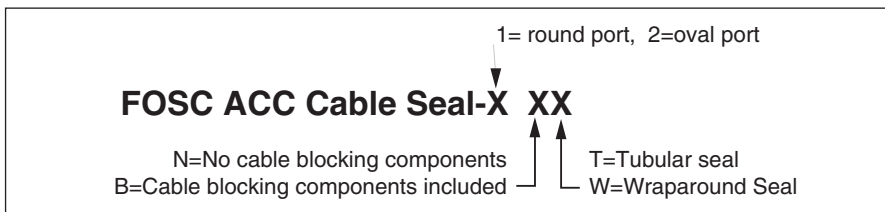# COMMSCOPE®

FOSC ACC Cable Seal 1-XX

Round Port Seal

1.0 General Product Information

The FOSC ACC cable seal 1-XX kit contains the materials necessary to seal one cable end into any round port of any FOSC 400 series splice closure. The kit may contain either a tubular or wraparound cable seal, and may contain cable moisture blocking   components, as well. The two-character extension terminating the kit's name defines its contents:

Note: This kit can also be used on FOSC 100 B, B2, 200D and A closures.

```
                                    1= round port,  2=oval port

        FOSC ACC Cable Seal-X  XX

    N=No cable blocking components          T=Tubular seal
    B=Cable blocking components included     W=Wraparound Seal
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2.0 Kit Contents

The following items are included in every FOSC ACC cable seal 1-XX kit:

Cable Termination Components
*   heat-shrinkable cable seal
*   aluminum tape
*   abrasive strip
*   cleaning tissue
*   bond wire and clamp
*   distribution funnel and cap
*   thin-walled heat-shrink tube (for use with funnel)
*   small transportation tubes
*   large transportation tubes
*   clear vinyl transport tubing (3 sizes each 12" in length)
*   buffer tube identification labels
*   tie wraps (small and large)
*   installation instructions

Cable Blocking Components**
*   yellow adhesive rings
*   adhesive foam strip
*   heat-shrink tubing
*   abrasive strip
*   cleaning tissue
*   tie wraps
*   installation instructions

••Cable blocking components are not included in all kits.
Refer to the Naming Convention definition in this practice
for further details.

3.0 Cable Preparation

Cable core blocking is optional with cable seal kits. If cables are to be blocked prior to installation in a splice closure, ignore the instructions in this section and refer to the instructions on cable preparation included with the cable blocking components.

The instructions that follow address the preparation of loose buffer tube and central core tube (stranded fiber and ribbon) cable. Refer to the appropriate section:

3.1   Loose Buffer Tube Cable End Preparation
3.2   Central Core Tube Stranded Fiber Cable End Preparation
3.3   Central Core Tube Ribbon Fiber Cable End Preparation
3.4   Loose Buffer Tube Ribbon Fiber Cable End Preparation

3.1 Loose Buffer Tube Cable End Preparation

1. Clean the cable and remove the outer cable sheath and shield if present. (70″ in D closures; 48″ in A and B 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 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. (Figure 1)

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)

Note: If flexible loose buffer tube cable is being used, transportation tubes are not required. Buffer tube can be routed directly to the splice tray. Check with your cable manufacturer if you are not sure of the buffer tube material.

7. Carefully ring cut and remove all but three inches of each buffer tube. Clean the remaining buffer tubes, exposed fibers, strength 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 the sheath ring cut.

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

9. If cable blocking is not being installed, wrap cable with vinyl tape from 1″ below the bond clamp to 2″ above the ring cut to hold transportation tubes in place.

10. Place an identification marker on each transportation tube 6″ above the ring cut.

3.2 Central Core Tube Stranded Fiber Cable End Preparation

The following procedure describes the use of funnels to distribute single fibers to the organizer trays. An alternative procedure for use in B2, B4, and D5 closures is to route the entire central core tube to the bottom organizer tray only if no slack basket is present. If cable blocking is required, refer to cable blocking instructions.

Note: The distribution funnel and cap provided in the kit is not to be used on ribbon fiber cable.

