CORNING

SCF-4 Heatshrink Canister Splice Closure

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206-288	Heatshrink End Cap Canister Closure Sealing Checklist

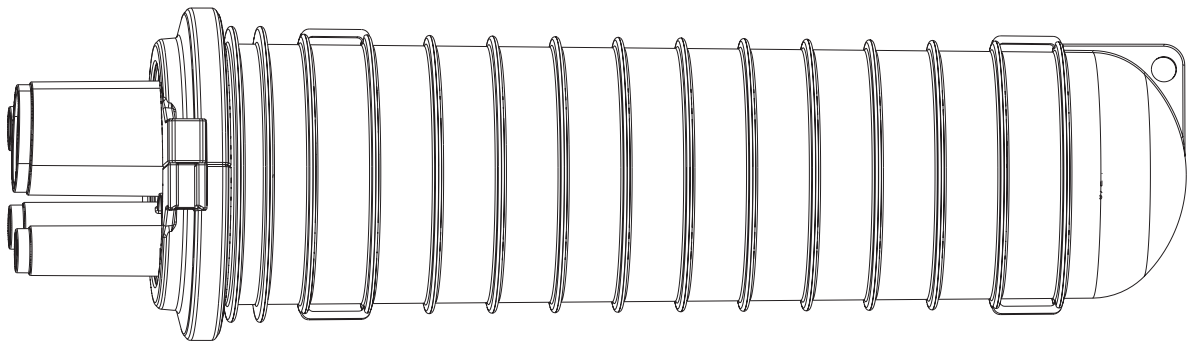


Figure 1

Table of Contents

1. Carton Contents

Each carton contains the following:

- (1) Closure dome
- (1) Frame assembly
- (1) Splice tray
- (1) End cap
- (2) Ground assembly
- (1) Clamping ring
- (1) End cap sealing ring
- (1) Accessory kit (containing express heatshink tube, 3-finger clip and UCN lubricant)

2. Tools and Materials

The following tools and materials are required to complete this installation:

- Tape measure
- Scissors
- Side cutters
- Cable knife
- 5/16-in nut driver (to install sheath retention clamp)
- 3/8-in nut driver
- 11/32-in nut driver
- 7/16-in nut driver
- 1/2-in nut driver
- Flat-tip screwdriver
- Phillips-head screwdriver
- Electrical tape
- Heat gun
- Torque wrench
- Hand pump
- Air pressure gauge

3. Precautions

3.1 Laser Handling Precautions

WARNING: Never look directly into the end of a fiber that may be carrying laser light. Laser light can be invisible and can damage your eyes. 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. Should accidental eye exposure to laser light be suspected, arrange for an eye examination immediately.

WARNING: DO NOT use magnifiers in the presence of laser radiation. Diffused laser light can cause eye damage if focused with optical instruments. Should accidental eye exposure to laser light be suspected, arrange for an eye examination immediately.

3.2 Installer Precautions

WARNING: Do not install telecommunications equipment or work with telephone wiring during a lightning storm. Telephone lines can carry high voltages from lightning causing electrical shock resulting in severe injury or death.

CAUTION: Corning recommends the use of safety glasses (spectacles) conforming to ANSI Z87 for eye protection from accidental injury when handling chemicals, cables, or working with fiber. Pieces of glass fiber are very sharp and have the potential to damage the eye.

CAUTION: The wearing of cut-resistant safety gloves to protect your hands from accidental injury when using sharp-bladed tools and armored cable is strongly recommended. Use extreme care when working with severed armor. There will be a sharp edge where armor is cut. To minimize the chance of injury from the cut armor, cover the exposed edge with a wrap of electrical tape. To minimize the chance of injury from sharp-bladed tools, always cut away from yourself and others. Dispose of used blades and armor scrap properly.

	**CAUTION:** Do not use power tools in any installation steps or when reentering the closure. Tighten the clamping ring with a torque value of more than 80 in-lb causes the hardware to crack and the clamping ring to become defective.

3.3 Glass Fiber Precautions

	**CAUTION:** Cleaved or broken glass fibers are very sharp and can pierce the skin easily. Do not let these pieces of fiber stick to your clothing or drop in the work area where they can cause injury later. Use tweezers to pick up cleaved or broken pieces of 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 the 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 Chemical Precautions

	**CAUTION:** Isopropyl alcohol is flammable with a flashpoint at 54°F. It can cause irritation to eyes on contact. In case of eye contact, flush eyes with water for at least 15 minutes. Inhaling fumes may cause mild dizziness. In case of ingestion, consult a physician..

	**CAUTION:** Use cable cleaner in a well-ventilated area to eliminate the possibility of dizziness and nausea. If cleaner comes in contact with skin or eyes, wash area immediately with soap and water to avoid irritation. Do not induce vomiting if cleaner is ingested.

4. Prepare the Cable

One express (mid-span) cable may be placed in the express port or up to two individual cables may be installed using the supplied 3-finger clip.

Step 1: Remove indicated length of cable sheath and armor (where applicable) according to cable manufacturer's instructions (Figure 2).

IMPORTANT: Do not expose the bare fibers until after the cable has been placed in the closure end cap.

