

Figure 1

1. INTRODUCTION

This sheet covers the assembly of AMP* LightCrimp XTC/NeXTC fiber optic connectors, which are used with cable having singlemode, 125-µm OD fiber (ceramic ferrule connector); multimode, 125-µm fiber (ceramic, stainless steel, or NeXTC ferrule connectors); or 140-µm OD fiber (stainless steel connector). Read these instructions carefully before applying any connectors.

NOTE *These instructions are applicable only to LightCrimp XTC/NeXTC connectors when used with buffered, jacketed, or unjacketed fibers.*

NOTE *Dimensions on this sheet are in metric units [with U.S. customary units in brackets]. Figures are not drawn to scale.*

Reasons for reissue of this sheet are provided in Section 11, REVISION SUMMARY.

2. DESCRIPTION (Figure 1)

LightCrimp XTC/NeXTC connectors, while being fully compatible with AMP OPTIMATE* 2.5mm Bayonet connectors and other ST[•]-style singlemode and

multimode fiber connectors, provide the advantage of not requiring epoxy during assembly of the connector.

The connector consists of two cable boots (either one may be required), a crimp sleeve, a plunger, a connector body, larger diameter Tygon tubing, large diameter PVC tubing, small diameter Hytrel tubing, and a dust cover.

LightCrimp XTC/NeXTC connectors accommodate buffer sizes of 250 µm and 900 µm.

Jacketed fibers must be no larger than 3.10 mm [.122 in.] in diameter for proper jacket captivation. Use of these instructions on the LightCrimp XTC/NeXTC connector with other buffer diameters or larger jacket diameters may result in improper fiber and/or cable captivation.

Crimping the connector requires AMP LightCrimp XTC/NeXTC Crimping Tool 503568-1.

NOTE *The crimping tool is marked with "XTC/NeXTC" and has two hexagonal crimping areas.*

Termination Kit 503330-1 contains the preparation tools required to apply all LightCrimp XTC/NeXTC connectors.

3. FIBER PREPARATION AND ASSEMBLY PROCEDURES

3.1. Required Tools and Materials

The following AMP tools and materials are required for applying the connectors to optical fibers:

Tools:

- Cable Stripper 501198-1 (408-9394)
- Fiber Stripper 492109-2 203 μm [.008 in.]
- Fiber Stripper 501554-1
- Scissors 501014-1
- Cable Preparation Template 503574-1
- Crimping Tool 503568-1
- Cleaving Tool 502700-2
- Polishing Bushing 503337-1 (Metal)
- Polishing Bushing 503304-1 (Plastic) Black
- Polishing Bushing 503304-2 (Plastic) Beige
- Polishing Plate 501197-2
- Polishing Pad 504584-1
- Resilient Pad 501523-1

Consumable Items:

- 5- μm Polishing Film 228433-8
- .3- μm Polishing Film 228433-5
- Isopropyl Alcohol

3.2. Unjacketed Fibers

DANGER

To avoid personal injury, always wear safety glasses when working with optical fibers.

DANGER

Be very careful to dispose of fiber ends properly. The fibers create slivers that can easily puncture skin and cause irritation.

1. If terminating unjacketed buffered fiber without using the breakout kit, slide the bare fiber boot onto the fiber.
2. For 900- μm buffered fiber, Tygon tubing may be used in conjunction with the push-on boot. Slide the push-on boot onto the fiber; then slide the Tygon tubing onto the fiber so that the tubing fits inside the boot. See Figure 2.
3. For 900- μm buffered fiber, use an appropriate fiber-stripping tool, such as AMP Stripping Tool 492109-2, and remove 25 mm [1.0 in.] of buffer from the fiber. Refer to micro-strip instructions for proper use of the tool. You may have to take several steps to remove all the buffer.
4. For 250- μm coated fiber, use an appropriate fiber-stripping tool, such as AMP Stripping Tool 501554-1, and remove 25 mm [1.0 in.] of coating from fiber.
5. For 250- μm coated fiber, mark the buffer at a point 20 mm [.80 in.] behind the end of the buffer, as shown in Figure 3.