1. Clean the cable and remove the outer cable sheath (70″ in D closures; 48″ in A and B closures).

2. If metal or dielectric 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 6)

3. If flexible 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 6) 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. (Figure 4)

6. Cut the central core tube 2-1/2″ from the ring cut (1-1/2″ beyond the metal shield if present), and remove the excess tube. (Figure 6)
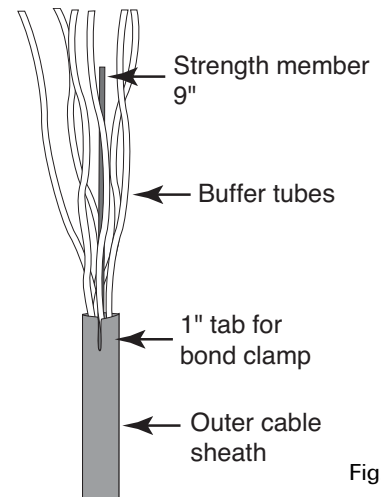

Strength member 9"

Buffer tubes

1" tab for bond clamp

Outer cable sheath

Fig. 1

1"

Fig. 2

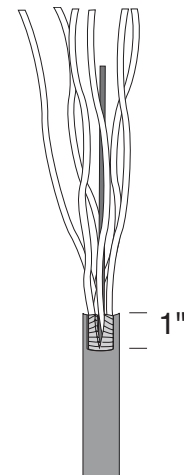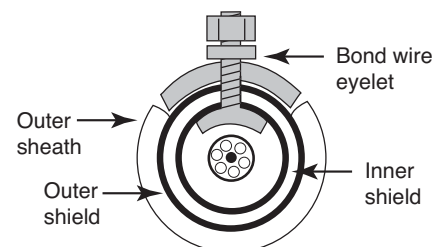Bond wire eyelet

Outer sheath

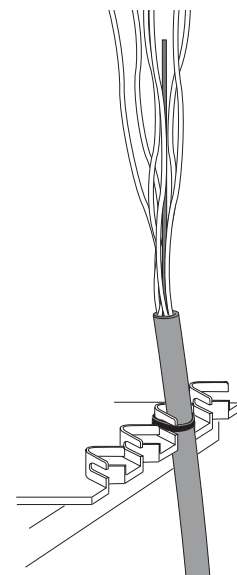Outer shield

Inner shield

Fig. 3

Fig. 4

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. (Figure 7)

10. Carefully slide the distributor cap down until it seats in the funnel.

11. Place the fibers 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. On feeder tubes (in cable), place the markers 6″ above the ring cut. On distribution tubes (out cable), place the markers 9″ above the ring cut.

13. Place a tie wrap 1″ below the ring cut. Slide the 4″ long black heat-shrinkable tube over the cable components 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.14.   Place a tie wrap around the transportation tubes to hold them in place. (Figure 8)

15. With the CV1981 on setting 6, begin shrinking the tube around the top of thefunnel (Figure 8). After recovering 1″ of tube on funnel, pause for 15 seconds to allow the adhesive to set on the funnel. Complete shrinking the tube. (Figure 9)

16. Remove the tie wraps, after the tube has cooled.

3.3 Central Core Tube Ribbon Fiber Cable End Preparation

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

The following procedure describes how to use the 12″ clear vinyl transport tubing to transfer ribbons from central core tube cable to the slack basket.

Warning: Do not use the clear vinyl transport tubing to route fibers directly from cable to the hinging splice trays. All clear vinyl transport tubing gets routed directly to the slack basket.

1. Clean the cable, and remove the outer cable sheath (110″ in D closures; 70″ in A and B closures).

2. If metal or dielectric dual strength members (e.g., LXE) or multiple metallic strength members (eg., crossply) are present, expose each strength member. Cut it off 9″ from the ring cut. (See Figure 6)

3. If flexible 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 6) 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. Cut the central core tube 2-1/2″ from the ring cut (1-1/2″ beyond the metal shield if present), and remove the excess tube. (See Figure 6)

7. Separate the fiber groups, and clean the exposed components with a clean rag and company approved cleaning solution.

8. Slide correct size clear transport vinyl tubing over the core tube. Tie wrap in place.

9. If cable blocking is not being installed, wrap cable with vinyl tape from 1″ below the bond clamp to 2″ above the ring cut to hold transportation tubes in place. If cable blocking is to be installed, follow normal cable blocking procedures for central core cable.

10. Route clear vinyl transport tubing into the slack tray. Attach with tie wraps. End of the tubing can be sealed with company approved sealant.

