

**Corning Cable Systems UniCam™
 SC/ST-Compatible/FC Connector
 Assembly Instructions Using FBC-006 Cleaver**

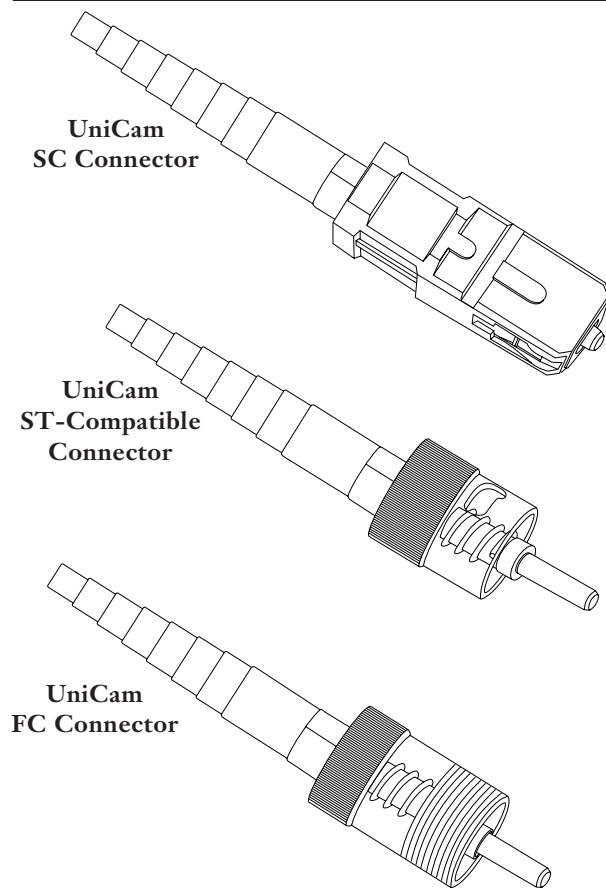


Figure 1

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1. General

1.1 In this procedure you will learn how to assemble Corning Cable Systems UniCam SC-, ST, and FC-Compatible connectors. This document describes assembly of both multimode and single-mode connectors.

1.2 The Corning Cable Systems UniCam connector is a field-installable connector that does not require epoxy or polishing. The unit incorporates a fiber stub that is bonded into a ferrule and polished in the factory, not in the field.

The field fiber is cleaved and inserted into the connector so that it touches the cleaved end of the fiber stub. When the cam is rotated, both cleaved ends are precisely aligned inside the connector and held in place.

1.3 After strain relieving the fiber to the connector, it is ready to be mated to another connector inside an adapter.

1.4 The UniCam connector will fit the following fiber types:

- 900 μm tight-buffered fibers
- 3 mm single-fiber cables
- 250 μm furcated fibers

All three types of installations are described in this procedure.

1.5 Please read through the entire procedure before starting to assemble a connector. This document supercedes SRP-006-047, Corning Cable Systems CamLite® FC and ST-Compatible Connector Assembly Instructions, and SRP-006-250, Corning Cable Systems CamLite SC Connector Assembly Instructions.