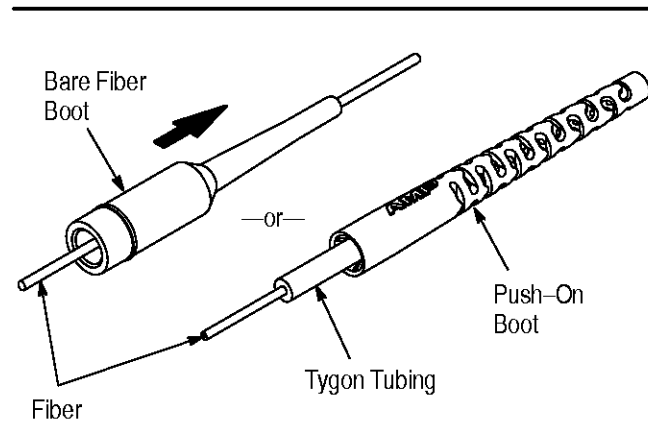
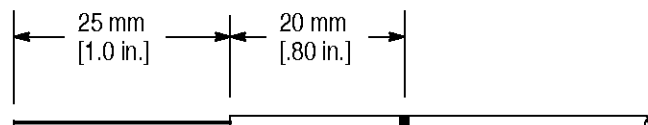


Figure 2



Note: Not to Scale

Figure 3

CAUTION

Make sure the fiber stripper removes the clear coating on the fiber. If the 250- μm coating remains on the fiber, the prepared fiber will stub in the connector and will not pass through.

- Remove debris on the fiber by wiping the stripped fiber with a lint-free tissue dampened with isopropyl alcohol.

3.3. Jacketed Fibers

- Slide the push-on boot onto the cable as shown in Figure 4.

- If the jacket diameter of the cable is less than 2.30 mm [.090 in.], slide the PVC tubing over the cable jacket.

NOTE

If the exact jacket diameter is unknown, use the PVC tubing if it slides easily over the jacket.

- Referring to Figure 5 or Cable Preparation Template 503574-1, use an appropriate cable stripper (such as AMP Cable Stripper 501198-1), and remove 42.9 mm [1.69 in.] of the cable jacket.

- Using sharp scissors (such as AMP Scissors 501014-1), trim the strength members to a length of 12.7 mm [.50 in.].

- Using an appropriate fiber-stripping tool, such as AMP Stripping Tool 492109-2, remove 25 mm [1.0 in.] of buffer from the fiber as shown in Figure 5. Refer to micro-strip instructions for proper use of the tool. You may have to take several steps to remove all the buffer.

- Slide the crimp sleeve onto the cable and position the sleeve so that it captures the strength members in a "bent-back" position. See Figure 6.

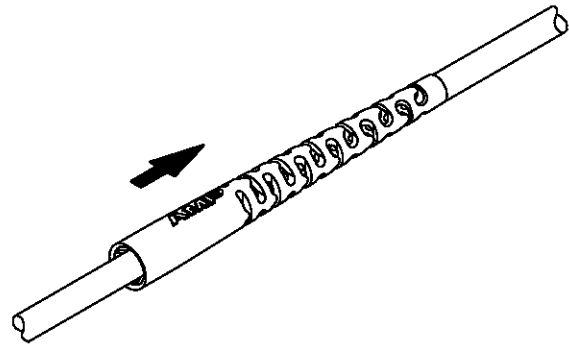
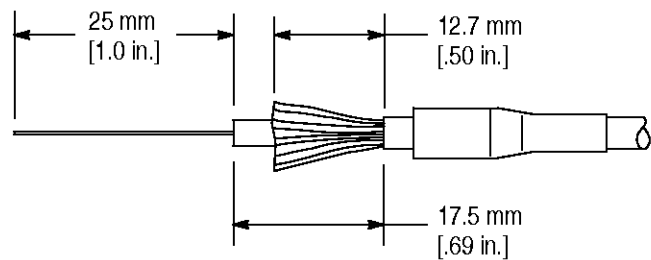


