

Moisture Blocking for FOSC 400 Splice Closure Kits

1. General Information

If cables are to be blocked, use the following instructions in place of the Cable Preparation instructions included with closure kits and cable sealing kits.

Depending upon the application, additional kits may be required, including:

FOSC ACC CB Sleeve W: wraparound cable blocking sleeve for mid-span cable openings.

FOSC ACC TTube Ribn: ribbon-sized transportation tubes for ribbon cables.

FOSC ACC Funnel Ribbon: ribbon-sized funnel for ribbon cables installed in round ports.

2. Kit Components

- Adhesive rings
- Heat-shrink tubing (black with white stripe)
- Adhesive foam strip
- Cleaning tissues
- Abrasive strip
- Tie wraps
- Installation instructions

WARNING! Extreme caution should be used when installing the cable block on flexible buffer tube cable. Applying heat directly to the buffer tubes or overheating the cable block will cause buffer tube damage.

Note: Transportation tubes are supplied with cable termination components in closure and cable seal kits.

3. Cable Preparation

These instructions address the cable blocking procedures for loose buffer tube and central core tube (stranded fiber or ribbon) cable, including both cable ends and mid-span cable

		Section Number	
		Oval Port	Round Port
Cable Ends	Loose Buffer Tube Stranded Fiber	3.1	3.1
	Central Core Tube Stranded Fiber	3.3	3.4
	Central Core Tube Ribbon Fiber	3.3	3.5
	Loose Buffer Tube Ribbon Fiber	3.6	3.6
Mid-Span Cable Entry*	Loose Buffer Tube Stranded Fiber	3.2*	N/A
	Central Core Tube Stranded Fiber	3.7*	N/A
	Central Core Tube Ribbon Fiber	3.7*	N/A
	Loose Buffer Tube Ribbon Fiber	3.8*	N/A

entries. Refer to the appropriate section:

*These applications require wraparound cable blocking sleeves available with some Basket

kits, or separately in the FOSC ACC CB Sleeve W Kit.

3.1 Loose Buffer Tube Cable Ends in Oval or Round Ports

To cable block the ends of loose buffer tube cable, follow these steps:

1. Clean the cable and remove outer cable sheath and shield if present. (70" in D closures, 48" in B and A closures) Remove the aramid and fiber yarns to the ring cut.
2. Cut central member 9" from the ring cut. (Figure 1)
3. Strip away any insulation present on the central member all the way back to the ring cut.
4. If a shield is present in the cable, tab the cable 1" from the ring cut. Crimp the alligator bond clamp to the tab in the sheath.
5. If you are using a B-Bond clamp on double-armored cable, remove a 1" square section of the outer cable sheath around the tab. (Figure 2) Slide the lower plate of the bond clamp under the inner shield so that the stud bolt sticks up through the tab.

Place the upper plate of the B-Bond clamp over the bolt. Place a double-eyelet bond wire (available in the FOSC ACC Bond Wire Kit) over the bolt. Install the nut on the bolt and tighten it. Cut off the excess stud bolt and file it flush with the nut. (Figure 3)

6. Attach cable end to the FOSC Work Stand using a tie wrap as shown. (Figure 4)
7. Carefully ring cut and remove all but three inches of each buffer tube. Clean the remaining buffer tubes, exposed fibers, central member, and 6" of the cable sheath with a rag and company-approved cleaning solution. (Figure 5)
8. Install one transportation tube on each buffer tube and slide it down to within 1" of the sheath ring cut.

Note: Two sizes of transportation tubes are provided for six-fiber and twelve-fiber buffer tubes.