1.6 This document is being reissued to include updated corporate information.

2. Components

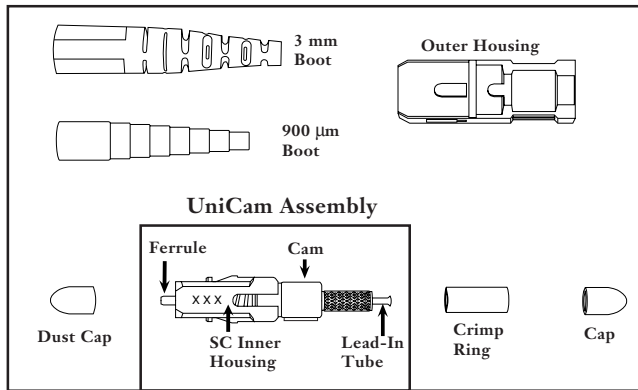


Figure 2

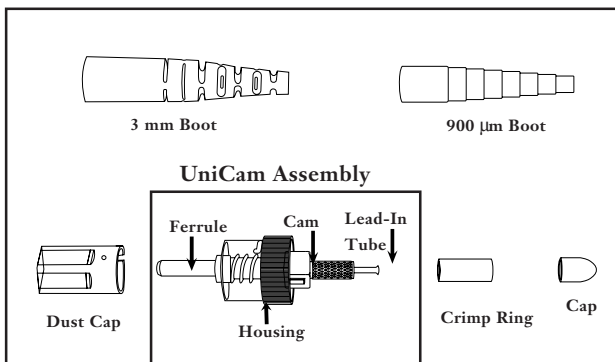


Figure 3

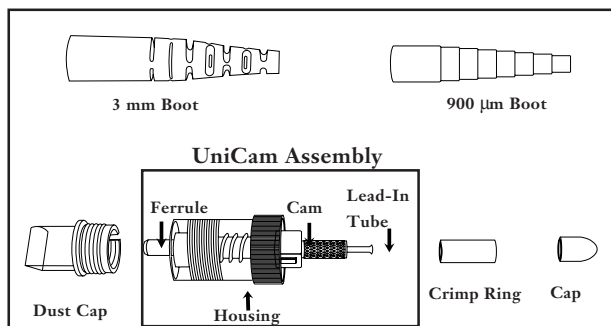


Figure 4

Each UniCam connector package contains the parts listed in Figures 2 through 4 for the connector type described.

NOTE: Do NOT remove the dust cap from the front end of the ferrule until you have completed this procedure and you are ready to install the completed connector into a sleeve.

3. Precautions

3.1 Safety Glasses

⚠ WARNING: *The wearing of safety glasses to protect the eyes from accidental injury is strongly recommended when handling chemicals and cutting fiber. Pieces of glass fiber are very sharp and can damage the cornea of the eye easily.*

3.2 Chemical Precautions

Isopropyl Alcohol

⚠ WARNING: *Isopropyl Alcohol is Flammable. Flashpoint 54° F. Can cause irritation to eyes on contact. In case of eye contact, flush eyes with water for at least 15 minutes. Inhaling fumes may induce mild narcosis. In case of ingestion, consult a physician. Use with adequate ventilation.*

3.3 Fiber Precautions

⚠ WARNING: *Cleaved glass fibers are very sharp and can pierce the skin easily. Do not let cut pieces of fiber stick to your clothing or drop in the work area where they can cause injury later. Use tweezers to pick up cut or broken pieces of the glass fibers and place them on a loop of tape kept for that purpose alone. Good housekeeping is very important.*

3.4 Cable Handling Precautions

CAUTION: *Fiber optic cable is sensitive to excessive pulling, bending and crushing forces. Consult the cable specification sheet for the cable you are installing. Do not bend cable more sharply than the minimum recommended bend radius. Do not apply more pulling force to the cable than specified. Do not crush the cable or allow it to kink. Doing so may cause damage that can alter the transmission characteristics of the cable. The cable may have to be replaced.*

3.5 Laser Handling Precautions

⚠ WARNING: *Laser light can damage your eyes. Laser light is invisible. Viewing it directly does not cause pain. The iris of the eye will not close involuntarily as when viewing a bright light. Consequently, serious damage to the retina of the eye is possible. Never look into the end of a fiber which may have a laser coupled to it. Should accidental eye exposure to laser light be suspected, arrange for an eye examination immediately.*