Figure 4



Note: Not to Scale

Figure 5

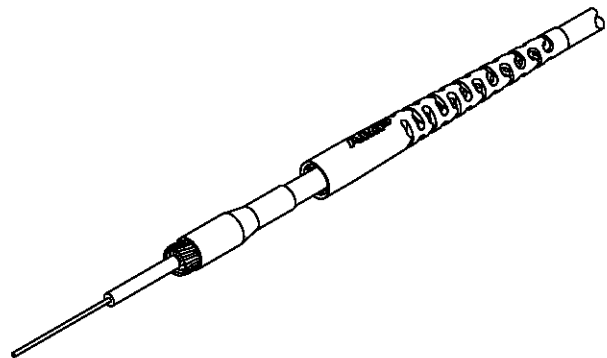


Figure 6

4. FIBER TERMINATION

1. For 250- μm coated fiber, insert the 20 mm [.80 in.] Hytrel tubing (gray or white) into the back of the plunger. See Figure 7, Detail A. The tubing is properly seated when approximately 6.0 mm [.24 in.] of tubing remains outside of the plunger.
2. Insert the plunger into the rear of the connector body until it stops. See Figure 7, Detail B.
3. Feed the prepared fiber (either jacketed or unjacketed) through the rear of the plunger (and connector body) until it stops. To insert the fiber easily, hold the fiber at the buffer/fiber interface, and rotate the connector slowly while inserting the fiber. See Figure 7, Detail C.

NOTE

Special attention must be paid to cables with loose jacket material. It is important that the buffer strip length is maintained during the feed, and not be pushed back into the cable jacket.

NOTE

The bare fiber should protrude from the connector ferrule not more than 12.7 mm [.50 in.]. If the fiber does not protrude, it has broken or was improperly prepared. Prepare the fiber again, making sure that any broken fiber pieces are removed from the connector.

4. Open the crimping tool jaws fully. If the ratchet is engaged, squeeze the handles together until they release.

NOTE

Be careful not to break the fiber while inserting the connector into the tool. Also, for 900- μm buffered fiber, make sure that the fiber is fully inserted into the connector during the crimping action. For 250- μm coated fiber, the mark made on the buffer in Paragraph 3.1, Step 4, must be visible at the edge of the Hytrel tubing before crimping.

5. Gently close the tool until you hear one click from the ratchet. Position the connector assembly in the dies so that the die shoulder is located between the plunger and the folded-back strength members. The connector assembly should be aligned with the direction of the arrows on the dies. The eyelet and strength members are positioned in the larger-width pocket. See Figure 8.

