CamSplice™ Assembly Manual

Table of Contents

1. General 1
2. Precautions 1
3. Tools and Materials 2
4. Cable and Fiber Preparation 2
5. CamSplice™ Assembly With Tool 3
6. CamSplice™ Assembly Without Assembly Tool 4

1. General

1.1 This procedure outlines the use of the CamSplice™ and TKT-100 Tool Kits for splicing single or multi-mode optical fibers (Figure 1). This document describes and illustrates splicing both loose tube and tight-buffered fibers with the CamSplice™ Mechanical Splicer.

1.2 The CamSplice™ mechanical splicer accepts either 250 or 900 µm fibers. No adhesives, special tools, or power-operated equipment are required for splicing operations.

1.3 The Camsplice unit can be assembled with or without the CamSplice assembly tool provided in the tool kit. The assembly tool simply ensures that the fiber end faces are touching prior to activating the splices. This procedure describes both ways to assemble the CamSplice.

1.4 Each CamSplice unit is shipped ready for splicing in an "open position" with its cams 180° apart. To secure the fibers, the cams are rotated into their closed position. When completed, the beveled surfaces of the CamSplice's center section and its two cams are aligned with each other, providing visual confirmation that the splice is secured.

1.5 A training video covering CamSplice assembly is available from and is recommended for all assemblers prior to making splices in the field. Contact Corning Cable Systems Customer Service at (828) 327-5000, 8:30- 5:00 Eastern Time, for information about the video.

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

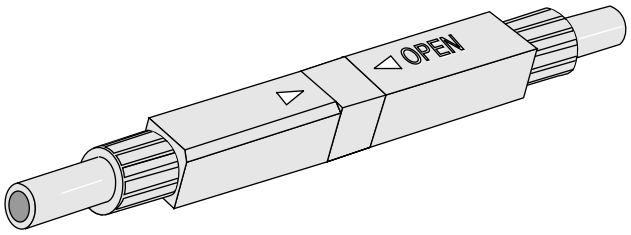

Figure 1

2. Precautions

IMPORTANT: Read and understand this procedure completely before starting a CamSplice assembly.

For best results, keep the CamSplices clean. Do not remove from packaging until ready for use. Do not rotate the cams until the fibers are inserted.

Safety Glasses

CAUTION: 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.**

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.

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 exposure to laser light be suspected, arrange for an eye examination immediately.

Isopropyl Alcohol

DANGER: *Flammable. Flashpoint 50° 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.*

3. Tools and Materials

3.1 The following basic tools and materials required to install a CamSplice mechanical splicer:

- Miller fiber optic stripping tool *
- Fiber cleaver such as the FBC-005 Fiber cutter or FBC-001 Score and Snap Fiber Cutter **
- Wire strippers *
- Isopropyl alcohol wipes (or isopropyl alcohol and lint-free tissues)
- 200 µm No-Nik tool *
- Scissors *
- Tweezers *
- Vinyl tape *
- Permanent-ink marker *
- Marker numbers *
- CamSplice assembly tool *
- Steel rule*

* items provided in the TKT-100-01 and -02 CamSplice Tool Kits.
** item provided in TKT-100-02 CamSplice Tool Kit

3.2 In order to optimize a Camsplice for the lowest possible loss, an Optical Power Meter or an Optical Time Domain Reflectometer (OTDR) is required.

4. Cable and Fiber Preparation

4.1 Remove the cable sheath and prepare the cable for splicing according to its manufacturer's procedures.

4.2 Refer to the documentation provided with the splice tray or hardware in which the CamSplice will be installed for sheath removal lengths.

Note: *The TKT-100 tool kits provide a plier-type buffer tube cutter suitable for use on both loose-tube and tight-buffered cable. For complete instructions on this tool's use, consult SRP-005-005, Stripping Tool For Buffers. This document is included in the TKT-100 tool kits, and is available from Corning Cable Systems.*

After removing the fiber buffer, proceed to step 4.03 for loose-tube fibers or step 4.06 for tight-buffered fibers.