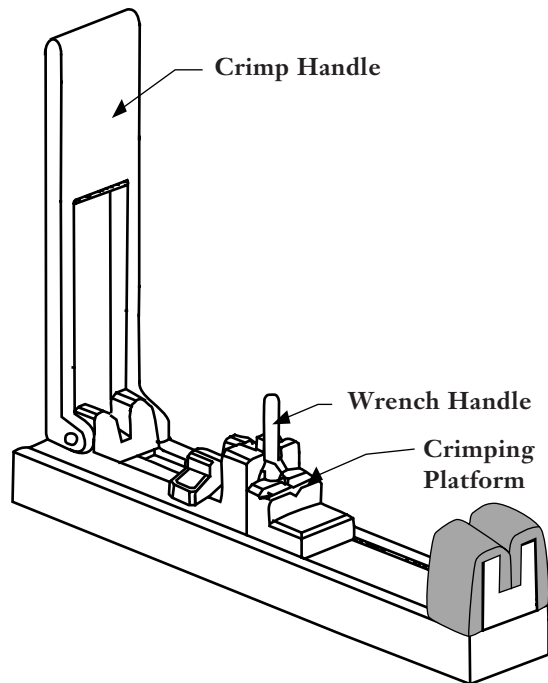


Figure 5

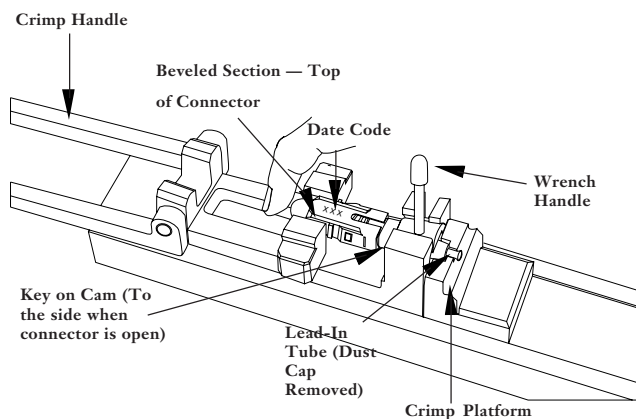


Figure 6

4. Connector Preparation

4.1 The installation tool you will use is a special tool designed to position the fiber into the UniCam connector, rotate the cam that aligns the fibers, and crimp the fiber in place. The tool makes connector assembly easy and accurate. A separate crimp tool is required to secure the aramid yarn on the interconnect cable.

NOTE: Section 4 describes connector preparation for all styles of connectors, but figures only depict the SC connector.

Critical Step

4.2 Flip the crimp handle open and rotate the wrench so the handle is up.

4.3 Remove and discard the cap from the rear of the connector.

NOTE: Do NOT remove the front dust cap until the connector is completely assembled and you are ready to install it in an adapter.

4.4 Examine the connector to make sure it is in the open position. For the SC-Type, the connector is in the open position when the key on the cam is positioned 90° from the date code printing on top of the connector. For the ST- or FC-Type, the connector is in the open position when the key on the cam is positioned 90° from the “up” label on the rounded side of the dust cap. You’ll notice that the connector will not fit into the installation tool unless it is in the open position.

4.5 Pull back the slider and insert the connector into the tool as far as it will go. **The lead-in tube should rest on the crimp platform when the connector is fully seated.** The front of the connector should rest in the slider.

IMPORTANT: A gentle push should be adequate to insert the connector. Do not attempt to force the connector into the tool. Doing so could damage the connector. If the connector does not slide into the tool when gently pushed, check to make sure the connector is in the open position, the wrench handle is up, and you are inserting the connector in the correct orientation.

