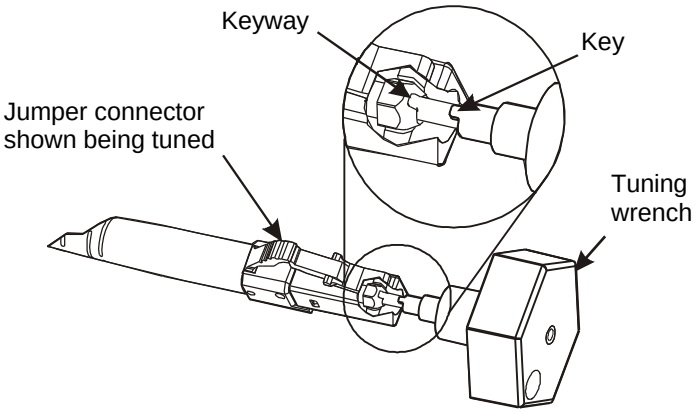
   Note 1: It takes 3-4 pounds (0.9-1.8 kilograms) of force to separate the two halves of the Tuning Index Tool properly.

   Note 2: White reference mark is now showing in a different window.

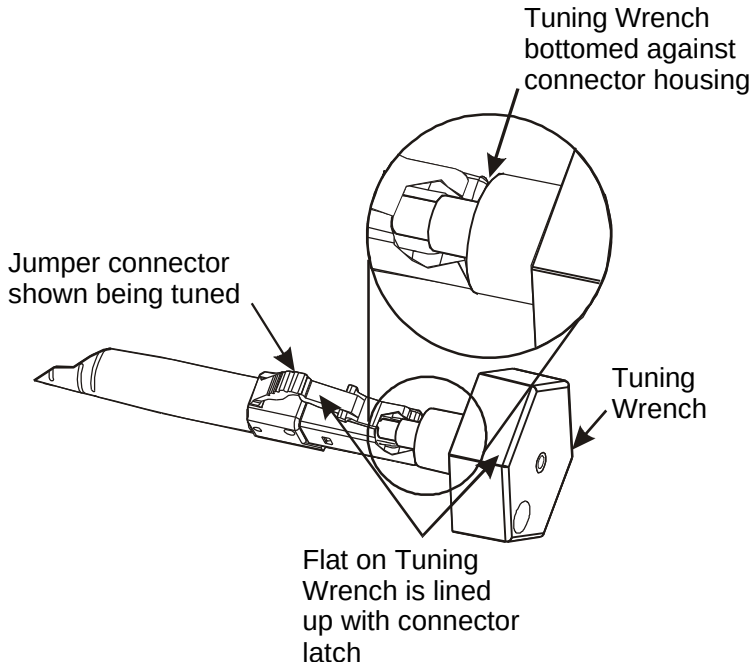


6. Record insertion loss measurement for each position or window in appropriate column on copied tuning sheet.
7. Repeat Steps 4 through 6 for the remaining four Tuning Index Tool window positions.
8. Refer to tuning sheet and determine which window position yielded the lowest insertion loss.
9. Note the number of turns and direction that is stamped next to the window position that yielded the lowest insertion loss (for example, **Turn 2 flats CW**).
10. Remove jumper or BTW connector being tuned from the Tuning Index Tool.
11. Place Tuning Wrench over jumper or BTW connector ferrule and engage the wrench keys into the connector keyways.

    Note: The wrench keys are engaged in the connector keyways by applying very light inward pressure on the wrench and rotating until you feel the keys engage.



12. With the wrench keys engaged in the connector keyways, push the wrench into the connector until the wrench bottoms against the connector housing.
13. Note that one of the flat portions of the Tuning Wrench is aligned with the connector latch.



Caution 1: Damage will occur to the Tuning Wrench or the connector barrel/ferrule if the

Tuning Wrench is rotated without the wrench being bottomed against the connector housing.

Caution 2: Damage may occur to a jumper connector being tuned if the barrel/ferrule is rotated more than 180 degrees (three flats) in either the clockwise or

counterclockwise direction.

14. Hold connector stable and rotate the wrench the number of hex flats and in the direction determined in Step 9.
15. Remove the Tuning Wrench from connector.