6. Slowly squeeze the tool handles together until the ratchet releases.

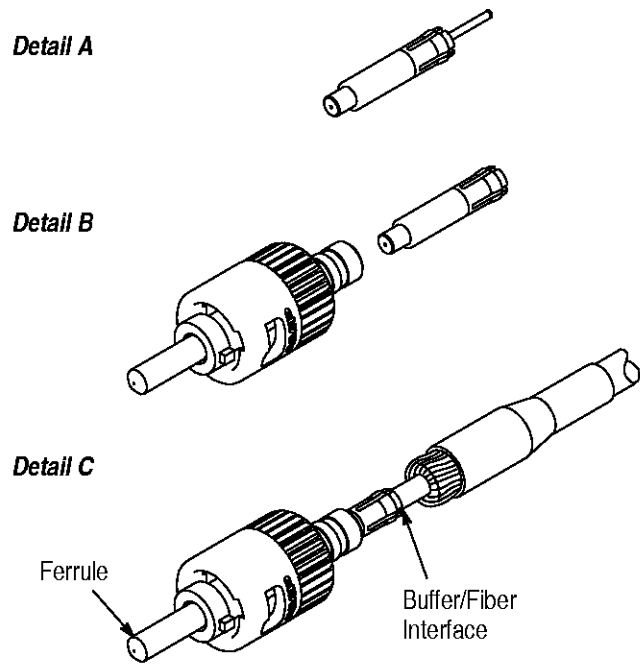


Figure 7

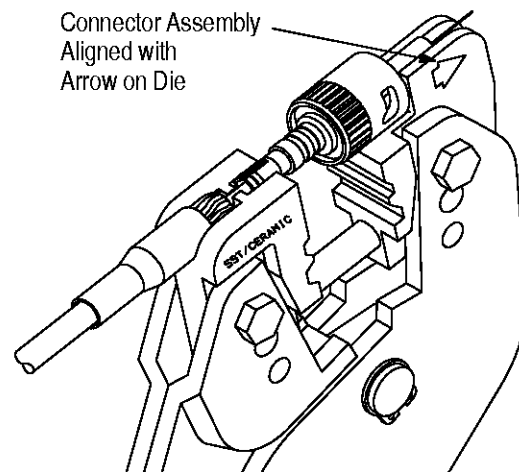


Figure 8

7. Slowly release the tool handles and allow the handles to open fully.
8. Carefully remove the crimped connector and its fiber cable from the tool.

NOTE

Be careful not to break the protruding fiber while removing the connector from the tool.

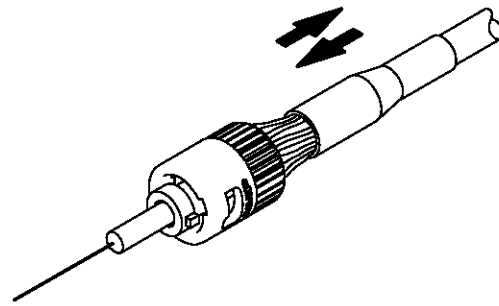


Figure 9

5. CABLE TERMINATION FOR JACKETED FIBER**NOTE**

Skip this section for unjacketed fibers.

1. While holding the connector, carefully slide the crimp sleeve away from the connector body to release the strength members. See Figure 9.
2. Slide the crimp sleeve over the back end of the connector, covering the strength members spread evenly. For cable with a jacket diameter of less than 2.30 mm [.090 in.], slide the PVC tubing under the crimp eyelet until the tubing bottoms.
3. Using Crimping Tool 503568-1, place the larger crimp cavity around the crimp sleeve larger diameter, closest to the connector body. See Figure 10.
4. Squeeze the tool handles together until they release.

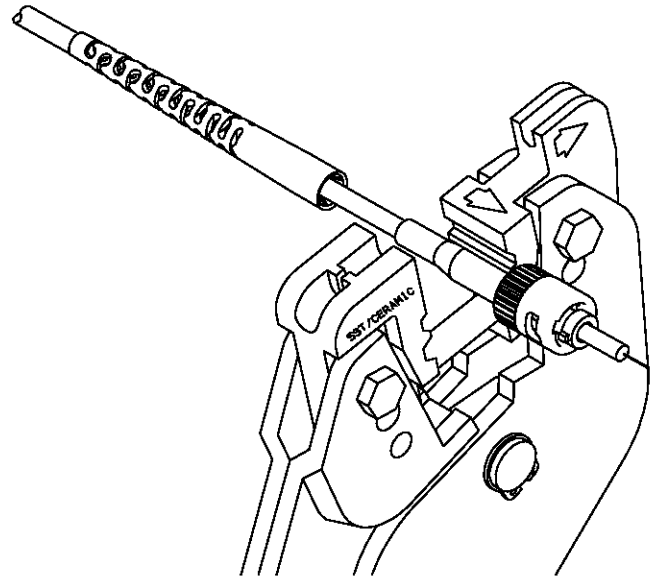


Figure 10

5. Move the crimping tool to the crimp sleeve smaller diameter, using the smaller hex cavity on the tool, squeeze the tool handles together until they release. See Figure 11.