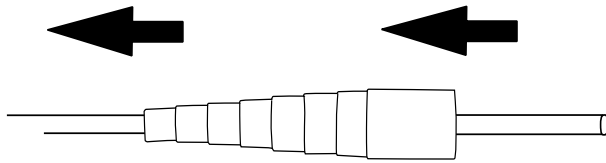


Figure 7

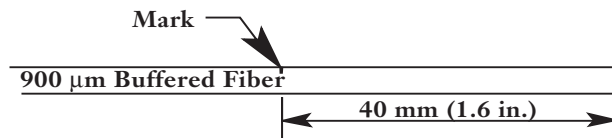


Figure 8

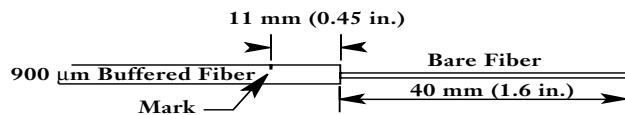


Figure 9

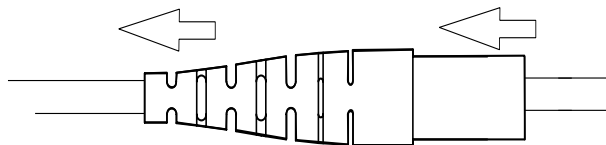


Figure 10

5. Fiber Preparation — 900 μm Tight-Buffered Fiber

5.1 Slide the 900 μm boot (small end first) down the fiber until it is out of the way.

5.2 Measure and mark 40 mm (1.6 in) from the end of the buffered fiber.

5.3 Remove this 40-mm section of buffer with the 200 μm No-Nik tool.

5.4 Mark the buffer 11 mm (0.45 in) back from the strip point with a permanent ink marker.

5.5 Clean the bare fiber with two passes of an alcohol wipe. Do not touch the bare fiber after cleaning it. Do not remove the 11 mm mark.

Proceed to Section 8, Connector Installation.

6. Fiber Preparation— 3 mm Single-Fiber Cable

6.1 Slide the 3-mm boot (small end first) down the cable until it is out of the way.

NOTE: *Take your time and do the next four steps correctly. Excessive yarn length will have to be trimmed later. Yarn too short may result in weak strain relief for the connector.*

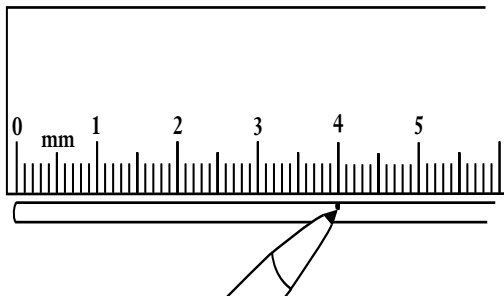


Figure 11

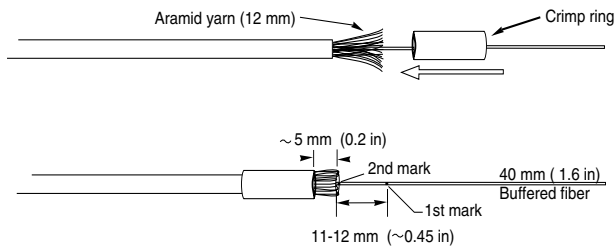


Figure 12

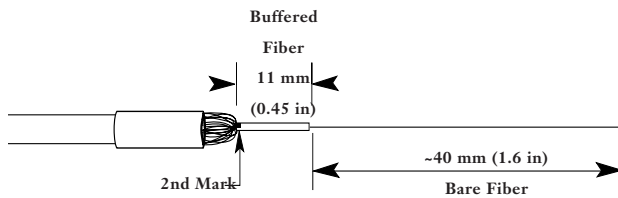


Figure 13

6.2 Measure and mark 40 mm (1.5 in) from the end of the cable's outer jacket.

6.3 Strip off the 40-mm section of outer jacket with the 16 AWG opening of the buffer stripping tool.

6.4 Trim the aramid yarn flush to the end of the outer jacket.

6.5 Measure and mark 12 mm (0.5 in) from the end of the outer jacket.

6.6 Strip off the 12-mm section of outer jacket. You should have 12 mm of aramid yarn showing.

6.7 Fold the aramid yarn back over the cable jacket and slide the crimp ring about 5 mm (0.2 in) down the yarn to hold it out of the way.

NOTE: *The ST-compatible and FC crimp rings no longer have a directional orientation.*

6.8 Measure and mark the fiber buffer 11-12 mm (0.45-0.5 in) from the end of the cable jacket. Place an additional mark on the buffer at the edge of the jacket.

