Fixed–Shroud Duplex (FSD*) Polymer Ferrule Fiber–Optic Connectors 503347–[ ]

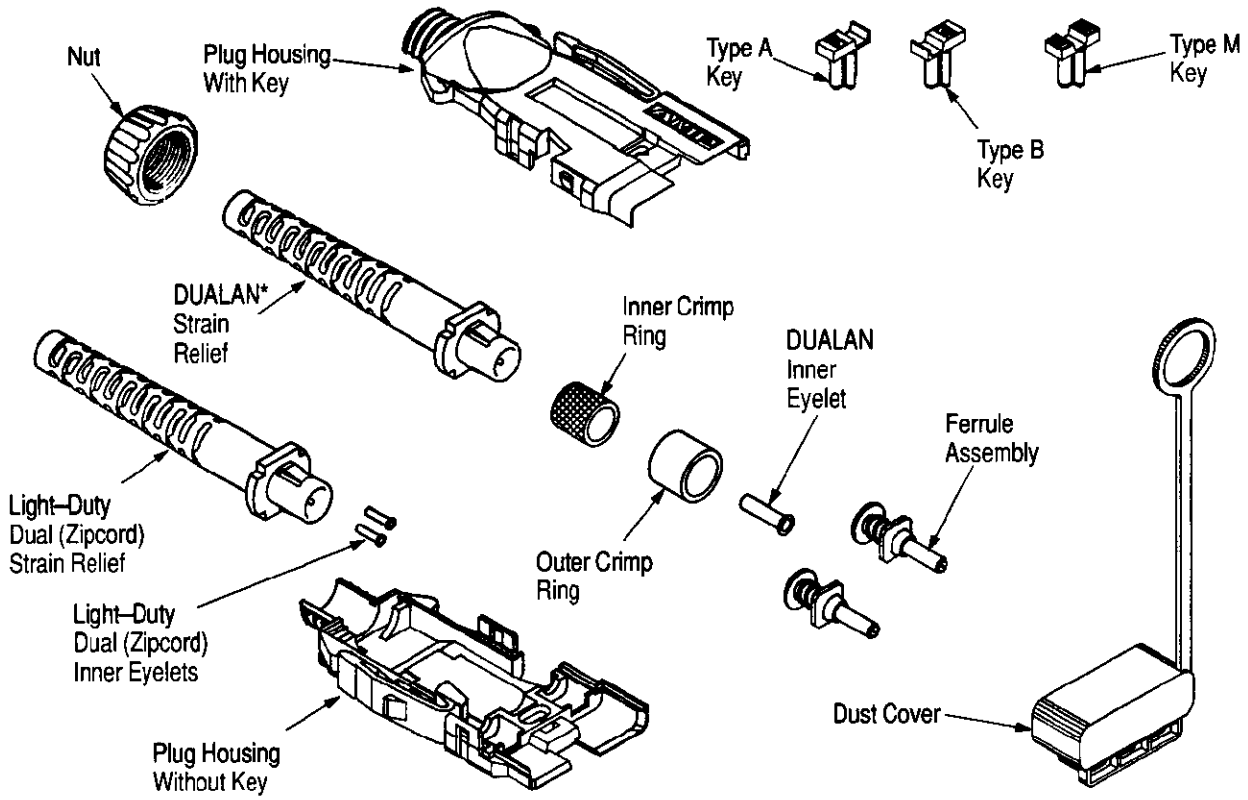

Figure 1

1. INTRODUCTION

This instruction sheet covers the application of AMP* FSD Polymer Ferrule Fiber–Optic Connectors 503347–[ ] to fiber–optic cable. Read this material thoroughly before starting assembly.

NOTE *Measurements are in metric units [followed by U.S. customary units in brackets]. Figures and illustrations are for identification only and are not drawn to scale.*

Reasons for reissue are provided in Section 5, REVISION SUMMARY.

2. DESCRIPTION

Figure 1 shows the FSD Connector which is made up of connector housing halves, two ferrule assemblies, inner and outer crimp rings, inner eyelet(s), three keys, strain relief, nut, and dust cover. The connector can be used with DUALAN or Light–Duty Dual (Zipcord) fiber–optic cable. Refer to Figure 2 for a cross–reference between connectors and cable size.