9. Split a 1/2" long piece of transportation tube and install it on the central member 1" from the sheath ring cut.
10. Place an identification marker on each transportation tube 6" above the ring cut. (On distribution (out) cables in the oval port of "D" closures, place the markers 9" above the ring cut.)
11. Peel the backing off the foam strip. Gather all the transportation tubes together (excluding the bond wire, if present) and make one complete wrap of the foam strip, adhesive side down, 1" from the sheath ring cut. The ends of the transportation tube should extend slightly beneath the foam strip. Wrap the remaining foam strip around the bond wire and transportation tubes. (Figure 6)
12. If the cable is less than .50" in diameter, use 1 adhesive ring. Otherwise, use 2 rings. Wrap the yellow adhesive ring around the buffer tubes (and bond wire, if present) between the sheath ring cut and the foam strip. (Figure 6)
13. Clean 3" of the cable sheath below the ring cut with the provided cleaning tissue. Abrade the cleaned area with the abrasive strip. (Figure 6)

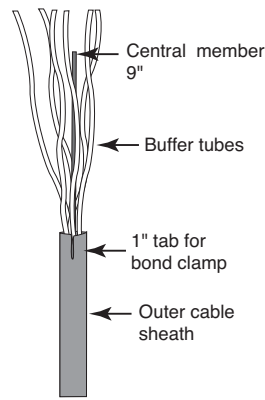


Figure 1

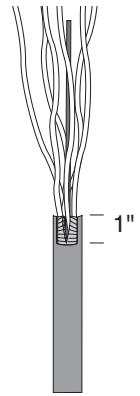


Figure 2

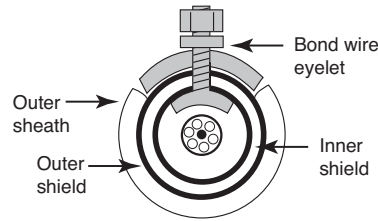


Figure 3

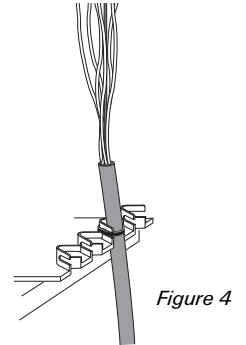


Figure 4

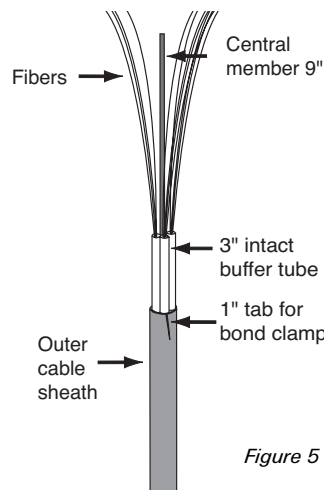


Figure 5

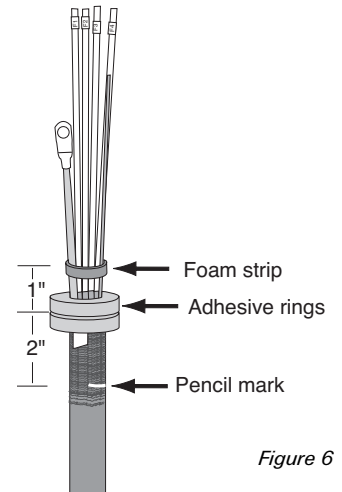


Figure 6

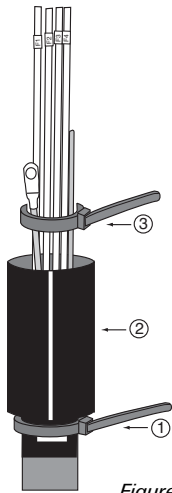


Figure 7

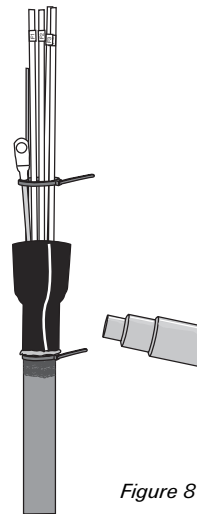


Figure 8

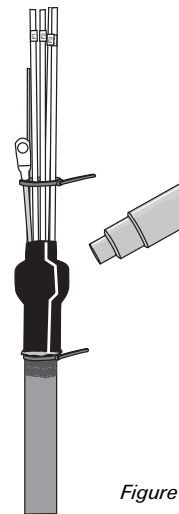


Figure 9

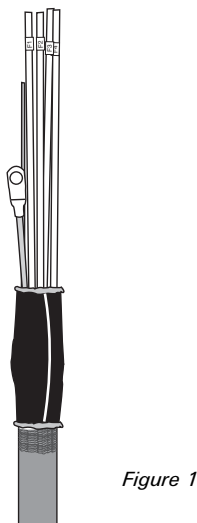


Figure 10

- Place a white pencil mark on the cable sheath 2" below the ring cut (1" below the bond clamp, if present).