Loose Tube Fiber Preparation

4.3 Wipe the filling compound from the fibers with a tissue soaked in filling compound remover.

4.4 Use the Miller fiber stripping tool to remove the fiber coating in 3/8-inch increments until you have removed the coating length specified for the cleaver you are using (Figure 2).

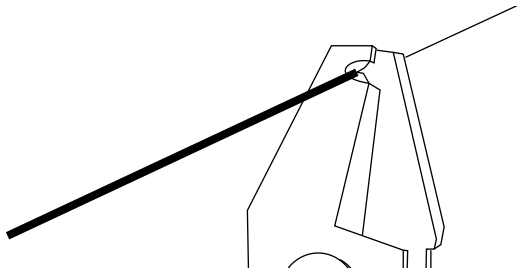

Figure 2

4.5 Gently wipe the fiber with an alcohol-soaked tissue or wipe to remove any residue. *Proceed to section 5 or 6.*

Note: *The CamSplice unit can be assembled without use of an assembly tool. The assembly tool simply ensures that the fiber end faces are touching prior to activating the splices. This procedure describes assembly of the CamSplice both with and without the tool.*

Tight-Buffered Fiber Preparation

4.6 After removing the required length of outer jacketing of the tight-buffered pigtail, use scissors to carefully trim off the aramid yarn at the end of the jacketing.

4.7 Remove the fiber coating from the tight-buffered fiber with the No-Nik tool as described in SRP-004-036, *Stripping Fiber Coating With a 200 µm No-Nik Tool.* This document is supplied in the tool kit, and is available from Corning Cable Systems.

5. CamSplice Assembly With Tool

5.1 Position the assembly tool with the label on your left. Place both levers of the assembly tool in their vertical position (Figure 3).

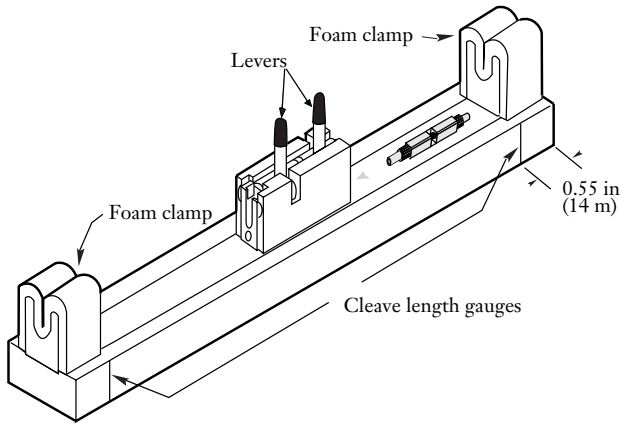

Figure 3

5.2 Remove the dust caps from the CamSplice unit.

5.3 Slide the CamSplice into the right end of the assembly tool until it butts against the tool's left stop. Approximately 1/8- inch (3 mm) of the splice should protrude from the left end of the tool (Figure 4).

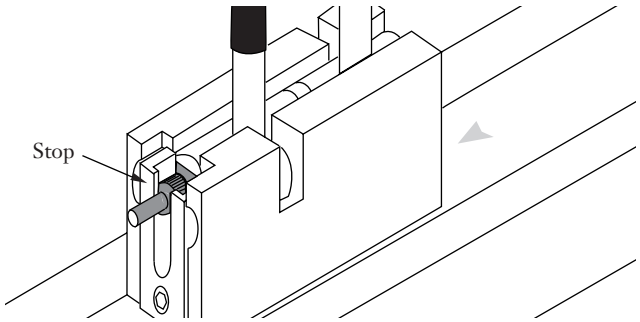

Figure 4

5.4 Strip, clean, and cleave the first fiber to 0.55 (± .02) inches [14 mm ± 0.5 mm]. Check the fiber's strip length with the tool's strip length gauge (Figure 5).