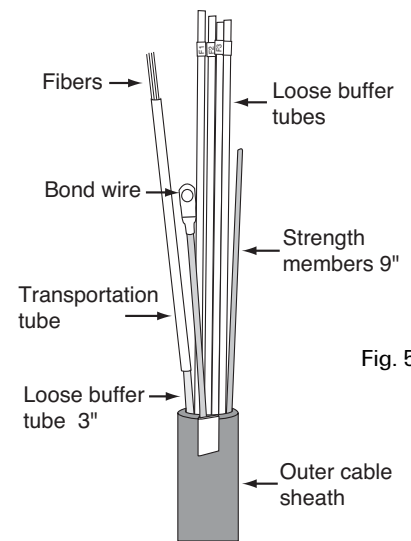11. Ribbon intertray jumpers are used to route the ribbons from slack basket to splice organizer trays.

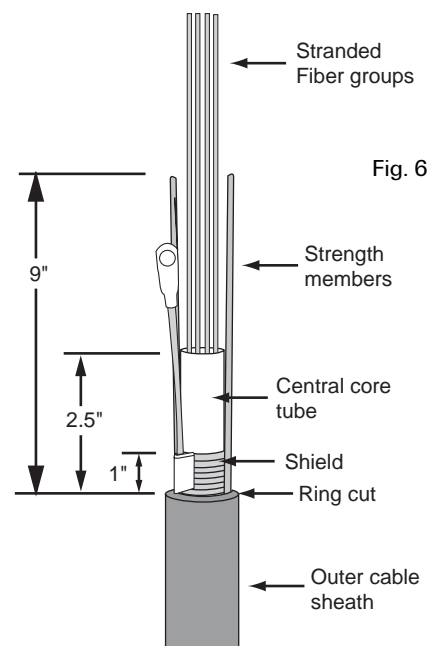Fibers
Loose buffer tubes
Bond wire
Strength members 9"
Transportation tube
Loose buffer tube 3"
Outer cable sheath

Fig. 5

Stranded Fiber groups
Fig. 6
9"
Strength members
2.5"
Central core tube
1"
Shield
Ring cut
Outer cable sheath

Fiber groups
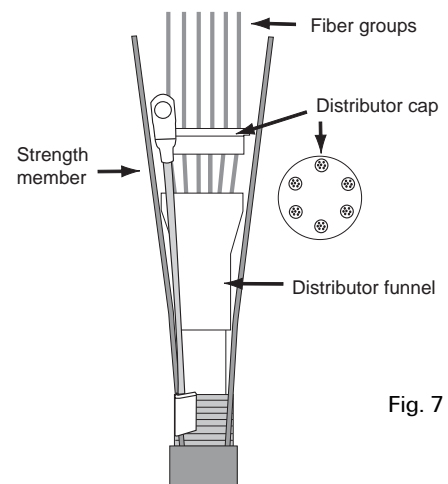Distributor cap
Strength member
Distributor funnel
Fig. 7

3.4 Loose Buffer Tube Ribbon Fiber Cable End Preparation

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

1. Prepare the cable as in Section 3.1, Steps 1-7. In Step 7, leave 12″ of intact buffer tube on each loose buffer tube.

2. The 12″ loose buffer tubes are routed directly to the slack basket. Intertray jumpers (documented in the closure practices) are used to route the ribbons to splice organizer trays.

4. Cable Installation

1. Select the appropriate round port to open on the FOSC base. Cut the end off the selected port at the ridge with a hacksaw.

IMPORTANT: Slide tubular cable port seal over cable(s) before installing cable(s) in the port!! The arrow on the seal should point at the base. (If you forget this step, you may need to order a wraparound port sleeve.)

2. Insert the cable through the port. Align each cable so that the sealed end of the moisture block (if present) is flush with the inside edge of the opened port. If moisture block is not used, align with the top of the vinyl tape wrap (loose buffer tube cable), or the distribution funnel cap (central core tube cable).

3. Attach appropriate rectangular washer to base of closure with supplied boltadjacent to the opened round ports. Two washers and one bolt are includedwith the cable seal kit, so be sure to install the right washer and bolt. (Figure 10, 11a, and 11b)

4.1 Bond and Ground Metal Components

Bonding components are included in the FOSC 400 kits. FOSC 400 closures support two methods of external grounding:

· Grounding using the FOSC-ACC-Fiber Ext Grnd kit (common or isolated grounding)
· Grounding using the FOSC-ACC-MEG (Multiple External Grnd)
· Grounding using ground feedthrough studs

Various combinations of the procedures described in this section can be used to bond and ground cables and closure components in compliance with company approved grounding standards.