Step 2: Cut the central member of each cable to 16 cm (6 in) from the sheath using side cutters. Leave an excess length of yarn (approximately 6 in) for additional strain-relieving.

IMPORTANT: To prevent damage to the fiber, remove all uncut express fiber from the tubing using the universal access tool (p/n UAT2-000 purchased separately).

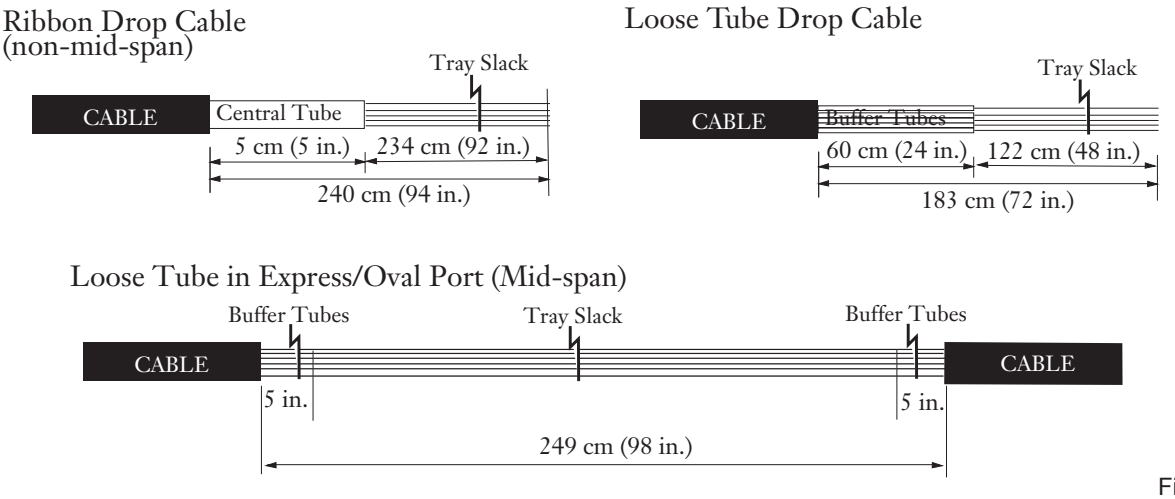


Figure 2

5. Install Grounding Hardware (Armored Cable Only)

Ground armored cables using the hardware in the accessory kit as shown in Figure 3. Armored drop cable must also be grounded using a grounding kit purchased separately from your customer service representative.

a. Cut a slit into opposite sides of the outer sheath and armor about 5 cm (2 in). To do this, score the armor with a cable knife (being careful not to damage the inner sheath) and split the sheath by flexing it.

b. Position the grounding clamp base plate under the armor. The stops of the clamp should just touch the outside of the armor and sheath. Tap the sheath above the ground clamp base to drive the teeth on the plate into the cable sheath.

c. Position the top plate and lock nut on the outer sheath over the base plate. Tighten with a 10 mm wrench so that the teeth on the upper plate are driven into the sheath. (When the cable has a metal strength member, attach the extension bracket to the base plate as shown in the inset before installing the top plate.)

d. Place the eyelet on the ground wire over the stud on the base plate. Add a second lock nut and tighten using a 10 mm wrench.

e. Wrap the grounding clamp and split portion of the cable sheath with vinyl tape.