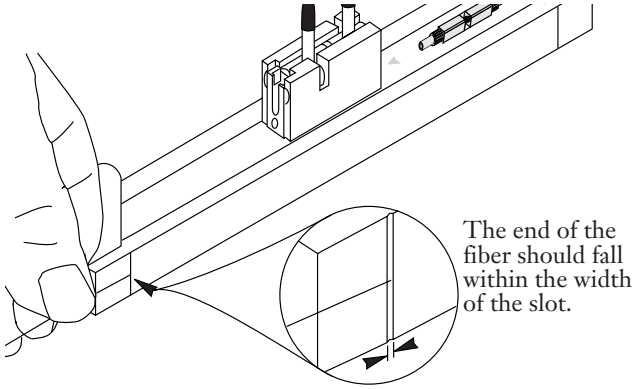

Figure 5

5.5 Holding the fiber by its coating, push the first fiber down into the foam clamps (Figure 6). Slide the fiber into the CamSplice splicer until it stops. To ease the fiber's entry into the CamSplice, the fiber can be slightly twisted or "rolled" during insertion. *There should be no bend in the first fiber at this point.*

Note: If you feel any resistance while inserting the first fiber, pull back on the fiber very slightly, and then continue to insert it into the CamSplice.

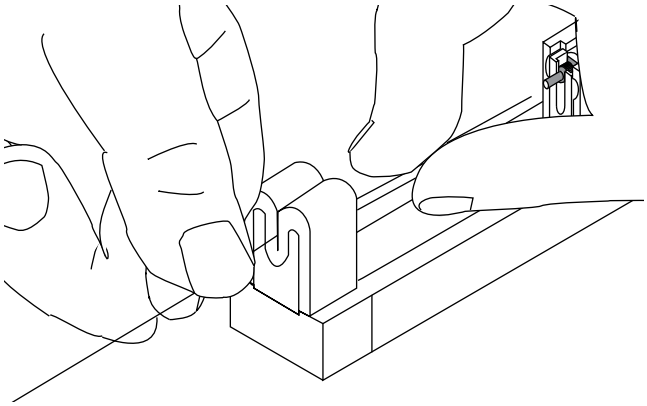

Figure 6

5.6 Strip, clean, and cleave the second fiber to 0.55 (± .02) inches [14 mm ± 0.5 mm].

5.7 Push the second fiber into the foam clamps. Slide it into the CamSplice unit until it butts against the first fiber (you may twist the second fiber as you did with the first to ease its entry into the CamSplice). Continue pushing the second fiber until it stops (the coating should bottom out). *This step should put a 3/4 to 1-inch bend in the first fiber but NO bend in the second fiber.*

5.8 Push the first fiber against the second until there are equal bends in the fibers with approximately 3/8 to 1/2 inch (10-13 mm) deflection (Figure 7).

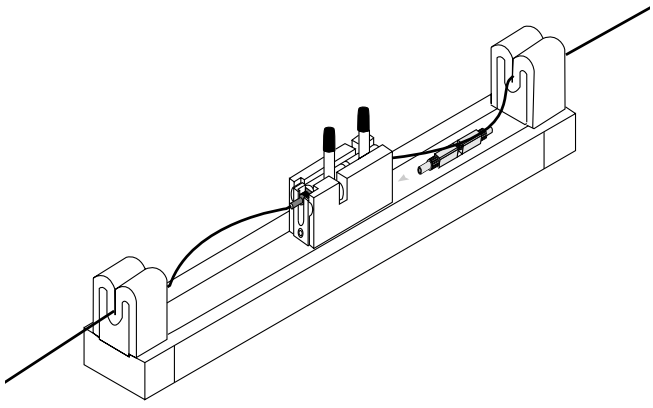

Figure 7

5.9 Slowly rotate both levers down to actuate the CamSplice (Figure 8).

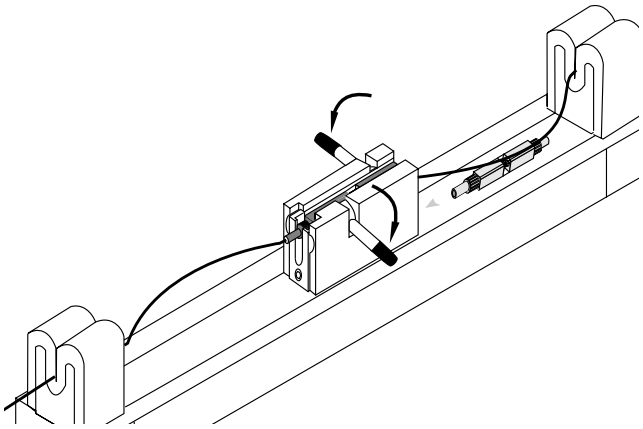

Figure 8

5.10 If your OTDR or power meter indicates a loss less than 0.5 dB, or an acceptable loss according to your company's remake policy, skip to step 5.13. If the splice loss is NOT acceptable, proceed to step 5.11.