Note: If the cable is to be installed in any oval port or in the large round port on a B2 or D5 closure, use the black tubing with the white stripe provided with the cable blocking components. If the cable is to be installed in the small round port on a B4 or A4 closure, or if the cable is less than 0.5" in diameter, use the lower-profile plain black tubing included with the cable termination components of the Cable Seal and closure kits. (The striped tubing will be too big to fit in the small round ports.)

- Place a tie wrap at the pencil mark on the sheath. Slide the appropriate heat-shrinkable tube over the adhesive rings. Let the tube slide down and rest on the tie wrap. (Figure 7, step 1, 2)
- Place a tie wrap around all the transportation tubes (and bonding wire if present) above the heat-shrinkable tube. (Figure 7, step 3)
- Begin shrinking the tube with the CV1981 hot-air gun on setting 6. Start at the bottom of the tube, directing the air flow upward. (Figure 8) At the top of the tube, direct the air flow downward to avoid applying heat directly to the transportation tubes.
- Continue heating until the entire tube has shrunk, (Figure 9) then apply additional heat to the lump of adhesive in the middle of the tube. When the seal is complete, the tube should be smooth and the adhesive lump should be melted. (Figure 10) After the moisture-block has cooled, remove the tie wraps from the cable.

Note: Do not attempt to melt the adhesive rings until both ends of the tube have been recovered.

3.2 Loose Buffer Tube Cable - Midspan Cable Entry in the Oval Port

- Clean the cable and remove the cable sheath and shield, if present (102" in D closures; 90" in A and B closures).
- Prepare both sides of the midspan opening as described in Section 3.1, Steps 1-14, but do not remove buffer tubes from fibers that will be looped, uncut, through the closure. Instead, place a 1" length of slit transportation tube around each buffer tube 1" from the ring cut. (This is required to separate the buffer tubes.)
- Place a tie wrap at the pencil mark on each cable sheath. Wrap the heat-shrinkable sleeves (available in FOSC ACC CB Sleeve W Kit and some Basket kits) around the adhesive tubes. Slide the channels over the rails. (Figure 11) Let the sleeves slide down and rest on the tie wraps. If a bond wire is present, rotate the channel at least 90° from the bond wire.
- Place another tie wrap around all tubes and wires above the sleeve. (Figure 11, Step 3)
- Begin shrinking the sleeve with the CV1981 hot-air gun on setting 6. Start at the bottom of the sleeve, directing the air flow upward. At the top of the tube, direct the air flow downward.

Note: Avoid applying heat directly to the cable buffer tubes.

- Continue heating until the entire tube has shrunk, then apply additional heat to the lump of adhesive in the middle of the tube. When the seal is complete, the tube should be smooth and the adhesive lump should be melted. (Figure 12)