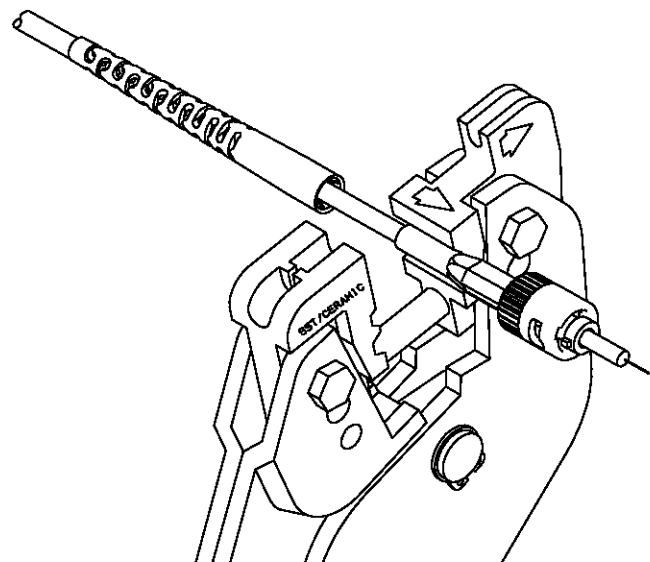


Figure 11

6. Slide the cable boot over the crimp sleeve to complete the connector assembly. See Figure 12.

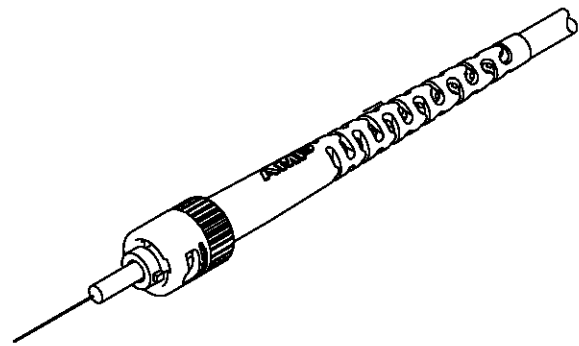


Figure 12

6. CLEAVING

1. Insert the connector into the automatic cleave tool (AMP Cleave Tool 502700-2) from the side, so that the protruding fiber is guided through the slot in the tool. See Figure 13.

NOTE Make sure that the fiber extends beyond the edge of the cleave tool. If it does not, the sapphire scribe blade procedure, described below, must be used.

2. Push the connector ferrule into the bore until the connector stops at the screw.

DANGER To avoid possible injury, hold the connector away from your face when pushing the actuator button.

NOTE Hold the cleaving tool and connector inverted over a container or a piece of masking tape, sticky side facing up. This method holds the cleaved fiber end and any fiber debris for safe disposal.

3. Gently depress the actuator button to cleave the fiber.

CAUTION All screws are factory preset on the cleave tool. **DO NOT ADJUST THE SCREWS**, otherwise poor cleaves will result.

NOTE Optionally, a sapphire scribe blade (such as AMP Scribe Tool 504064-1) can be used. See Figure 14. Gently brush the tool blade across the fiber at a 3 to 5° angle, about 1 fiber diameter from the ferrule surface. Do not apply force on the fiber with the blade while scribing, since excessive force may fracture the fiber, making the connector useless. Grasp the protruding fiber lightly between the thumb and forefinger, then gently pull in line with the connector. The fiber should cleave cleanly at the scribe, producing a mirror-like surface. If the fiber does not cleave easily, re-scribe the fiber and try again. A proper cleave, close to the ferrule surface, is essential for obtaining a successful fiber polish.

