

Fiber Optic Splice Closure

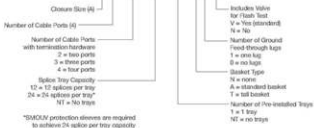
Note: Store unused components and installation instructions in bag and keep inside closure for future cable terminations. If these parts are lost, you will need to order a FOSC-450-CABLE-TERM kit to terminate future cables.

1.0 General Product Description

FOSC 450 fiber optic splice closures use compressed-gel cable seals to environmentally seal fiber cable splice points. The maximum single splice capacity of the FOSC 450 A closure is 96 with 24 splices stored on four trays. The maximum mass fusion splice capacity is 216 with 6 splices on three trays. This closure can be direct buried, pole mounted, aerial-mounted, or placed in a hand hole or man hole.

Note: Cable blocking is not recommended in this closure due to space constraints.

FOSC 450 - a b - c - dd - e - f g h



2.0 Kit Contents

- Dome and clamp
- Base and o-ring
- FOSC-ACCA-Tray 12 or 24
- Metal slack basket (optional)
- Gel end-piece
- Velcro strap
- Cable termination hardware
- Hose clamps
- Strength member attachment bracket
- 3 Bond wires (optional)
- Tie wraps
- 1/4" Nut driver
- LBT Wrap
- Transportation Tubes
- Spiral transportation tube kit (optional)
- Multi-Drop Kit (optional)
- Cleaning Tissues
- Identification Labels



Other Accessory Kits:

FOSC-ACC-CABLE-TERM

FOSC-ACC-AB Gasket

FOSC-ACC-AS Basket-Tail

FOSC-ACC-WALL/POLE MOUNT

FOSC-ACC-UNIV-AERIAL CLAMP

FOSC-ACC-LASHING STRAPS

FOSC-ACC-450 AFRIAL CLAMP

SMDUV Splice Protection Sleeves

FOSC-ACC-450 Workstand

FOSC-ACC-SPH-TUBE-3/8-50

FOSC-ACC-SPH-TUBE-3/16

Usage

extra cable termination hardware

fiber storage basket

larger capacity basket

mounting hardware

serial mounting hardware

serial mounting hardware

serial mounting hardware

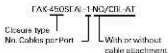
for single-fiber splices

Workstand for installations

3/8" dia. spiral tubing

3/16" dia. spiral tubing

Use these accessory kits to seal multiple small cables in a single port.



3.0 Open Closure

Note: Before opening a sealed closure, use the valve in the dome to bleed all air from the closure.

1. Remove the dome to base clamp. Pull the clamp slightly to the side and lift the clamp handle, using the feet of the clamp to pry against the two posts to spread the clamp open. Open one side of the clamp all the way and pull it back on itself quickly to remove it from the dome and base. (Fig. 1)
2. Remove the dome from the base of the closure.
3. If gel seal is already installed, loosen the gel seal by turning the tail section counter-clockwise until seal is loose.
4. Loosen and turn the two metal latches clockwise and remove the base from the frame. (Fig. 2)
5. Slide the closure base (small end first) over the main cables to be installed in the closure and proceed with cable preparation.

Tip: Tighten the latches in a clockwise direction to make it easier to remove and reinstall the base later.

Tip: Using a FOSC ACC 450 closure workstand makes installations easier.

IMPORTANT: Small round or flat cable installations – If cables are less than 0.35" in diameter or flat drop style, an additional step is required for cable sealing in the port. In this case the cable diameter must be built up to the minimum 0.35" diameter. In addition, if multiple small cables like these are to be installed in a single port, it is imperative that gel is applied between the cables before installing them into the gel port. See FOSC 450 Small/Seal-3 or -4 Cable Kit installation instructions or FOSC 450 Single Small Cable Kit installation instructions for further details.

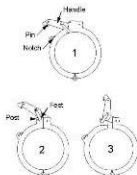


Figure 1

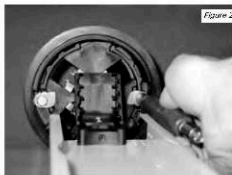


Figure 2

Table 1: Midspan (Main) Cable Opening Lengths

Cable Type	Opening Location	Max. Slack Storage Length
LET	Midspan	55" - 72"
Central Core Tube Loose Fiber	Midspan	52" - 74", 84"
Central Core Tube Ribbon	Midspan	52" - 75"
80" allows for one loop of slack in the basket and 36" of fiber on the splice trap.		