CONNECTOR KIT PART NO.	CABLE SIZE (µm)	STRAIN RELIEF TYPE	CONNECTOR KIT PART NO.	CABLE SIZE (µm)	STRAIN RELIEF TYPE
503347–1 503347–2	62.5 / 125 100 / 140	DUALAN	503347–5	62.5 / 125	LIGHT–DUTY DUAL (Zipcord)
503347–3□	62.5 / 125	N/A	503347–6	100 / 140	
503347–4◆	62.5 / 125	DUALAN	503347–7◆	62.5 / 125	

□ BULK PACKED, 50 PER PACKAGE (Without Strain Reliefs)
◆ BULK–PACKED, 250 PER PACKAGE

INDIVIDUAL REPLACEMENTS
Ferrules: 125–µm – Part No. 502653–4
140–µm – Part No. 502653–5
Strain Reliefs: DUALAN – Part No. 501783–1
Light–Duty Dual – Part No. 502016–1

Figure 2

3. PREPARATION

3.1. Required Tools and Materials

The following tools and materials are required for applying the connector to optical fiber:

A. Tools

- Cable Stripper 501198–1 (408–9394)
- Curing Assembly Kit with Polishing Bushing 501795–1
- Sapphire Pen Cleave Tool 504064–1(408–4293)
- Cable Preparation Template Kit 501818–1
- No–Nik Stripper 504024–3 (305 µm [.012 in.], white handle) or No–Nik Stripper 504024–1 (203 µm [.008 in.], red handle) (408–9485)
- Heat Curing Oven 502134–5 (120V) or 502134–6 (240V) (408–9460)
- PRO–CRIMPER* II Hand Tool Assembly 58519–1■ (408–9917)

B. Consumable Items

- Epoxy 501195–1 or 502418–1●
- Epoxy Applicator Kit 501473–3
- .3–µm Polishing Film 228433–5
- 5–µm Polishing Film 228433–8
- Resilient Pads 501523–1
- Alcohol Pads or Isopropyl Alcohol and Lint–Free Tissues or Cloths

■ Hand Tool Assembly consists of Frame Assembly 58532–1 and Die Assembly 58510–1

● Oven curing required when using Epoxy 502418–1.

NOTE *AMP OPTIMATE* Professional Installer Kits 501258–7, –8, and –9 includes all tools necessary to terminate fiber–optic connectors.*

3.2. Preparing Fibers

DANGER *Always wear safety glasses when you work with optical fibers. Be very careful to dispose of fiber ends properly. The fibers create slivers that can easily puncture the skin and cause irritation.*

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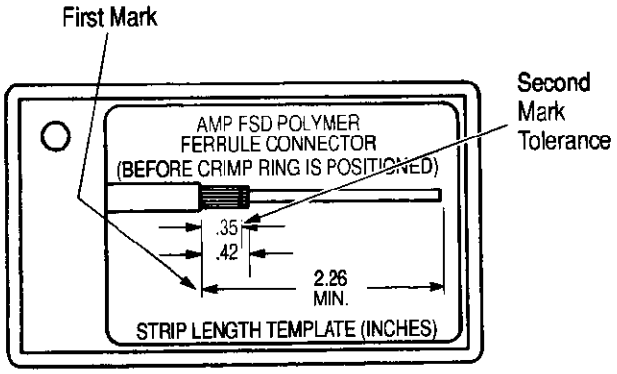
1. Slide the nut, dust cover, strain relief, and inner crimp ring over the cable. Slide the inner crimp ring over the end of strain relief. See Figure 4.

2. Mark the end of the cable for stripping. See Figure 3.

NOTE *Shown in Figure 3, the 2.26 dimension is the FIRST mark. The .35 to .42 is the SECOND mark tolerance.*



NOTE: Not to Scale

Figure 3

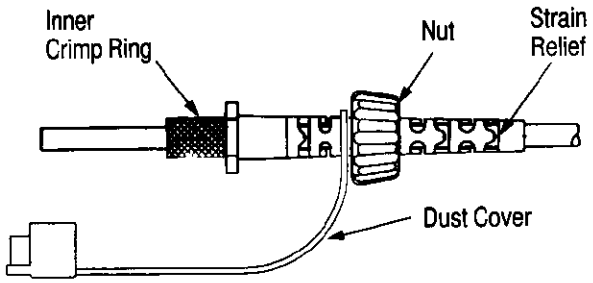


Figure 4

NOTE *When using Light–Duty Dual cable, it is necessary to split the cable 12.7 mm [.500 in.] past the FIRST mark before proceeding.*