6.9 Remove approximately 40 mm (1.6 in) of buffer with the No-Nik tool by stripping to the first mark.

IMPORTANT: *Check the location of the second mark after stripping. It must be near the edge of the jacket. If necessary, work the buffer back into its original position in the jacket as follows:*

- *Grasp the cable about 60 cm (2 ft) behind the strip point.*
- *Pull the cable until the second mark is again near the jacket.*

6.10 Clean the bare fiber with two passes of an alcohol wipe. Do not touch the bare fiber after cleaning it.

Proceed to Section 8, Connector Installation.

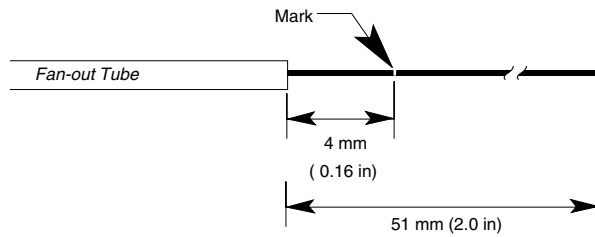
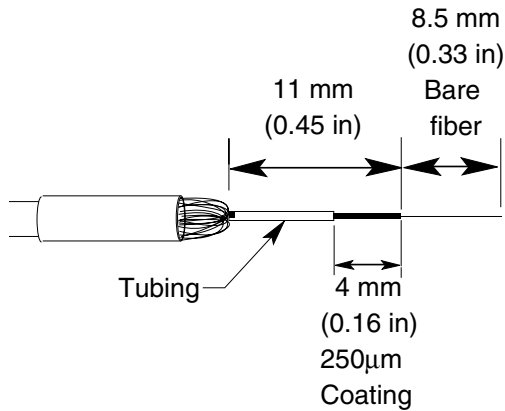
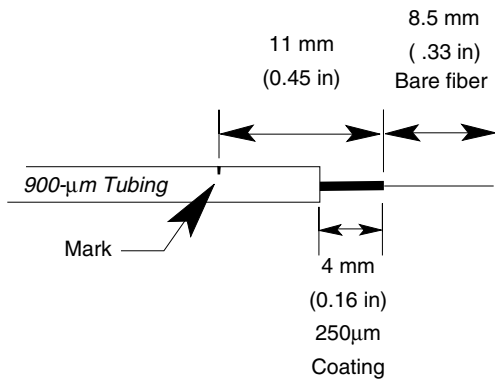


Figure 14



Spider Fan-out



Mark the Fiber

Figure 15

7. Fiber Preparation – 250 µm Fan-out Cable (Buffer Tube or Ribbon)

- 7.1 Slide the 900 µm boot (small end first) down the cable.
- 7.2 Make sure that 51 mm (2.0 in) of 250 µm fiber protrude from the end of the fan-out tubing.
- 7.3 Measure and mark the 250 µm-coated fiber 4 mm from the end of the fan-out tube.

Critical Step

7.4 Remove the 250 µm coating to the 4 mm mark with a fiber stripper (Miller tool). It is important to leave 4 mm of 250-µm fiber extending beyond the 900-µm tubing. This allows the fibers to touch before the 900-µm tubing bottoms out inside the connector.

- 7.5 Mark the fan-out tube 11 mm (0.45 in) back from the strip point with a permanent marker.
- 7.6 Clean the bare fiber with two passes of an alcohol wipe. Do not touch the bare fiber after cleaning it. Do not remove the 11 mm mark.

Proceed to Section 8, Connector Installation.