4.0 Main (Midspan) Cable Preparation

4.1 Loose Buffer Tube (LBT) Main Cable Preparation

Note: The maximum slack storage lengths listed in the chart to the right will be limited with higher count Loose Buffer Tube (LBT) cable.

1. Refer to Table 1 for appropriate opening length. Ring cut and remove the outer cable sheath and shield (if present). Remove the fiber yarns and cloth, trim at ring cut. Clean fibers.

Note: Leave a short length of ripcord at each ring cut.

2. Install bonding hardware on shielded or armored cable (optional).

Warning: Do not use a braided or stranded ground wire when installing a ground through a port on the FOSC 450 closures. Tyco Electronics requires that a bonded solid ground wire be used to prevent a leak path and make a proper seal.

- a. Pull the ripcord 1" past the ring cut.
- b. Peel open both shield and sheath.
- c. Attach the alligator clip under the shield and over the sheath and crimp down.
- d. Wrap exposed area with vinyl tape.
- e. Cut the strength member(s) 1.5" from the ring cut. (Fig. 3)

4.2 Central Core Tube (Loose Fiber or Ribbon) Main Cable Preparation

1. Refer to Table 1 for appropriate opening length. Ring cut and remove the outer cable sheath and shield (if present). Remove the fiber yarns and cloth, trim at ring cut.

Note: Leave a short length of ripcord at each ring cut.

2. Install bonding hardware on shielded or armored cable (optional).

 - a. Pull the ripcord 1" past the ring cut.
 - b. Peel open both shield and sheath.
 - c. Attach the alligator clip under the shield and over the sheath and crimp down.
 - d. Wrap exposed area with vinyl tape.

3. Cut the strength member(s) 2" from the ring cut.
4. Ring cut the core tube 1" from each sheath ring cut. Split and remove core tube between ring cuts. Clean exposed fibers or ribbons with approved degreaser. (Fig. 4)

5.0 Main Cable Installation

If circuit midspan fibers are to be tested to a tray, the cable reverse point must be centered over the midspan opening of the cable.

1. Main cables are installed in the two smaller bottom ports. The drop cables will be placed in the two larger top ports. (Fig. 5)

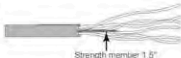


Figure 3

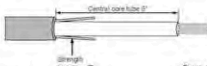


Figure 4



Figure 5



Figure 6

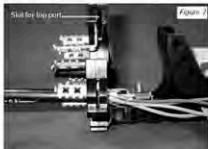


Figure 7

2. Secure the strength member into the strength member attachment bracket. The buffer tubes, ribbons, or loose fibers should pass over or around the head of the strength member attachment bolt. (Fig. 8)

Note: A nut driver is included in the kit for this purpose.

Note: The "stem" of the bracket must be in-line with the cable jacket. Hold the bracket in place while tightening the bolt to prevent unwanted rotation.

Note: If the strength member diameter is too large, remove the outer PE jacket from the strength member.

3. Insert strength member bracket into the slot in the frame (Fig. 7).
4. Place the cables between the cable retention brackets. Secure the cables with the supplied hose clamp. (Fig. 8) Tighten the clamp such that the retention teeth fully seat into the cable assembly. Do not tighten to the point that the clamp deforms.

Note: The head of the hose clamp has to be positioned on top of the cable retention bracket. Otherwise it might interfere with the base when assembled. (See Fig. 5)

5. Secure the strength member into the strength member fork.

5.1 Slack Storage

1. Place the loose buffer tubes or core tubes of the main cable to the metal basket for storage. Attach the loose buffer tubes or core tubes to each side of the basket with two tie-wraps.

Note: For loose buffer tubes, separate the tubes containing the fibers to be spliced and let them hang to the side. They should not be secured to the slack basket with the untied tubes.

