INSTALLATION INSTRUCTIONS
LG-150 SEALED FIBER OPTIC SPLICE CLOSURE

1.0 GENERAL

1.01 The LG 150 Sealed Fiber Optic Splice Closure provides a unique, flexible fiber splicing system for Fiber-in-the-Loop or distribution splicing. Typical types of cables that can be used in this closure are: central core shielded, central core dielectric, loose tube shielded, loose tube dielectric, ribbon shielded, ribbon dielectric. Also, the closure incorporated a unique cable clamp design that secures the cable and allows the dome and C-Half sections to be removed with out disturbing previously installed cables. The LG-150 consists of five (5) main components. Refer to ***Figure 1***.

1.02 Dome: Protects all internal components.

1.03 C-Half Section: Creates end sealing surface with center section. Each C-Half section comes with four (4) hex head bolts for securing for securing to center section.

1.04 Center Section: Center section consists of five (5) cable sheath strain relief and central strength member tie-downs and will accommodate three (3) LL-2450 or LL-4850 Mini Splice Trays. The Express side incorporates as storage tray and clear cover for bare or ribbon fiber. Included and installed in the Center Section are five (5) sealing port grommet sets. The Express side of the closure has two (2) and the Drop/Lateral side has three (3) ports.

1.05 O-Ring: Provides sealing between dome and the center section assembly.

1.06 V-Band: Provides locking and final clamping between the dome and center section assembly.

2.0 SPECIFICATIONS

Parameter	Value
Maximum Cable Diameter	0.62" (15.75mm)
Minimum Cable Diameter	0.30" (7.6mm)
Maximum Cable Entry	5 ports
Overall Dimensions (ht. x dia.)	18.75" X 8.75" (464mm X 222mm)

3.0 Contents

3.01 The LG-150 comes with materials to install five (5) cables into ports and up to three (3) drops per port on the Drop/Lateral side of the closure.

3.02 Accessory Materials

91957-00	LL-2450	Single Fusion (12SF) Splice Tray
91958-00	LL-4850	Mass Fusion (96MF) Splice Tray
FC000003	CGH-1	Cable grounding kit (for 1 cable)
FC000040	CGH-5	Cable grounding kit (for 5 cables)
FC000006	OHK	Universal Strand Hanger Kit

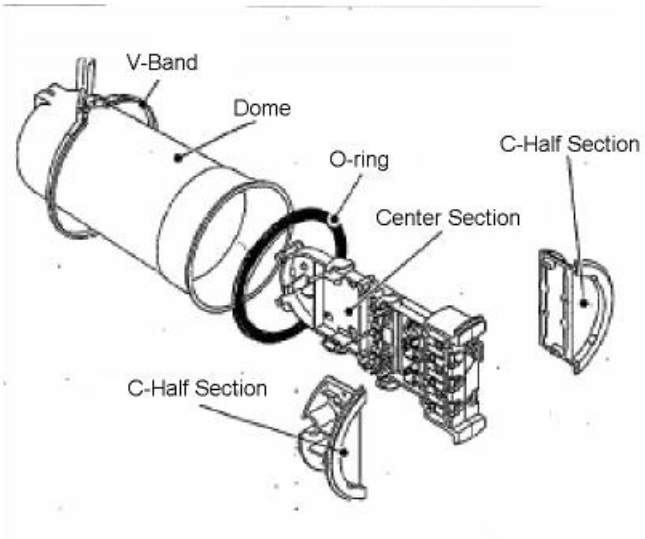

Figure 1 - Components of the LG-150 Closure

911696-00	PWK	Pole/Wall Mount Bracket Kit
FC000070	RT 1x6	1x6 Router Kit

3.03 Tools and Supplies Required for Installation:

- Cable Cleaner or Wipes
- ¾" Vinyl tape (if bonding)
- 216 Style Tool (3/8" – 7/16" Hex Driver)
- Wire Cutters for Strength Member
- Splicers Scissors
- Splice Equipment and Sleeves
- Cable Stripper
- Cable Splicers Knife
- Needle Nose Pliers
- Slotted Screw Driver (optional)