    Note: The jumper is now tuned per the measurements taken in Steps 3 through 7.
16. For a jumper, repeat this procedure for the connector on the other end of the jumper cable.

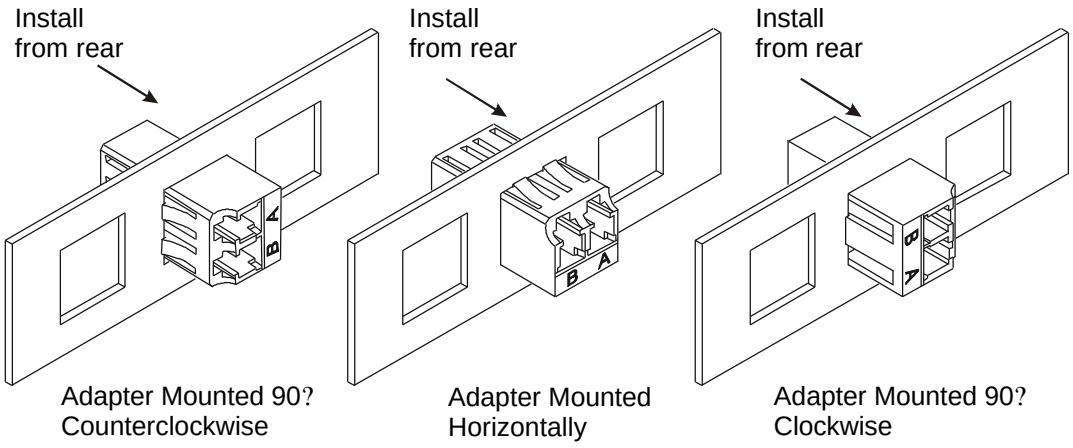
    Note: The following steps are optional.
17. Realign the white reference mark on adjustable section of Tuning Index Tool in the **Tuned** window.
18. Repeat Steps 3 through 16 to ensure that the connector has been set to the position that provides the lowest insertion loss.

9.0 Mount Adapter

Caution: The adapter should never be installed from the front of a panel or outlet.

1. Locate the panel or outlet where the adapter is to be mounted.
2. Install the adapter **from the rear** of the panel or outlet.

    Note: The channel markings (B A) are normally oriented horizontally. However, it is acceptable to orient the adapter 90? clockwise or 90? counterclockwise. This rotated orientation will allow finger access to the connectors for insertion and removal in dense applications. Donot install with the channel markings (B A) upside down.



10.0 Ordering Information for Epoxy Kits and Connectors

1032B5 Tool Kit (106 705 213)

Kit Quantity	Description	Replacement	
		Comcode	Quantity
1	1510B Crimping Tool	106 918 998	1 Tool
1	300B Microscope	104 412 077	1 Microscope
1	1510A Polishing Tool	106 918 980	1 Tool
12	600B Connector Holders	107 118 549	12 Holders
1	700A Stripping Tool	104 278 478	1 Tool
1	1026A Heat Strip Tool	105 514 764	1 Tool
2	971A-1 Holder Blocks	104 229 398	1 Block
1	975A Cleaving Tool	103 808 770	1 Tool
1	Scissors	105 257 364	2 Pairs
1	6-inch Scale	105 257 356	5 Scales
1	Alcohol Bottle	105 257 463	2 Bottles
1	Glass Plate	105 075 618	2 Plates
1	Stripping Tool (R4366)	105 114 581	1 Tool
1	Instruction Manual	105 536 718	1 Manual
15	Micro Clips (1043A)	106 228 455	15 Clips
1	200A Curing Oven	104 055 058	1 Oven
12	SC Curing Fixtures	106 919 004	12 Fixtures
2	Modified SM/MM SC Grips	107 480 022	10 Grips
1	Rubber Polishing Pad	106 978 992	10 Pads
1	1039B Cut-Length Template	107 149 783	5 Templates
1	***ST***® /SC Connectors Assembly Instructions - Epoxy and EZ Methods	See Note	1 Manual

Note: Obtain ***ST***® /SC Connectors manual (640-252-044) from field support (1-888-342-3743).