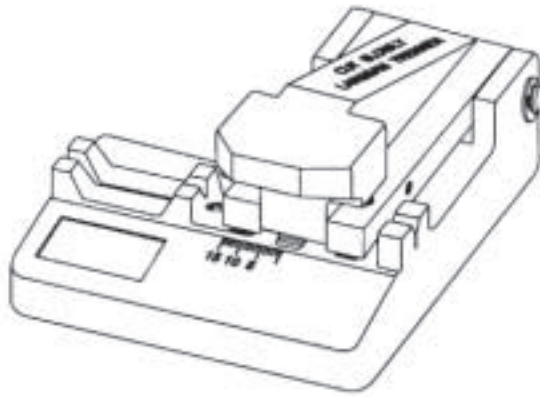


Figure 16

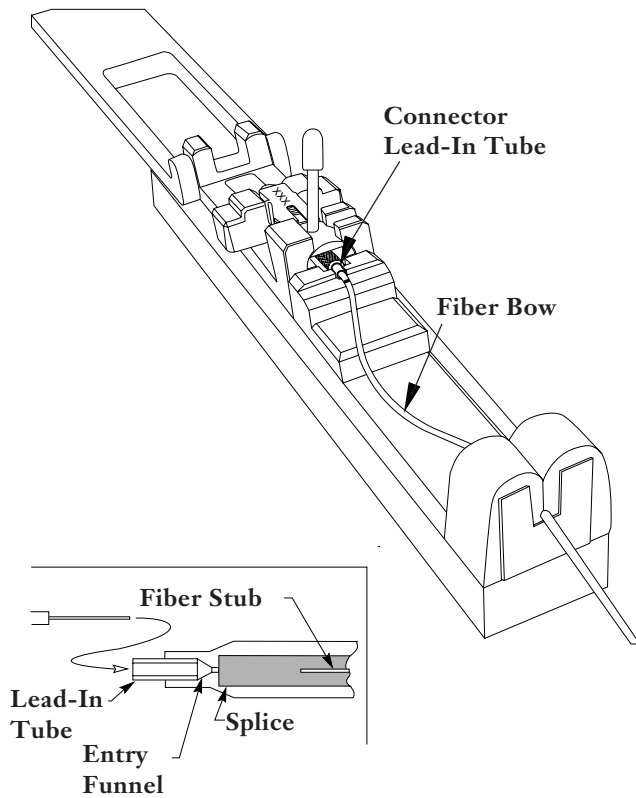


Figure 17

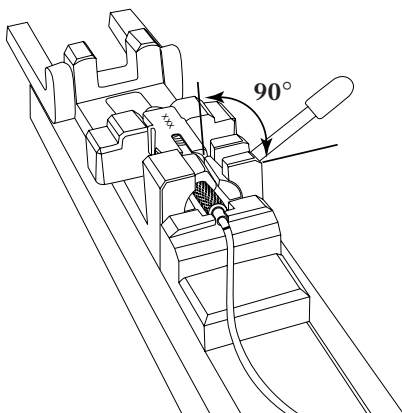


Figure 18

8. Connector Installation

NOTE: Section 8 describes connector installation for all styles of connectors, but figures only depict the SC connector.

8.1 Cleave the fiber as described in the instructions packaged with the FBC-006. If you are using a different cleaver, cleave the fiber to 8.5 mm. The UniCam connector accepts cleave lengths of 8.5 mm +0.0/-0.5.

NOTE: For fan-out cable, cleave 8.5 mm from the end of the 250 μm coating, not the 900 μm tubing.

8.2 After following steps 4.2 through 4.5 to insert a connector in the installation tool, carefully insert the cleaved fiber into the lead-in tube until you feel it firmly stop against the connector's fiber stub.

8.3 Guide the fiber in straight. Do not bend or angle it.

8.4 If you feel resistance at the entry funnel, rotate the fiber while applying a gentle inward pressure.

NOTE: If you have stripped and cleaved the fiber to the correct lengths, the end of the cable jacket or the buffer mark should be within 2 mm (0.08 in) of the lead-in tube.

NOTE: For jacketed fibers, there must be a gap between the jacket and the lead-in tube to assure that the fibers butt together. If you don't see a gap, pull the fiber out and start over again with a new 40 mm length of bare fiber.