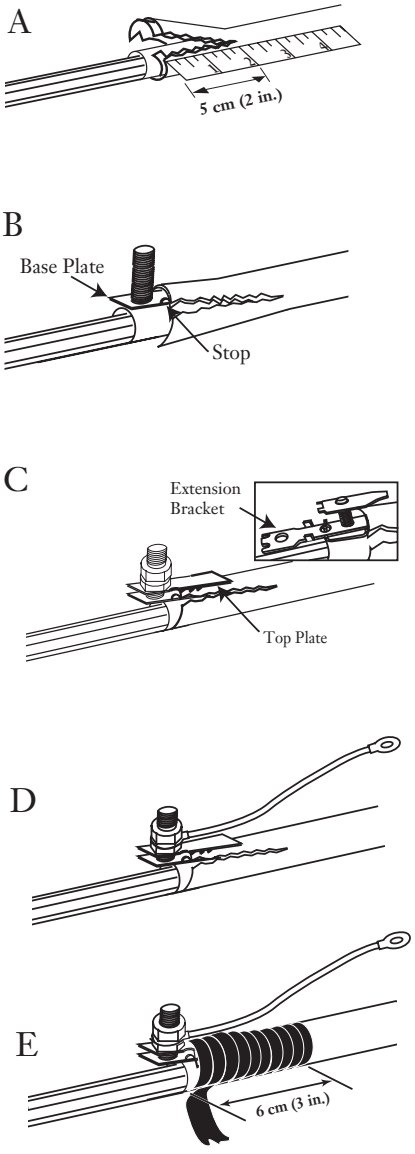


Figure 3

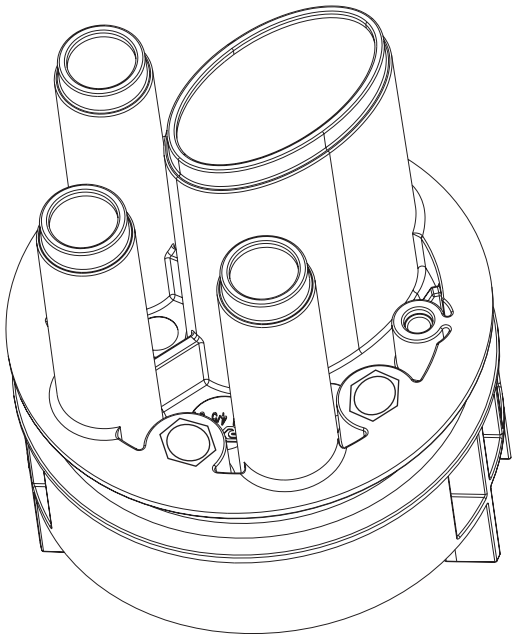
6. Prepare End Cap

Step 1: Remove the frame from the end cap.

Step 2: Open the appropriate cable port for your application based on the table in Figure 4. When using ports other than the oval port, use a taller port before using a shorter port.

a. Carefully tap the end using a punch or a nut driver (Figure 5).

b. Clean the port opening with a file to remove any rough edges.



Oval Port "A"		Round Port "B"	
One Cable	Two Cables	One Cable	Two Cables
19 mm (.75 in) min.	10 mm (.40 in) min.	7 mm (.28 in) min.	N/A
25 mm (1.0 in) max.	16 mm (.63 in) max.	15 mm (.6 in) max.	N/A

Figure 4

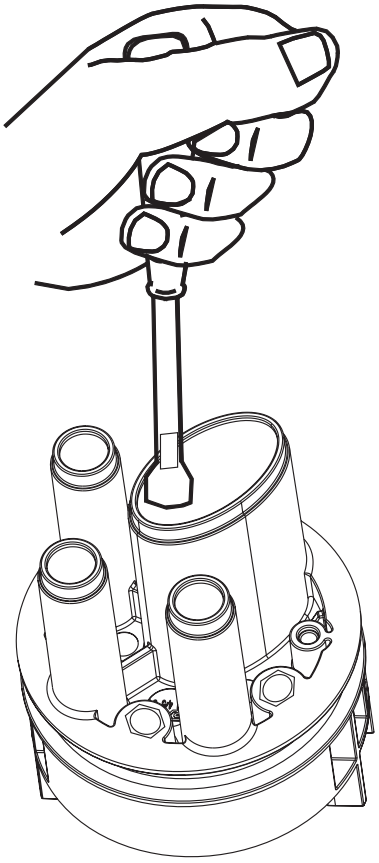


Figure 5

7. Prepare the Cable

Refer to SRP 206-288 (Heatshrink End Cap Canister Closure Sealing Checklist) to ensure all **critical** steps in Section 7 for sealing the closure have been performed accurately.

Step 1: Remove indicated length of cable sheath and armor (where applicable) according to Figure 2.

Step 2: Slide the heatshrink tubing over the cable as shown in Figure 6.

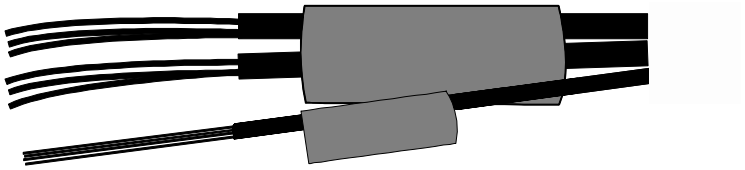


Figure 6

NOTE: Heatshrink tubes for drop ports are purchased separately.

Step 3: Mark the cable 9 in from the sheath opening and slide it through the port.

Step 4: Pull the cable through the end cap an additional 300 mm (12 in) or until you pass the mark on the cable.

8. Install Strain-relief Hardware

IMPORTANT: If an armored cable is used in the drop port, refer to Section 5 and add ground hardware to the cable. Install strain-relief hardware appropriately as described.

IMPORTANT: If the cable used is made with a metal central/strength member, use the grounding connector as for the armored cable, with the extension bracket to strain-relieve the central/strength member and ground it.

Step 1: Remove nuts from the ground clamp.

Step 2: Attach the extension bracket, then the top plate (Figure 7). Tap the top plate to set the teeth into the cable.

Step 3: Tighten clamp using one nut.

Step 4: Trim the central/strength member slightly shorter than the top of the extension bracket (Figure 8).
(When strength member is metal, bend it over the slots in the extension bracket as shown in the inset in Figure 8 and then trim excess strength member.)