1032B6 Tool Kit (106 919 012)

The 1032B6 Tool Kit contains the same tools and materials as the 1032B5 Tool Kit except the 200A Curing Oven is replaced by the 200A1 Curing Oven for use internationally. The 200A1 oven operates on 220 V 50 Hz. Replacement comcode for the 200A1 oven is 105 537 690 and is replaced in quantities of one each.

D-182905 Upgrade Kit for *LC*™ Behind-The-Wall Connectors (107 852 139)

Kit Quantity	Description	Replacement	
		Comcode	Quantity
1	T2000A Polishing Tool	107 766 776	1 Tool
1	***LC*** Microscope	107 863 946	1 Microscope
12	***LC*** Connector Holders	107 852 493	12 Holders
1	***LC*** Polishing Pad/Template	NA	1 Pad
1	Assembly Instructions for ***LC*** Fiber Optic Behind-The-Wall (BTW) Connectors – Epoxy and EZ Methods - Singlemode and Multimode Versions	See Note	1 Manual

Note: Obtain BTW Connectors manual (640-252-053) from field support (1-888-342-3743).

D-182959 Upgrade Kit for *LC*™ Jumper and BTW Connectors (108 262 569)

Kit Quantity	Description	Replacement	
		Comcode	Quantity
1	T2001A Polishing Tool	108 209 651	1 Tool
1	***LC*** Microscope	107 863 946	1 Microscope
12	***LC*** BTW Connector Holders	107 852 493	12 Holders
12	***LC*** Jumper Connector Holders	108 262 585	12 Holders
2	971A-2 Holder Blocks	108 266 123	1 Block
1	***LC*** Cut-Length Template	108 262 536	5 Pads
1	1510LC Crimping Tool	108 262 551	1 Tool
1	***LC*** Stripper Guide Tube for 1026A	108 262 577	1 Insert
1	Ultra-Fine-Point Permanent Pen	NA	1 Pen
6	Heat Tube Assemblies	108 261 835	6 Assemblies
6	***LC*** Adapter Brushes	108 263 898	6 Brushes
1	C1001B-2 Multimode ***LC*** Adapter	108 072 497	1 Adapter
1	Assembly Instructions for ***LC*** Fiber Optic Jumper Connectors	See Note 1	1 Manual
1	Assembly Instructions for ***LC*** Fiber Optic Behind-The-Wall (BTW) Connectors – Epoxy and EZ Methods - Singlemode and Multimode Versions	See Note 2	1 Manual

Note 1: Obtain Jumper Connectors manual (640-252-054) from field support (1-888-342-3743).

Note 2: Obtain BTW Connectors manual (640-252-053) from field support (1-888-342-3743).

D-182977 Kit of Consumables, Singlemode (108 338 591)—EPOXY

Note: Kit contains enough supplies to field-assemble 200 singlemode ***LC***™ connectors using heat cured epoxy.

Kit Quantity		Description	
2	Packages	Wipes	
1	Vial	Music Wire	
15	Syringes	Syringes	
25	Tips	Dispensing Tips	
1	Package	Epoxy	15 bi-packs
10	Sheets	Clear Spacers	6 by 6 inches (150 by 150 mm)
10	Sheets	Foam Pad (white)	6 by 6 inches (150 by 150 mm)
20	Sheets	Type J Polishing Paper (purple)	6 by 6 inches (150 by 150 mm)
5	Sheets	Type F Polishing Paper (yellow)	6 by 6 inches (150 by 150 mm)
5	Sheets	Type K Polishing Paper (gray)	6 by 6 inches (150 by 150 mm)
10	Sheets	Type L Polishing Felt (purple)	6 by 6 inches (150 by 150 mm)
1	Package	***LC*** Adapter Brush	6 items (See Note)

Note: A six-pack of brushes is provided in the D-182959 Upgrade Kit (108 262 569). Additional adapter brushes (108 263 898) can be ordered separately.

D-182983 Kit of Consumables, Multimode (108 340 811)—EPOXY

The D-182983 Kit of Consumables contains enough supplies to install 200 multimode ***LC*** fiber optic connectors using heat-cured epoxy. This kit is the same as the D-182977 Kit except that it does not contain type K polishing paper and type L polishing felt.