Tuning

5.11 Optimize the splice as follows:

a) "Tune" the splice by first rotating both levers back to their vertical position to open the splice.

b) Rotate the left lever 45° to tighten its fiber. This action provides a positive stop to butt the right fiber against while tuning.

c) Pull back on the right fiber, slightly rotate it, and then rebutt it against the left fiber. Check for loss improvement and repeat this step until you have achieved maximum performance.

d) After optimizing the splice, rotate both levers fully down to actuate the splice. Check the splice loss again. *Proceed to step 5.13 if the splice loss is now acceptable.*

Cleaning

5.12 If step 5.11 did not result in an acceptable loss, clean the CamSplice unit as follows:

a) Open the splice by rotating both levers back to vertical.

b) Remove both fibers from the CamSplice.

c) Strip, clean, and cleave a piece of scrap fiber approximately 3 inches (80 mm) long.

d) Slide the fiber, cleaved end first, into the CamSplice unit and pull it out through the other end of the splice.

e) Return to step 5.4 and remake the splice.

Note: *If you still have unacceptable loss after steps 5.11-5.12 and remaking the splice, carefully inspect your cleaver and its operation to make sure the loss is not due to poor cleaves.*

5.13 To remove a completed CamSplice from the assembly tool:

a) Gently release the fibers from both foam clamps.

b) Working from the right side of the assembly tool, carefully lift the CamSplice out of the tool (Figure 9).

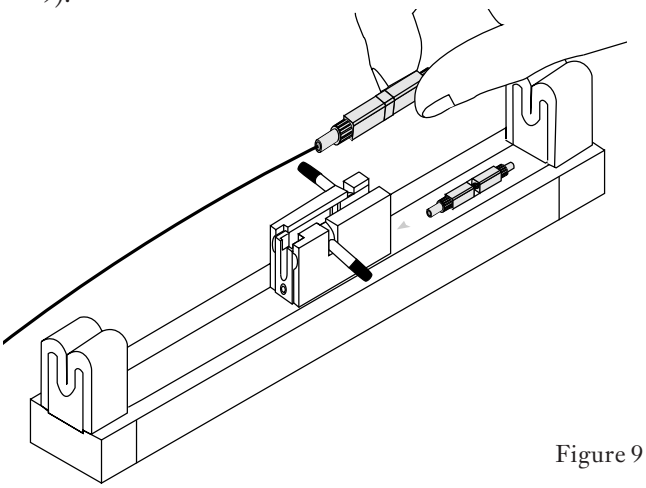

Figure 9

5.14 Secure the CamSplice in its splice tray or hardware. Follow the instructions provided with the splice tray or hardware to ensure that the splice and its fibers are properly strain-relieved.

6. CamSplice Assembly Without Assembly Tool

6.1 Remove the dust caps from the CamSplice.

6.2 Strip, clean, and cleave the first fiber to 0.55 inches (± .02 in) [14 mm ± 0.5 mm]. Verify the strip length with the steel rule provided in the tool kit before proceeding.

NOTE: *When splicing 250 µm loose tube cable to 900 µm tight-buffered cable, the 250 µm fiber should be placed in the CamSplice first.*

6.3 Slide the fiber into the CamSplice unit until the fiber coating bottoms. To center the splice point, retract the fiber approximately 1/16 inch (2 mm). To ease the fiber's entry into the CamSplice, the fiber should be slightly twisted or "rolled" during insertion.

Note: If you feel any resistance while inserting the first fiber, pull back on the fiber very slightly, and then continue to insert it into the CamSplice.