Note: All steel strength members are bonded in common when captured under the rectangular washer.

Bonding Cables Installed in the Bottom Round Port on a D5 Closure

Locate the twisted copper bonding wire preinstalled in the closure. One end of the wire is attached to the metal tray bracket. The other end is an eyelet to which bond wires from cables will be attached with the supplied nut and bolt assembly.

Bonding Cables Installed in the All Other FOSC 400 Round Ports

Insert the ″hooked″ bond wire eyelet between the bolt head and rectangular washer opposite the port being used. Do not tighten the bolt until central members are placed under the washer. (See Figure 12b)
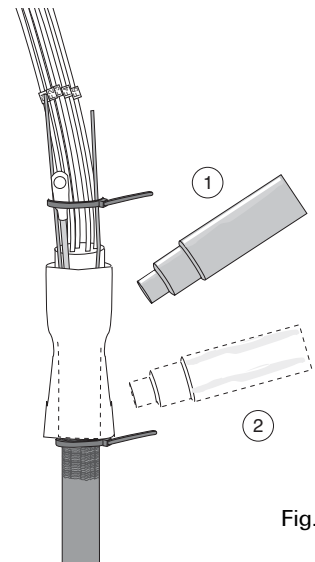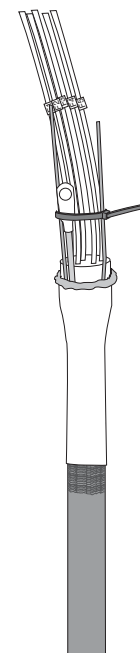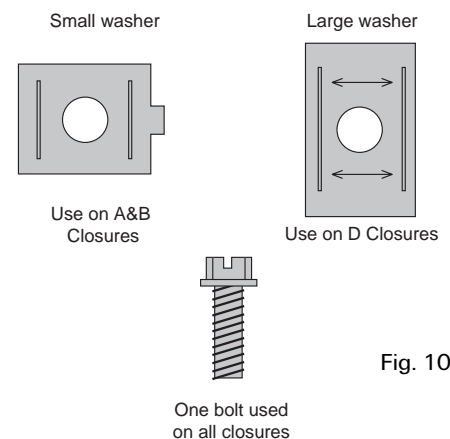

Fig. 8

Fig. 9

Small washer
Large washer

Use on A&B Closures
Use on D Closures

One bolt used on all closures

Fig. 10

4.2 Attach Strength Members

Follow these steps to attach strength members from the cables to the metal tray bracket:

1. Align the strength member with the square washer with which it will be attached to the base. Trim the strength member 1/4″ beyond the edge of the square washer.

2. Loosen the square washer and place the strength member(s) underneath it. Add short section of central member to other side of washer to keep level. Tighten the square washer to secure the central members against the base. (Figure 12)

3. With all round ports (except the bottom port on a D5 closure), one bolt captures both the bond wire eyelet and the washer.
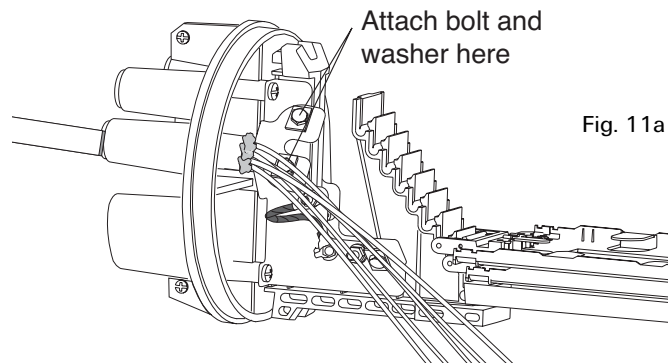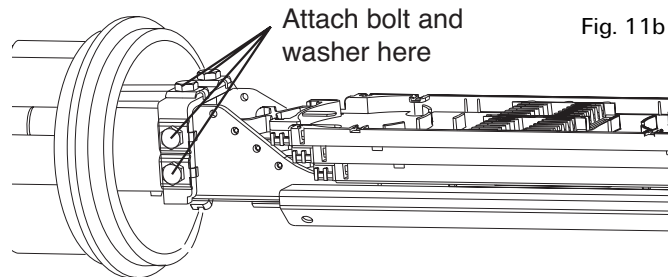
4.3 Tubular cable seal

Follow these steps to install a tubular round port seal (FOSC ACC cable seal 1NT or 1BT):

1. Clean the port and 8″ of cable sheath beyond the port edge thoroughly with the supplied cleaning tissue. (Figure 13)

2. Abrade the port and 8″ of cable sheath with the supplied abrasive strip, and remove any abraded material from the port and sheath with a clean, dry rag.