8.5 Apply a light inward pressure on the fiber to keep it butted against the fiber stub during the next step.

8.6 When installing a 250 μm Fan-out Cable or a 900 μm fiber, carefully push the buffer into the fiber clamp on the tool. Maintain inward pressure on the fiber so that a slight bow forms in the buffered fiber between the connector and the clamp. This bow is important. It will help butt the fibers in the connector during the next step. When installing a 3mm fiber, it is only necessary to hold the fiber in place by hand to apply a light inward pressure during step 8.7.

8.7 Rotate the wrench past 90° to cam the connector. **The wrench must stay down. Do not rotate back upright.**

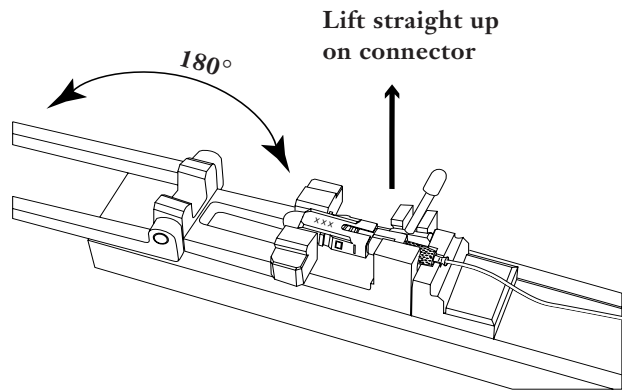


Figure 19

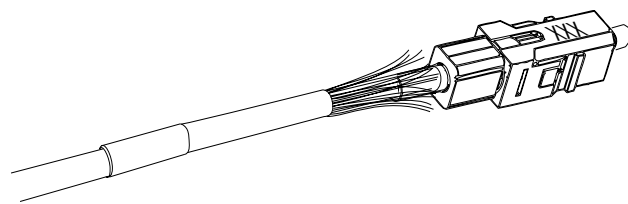


Figure 20

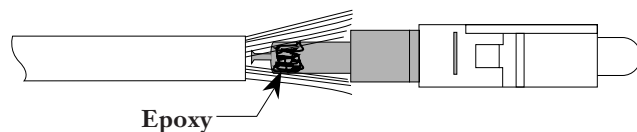


Figure 21

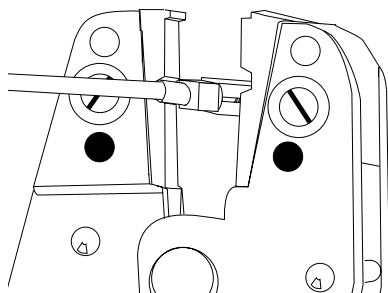


Figure 22

8.8 The fiber is now held in place by the connector's splice components. Do not pull on the fiber.

8.9 Carefully flip the crimp handle 180° until it contacts the crimp tube. Push down firmly to crimp. You should see a flat impression in the crimp tube, indicating a proper crimp. The tool cannot over crimp the connector.

8.10 Flip the crimp handle back. Leave the wrench handle down. Remove the connector by lifting it straight up and out of the tool. Do not pull on the fiber. Handle the connector only.

For 900 μm Installation: Proceed to step 8.15

3mm Cable Only:

8.11 Hold the cable and slide the crimp ring away from the connector, along the cable jacket, to free the aramid yarn. Flare the yarn around the buffered fiber. The ends of the yarn should just touch the back of the square cam. If the yarn is too long, trim it now.

OPTION: For added strain relief:

- Mix a small amount of Hysol 0151 epoxy.
- Use a toothpick to apply a thin film of epoxy (ensuring that it does not enter the cam) around the rear of the connector housing.
- You may substitute Loctite 411 adhesive for the epoxy.