3. Strip the outer jacket to the SECOND mark using the cable stripper. See Figure 5.

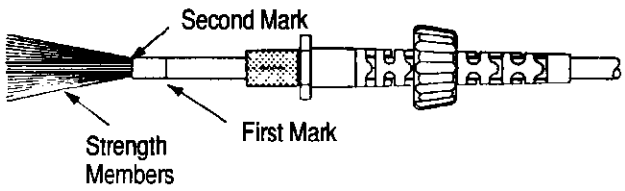


Figure 5

NOTE *Contact your local AMP Sales Representative for the cable preparation template kit.*

4. Trim the strength members back to the cable jacket (see Figure 6). Be careful **not** to damage the fibers.

5. Strip the outer jacket to the FIRST mark. See Figure 6.

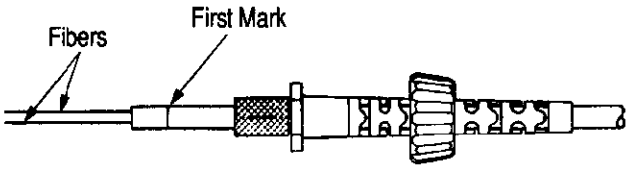


Figure 6

6. Slide the inner eyelet (one for DUALAN cable and two for Light–Duty Dual cable, one for each fiber), small end first, over the fibers, then *push* the eyelet until the eyelet flange bottoms and flares out the strength members. Make sure that the strength members are spaced evenly around eyelet flange. In addition, for Light–Duty Dual cable, make sure that all of the strength members are oriented toward the outside edge of the cable jacket. See Figure 7, Detail A.

7. Position the end of the strain relief even with the end of the outer jacket.

8. While supporting the strain relief, *push* the outer crimp ring over the strength members so that they are folded back over the inner crimp ring. See Figure 7, Detail B.

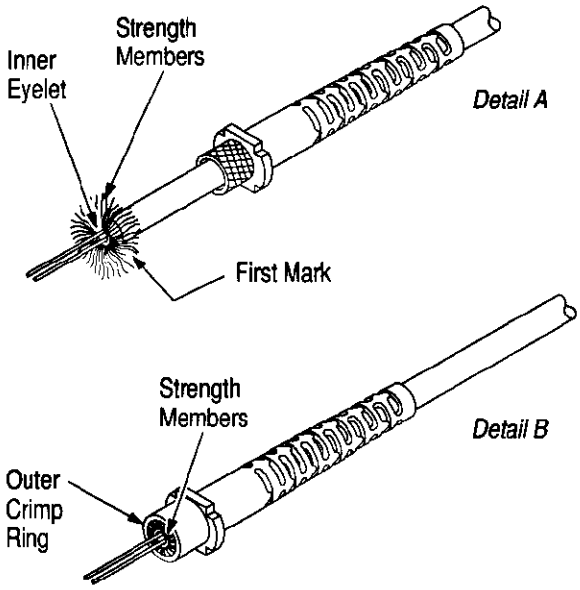


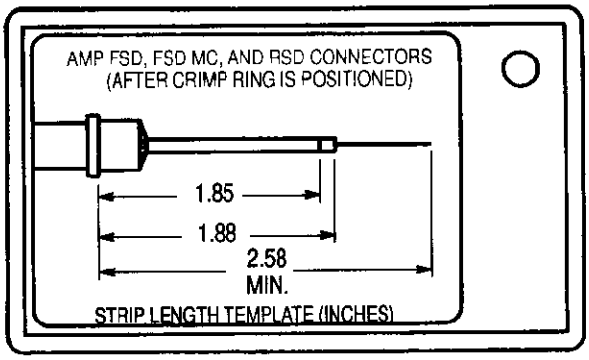
Figure 7

4. ASSEMBLY PROCEDURE

4.1. Terminating Fiber

1. Using a No–Nik stripper, strip the buffer from both fibers according to the dimension shown in Figure 8.

NOTE *Shown in Figure 9, the 1.85 to 1.88 dimension is the BUFFER strip length tolerance.*



NOTE: Not to Scale

Figure 8

2. Clean the fibers with an alcohol pad (or lint–free tissue dampened with isopropyl alcohol) and place the strain relief and fibers in the bottom curing fixture as shown in Figure 9.