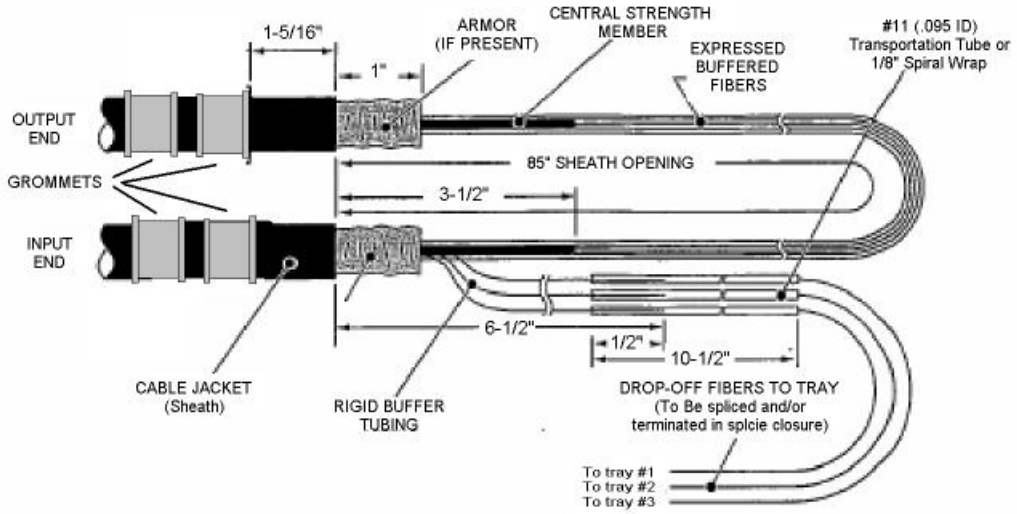

Figure 2a - Express Cable Preparation (Loose Tube)

* ***Note:*** *1-5/16" Main Cable Input/Output*
2-1/16" Drop or Branch Cables

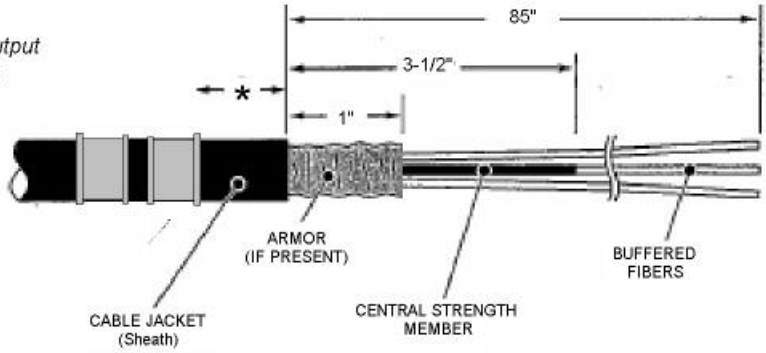

Figure 2b - Drop Cable or Input/Feeder Cable Full Cut Preparation (Loose Tube)

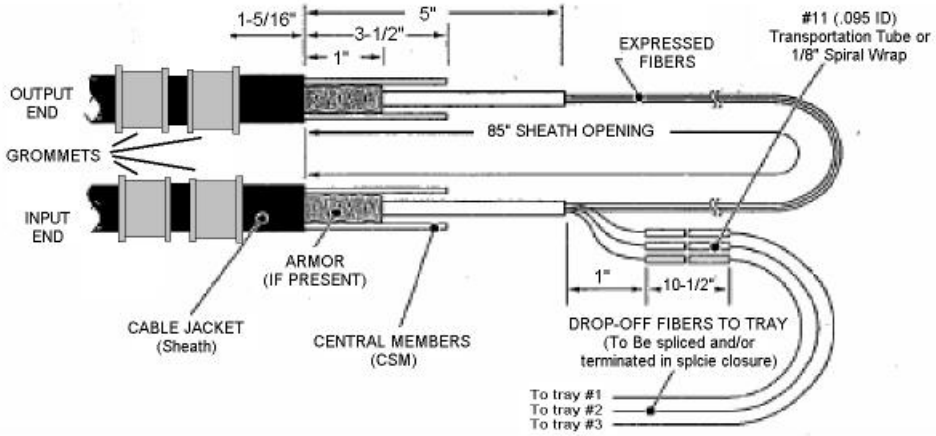

Figure 2 bc - Express Cable Preparation (Central Core)