2. Form the loose buffer tubes, ribbons, or fibers into loose loops and place them in the slack basket. (Fig. 9)

6.0 Cable (End) Preparation

6.1 Loose Buffer Tube (LBT) Cable Preparation

1. Refer to Table 2 for opening lengths. Ring cut and remove the outer cable sheath and braid (if present). Remove the fiber gels and cloth, trim at ring cut. Clean buffer tubes.

Note: Leave a short length of ripcord at each ring cut.

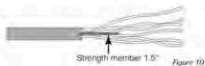
2. Install banding hardware on shielded or unshielded cable (optional).

Warning: Do not use a braided or stranded ground wire when installing a ground through a port on the FOSC 450 closures. Tyco Electronics requires that a bonded solid ground wire be used to prevent a leak path and make a proper seal.



Table 2: Drop (End) Cable Opening Lengths

Cable Type	Opening Location	Max Slack Storage Length
LBT	End	30" - 48"
Central Core Tube Loose Fiber	End	36" - 48", 60"
Central Core Tube Ribbons	End	70"



- Pull the ripcord 1" past the ring cut.
- Peel open both shield and sheath.
- Attach the alligator clip under the shield and over the sheath and crimp down.
- Wrap exposed area with vinyl tape.
- Cut the strength member(s) 1.5" from the ring cut. (Fig. 10)

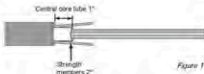


Figure 11

6.2 Central Core Tube (Loose Fiber or Ribbon) Cable Preparation

- Refer to Table 2 for opening lengths. Ring cut and remove the outer cable sheath and shield (if present). Remove the fiber yarns and cloths, stop at ring cut.

Note: Leave a short length of ripcord at each ring cut.

- Install bonding hardware on shielded or armored cable (optional)

Warning: Do not use a braided or stranded ground wire when installing a ground through a port on the FOSC 450 closures. Tyco Electronics requires that a bonded solid ground wire be used to prevent a leak path and make a proper seal.

- Pull the ripcord 1" past the ring cut.
- Peel open both shield and sheath.
- Attach the alligator clip under the shield and over the sheath and crimp down.
- Wrap exposed area with vinyl tape.
- Cut the strength member(s) 2" from the ring cut.
- Ring cut the core tube 1" from the sheath ring cut and remove entire tube. Clean exposed fibers or ribbons with approved degreaser. (Fig. 11)



Figure 12

7.0 Drop Cable Installation

IMPORTANT: Drops greater than .3" in outside diameter are installed in the same way that main cables are installed. Refer to Section 5.0 for instructions.

However, drops less than .3" in outside diameter must be installed together in one port, using the FOSC 450 3-Drop kit for flat drop cables, or the FOSC 450 4-Drop kit for round drop cables. Instructions for preparing and installing multiple drops are included with those kits.



Figure 13

8.0 Route Fibers For Splicing and Storage on Trays

Note: Begin splicing on the bottom tray closest to the metal slack basket. Other empty trays can be removed until needed.

8.1 LBT Main (Midspan) Cable Routing

- Route the selected amount LBT to the tray as shown and mark the buffer tube 1" from the back of the tray at each side. (See Figures 12 and 13)
- Shove the LBT back to each mark on the tube and remove section of LBT.



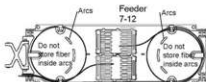
Figure 14

3. Clean exposed fibers with an approved cleaning solution.
4. Wrap LBT wrap around each LBT where it enters the tray.
5. Secure each side of the LBT to the tray with tie wraps. (See Fig. 14) Tie wraps should be over the LBT wrap.
6. Loop fibers around the perimeter of the tray as shown until ready to splice.

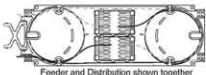
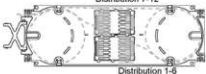
8.2 LBT Cable (End) Routing

Note: If the LBT cable contains the older style stiff LBT's, it may be necessary to install a flexible transportation tube over the LBT for routing.