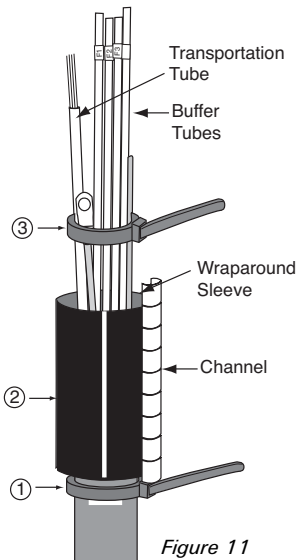


Figure 11

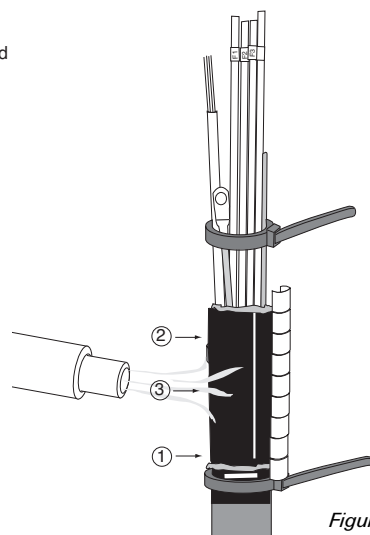


Figure 12

Note: Do not attempt to melt the adhesive rings until both ends of the tube have been recovered.

7. Direct additional heat to the channels. After the sleeves have cooled, cut the channels off with a utility knife and remove the tie wraps from the cables.

3.3 Central Core Tube Cable Ends in the Oval Port

1. Clean the cable and remove the outer cable sheath and shield, if necessary (70" in D closures; 48" in A and B closures).
2. If dual strength members (e.g., LXE) or multiple metallic strength members (eg., crossply) are present: expose each strength member and cut it off 9" from the ring cut. (Figure 13)
3. If multiple non-metallic strength members (eg., EST) are present: cut them off at the ring cut.
4. If metal shield is present: Remove all but 1" of the metal shield. (Figure 13) Pry open a 1" tab in the exposed metal shield where the shield overlaps. Crimp the bond clamp onto the edge of the shield.
5. Attach the cable to the FOSC Work Stand with a tie wrap. (See Figure 4)
6. Carefully cut the central core tube 12" from the sheath ring cut. (Figure 13)
7. Separate the fiber groups and clean the exposed components with a clean rag and company-approved cleaning solution. If ribbon cable is used, stack the ribbons in the order in which they appear in the central core tube. Temporarily wrap a piece of vinyl tape around the ribbons about 1" from the tube to help keep the ribbons stacked.

Note: If central core dielectric cable is used, the adhesive rings and foam strip are not required as described in steps 8,9.

Note: If the ribbons are not stacked properly, or if they are twisted, light signals may be attenuated.

8. Peel the backing away from the foam adhesive strip. Wrap one layer of foam around the central core tube 2-1/2" above the sheath ring cut, excluding the bond wire (if present) and the strength members. Wrap the remainder of the foam strip around the central core tube, strength members, and bond wire (if present) over the previously placed foam strip, creating a foam collar. (Figure 14)
9. Install both yellow adhesive rings over the central core tube, strength members, and bond wire between the shield (if present) or the sheath ring cut and the foam collar. (Figure 14)
10. Clean 3" of the cable sheath below the sheath ring cut with the provided cleaning tissue. Abrade the cleaned area with the abrasive strip.
11. Place a pencil mark on the cable sheath 1" below the ring cut.
12. Place a tie wrap at the pencil mark on the cable sheath. Slide the black heat-shrink tubing with the white stripe over the adhesive rings and let it rest on the tie wrap. (Figure 15)
13. Place another tie wrap around all tubes and wires above the tube. (Figure 15)
14. With the CV1981 hot air gun on setting 6, start shrinking the top of the tube, directing the air flow downward. Continue heating until the entire tube has shrunk, then apply additional heat to the lump of adhesive in the middle of the tube. When the seal is complete, the tube should be smooth and the adhesive lump should be melted. (Figure 16)

Note: Do not attempt to melt the adhesive rings until both ends of the tube have been recovered.