D-183017 Tuning Kit (108 476 094)

Qty.	Description	Replacement No.	
		Comcode	Quantity
1	***LC*™** Singlemode Offset Test Jumper	108 476 110	1
1	***LC*** Tuning Index Tool Assembly	108 476 151	1
1	***LC*** Tuning Wrench	108 476 136	1
1	Instruction card (See Note)	848 339 305	1
1	Hard case with foam insert	NA	NA

Note: Obtain instruction card from field support (1-888-342-3743).

LC™ Connector Product Codes

Product Code	Description	Comcode	Quantity
P1001A-Z-125	Multimode BTW Connector	107 764 292	1
P1001A-Z-125 - 100	Multimode BTW Connector	108 247 412	1 package of 100
P1101A-Z-125	Singlemode BTW Connector	107 764 300	1
P1101A-Z-125 - 100	Singlemode BTW Connector	108 247 420	1 package of 100

Obtain Locally

- Distilled water.
- Isopropyl alcohol (>91% 2-propanol + water).
- Canned air (nonozone-depleting).
- Alternate adhesives. Locally obtained adhesives with shorter shelf life and higher T_g for outside plant use are acceptable alternates, such as:

EPO-TEK* 353ND adhesive
Manufacturer:
Epoxy Technology, Inc.
14 Fortune Drive
Billerica, MA 01821
Phone: 1-800-227-2201

Tra-Bond** F123MV adhesive
Manufacturer:
Tra-Con, Incorporated
45 Wiggins Avenue
Bedford, MA 01730
Phone: 800-TRA CON1

* EPO-TEK is a registered trademark of Epoxy Technology Incorporated.
** Tra-Bond is a registered trademark of Tra-Con, Incorporated.

11.0 Ordering Information for EZ Kits and Connectors

1032F1 Tool Kit (107 149 320)

Kit Quantity	Description	Replacement	
		Comcode	Quantity
1	1510B Crimping Tool	106 918 998	1 Tool
1	300B Microscope	104 412 077	1 Microscope
1	1510A Polishing Tool	106 918 980	1 Tool
12	600B Connector Holders	107 118 549	12 Holders
1	700A Stripping Tool	104 278 478	1 Tool
1	1026A Heat Strip Tool	105 514 764	1 Tool
2	971A-1 Holder Blocks	104 229 398	1 Block
1	975A Cleaving Tool	103 808 770	1 Tool
1	Scissors	105 257 364	2 Pairs
1	6-inch Scale	105 257 356	5 Scales
1	Alcohol Bottle	105 257 463	2 Bottles
1	Glass Plate	105 075 618	2 Plates
1	Stripping Tool (R-4366)	105 114 581	1 Tool
1	Instruction Manual	105 536 718	1 Manual
15	Micro Clips (1043A)	106 228 455	15 Clips
12	SC Curing Fixtures	106 919 004	12 Fixtures
2	Modified SM/MM SC Grips	107 480 022	10 Grips
1	Rubber Polishing Pad	106 978 992	10 Pads
1	1039B Cut-Length Template	107 149 783	5 Templates
1	Eye Loupe	NA	
1	***ST***® /SC Connectors Assembly Instructions - Epoxy and EZ Methods	See Note	1 Manual

Note: Obtain ***ST***® /SC Connectors manual (640-252-044) from field support (1-888-342-3743).

D-182905 Upgrade Kit for *LC*™ Connectors (107 852 139)

Kit Quantity	Description	Replacement	
		Comcode	Quantity
1	T2000A Polishing Tool	107 766 776	1 Tool
1	***LC*** Microscope	107 863 946	1 Microscope
12	***LC*** Connector Holders	107 852 493	12 Holders
1	***LC*** Polishing Pad/Template	NA	1 Pad
1	Assembly Instructions for ***LC*** Fiber Optic Behind-The-Wall (BTW) Connectors – Epoxy and EZ Methods - Singlemode and Multimode Versions	See Note	1 Manual

Note: Obtain BTW Connectors manual (640-252-053) from field support (1-888-342-3743).

D-182985 Kit of Consumables, Singlemode (108 340 837)—EZ

Note: Kit contains enough supplies to field-assemble 200 singlemode ***LC*** connectors using anaerobic EZ adhesive.