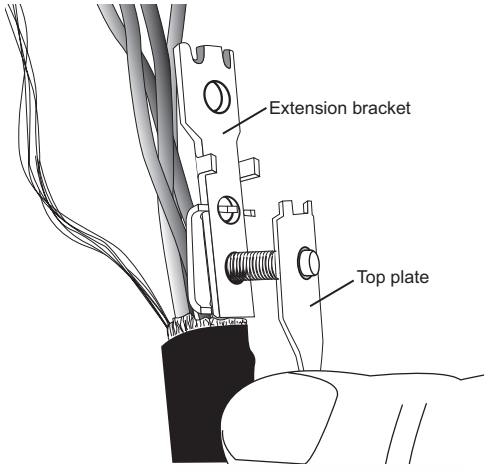


Figure 7

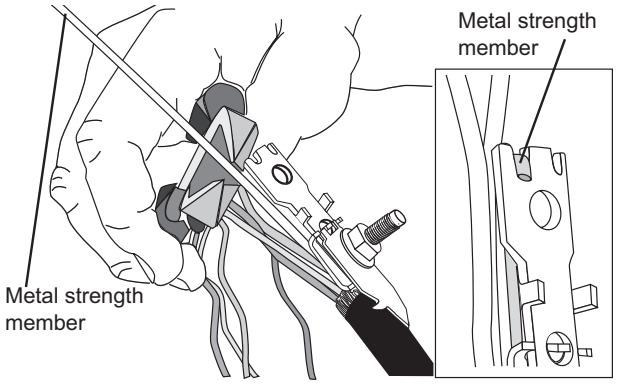


Figure 8

Step 5: Wrap the strength member yarn around the restraint cap stud (Figure 9A). Position the cap behind the extension bracket.

8.1 For small strength members (less than 3 mm in diameter)

Step 1: Repeat Steps 1 through 5 of Section 8 .

Step 2: Insert the restraint cap threaded stud through the upper hole in the strain-relief bracket, capturing the strength member between the two.

Step 3: With the strength member behind the bracket, install a nut on the restraint cap threaded stud (Figure 9B).

Step 4: Secure the cap to the extension bracket using the supplied nut (Figure 9B). Confirm that all buffer tubes are clear of the strength members and tighten securely.

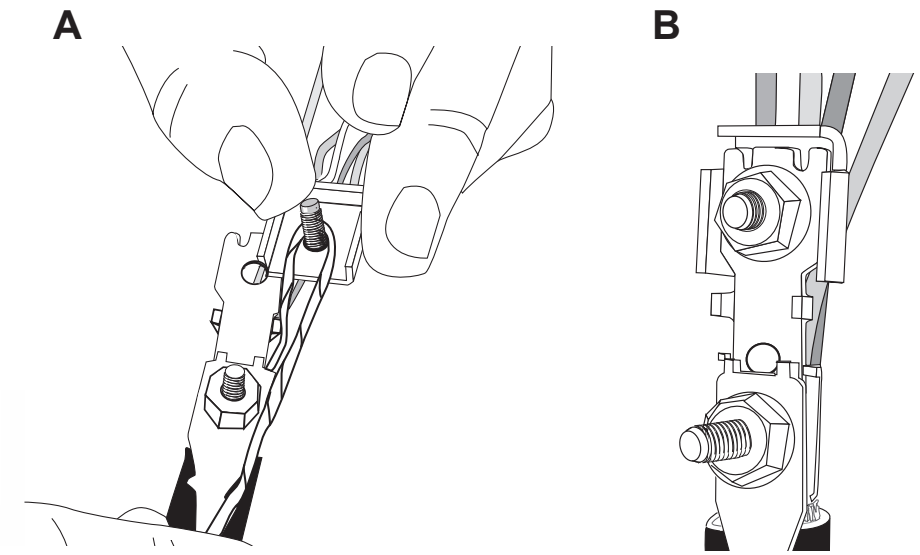


Figure 9

8.2 For large strength members (greater than 3mm in diameter)

Step 1: Use the supplied strain-relief kit, instead of the restraint caps:

Step 2: Slide the metal tube over the end of the central member (Figure 10A).

Step 3: Align the threads in the side of the tube with the hole in the strain-relief bracket.

Step 4: Install the supplied screw through the bracket and the threaded hole in the tube and tighten (Figure 10B).

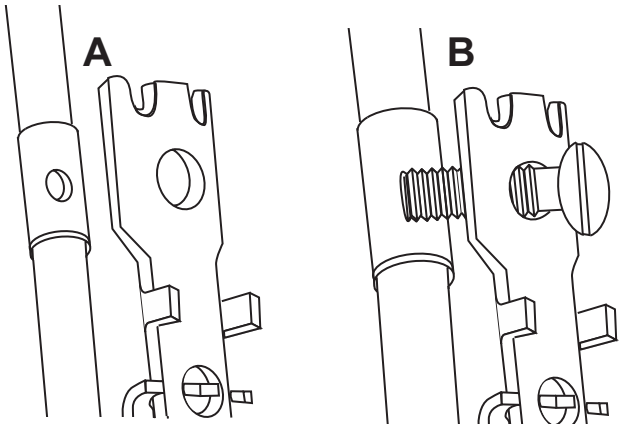


Figure 10

9. Install Cable

IMPORTANT: Torches are not recommended for the application of the heatshrink tubes included with this kit. Certain combinations of cable sheath materials and torches may cause sheath blistering.

Step 1: Clean and roughen the cable approximately 75 or 100 mm (3 or 4 in) towards the end of the cable using the supplied sandpaper.

Step 2: Roughen the appropriate cable port to ensure heatshrink adhesion.

Step 3: Carefully preheat the port and cable with the heat gun.