3. Slide the tubular cable port seal up around the port and cable. Be sure that the arrows on the tube point to the base. Squeeze the tube down onto the cable and place a white pencil mark on the cable just beyond the end of the tube. (Figure 14)

4. Slide the tube back off the port.

5. Line up purple line from the aluminum tape to the white mark on the cable and wrap cable. The aluminum tape should be no more than 1/2″ inside the white mark on the cable. (Figure 14)

6. Slide the tube back onto the port, being sure that the edge of the tube butts against the FOSC 400 base. (Figure 15)

7. Using the CV1981 hot-air gun on setting 10, begin shrinking the tube at the end closest to the base of the closure. Direct the air around the tube until the green paint turns black.

8. Continue heating the remainder of the tube as evenly as possible until it has completely conformed to the cable. (Figure 16)
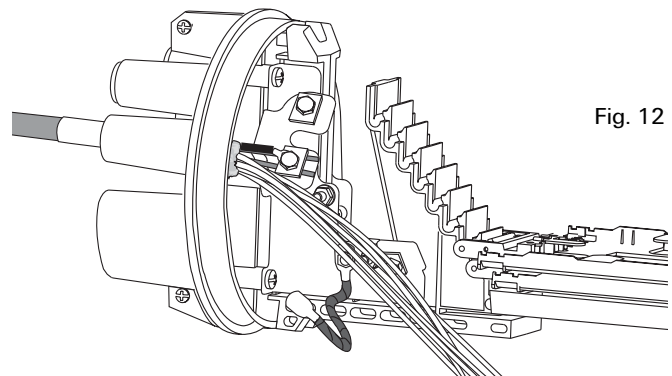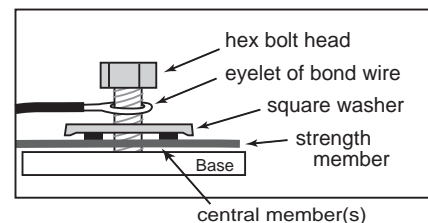
Note: Do not overheat the tube or closure base.

9. The seal is completely installed when:

· Melted adhesive appears at the cable end of the tube.
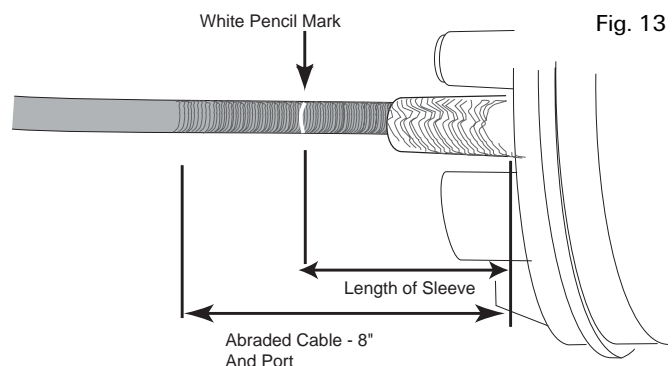· All green thermochromic paint on the tube has turned black.

Attach bolt and washer here

Fig. 11a

Attach bolt and washer here

Fig. 11b

Fig. 12

hex bolt head
eyelet of bond wire
square washer
strength member
Base
central member(s)

Fig. 12b

White Pencil Mark

Length of Sleeve

Abraded Cable - 8″ And Port

Fig. 13

4.4 Wraparound cable seal

To install a wraparound round port seal (FOSC ACC cable seal 1NW), follow these steps:

1.   Do Section 4.3, Steps 1-5.

2.   Remove the detachable portion of the Velcro strip from the wraparound sleeve. Peel the adhesive backing away from the strip, and wrap the strip around the port, abutting the strip against the base.