Kit Quantity		Description	
2	Packages	Wipes	
1	Vial	Music Wire	
15	Syringes	Syringes	
25	Tips	Dispensing Tips	
10	Sheets	Clear Spacers	6 by 6 inches (150 by 150 mm)
10	Sheets	Foam Pad (white)	6 by 6 inches (150 by 150 mm)
20	Sheets	Type J Polishing Paper (purple)	6 by 6 inches (150 by 150 mm)
5	Sheets	Type F Polishing Paper (yellow)	6 by 6 inches (150 by 150 mm)
5	Sheets	Type K Polishing Paper (gray)	6 by 6 inches (150 by 150 mm)
10	Sheets	Type L Polishing Felt (purple)	6 by 6 inches (150 by 150 mm)
1	Package	***LC*** Adapter Brush	6 items (Note)
1	Bottle	Adhesive	1 Bottle (106 730 856)
1	Bottle	Primer	1 Bottle (106 730 849)

Note: A six-pack of brushes is provided in the D-182959 Upgrade Kit (108 262 569). Additional adapter brushes (108 263 898) can be ordered separately.

D-182984 Kit of Consumables, Multimode (108 340 829)—EZ

Note: Kit contains enough supplies to install 200 multimode ***LC*** fiber optic connectors using anaerobic EZ adhesive. The kit is the same as the D-182985 Kit except no type K polishing paper and type L polishing felt are provided.

D-183017 Tuning Kit (108 476 094)

Qty.	Description	Replacement No.	
		Comcode	Quantity
1	***LC™*** Singlemode Offset Test Jumper	108 476 110	1
1	***LC*** Tuning Index Tool Assembly	108 476 151	1
1	***LC*** Tuning Wrench	108 476 136	1
1	Instruction card (See Note)	848 339 305	1
1	Hard case with foam insert	NA	NA

Note: Obtain instruction card from field support (1-888-342-3743).

LC™ Connector Product Codes

Product Code	Description	Comcode	Quantity
P1001A-Z-125	Multimode BTW Connector	107 764 292	1
P1001A-Z-125 - 100	Multimode BTW Connector	108 247 412	1 package of 100
P1101A-Z-125	Singlemode BTW Connector	107 764 300	1
P1101A-Z-125 - 100	Singlemode BTW Connector	108 247 420	1 package of 100

Reference (Golden) Singlemode *LC*™ Jumper Product Codes

The Reference (Golden) Singlemode ***LC*** Jumper can be used to measure optical performance using a standard singlemode ***LC*** adapter. This reference jumper has a yellow connector trigger.

Product Code	Description	Comcode	Quantity
MS1GLC-*LC*-5	SM Reference Jumper - ***LC*** Reference to Standard ***LC***, Length 5 feet	108 513 045	1
MS1GLC-*LC*-10	SM Reference Jumper - ***LC*** Reference to Standard ***LC***, Length 10 feet	108 513 052	1
MS1GLC-*LC*-15	SM Reference Jumper - ***LC*** Reference to Standard ***LC***, Length 15 feet	108 513 060	1
MS1GLC-*LC*-20	SM Reference Jumper - ***LC*** Reference to Standard ***LC***, Length 20 feet	108 513 078	1
MS1GLC-SC-10	SM Reference Jumper - ***LC*** Reference to Standard SC, Length 10 feet	108 513 086	1
MS1GLC-FC-10	SM Reference Jumper - ***LC*** Reference to Standard FC, Length 10 feet	108 513 094	1
MS1GLC-EP-10	SM Reference Jumper - ***LC*** Reference to Standard ST II+, Length 10 feet	108 513 102	1
MS1GLC-SCA-10	SM Reference Jumper - ***LC*** Reference to Standard Angled SC, Length 10 feet	108 547 860	1

Obtain Locally

- Distilled water
- Isopropyl alcohol (>91% 2-propanol + water)
- Canned air (non-ozone depleting).

12.0 Assistance Information

For more information, contact an OFS Sales Representative.

For fiber optic technical assistance, call **1-888-FIBERHELP** (1-888-342-3743).