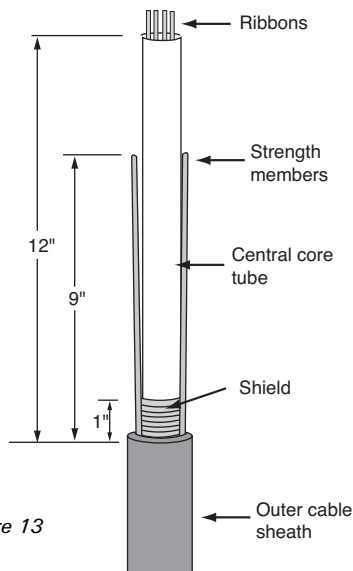


Figure 13

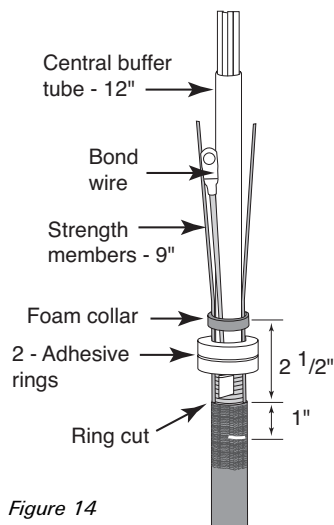


Figure 14

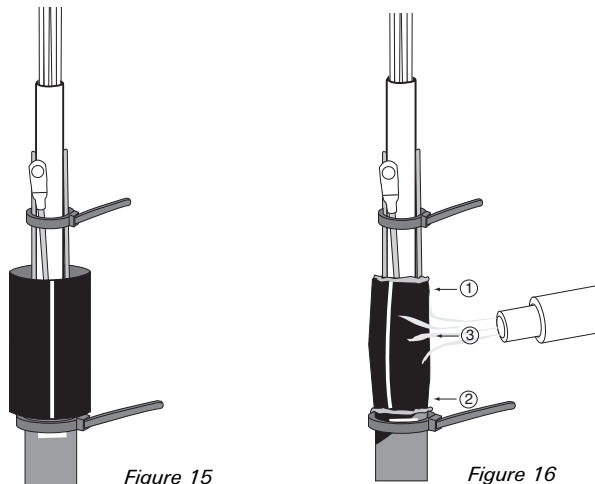


Figure 15

Figure 16

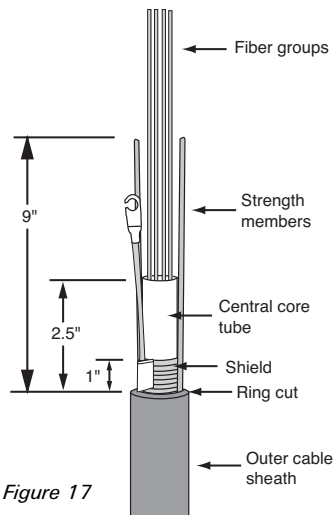


Figure 17

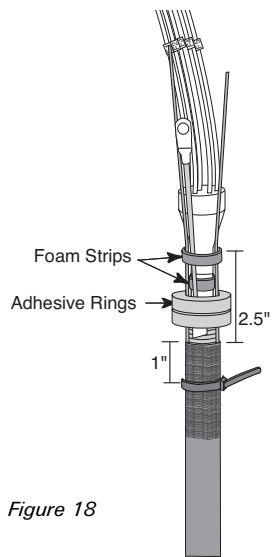


Figure 18

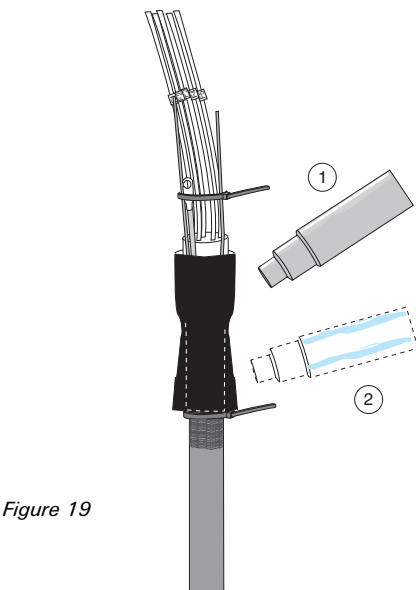


Figure 19

3.4 Central Core Tube Stranded Fiber Cable Ends in Round Ports

Note: For small-diameter central core tube cables or drops, use one transportation tube to extend the central core tube directly to an organizer tray, and do not use the funnels and distribution caps mentioned in this section.