Step 4: Slide the heatshrink tube over the port until it butts against the end cap.

Step 5: Pull the cable(s) back through the port.

Step 6: If more than one cable is being installed in the oval port, position the 3-finger clip between the two cables at the end of the heatshrink tube (Figure 11).

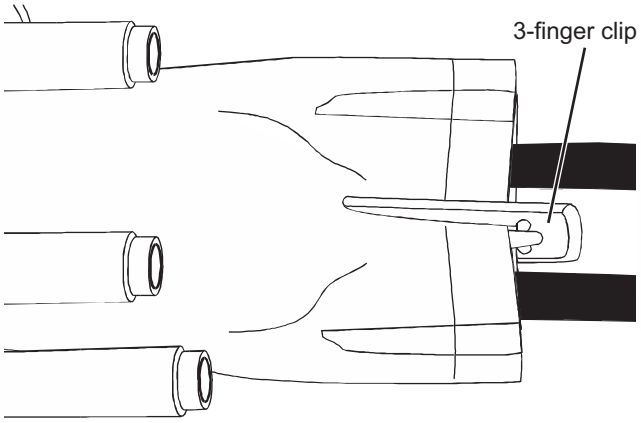


Figure 11

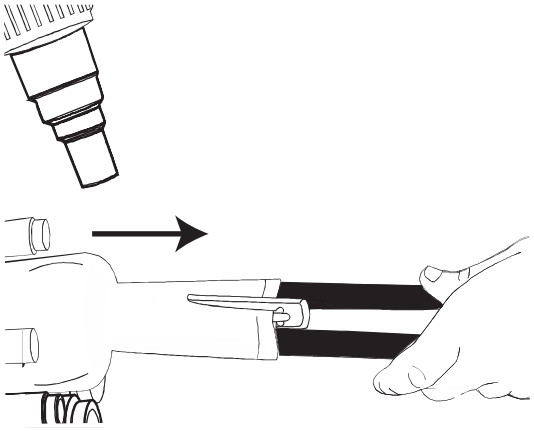


Figure 12

Step 7: Hold the cable while heating to prevent any movement.

Step 8: Beginning at the port, gradually move a heat gun down the tube (Figure 12)). Allow this portion of the tube to cool before shrinking the rest of the tube onto the cable.

10. Ground Armored Cable to End Cap

Step 1: Install the vented grounding plug onto the grounding port facing the inside of the closure (Figure 13).

Step 2: Attach the end of the grounding wire to the vented grounding plug using the vented grounding screw (Figure 13).

NOTE: When multiple cables are used, link the (Figure 14). Then secure the remaining cable to the ground plug.

Step 3: Apply lubricant on the threads of the solid two-piece grounding plug.

Step 4: Install the grounding plug on the outside of the same ground location (Figure 15).

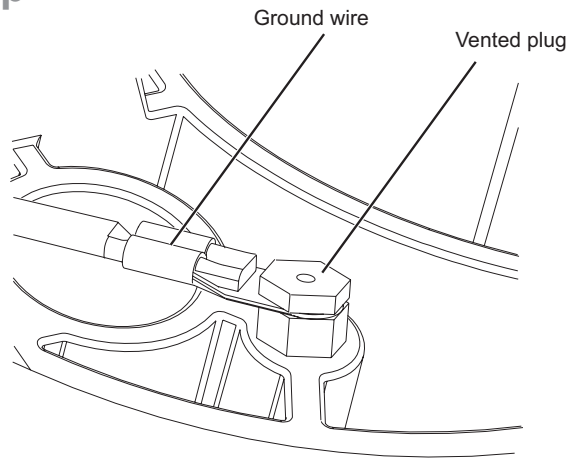


Figure 13

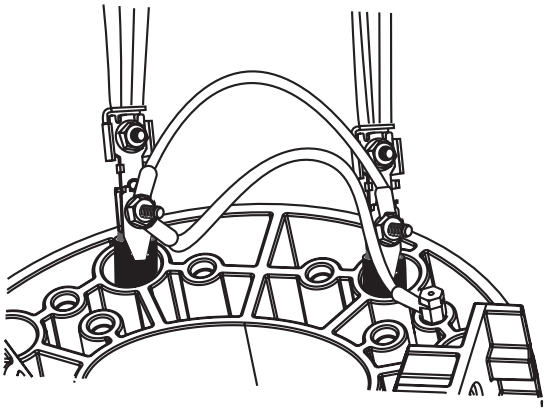


Figure 14

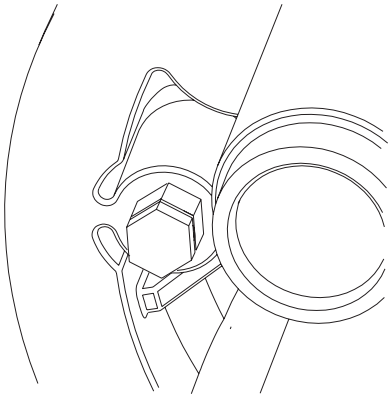


Figure 15

Refer to SRP 206-288 (Heatshrink End Cap Canister Closure Sealing Checklist) to ensure all **critical** steps in Sections 9 and 10 for sealing the closure have been performed accurately.

