

CF-9000-1

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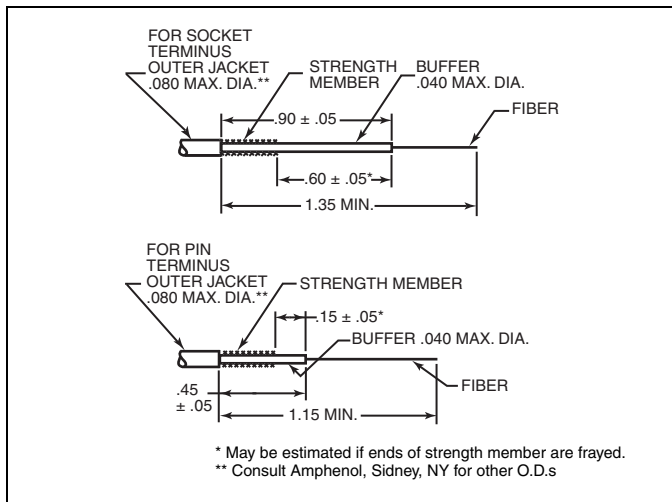
**MIL-T-29504 Fiber Optic Termini  
CF-198035-( ), CF-198036-( )  
Cable Installation Instructions**

**WARNING NOTE:**

Caution: Looking into fibers illuminated with laser light can cause eye damage. Follow safety procedures recommended by light source manufacturers.

Extreme care should be taken when handling glass fiber to avoid penetration of skin.

1. Ref. drawings CF-198035-CD and CF-198036-CD for identification and orientation of parts. Visually inspect cable for optical continuity.
2. Slide shrink tube back onto cable.
3. Strip cable to indicated dimensions.



4. Wipe off bare fiber with MEK, or Isopropanol or equivalent. Fiber surface must be clean and dry before bonding.
5. (Optional) Push fiber into terminus and remove to insure proper fiber hole size.
6. Prepare epoxy per manufacturer's instructions.  
**Recommended Epoxy:** 200°C Max Service Temp.; #353ND  
**Suggested Source:**  
Epoxy Technologies, Inc.  
P.O. Box 567  
Billerica, MA 01865
7. Fill syringe with epoxy.
8. Wipe bare fiber with epoxy. **Use epoxy sparingly** (should resemble dew on a spider web).
9. Add epoxy to outside of the rear end of terminus (.063 dia.) for approximately .150. This is to ensure bonding of the strength member to the terminus body. Carefully push stripped fiber into terminus until buffer is in contact with rear of ceramic. Outer jacket will be approximately .080 from rear of terminus. Bare fiber should be sticking out of front of terminus. There should be no epoxy on front face. If there is, additional polishing time may be required. Add epoxy to end of outer jacket of cable for approximately .150 to ensure seal-

ing to shrink tube. Evenly distribute strength member over rear of contact. Bring up shrink tube to position shown in reference drawings (see step 1).

**Note:** Neither shrink tube or strength members should be on .102 diameter.

10. Shrink tube using heat gun. Heat gun to be rated at 475 minimum wattage and to generate between 300°- 400°C air flow temperature. Do not apply excessive heat to F.O. cable jacketing. Epoxy at rear of terminus will turn amber color at full cure. When this happens, remove heat immediately. Repeat for other fibers.
11. To cure the epoxy at the front of the terminus between fiber and ceramic, follow either of the approved procedures listed below:  
Option 1: When using a heat gun @ 475 minimum wattage  
a. heat gun to generate between 300-400°C air flow temperature  
b. insert end of ceramic and fiber into air flow for ten 1 second intervals.  
Option 2: When using an oven - step cure per the following cure schedule:  

Temp. ( °C )	Duration (minutes)
80	120
125	120
150	120
12. Scribe glass fiber approximately .010 above ceramic. Grasp fiber and pull slightly until fiber breaks.
13. Take a piece of 15 micron lapping film (approx. 8 X 3 inches long) and hold in hand so it has a slight concave radius to it. Complete 40 gentle strokes back and forth over termini to be polished. Use approximately a 4-inch stroke. This step will reduce the fiber length to the right amount for final polish. (Holding the lapping film on a radius ensures that the fiber length will not be polished flush with ceramic.) Repeat for other fibers.
14. Thoroughly clean termini.
15. The fully cured epoxied termini may be either hand polished or machine polished. Reference the following lists to determine which polishing fixture to use:

**Hand Polishing**

Termini P/N	Hand Polishing Fixture	Termini Capable of Polishing
CF-198035-( ) CF-198036-( )	11-12123	1

**Machine Polishing**

Using the Buehler Fibrmet\* Optical Fiber Polisher and the Buehler Fibroscope\* Portable microscope.

Amphenol Terminus P/N	Amphenol Buehler Fibrmet* Polishing Fixture P/N	Amphenol Buehler Fibroscope* Adaptor Body P/N
CF-198035-( ) CF-198036-( )	11-12103	11-12104

After selecting the appropriate polishing fixture and adaptor, reference the Buehler Fibrmet\* and Fibroscope\* instructions for SMA type connectors to familiarize yourself with their operation. (For hand polishing go to step 26).