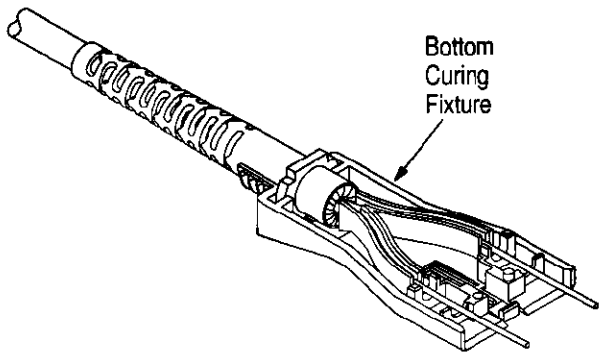


Figure 9

3. Select and prepare epoxy according to package instructions and fill the applicator from the epoxy applicator kit. Insert and bottom the epoxy applicator into the ferrule assembly. Inject epoxy into the ferrule until epoxy appears at the ferrule tip. Continue to inject epoxy while withdrawing the applicator by 3 mm [.125 in.]. Remove applicator from ferrule assembly without applying additional epoxy. See Figure 10, Detail A.

CAUTION *Do not allow epoxy to overflow onto exterior of ferrule.*

4. Install a ferrule over one of the fibers using a semi–circular rotating motion. Do not tilt or force the fiber into the ferrule. Do not allow epoxy on the fiber buffer entering the back of the ferrule assembly. See Figure 10, Detail B.

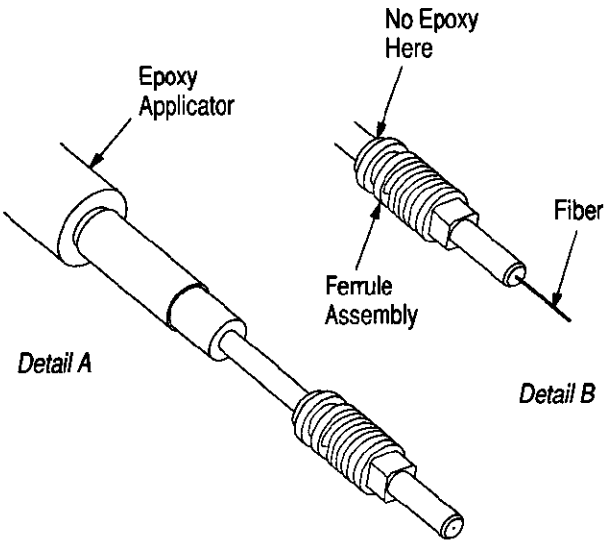


Figure 10

5. Carefully position the ferrule in its nest in the bottom of the curing fixture. Push the buffered fiber into the track in the fixture. Repeat for the second fiber. See Figure 11.

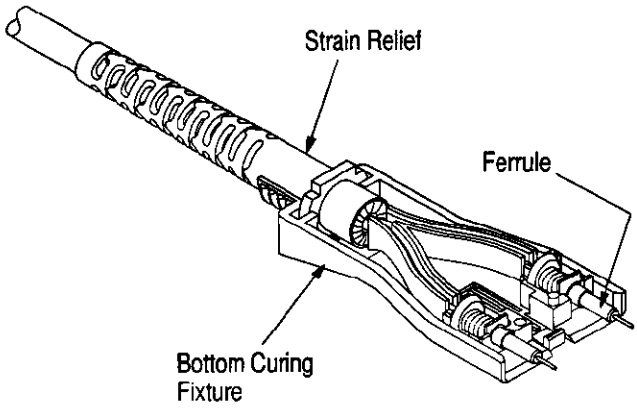


Figure 11

6. Place the top curing fixture on the bottom curing fixture and screw the nut onto the fixture assembly to secure both halves (see Figure 12). Place the protective sleeve on the fixture assembly. If needed, use a piece of double–sided tape to hold protective sleeve onto the fixture assembly.