11. Splice the Main Cable

11.1 Prepare Fiber for Splicing

Step 1: Position an empty splice tray onto the studs on the frame so the cable enters the tray away from the end cap.

Step 2: Select the buffer tubes to be spliced in this splice tray and route the buffer tube(s) to the fiber entrance portion of the tray.

Step 3: Use a permanent marker to mark the buffer tube 19 mm (0.75 in) from the corner of the splice tray.

Step 4: Remove the buffer tube in 304 mm (12-in) increments until reaching the mark made in the previous step.

Step 5: Clean fibers according to cable manufacturer's instructions.

Step 6: Remove the tray from the studs.

Step 7: Secure the buffer tube to the tray per instructions provided with the splice tray.

Step 8: Prepare any other splice trays the same way.

Step 9: When all trays are prepared, splice per local practice.

11.2 Secure the Spliced Trays

Step 1: Place the spliced trays onto the studs on the frame (Figure 16).

Step 2: Place the slack basket over the studs and secure with the supplied metal clips.

Step 3: Loop buffer tube slack in the slack basket (Figure 17).

IMPORTANT: Before removing spliced trays, remove the buffer tube slack from the slack basket.

Step 4: Loop any unspliced (or express) buffer tubes inside the slack basket on the opposite side of the frame.

Step 5: Secure all components using the provided hook-and-loop strap (Figure 18).

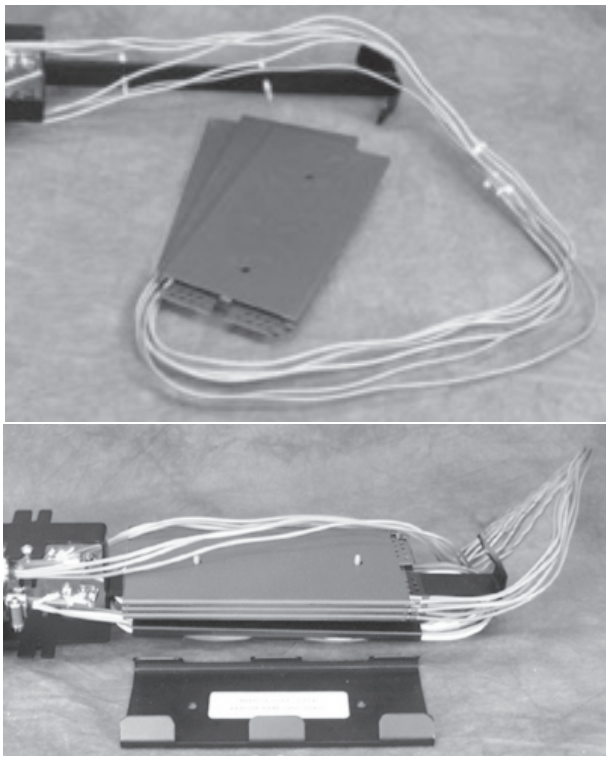


Figure 16

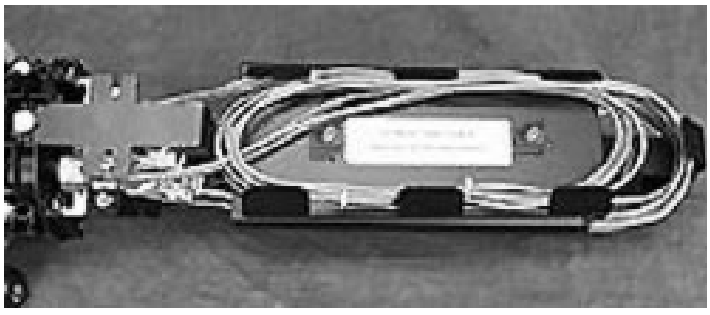


Figure 17

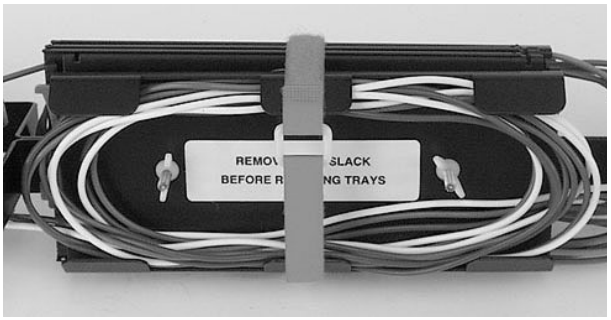


Figure 18

12. Seal the Closure

12.1 Install Seal

Step 1: Use the supplied brush to apply a third of the UCN lubricant to the sealing ring channel on the end cap (Figure 19A).

Step 2: Roll the sealing ring over the frame and up to the end cap. The sealing ring must be installed in the orientation shown in Figure 19B.

Step 3: Stretch the sealing ring over the channel.

Step 4: Fold the edge of the seal that overlaps the outside of the end cap until the seal seats in the channel as shown in Figure 19C.

IMPORTANT: The installed sealing ring must be oriented as shown toward the inside of the closure.

Step 5: Retain a small amount of UCN lubricant for later use. Apply the remaining lubricant to all sides of the sealing ring (Figure 19C).