1. Clean the cable and remove the outer cable sheath and shield, if present (70" for D closures; 48" for A and B closures).
 2. If dual strength members (e.g., LXE) or multiple metallic strength members (eg., crossply) are present: expose each strength member and cut it off 9" from the ring cut. (Figure 17)
 3. If multiple non-metallic strength members (eg., EST) are present: cut them off at the ring cut.
 4. If metal shield is present: Remove all but 1" of the metal shield. (Figure 17) Pry open a 1" tab in the exposed metal shield where the shield overlaps. Crimp the bond clamp onto the edge of the shield.
 5. Attach the cable to the FOOSC Work Stand with a tie wrap. (See Figure 4)
 6. Cut the central core tube 2.5" from the ring cut (1.5" beyond the metal shield, if present) and remove the excess tube. (Figure 17)
 7. Separate the fiber groups and clean the exposed components with a clean rag and company-approved cleaning solution.
 8. Slide the small end of the distributor funnel over the fiber groups, and slide it down over the central core tube.
 9. Place one fiber group in each hole of the distributor cap.
 10. Carefully slide the distributor cap down until it seats in the funnel. (Figure 18)
 11. Place the fiber groups from each distributor cap hole into a transportation tube, and slide the tube down into the hole.
 12. Place an identification marker on each transportation tube 6" above the ring cut.
 13. Cut a 1-1/2" piece of foam strip, then wrap the foam strip (adhesive side down) around the central core tube at funnel base, excluding the strength members. (Figure 18) This acts as a dam to block adhesive from migrating into the funnel.
 14. Peel backing from remainder of foam strip. Wrap one lap of foam around funnel 2 1/2" from ring cut (excluding strength members and bond wire), then wrap the remaining length over first strip, encompassing strength members and bond wire in the second lap. (Figure 18)
 15. Clean 3" of the cable sheath below the ring cut with the provided cleaning tissue. Abrade the cleaned area with the abrasive strip. Remove abraded material with a clean dry cloth.
 16. If the cable is less than .5" in diameter, use 1 adhesive ring. Otherwise, use 2 rings. Wrap the yellow adhesive ring(s) around the buffer tubes (and bond wire, if present) between the sheath ring cut and the foam strip. (Figure 18)
- Note: If cable diameter is less than .5", use bond wire or strength member to help hold adhesive ring in place against the central core tube.*
17. Place a tie-wrap 1" below the ring cut. Slide the 4"-long black heat-shrinkable tube (included with cable termination components in cable seal and closure kits) over the cable and allow it to rest on the tie wrap. The top of the tube should be roughly 1/2" below the top of the funnel. (Figure 19)

18. Place a tie wrap around the transportation tubes to hold them in place.
19. With the CV1981 hot-air gun on setting 6, begin shrinking the tube around the top of the funnel. After recovering 1" of tube on funnel, pause for 15 seconds to allow the adhesive to set on the funnel. Complete shrinking the tube and apply additional heat to the center of the tube to melt the adhesive rings. (Figure 20)

Note: Do not attempt to melt the adhesive rings until both ends of the tube have been recovered.

3.5 Central Core Tube Ribbon Fiber Cable Ends in Round Ports

Note: For ribbon cable, use the funnel and transportation tubes available in the FOSC ACC Funnel Ribbon Kit. This assembly will not fit into the small round ports on A4 and B4 closures.

1. Follow Steps 1 - 12 in Section 3.4 using the ribbon-sized funnel and ribbon transportation tubes from the Funnel Ribbon Kit. Place up to four ribbons in each hole of the distributor cap.

Note: Stack the ribbons in the order in which they appear in the central core tube. If the ribbons are twisted, light signals may be attenuated.

2. Slide the 4"-long black heat-shrinkable tube (included with cable termination components in cable seal and closure kits) over the transportation tubes and funnel, but under the strength members and bonding wire. The tube should be 1" from the ring cut. If a shield is present in the cable, the tube should be flush with the edge of the shield. (See Figure 21).