1. Route the loose buffer tubes from the drop cable either to the basket for slack storage or directly to the tray for splicing. (Fig. 13)
2. Route the LBT to be spliced onto the tray, making sure there is enough length for tray hinging. Mark the tube 1" from the back of the tray (as shown Fig. 13). Ring cut and remove buffer tube.
3. Clean and dry fibers with an approved cleaner.
4. Wrap LBT wrap around the LBT at the end of the ring cut.
5. Use two tie wraps to secure the tube to the tray. (Fig. 14)
6. Splice and store the designated fibers into the tray first. See Figure 15 and Figure 17 for tray routing recommendations.
7. Store the uncut fibers last. This will allow easy access to the uncut fibers if they need to be spliced at a later time.



Feeder 1-6
Do not store fiber inside the arcs on the tray!
Distribution 7-12



8.3 Central Core Tube Loose Fiber Main (Midspan) Cable Routing

1. Central core tubes containing loose fibers can be routed directly to the slack basket or to the non-hinging bottom tray and secured with tie wraps. Do not over tighten tie wraps.
2. Select fiber(s) to be cut or routed.

Note: Selected midspan fibers can be cut in the middle of the loop to splice to either end. If more length is needed, cut off from midpoint (short end fibers will be dead to the field).

3. Fibers are transported to the opposite side of the basket and routed to appropriate trays using the transportation tubes. Attach transportation tubes to the basket. Tubes can be identified at both ends with feeder (blue) and distribution (white) labels. Route transportation tube behind the tray tower and attach to tray with tie wraps.
4. Splice and organize fibers as appropriate.

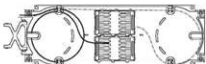


Figure 15



Figure 16

8.4 Central Core Tube Loose Fiber Cable (End) Routing

1. To route the cable's loose fibers to the splice tray or to the slack basket for storage, use spiral tubing (order separately). Allowing a generous length for tray hinging and attachment to the tray/basket, cut the spiral tubing to length and install it over the fibers and the central core tube.

2. Push the spiral tubing all the way up between the strength members and the central core tube. (Fig. 16)
3. Wrap the ends of the spiral tubing with LBT wrap before securing it to the tray or the basket with two tie wraps. The tie wraps should be located over the LBT wrap. Do not overtighten the tie wraps.
4. Splice and organize fibers as appropriate.

8.5 Central Core Tube Ribbon Main (Midspan) Cable Routing

Note: For standard trays, route ribbons to the slack basket, not directly to the trays unless the ribbons will be de-ribbonized for single splicing. Do not store ribbon slack on the tray.

1. Separate and select ribbons to be cut or routed.

Note: Cut selected midspan ribbons in the middle of the loop to splice to either end. This will allow 15" to 24" for splicing. If more length is needed, cut offset from midpoint (short end ribbons will be dead to the field).

2. Transport ribbons to the opposite side of the basket and route to appropriate trays using the ribbon transportation tubes (green rubber band group). Attach transportation tubes to the basket leaving 6" in the basket. Tubes can be identified at both ends with feeder (blue) and distribution (white) labels. Route the transportation tube behind the tray tower and attach to tray with tie wraps.

Note: Arrange the order and orientation of ribbons at the slack basket before inserting them into the transportation tube. This will eliminate crossing of ribbons on the tray.

3. Feed organized groups of six ribbons into the tubes in the basket and push ribbons through transportation tubes onto the tray leaving a small loop in basket. Ribbons on one side of transportation tube may need to be oriented in an opposite order to prevent crossover of ribbons on the tray.
4. Pull enough ribbon length through the transportation tubes to complete splicing.
5. Splice ribbon ends, allowing a generous bend when routing (six splices per tray recommended) (Fig. 17)
6. Ribbons can be pushed from one end and pulled back into the basket. Pull all ribbons in the group at the same time.

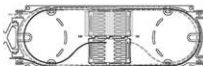
Note: Do not store ribbon loops on the standard tray.

7. Store slack ribbon length in the slack basket and hold down stored ribbons with tie-wraps. Leave the tie-wraps loose to avoid unnecessary pressure in the ribbons.