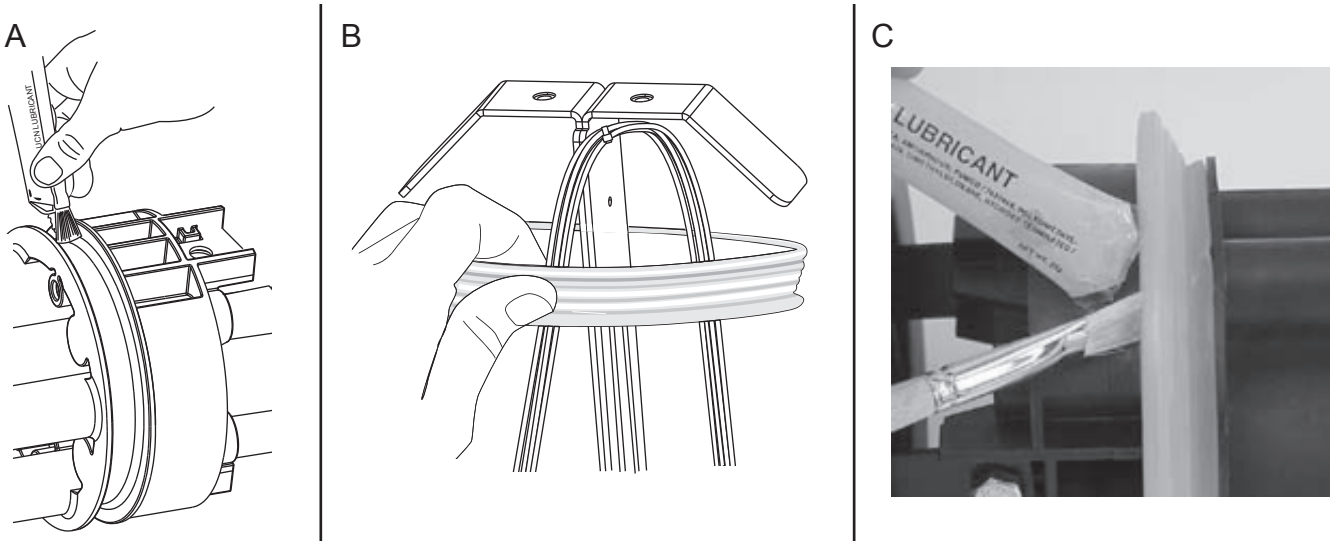


Figure 19

12.2 Install the Canister Cover

Step 1: Slide the canister over the closure assembly (Figure 20).

Step 2: Loosen bolt on the hinged side of the clamping ring.

Step 3: Apply a thin coat of UCN lubricant retained previously to the threads of the clamping ring latch bolts to prevent the bolts from seizing on reentry.

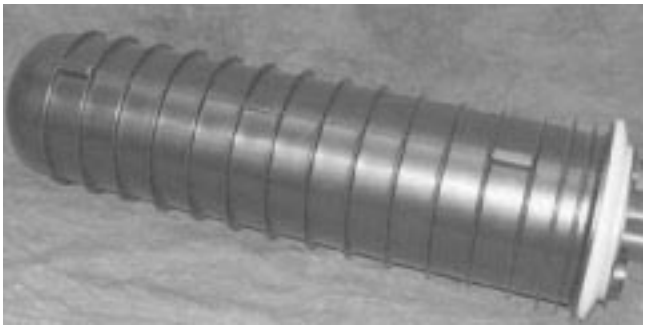


Figure 20

Step 4: Place the clamping ring over the flange of the canister and the sealing ring. Ensure that both the sealing ring and the canister flange are within the clamping ring (Figure 21).

Step 5: Swing the clamping ring into closing position. Tighten the bolts until the plastic on the ring touches, then tighten a quarter turn until the ring is completely closed.

IMPORTANT: A torque value of 25 to 50 in-lb should be sufficient. Do not use power tools to tighten the clamping ring; a torque value of more than 80 in-lb causes the hardware to crack and the clamping ring to become defective. If the clamping ring does not close properly, make sure the sealing ring and clamping ring are oriented correctly.