4. Place the dust cover on the connector if not polishing the connector immediately.

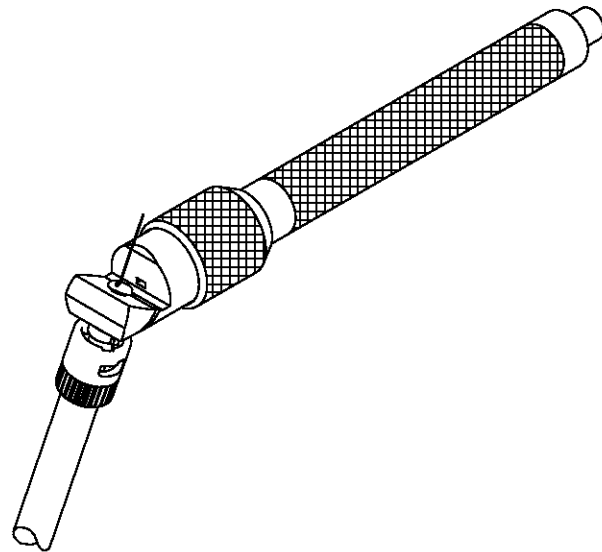


Figure 13

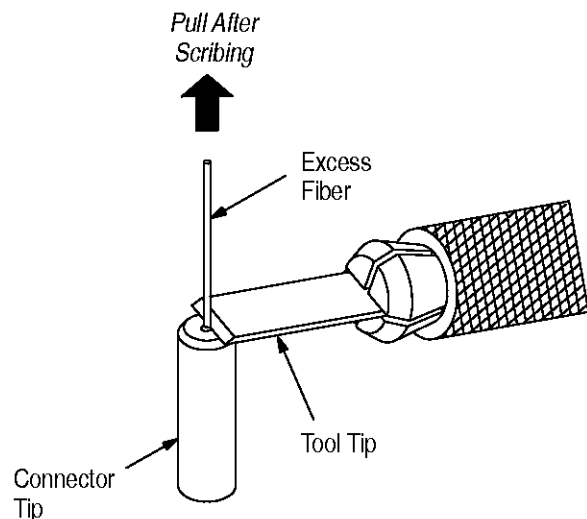


Figure 14

7. POLISHING

1. Cut a small piece (50×50 mm [2×2 in.]) of AMP 5- μ m Polishing Film 228433-8.
2. While holding the film in the air, form a concave shape, and air polish the connector tip by gently rubbing the tip of the connector in small circles or figure-8 motions until the protruding stub of the cleaved fiber is flush with the ferrule surface. Refer to Figure 15.

NOTE

An alternate method of air polishing is to hold one end of the polishing film between the index and middle fingers and hold the other end of the film between the thumb and the ring finger, with the abrasive surface of the film up. See Figure 16. Pull the film taut, and air polish the connector tip as described in Step 2 until no traces are visible on the polishing film.

3. Clean the polishing plate (such as AMP Polishing Plate 501197-2) with water or an appropriate window cleaning solution. Dry the plate thoroughly.

4. For the stainless steel and ceramic ferrule, place the black resilient polishing pad (such as AMP Polishing Pad 504584-1) on the polishing plate. Remove the adhesive backing from the pad before placing on the plate. See Figure 17.

5. Place a piece of AMP .3- μ m Polishing Film 228433-5 on top of the resilient pad.

6. Place AMP Polishing Bushing 503337-1 or 503304-1 (black polymer polishing bushing) onto the polishing film.

7. For NeXTC, place white woven pad (such as AMP Polishing Pad 501523-1) on the polishing plate. Remove the adhesive backing from the pad before placing on the plate. See Figure 17.

8. Place a piece of AMP .3- μ m Polishing Film 228433-5 on top of the white woven pad.

9. Place AMP Polishing Bushing 503337-1 or 503304-2 (beige polymer polishing bushing) onto the polishing film.

10. Gently insert the connector into the polishing bushing and move the bushing in a figure-8 motion (see Figure 17), supporting the weight of the connector for the first three figure-8 motions to prevent the fiber from scoring the film or breaking.

NOTE

Scored film should be replaced to avoid fiber breakage.