7. Hang the assembly, ferrules down, and cure according to the following:

For Epoxy 501195–1
Oven Cure: 2 hours at 65°C [150°F] or
10 minutes at 110°C [230°F]
Ambient Cure: 24 hours at 25°C [77°F]

For Epoxy 502418–1
Oven Cure: 30 minutes at 100°C [212°F]

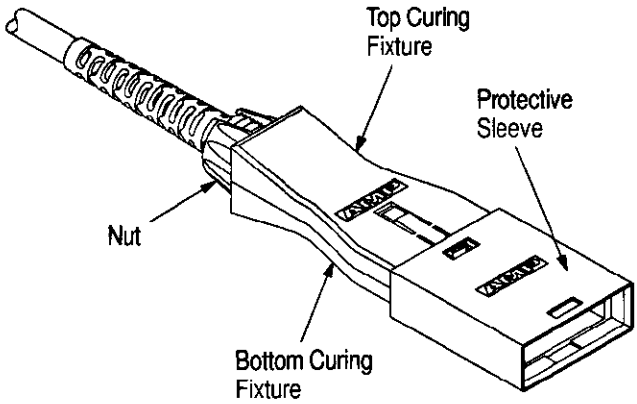


Figure 12

8. After removing the protective sleeve, place sapphire pen cleave tool 504064–1 directly above the epoxy and lightly draw the beveled edge across the fiber parallel to the tip of the connector. See Figure 13. After scoring the fiber, pull it straight away from the connector to complete the cleaving process.

CAUTION *DO NOT saw or cut fiber off with the cleave tool. This could fracture the fiber, making the connector unusable. Also, DO NOT allow the cleave tool to contact the epoxy. This could chip or dull the blade.*

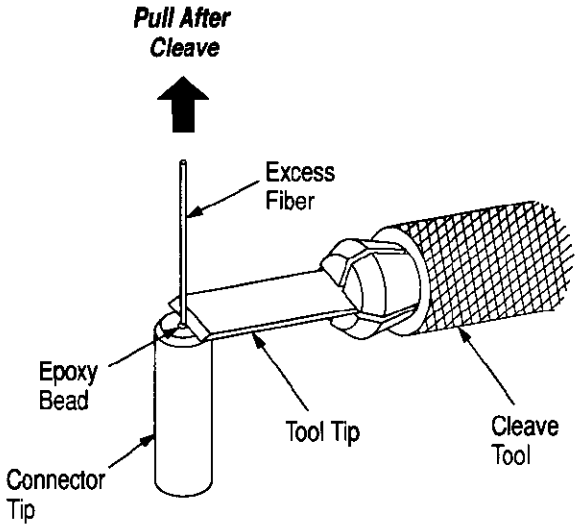


Figure 13

4.2. Polishing Fiber

1. Put the polishing bushing (part of the curing assembly kit) on the curing fixture. See Figure 14.

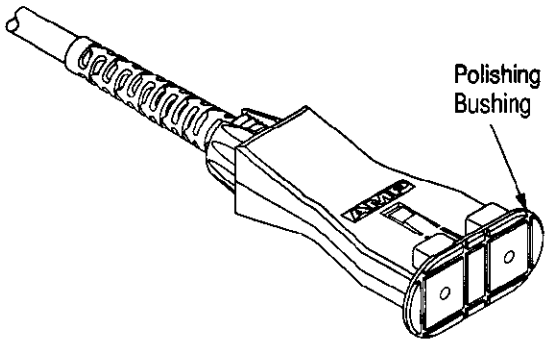


Figure 14

2. Cut a small piece (50x50 mm [2x2 in.]) of 5–µm polishing film. While holding the film in the air, form a concave shape, and air polish the connector tips by gently rubbing the tips of the connector in small circles or figure–8 motions until the protruding stub of the cleaved fibers is smooth. See Figure 15.