\* Fibrmet and Fibroscope are registered trademarks of Buehler Ltd.

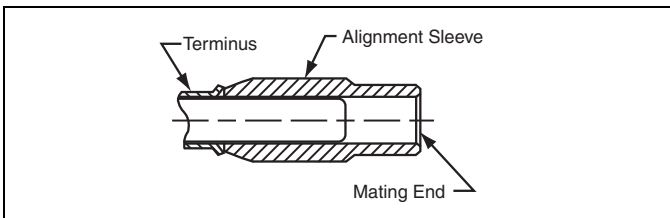
### Machine Polishing.

16. For machine polishing Amphenol/Bendix size 16 ceramic termini, follow these instructions.
17. Bring the lobe of the cam to the vertical position by switching the Fibrmet\* on and off.
18. Install .3 micron aluminum oxide polishing disc on left platen.
19. With the arm in the lock pin position, insert the terminus to be polished into the polishing fixture and secure.
20. Loosen the lock ring and rotate the arm counter clockwise to the left platen. Turn the adjustment collar in or out until the terminus just touches the surface of the disc. The contact should make only a light mark on the disc.
21. Tighten the lock ring against the adjustment collar.
22. Make a final adjustment by moving both the lock ring and the adjustment collar so that the terminus just touches the abrasive disc.
23. Polish terminus until an optically acceptable fiber end has been produced, approximately 1 minute. (See Figure 1). If a small amount of epoxy is on the polished surface, continue polishing until no epoxy can be seen with the naked eye. Inspect end of the optical fiber for desired finish by examining it with the Fibroscope\* portable microscope or other microscope. Repeat polishing if required.
24. Thoroughly clean termini and fixtures.
25. After polishing has been done, go to step 30 of these instructions.

### Hand Polishing

When hand polishing, follow these instructions:

26. Determine which termini are to be polished first. Use appropriate terminus holder (labeled pin or socket) on bottom polishing plate.
27. Install terminus in bottom fixture, then screw on top fixture, capturing terminus.
28. Using a circular motion of approximately 2 inches in diameter, polish terminus on 1 micron lapping film backed by a smooth hard surface, approximately 40-50 seconds. If a small amount of epoxy is on the polished surface, continue polishing until no epoxy can be seen with the naked eye. Inspect end of the optical fiber for desired finish using a microscope. (See Figure 1). Repeat for other termini. (For an exceptionally fine finish, continue polishing terminus for 20-30 seconds using .3 micron lapping film. Thoroughly clean termini before proceeding with this step).
29. Thoroughly clean termini and fixture. Push on protection cap, when supplied. Cap must be removed before inserting termini into connector.
30. For socket terminus ONLY:  
Push alignment sleeve onto socket terminus until fully seated. Note orientation of alignment sleeve in illustration below:



Push on protection cap, when supplied. Cap must be removed before inserting termini into connector.

31. Push termini into connector until fully seated. To keep the pin terminus face aligned with the connector cavity bore during the terminus insertion process, a 10-30X inspection scope may be used. Care should be taken not to exceed minimum bend radius of buffered fiber. If desired, insertion tool M81969/14-03 may be used to aid assembly.  
For removal of termini, use extraction half of supplied tool.

32. The installed terminus shall meet an optical loss as defined in MIL-29504 unless otherwise specified on the applicable drawing these termini are used on, but need not meet the "acceptable polish" criteria of Figure 1. If the optical loss value is not met, the terminus should be cleaned and retested. If the loss value is still not met, the terminus should be removed, repolished and re-installed.

### Recommended Equipment

#### Hand Polishing

- Razor blade and/or exacto knife
- MEK, or Isopropanol or equivalent
- Epoxy, as required
- 1 syringe
- Polishing fixture: 11-12123 or equivalent, as required
- 15 & 1 micron aluminum oxide lapping film or equivalent, as required
- Optional: .3 micron aluminum oxide lapping film or equivalent, as required
- Microscope, 100 power with white light source
- Cotton swabs
- Small scissors
- Cutting pliers
- Wire strippers or hot tweezers, depending on cable type
- .014 no nik wire strippers or equivalent
- Hot air gun
- Fiber scriber

#### Recommended Equipment:

#### Machine Polishing

- Buehler Fibrmet\* Optical Fiber Polisher or equivalent
- Buehler Fibroscope\* portable microscope or equivalent, 100 power with white light source
- 4 inch dia. PSA backed .3 micron aluminum oxide polishing discs or equivalent as required
- Polishing fixture: 11-12103 or equivalent
- Fibroscope\* adaptor: 11-12104 or equivalent
- Razor blade and/or exacto knife
- MEK, or Isopropanol or equivalent
- Epoxy, as required
- 1 syringe
- Cotton swabs
- Small scissors
- Cutting pliers
- Wire strippers or hot tweezers, depending on cable type
- .014 no nik wire strippers
- Hot air gun
- Fiber Scriber

Figure 1

\*Fibrmet and Fibroscope are registered trademarks of Buehler Ltd.