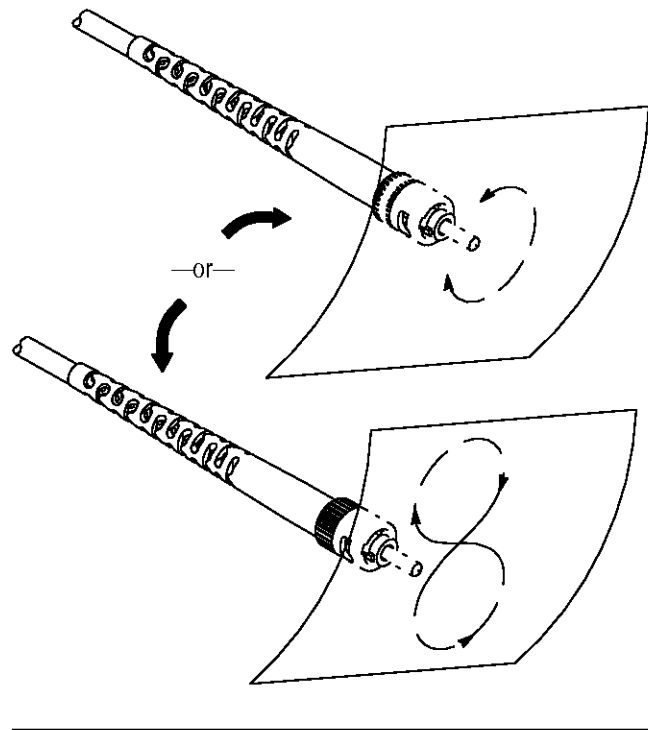


Figure 15

Alternate Method of Holding Polishing Film

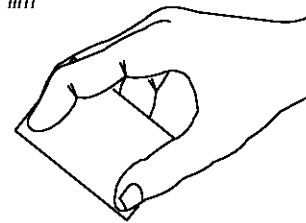


Figure 16

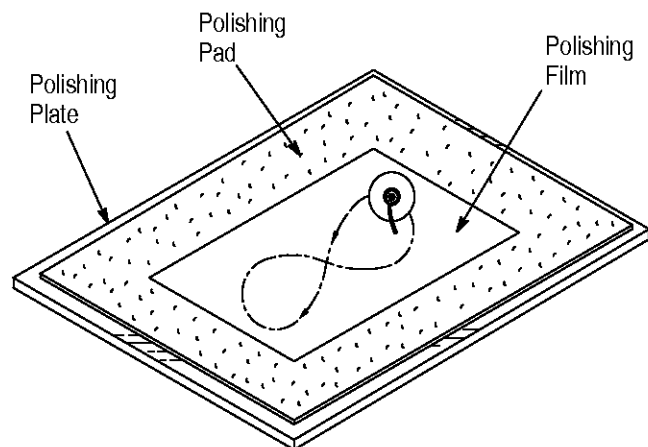


Figure 17

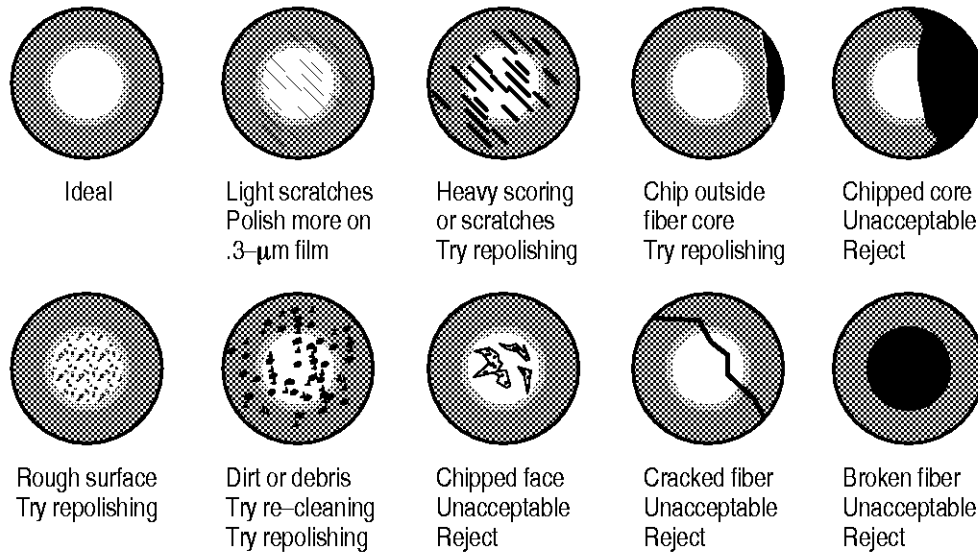


Figure 18

CAUTION

DO NOT wet the polishing film with water. The LightCrimp XTC/NeXTC connector requires a dry polish. Using water or other liquid during polishing will cause debris build-up within the connector, which may adversely effect the connector optical performance.