8.12 Hold the connector and push the crimp ring over the aramid yarn and against the back of the connector's cam.

8.13 Place the connector into the opening of the crimp tool jaws.

NOTE: Corning Cable Systems part number 3201007-01 is required for crimping. Do not use tools with part numbers 3201001-01 and 3201002-01; they will over-crimp causing increased attenuation.

NOTE: The ST-Compatible and FC crimp rings no longer have the collar.



Figure 23

8.14 Squeeze the handles shut to crimp the crimp ring onto the connector. Remove the connector and cable from the tool.

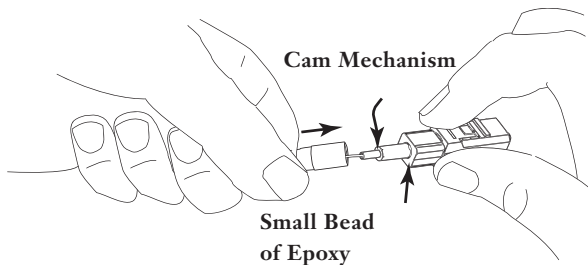


Figure 24

8.15 Slide the boot up the back of the connector until it reaches the cam.

OPTION: For added strain relief (900 μm only):

- Mix a small amount of Hysol 0151 epoxy.
- Use a toothpick to apply a thin film of epoxy (ensuring that it does not enter the cam) around the rear of the connector housing.
- You may substitute Loctite 411 adhesive for the epoxy.

NOTE: *Do not hesitate* or the adhesive will cure before the boot is fully seated. The boot must be in place before continuing.

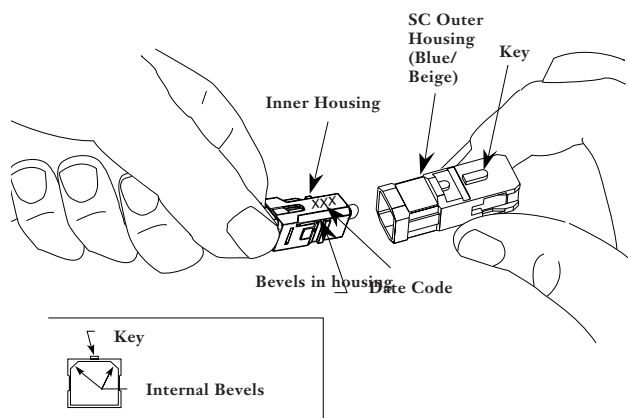


Figure 25

SC ONLY:

8.16 The outer housing for a single-mode connector is blue. The multimode connector housing is beige. To install the UniCam assembly into the SC outer housing, line up the date code on the inner shroud with the key on the outer housing. Using the boot, push the UniCam assembly into the rear of the outer housing until it snaps into place. You may have to wiggle the parts to make them snap together.

8.17 The connector is now ready to use. Leave the front dust cap on until you are ready to insert the UniCam connector into a sleeve.

9. Testing UniCam Connectors

9.1 Corning Cable Systems recommends that you test fiber optic connectors according to EIA FOTP-171.

9.2 If you have questions about proper testing, required equipment, etc., call Corning Cable Systems Engineering Services at 1-704-327-5000.

10. UniCam Connector Maintenance

10.1 Always keep a clean dust cap on any connector which is not in use. Do not remove the dust cap until immediately before inserting the connector into a sleeve.

10.2 To clean a UniCam connector:

- Wipe the end face and ferrule surfaces of the connector with an alcohol wipe.
- Wipe the end surface of the connector with a dry lint-free tissue. Make sure that the cloth makes full contact with the end face surface.
- Hold the nozzle of an ozone-safe aerosol duster 1.25 cm (0.5 in.) away from the connector and blow off the end surfaces of the connector.

NOTE: *Do not shake or agitate the can.*

Special Note:
Fiber Optic
Training
Program



Corning Cable Systems offers comprehensive, integrated training programs. Courses are structured for: telephony, CATV, LAN, Intelligent Transportation Systems and Power Utilities.

For information on Engineering Services Training call: 800-743-2671.

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