8.6 Central Core Tube Ribbon Cable (End) Routing

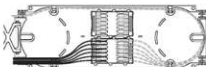
Note: Route ribbons to the slack basket, not directly to the standard trays unless the ribbons will be de-ribbonized for single splicing. Do not store ribbon slack on the tray.

1. To route the ribbons to the splice tray or to the slack basket for storage, use spiral tubing (order separately). Allowing a generous length for tray hinging and attachment to the tray/basket, cut the spiral tubing to length and install it over the ribbons and the central core tube.

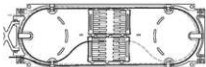


Perimeter routing, for splicing 12 fibers using SM 12 module

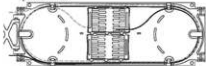
Upper module not used in this example



Ribbon routing. Do not store ribbons on standard trays; pull slack back into slack basket. Use SM6 module only



High capacity splicing for 250 micron fiber only splices 1-12



High capacity splicing for 250 micron fiber only splices 1-12
24 splices per tray using SM12 modules

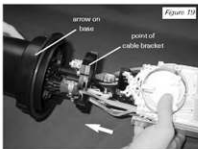
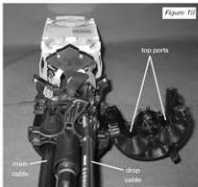
Figure 17

Note: SMOUV splice protection sleeves must be used if 24 splice per tray capacity is needed.

2. Push the spiral tubing all the way up between the strength members and the central core tube.
3. Wrap the ends of the spiral tubing with LBT wrap before securing it to the tray or the basket with two tie wraps. The tie wraps should be located over the LBT wrap. Do not overtighten the tie wraps.
4. Splice and organize fibers as appropriate.

9.0 Gel End-Piece Installation

1. Make sure the gel seal is not already compressed. Turn the "tail" of the gel seal counter clockwise to ensure that the seal is in the un-compressed position. Squeeze the gel seal to unlatch and open each half one at a time.
2. Hold the gel block with the hinges to the right. Install the gel block between the installed cables as shown. Making sure the small ports are at the bottom of the closure, hinge the top and bottom sections and snap together. (Fig. 18)
3. Slide the base up and over the gel seal. Align the arrow on the outside of the base with the pointed top of the cable/tray assembly. (Fig. 19)
4. Secure the frame to the base with the two metal latches.
5. Insert one port plug in each unused port (Fig. 20)
6. (Grounded Kits Only) Connect individual cable ground wires to the nearest ground cable inside the base. Use #6 ground wires to externally ground the closure by attaching the ground wires to the external ground feed through lug.
7. Turn the "tail" clockwise until it dead ends at the positive stop or becomes tight. A screwdriver can be installed through the hole in the "tail" to tighten the seal. Hold the screwdriver tightly so it does not come out.
8. Place a large tie wrap around all the cables near the end of the "tail".



10.0 Close the Closure

Note: Store unused components and installation instructions in bag and keep inside closure for future cable terminations. If these parts are lost, you will need to order a FOSC-450-CABLE-TERM kit to terminate future cables.

1. Check to make sure the "O" ring is positioned properly on the rim of the base.
2. Install the dome onto the base, align the arrow on the dome with the arrow on the base. The dome should sit flush on the base.
3. Install clamp around dome/base interface. Use the feet of the clamp handle to close the gap in the clamp. (Fig. 21)
4. A security lock or tie-wrap may be inserted through the mount holes in the handle and clamp to lock the closure.

11.0 Test Seals

Flash test the closure to 5 psi. Thoroughly soap the seal to check for integrity.

Note: After flash testing, release the pressure from the closure.

12.0 Mount the Closure

This closure can be direct buried, pole-mounted or aerial mounted, or placed in a hand hole or man hole.

For an aerially mounted application, the FOSC-ACC-450-AERIAL CLAMP, FOSC-ACC-UNIVERSAL CLAMP, or FOSC-ACC-LASHIN-STRAPS kit may be required. Installation instructions are included with the kits. Refer to the FOSC 450 A Closure Ordering Guide to determine which kit(s) are required for your needs.

For pole-mounted or wall-mounted applications, the FOSC-ACC-WALL/POLE MOUNT kit is required. Installation instructions are included with the kit.



Figure 21