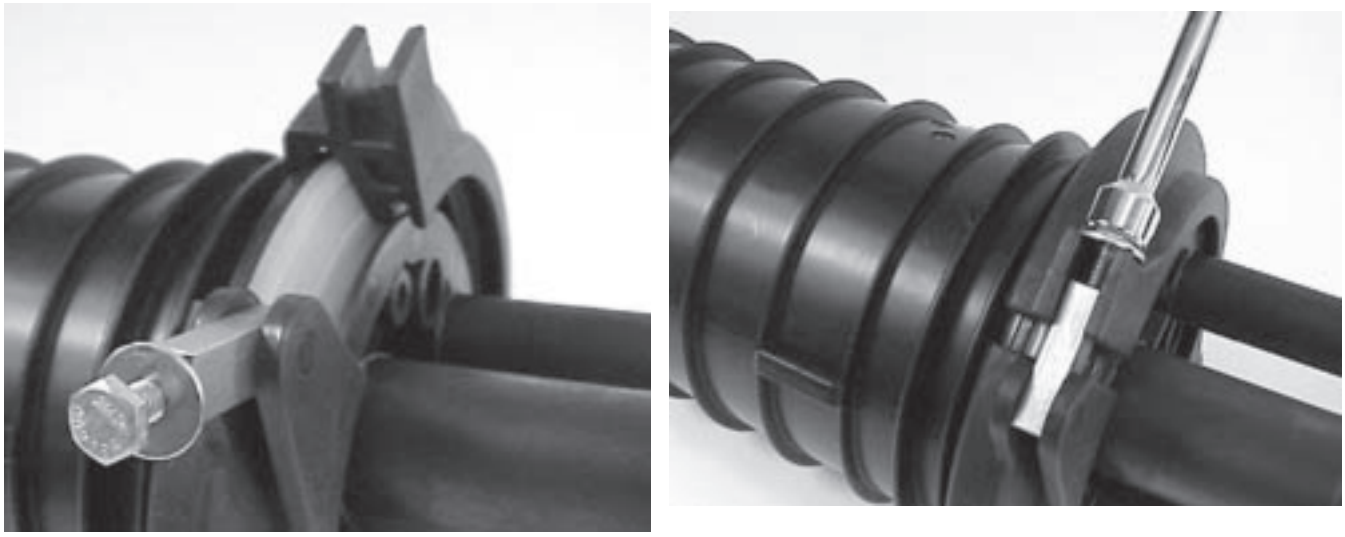


Figure 21

13. Install a Flash Test Air Valve

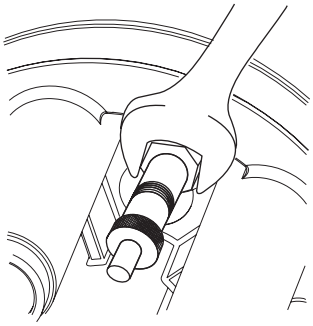


Figure 22

Step 1: Install valve stem (purchased separately):

a. Apply a thin coat of UCN lubricant retained previously to the threads of the valve stem.

b. Install the valve stem into the grounding port as shown in Figure 22.

Step 2: Perform flash test to a maximum of 14 psi:

a. Inject 12 to 14 psi of air into the closure using a hand pump (Figure 23). Check pressure after each 25 pumps.

WARNING: To avoid a potentially hazardous situation that could result in death or serious injury, do not exceed 14 psi (100 kpa) gauge pressure. The closure could burst.

b. Apply soapy water to the edges of the heatshrink tubing and watch closure for signs of leakage (bubbling of soap).

NOTE: A correctly sealed closure maintains pressure with no leaks.

Step 3: After the flash test has been performed and the closure sealed correctly, carefully remove the air valve and allow air to escape.

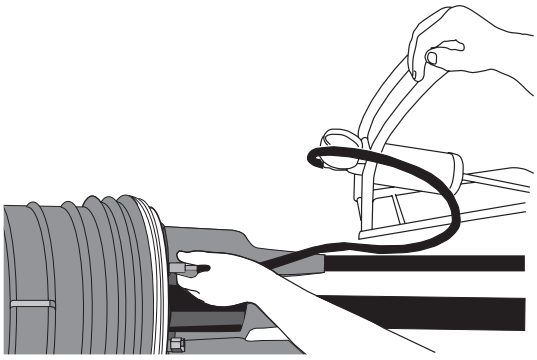


Figure 23

14. Ground the Closure

Step 1: Apply a thin coat of lubricant retained previously to the threads of a solid, two-piece, nonvented grounding plug (Figure 24).

Step 2: Install the larger plug into the end cap from the outside of the end cap finger-tight, then another half turn (approximately 40 to 60 in-lb).

Step 3: Connect a grounding cable (not supplied) to the plug.

Step 4: Screw the smaller insert into the plug.

Step 5: Tighten the insert using a small adjustable wrench.

Step 6: Terminate the other end of the ground per local practices.

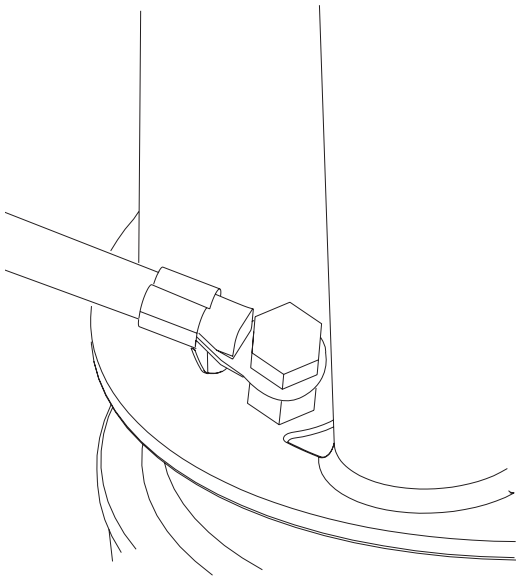


Figure 24

Refer to SRP 206-288 (Heatshrink End Cap Canister Closure Sealing Checklist) to ensure all **critical** steps in Sections 12, 13, and 14 for sealing the closure have been performed accurately.

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