* ***Note:*** *1-5/16" Main Cable Input/Output*
2-1/16" Drop or Branch Cables

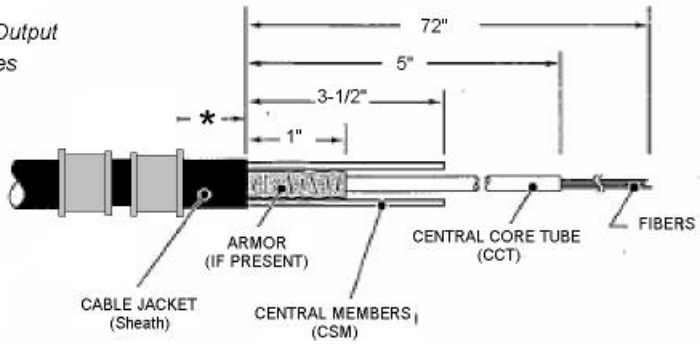

Figure 2d - Drop Cable or Input/Feeder Cable Full Cut Preparation (Central Core)

4.0 CABLE PREPARATION

CAUTION: When preparing cable, insure that buffer tubes and fibers are NOT cut, nicked or kinked. If this occurs, cut back to eliminate damaged area.

4.01 Express Cables: Remove 85" of cable sheath and expose buffer tubes, removing shield, Mylar or Kevlar if present.
Drop (Stub) Cables: Remove 85" of cable sheath. (*See* ***Figures 2A – 2D*** *for measurements, page 2).*

4.02 Remove all cable coating compounds. Clean sheath, all primary tubes and dielectric strands with approved cable cleaner. Clean outer sheath back approximately 6" from opening. Allow cleaner to dry completely.

4.03 Trim any solid filler tubes and discard. Trim central strength members to 3-1/2" from sheath opening.

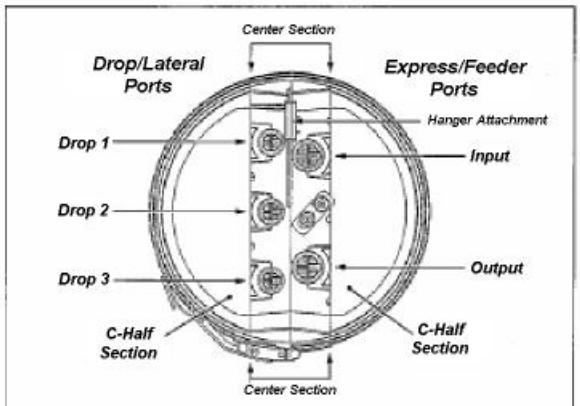

Figure 3 - Cable Port Selection Guide

5.0 SELECTION OF CABLE SEAL ENTRY PORTS

5.01 Cable entry should start with the selection of one or both of the Express/Feeder ports first then with the Drop/Lateral ports.

5.02 The port dosest to the center sections hanger attachment is used for the first cable entering either side. Refer to ***Figure 3*** **– Cable Port Selection Guide**.

5.03 Additional cables will be installed working away from the hanger attachments.

6.0 CLOSURE PREPARATION

6.01 Locate the pressure valve at the domes' end and remove the protective cap. Then, depress the valve core to ensure that all pressure was relieved at the factory.