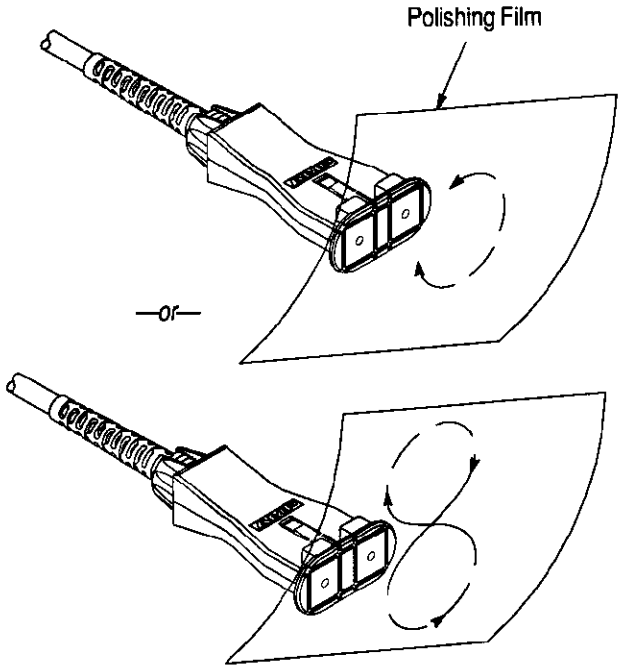


Figure 15

3. Place the resilient pad on the polishing surface; place a piece of 5–µm film on the pad. Beginning with very light pressure, use a figure–8 pattern to dry–polish the connector on the film until the epoxy on the tips of the ferrules turns light blue. Vary the pressure and/or rotate the fixture assembly as necessary. See Figure 16.

NOTE *One of the recommended epoxies should be used. The blue color of the epoxy is an indicator in the polishing process.*

NOTE *Examine the tips frequently to avoid over polishing, for example, every two figure–8 patterns.*

4. Replace the 5–µm film with .3–µm film and polish the connector until all of the epoxy is gone.

DANGER *Never look into an optical fiber when optical power is "on." Many of the light sources used, although invisible, can injure the eyes and cause blindness.*

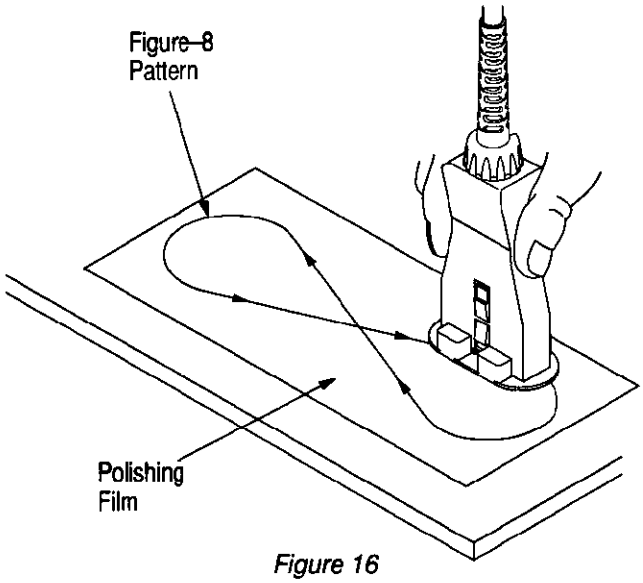


Figure 16

5. Check the polishing with a microscope or a magnifier. Check for the following (see Figure 17):

— Small chips in the outer ring are permissible. Large chips, or chips in the center of the fiber, mean that more polishing is needed, or that the termination is unacceptable, and the fiber must be reterminated.

— Deep scratches on the ferrule indicate that the ferrule should be polished more on the .3–µm film.

6. Remove the polishing bushing and the curing fixture.

NOTE *Be sure to identify (with a label or other means) the input and output fibers.*