6.4 While gripping the other cam and the clear center section of the CamSplice unit, rotate the first cam clockwise 45° to lock the first fiber into place. Rotation of the cam secures the fiber to provide a positive stop for the second fiber (Figure 10).

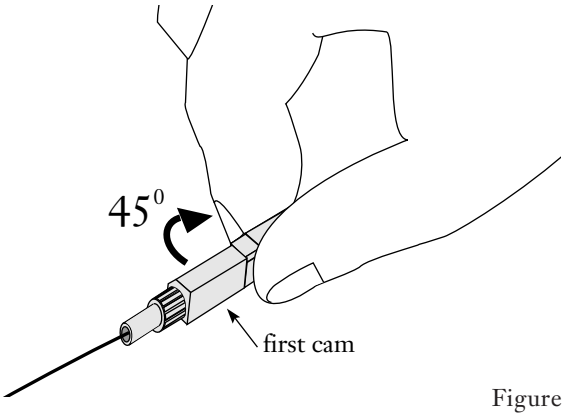

Figure 10

6.5 Strip, clean, and cleave the second fiber to 0.55 inches (± .02 in.) [14 mm ± 0.5 mm]. Verify the strip length with the steel rule provided in the tool kit before proceeding.

6.6 Using the first fiber as a positive stop, push the second fiber into the CamSplice until it bumps the first fiber with a positive stop. Twist the second fiber as you did with the first to ease its entry into the CamSplice. The second fiber's coating should not bottom out against the CamSplice during this step.

6.7 Actuate the CamSplice unit by rotating the cams against each other in a clock wise direction (clockwise looking at each end of the CamSplice unit). After rotation:

- The beveled edges of the cams should be aligned with that of the center section.
- The arrows on the cams line up as shown in Figure 11.

Do not over-rotate the cams.

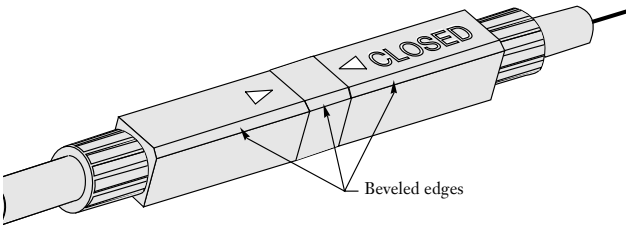

Figure 11

6.8 If your OTDR or power meter indicates a loss less than 0.5 dB, or an acceptable loss according to your company's remake policy, skip to step 6.11. If the splice loss is NOT acceptable, proceed to step 6.9.

Tuning

6.9 Optimize the splice as follows:

a) "Tune" the splice by first rotating both cams counter-clockwise back to their open position.

b) Grip the second fiber's cam and the CamSplice unit's center section and rotate the first fiber's cam 45°to lock the fiber in place. This provides a positive stop to butt the second fiber against while tuning.

c) Pull back on the second fiber, slightly rotate it, and then rebutt it against the first fiber. Check for loss improvement and repeat this step until you have achieved maximum performance.

d) After optimizing the splice, rotate both cams clockwise to their locked position to actuate the CamSplice. Check the splice loss again.

Proceed to step 6.11 if the splice loss is now acceptable.

Cleaning

6.10 If step 6.9 did not result in an acceptable loss, clean the CamSplice unit as follows:

a) Open the splice by rotating both cams back to their open position.

b) Remove both fibers from the CamSplice.

c) Strip, clean, and cleave a piece of scrap fiber approximately 3 inches (80 mm) long.

d) Slide the fiber, cleaved end first, into the CamSplice and pull it out through the other end of the splice.

e) Return to step 6.2 and remake the splice.

Note: *If you still have unacceptable loss after steps 6.9-6.10 and remaking the splice, carefully inspect your cleaver and its operation to make sure the loss is not due to poor cleaves.*

6.11 Secure the CamSplice mechanical splicer in its splice tray or hardware. Follow the instructions provided with the splice tray or hardware to ensure that the splice and its fibers are properly strain-relieved.

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