3. Place a tie wrap around the transportation tubes to hold them in place.

4. Begin shrinking the tube with the CV1981 hot-air gun on setting 6. Start at the end of the tube closest to the cable and work towards the transportation tubes. The seal is complete when the tube is completely shrunk around the transportation tubes. (See Figure 22)

5. Peel backing from foam strip. Wrap one lap of foam around tubing 2 1/2" from ring cut (excluding strength members and bond wire), then wrap the remaining length over the first strip, encompassing strength members and bond wire in the second lap. (See Figure 23, Step 1)

6. Clean 3" of the cable sheath below the ring cut with the provided cleaning tissue. Abrade the cleaned area with the abrasive strip. (See Figure 23, Step 3)

7. Install both yellow adhesive rings around central core tube (or metal shield if present), strength members, and bond wire (if present) between sheath ring cut and foam strip. (See Figure 23, Step 2)

Note: If cable diameter is less than 1/2", use the bond wire or strength member to hold adhesive rings in place against the central core tube.

8. Place a tie wrap on the cable sheath 1" below the ring cut. (See Figure 23, step 4)

9. Slide the black heat-shrinkable tube with the white stripe down over the adhesive rings. Let the tube slide down and rest on the tie wrap. (Figure 24, steps 1, 2)

10. Remove the tie wrap from step 3 and place a tie wrap around all the transportation tubes and strength members (if present) above the heat-shrinkable tube. (Figure 24, step 3)