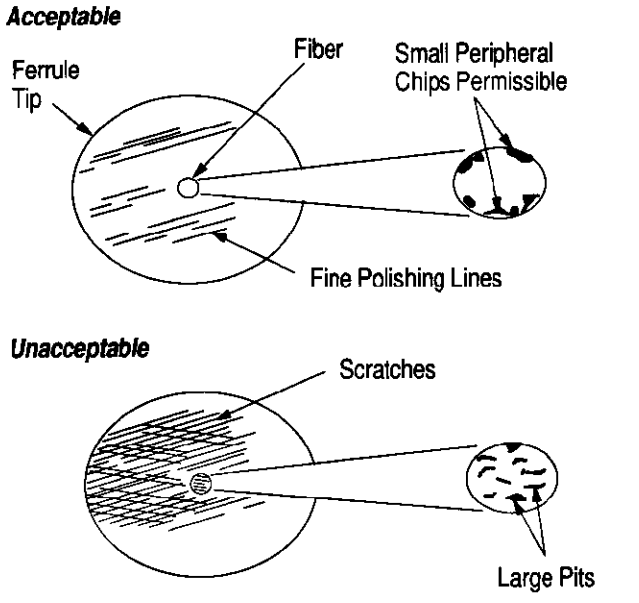


Figure 17

4.3. Crimping

Crimp the outer crimp ring using PRO–CRIMPER II Hand Tool Assembly. See Figure 18. Be careful not to let the strength members or the inner crimp ring slide out of position.

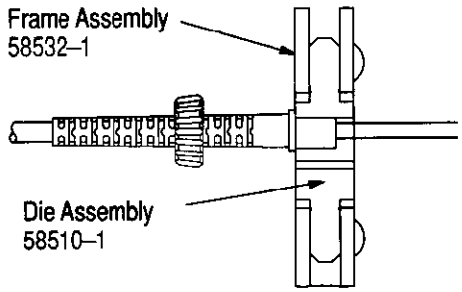


Figure 18

4.4. Assembling the Connector

1. Place the two polished ferrules in the bottom half of the housing, snap on the top half (the half with keying slot), and screw the nut onto the housing. See Figure 19.

2. Install key as required for the application. The three keys included with the connector are listed below. Install the keys as shown in Figure 19.

— Type A (Red)
— Type B (Blue)
— Type M (Green)

NOTE *To remove the key, push keying tabs from bottom side of connector*

3. Place dust cover over connector.

NOTE *If you are not the installer, place all three keys in the dust cover, so that the installer can choose which key is applicable.*

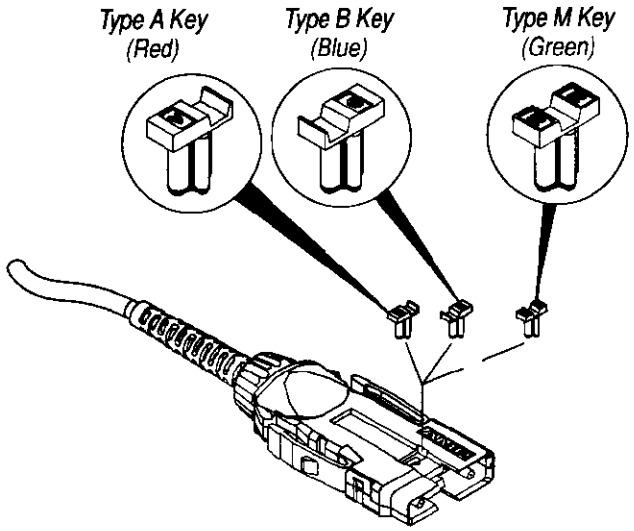


Figure 19

5. REVISION SUMMARY

Revisions to this instruction sheet include:

Per EC 0990–1129–96:

- Renamed Section 3 to "PREPARATION".
- Modified Tools and Consumable Items in Section 3.
- Changed "before crimping" to "before crimp ring is positioned" in Figure 3.
- Modified Paragraph 3.2, Step 6.
- Removed bottom view "B" in Figure 7 and made old Figure 8 new Detail B. Renumbered figures throughout document.
- Modified Paragraph 3.2, by removing "cut the cable to length" and renumbering steps and adding Step 8.
- Added Section 4, Assembly Procedure and renumbered Terminating Fiber to Paragraph 4.1.
- Modified steps in Paragraph 4.1. and renumbered.
- Changed "after crimping" to "after crimp ring is positioned" in Figure 9.
- Added new artwork in Figure 10.
- Renamed Paragraph 4.2., Polishing Fiber and modified steps.
- Added Step 2 in Paragraph 4.2 and added new Figure 15.
- Added Paragraph 4.3, Crimping and moved old Figure 9 to Figure 18.
- Renamed Paragraph 4.4, Assembling the Connector and modified steps.
- Added NOTE to Paragraph 4.4.