3.   Wrap the sleeve around the port so that the rail is closest to the outside edge of the base. Stick the Velcro on the sleeve to the Velcro on the port as much as possible.

4   Slide the channel on the rail, being careful not to pinch the red adhesive flap or the foam block between the rails. Position the channel towards the outside of the closure.

5.   Perform Section 4.3, Steps 7 - 9. Apply additional heat to channel area. Do not cut off channel.
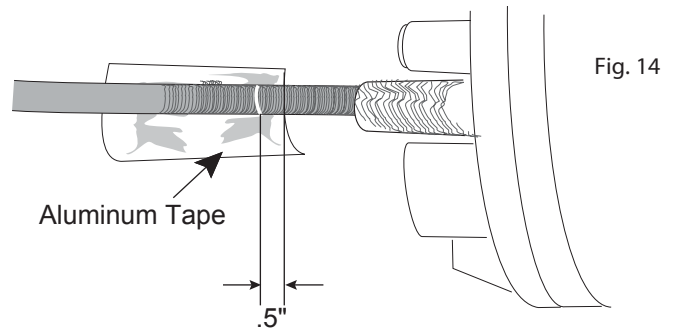
4.5 Two or Three Cables in one Round Port

Note: Branch-off clips are available in the FOSC ACC branch-off clip kit.

To seal two or three cables in one round port, follow these steps:

For two cables in the round port, .6" cable diameter is the maximum and for three cables in the round port .4" cable diameter is the maximum. These dimensions are for cables with no cable blocking.

1.   Depending upon whether a tubular or wraparound sleeve is being installed, refer to Section 4.3 or 4.4 and follow those instructions to the point at which the sleeve is installed on the foil-wrapped cables.

2.   Install a branch-off clip as shown. The clip's base must touch the tube. (Figure 17)

3.   Tie the cables together with a tie wrap 1" beyond the end of the tube.

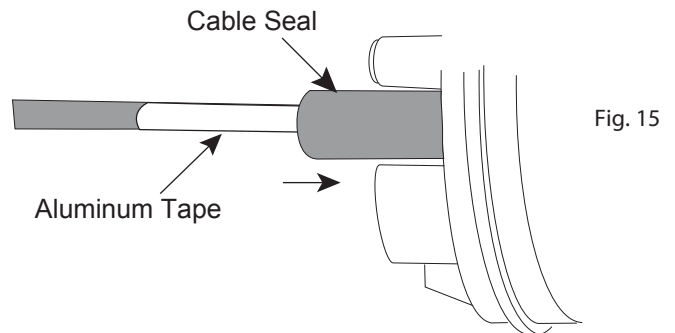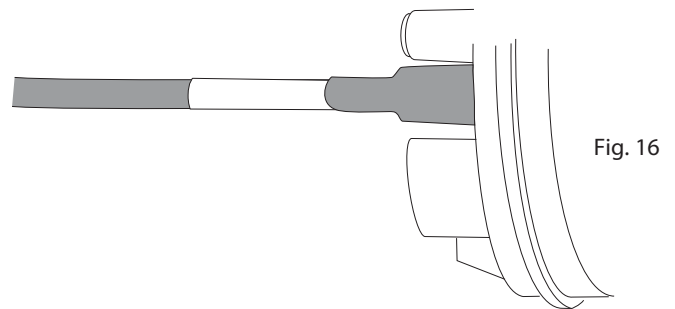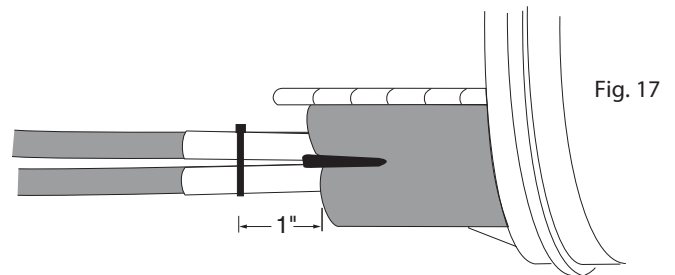4.   Shrink the sleeve as described in Section 4.3, Steps 7-9.

5.0 Fiber Splicing and Storage

Refer to the FOSC 400 splice closure kit installation instructions for directions on splicing fibers and storing the splices.

Fig. 14

Aluminum Tape

.5"

Cable Seal

Fig. 15

Aluminum Tape

Fig. 16

Fig. 17

1"