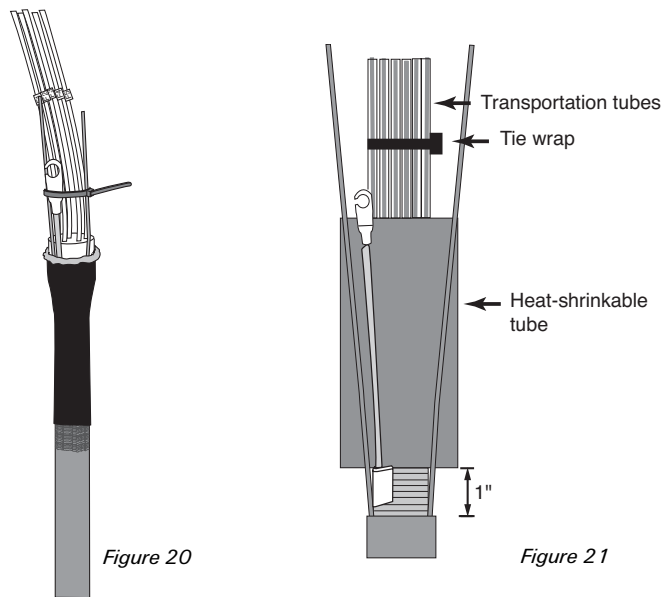


Figure 20

Figure 21

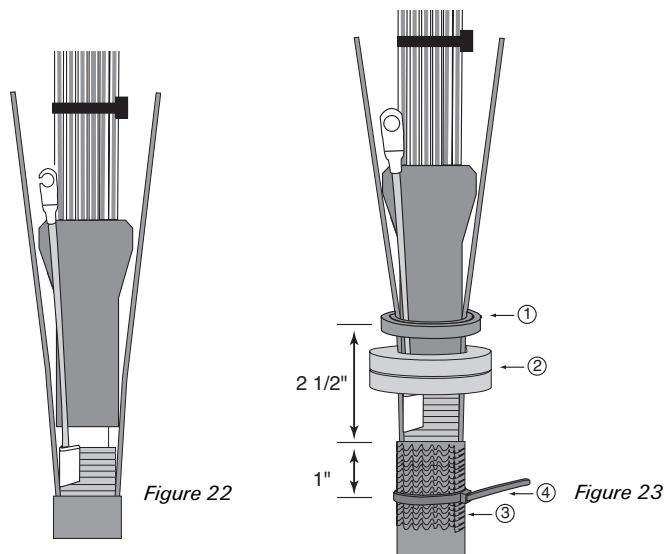


Figure 22

Figure 23

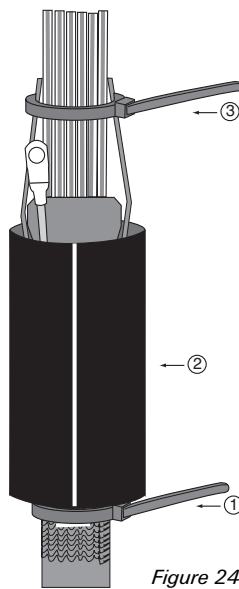


Figure 24

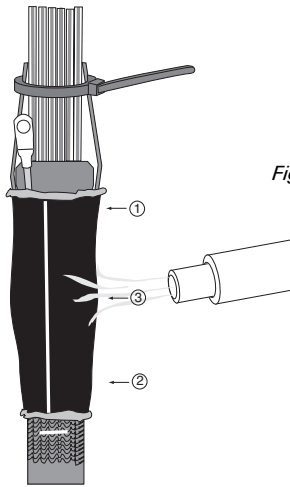


Figure 25

11. Begin shrinking the tube with the CV1981 hot-air gun on setting 6 around the top of the funnel. After recovering 1" of tube on funnel, pause for 15 seconds to allow the adhesive to set on the funnel before shrinking the bottom of the tube. (See Figure 25, steps 1,2)
12. Continue heating until the entire tube has shrunk, then apply additional heat to the lump of adhesive in the middle of the tube. When the seal is complete, the tube should be smooth and the adhesive lump should be melted. (See Figure 25, step 3) After the moisture-block has cooled, remove the tie wraps from the cable.

Note: Do not attempt to melt the adhesive rings until the entire tube has been recovered.

3.6 Loose Buffer Tube Ribbon Fiber Cable Ends (Oval or Round Port)

Important: A metal slack basket (FOSC ACC D Basket or FOSC ACC B Basket Ribbon) and ribbon sized transportation tubing (FOSC ACC TTube Ribn) are required.

1. Prepare the cable as in Section 3.1, Steps 1-6, but in Step 7, leave 12" of intact buffer tube on each loose buffer tube.
2. Do not install transportation tubes on the loose buffer tubes (Steps 8-10).
3. In Step 11, install the foam strip 1" from the sheath ring cut. Wrap the foam strip around the loose buffer tubes first, then on the second lap, wrap it around the bond wire as well as the tubes.
4. In Steps 13-18, substitute "loose buffer tubes" for "transportation tubes". In Step 17, be careful not to apply heat directly to the loose buffer tubes, as they may melt and damage the ribbons.
5. The twelve-inch loose buffer tubes are routed directly to the slack basket.

3.7 Central Core Tube Cable -Mid Span Cable Entry in the Oval Port

Important: If using ribbon cable, a metal slack basket (FOSC ACC D Basket or FOSC ACC B Basket Ribbon) and ribbon sized transportation tubing (FOSC ACC TTube Ribn) are required.

1. Clean the cable and remove the cable sheath and shield, if present (102" in D closures; 90" in A and B closures).
2. Follow the instructions in Section 3.3, Steps 2 - 14, but use Wraparound cable blocking sleeves available in the FOSC ACC CB Sleeve W Kit and some basket kits. The channels on the sleeves must be positioned 90° from the bond wire, if present. After shrinking sleeves direct additional heat at channels.
3. After the sleeves have cooled, cut the channels off the sleeves with a utility knife and remove the tie wraps from the cables.

3.8 Loose Buffer Tube Ribbon Fiber Cable - Mid-Span Entry in the Oval Port

Important: A metal slack basket (FOSC ACC D Basket or FOSC ACC B Basket Ribbon) and ribbon sized transportation tubing (FOSC ACC TTube Ribn) are required.

1. Strip 102" to 140" of outer cable sheath. Prepare the components as in Section 3.6, removing all but 10" of buffer tube from each group of ribbons. Do not cut ribbons that will be expressed through the closure.
2. A wraparound sleeve (FOSC ACC CB Sleeve W) must be used at each end of the cable opening.

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