11. Continue polishing for 15 to 20 more figure-8 motions, allowing the full weight of the bushing to rest on the film.

NOTE

A PF (protruding fiber) polish often provides superior connector performance. It is recommended, therefore, to leave the fiber protruding slightly from the ferrule surface.

12. Place the completed connector in an appropriate receptacle or place the dust cover on the connector if not using the connector immediately.

8. INSPECTION (Figure 18)**DANGER**

Disconnect the cable from the power/signal source before inspecting. The infrared light used, although it cannot be seen, can cause injury to the eye.

1. Remove the connector from the polishing bushing and clean the ferrule face with lint-free tissue (such as Kimwipes[®]). The ferrule face may also be cleaned by dabbing the ferrule face on a resilient piece of tape to remove stubborn polishing grit.

2. Inspect the connector with a 100x microscope (such as AMP Inspection Microscope 502970-1, or

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AMP Microscope 504085-1 with Adapter 504088-1). If possible, place the far end of the fiber near a bright light. Compare the fiber end to the examples shown and take any recommended action.

3. Verify that the fiber is flush (or is protruding only a few microns) with the ferrule surface by moving the microscope focus control. If the fiber and ferrule surface come into focus together, the fiber is flush. If the fiber comes into focus before the ferrule surface (when moving toward the endface), then the fiber is protruding, and additional polishing may be required.

9. STAINLESS STEEL FERRULE NOTES

- When using LightCrimp XTC connectors with stainless steel ferrules, some variations in polishing practices must be observed to obtain a correctly polished connector face.
- Perform the preparation, termination, and cleaving procedures as described in this document.
- Brush the cleaved fiber stub lightly in a circular motion on a hand-held piece of 5- μ m polishing film to take off any sharp edges.
- Gently insert the connector into the polishing tool.
- Clean the connector tip and polishing tool face with a lint-free tissue to remove any residue.
- When polishing stainless steel ferrules, remove the circular machine marks on the ferrule tip (from the edge toward the center) until a circle 0.5 to 0.7 mm [.020 to .028 in.] (still visible) of machine marks remains. This will leave the fiber protruding slightly from the ferrule face, as

recommended for optimum performance. Refer to Figure 18. Other relevant criteria described in Section 8, INSPECTION, prevail.

- Refer to Section 7 for information on polishing the fiber.

NOTE

Never remove the fiber hole chamfer (do not over-polish).

- Clean the ferrule face with a dry, lint-free tissue, and/or dab the ferrule face on a resilient piece of tape to remove any stubborn polishing grit.
- Place the completed connector in an appropriate receptacle or place the dust cover on the connector if not using the connector immediately.

10. STAINLESS STEEL INSPECTION

Another method of approximating the correct finished diameter is to see if the diameter of the machine marks is five times the diameter of the fiber, however, actually measuring the finished diameter is the preferred method. See Figure 19.

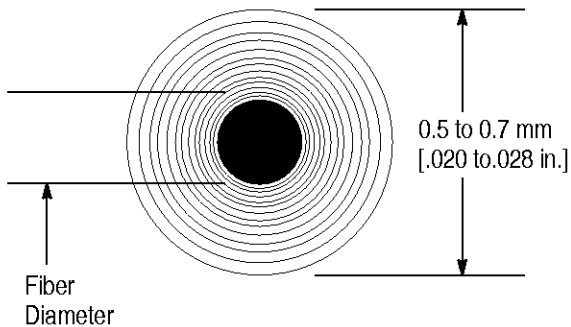


Figure 19

11. REVISION SUMMARY

Since the previous release of this instruction sheet, the following changes and additions were made:

Per EC 0990-0869-97:

- Replaced Cable Preparation Template 503455-1 with 503574-1.