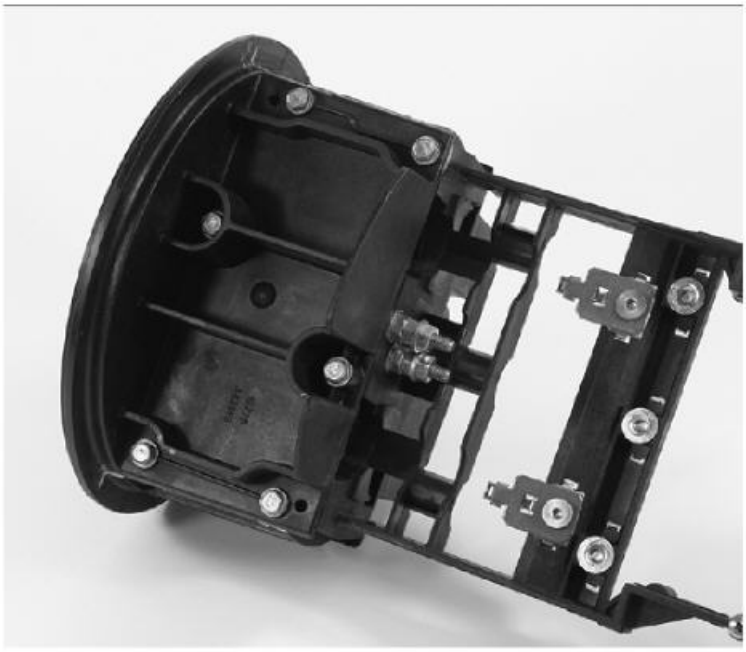

Photo 1 - C-Half Sections and Center Section Mounting Screws

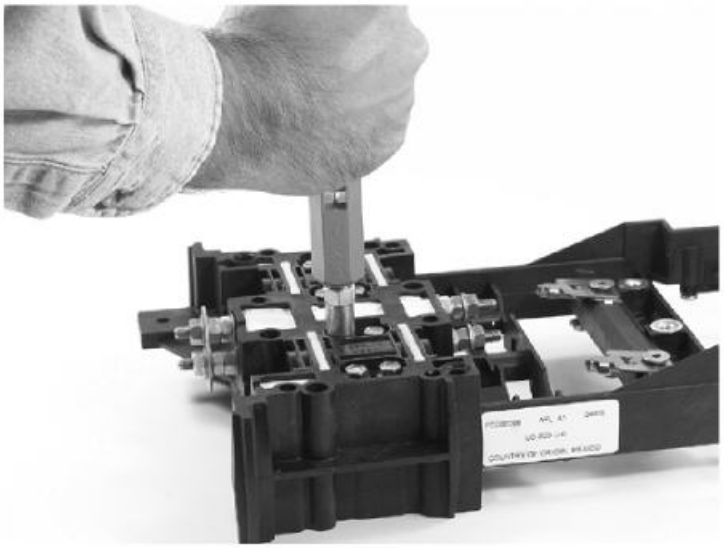

Photo 2 - Cable Clamp Removal from from Center Section

Photo 3- CSM Clamp Removal

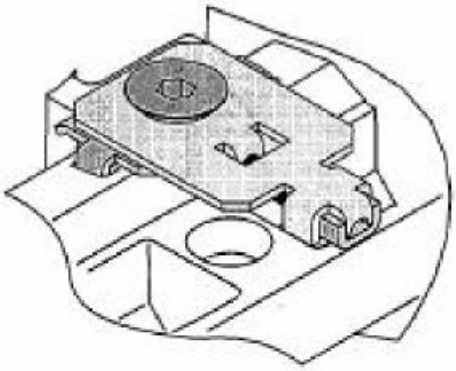

Figure 4 - CSM Clamp

6.02 Unlock and remove the V-Band clamp and set aside.

6.03 Remove the dome and the O-Ring and set both aside. Keep the O-Ring as clean as possible.

6.04 Loosen the four (4) captive hex head bolts on the C-Half section and gently separate the halves from the center section. Refer to ***Photo 1* – C-Half Sections and Center Section Mounting Bolts.**

Note: Make sure that the captive bolts are fully backed off before removing C-Half sections, then set aside.

6.05 Remove the selected cable clamp from the port by loosening the two hex head bolts and then using a gentle rocking motion lift the clamp out of the port. Refer to ***Photo 2* – Cable Clamp Removal from Center Section.**

6.06 Remove the Central Strength Member (CSM) clamps aligned with the cable ports to be used using the provided Allen wrench and set the clamp plates and screw aside for later installation. See ***Photo 3* – CSM Clamp Removal** and ***Figure 4***.

7.0 GROMMETS KIT CONTENTS

7.01 ***Photo 4*** above shows the grommets included in the cable entry ports and the accessories located in the sub-component kit bag. The fully round grommets were placed into the cable ports at the factory. The grease blister pack, diameter Band-Mic and ½-grommets are located within the kit bag. Only remove the cable clamps and grommets from the ports to be occupied by cable.

8.0 USING THE BAND-MIC AND LAYER REMOVAL

8.01 Wrap the Band-Mic around the cable in the sealing area to get a diameter reference and to determine how many grommet layers should be removed. The Band-Mic should be snug to the cable. The measurement provided will give the approximate diameter of the cable and also the corresponding number of layers to be removed from the grommet. If the cable diameter falls near or on the border of an additional layer, use the fewer number of layers initially and fit the grommet around the cable for the final fit. Refer to ***Photos 5a and 5b* – Measuring the Cable for Sizing Grommets**.

Note: Make sure that you are using the correct set of grommets and applicable Band-Mic for either the Express or Drop ports, and that the initial measurements are correct.

8.02 Position the grommet open and count the number of layers from the center of grommet to be removed. Do not include the center core as a layer. Carefully tear the layers from the grommet by using a pealing motion on the grommet.

Photo 4 - Grommet Kit Contents

Photo 5a - Measuring Cable Diameter

Photo 5b - Measuring the Cable for Sizing Grommet

Refer to ***Photo 6a*** **– Counting the Grommet Layers,** ***Photo 6b*** **– Tearing the Grommet Layers and** ***Photo 6c**** **– Grommet with Center Core and Layers Removed**.

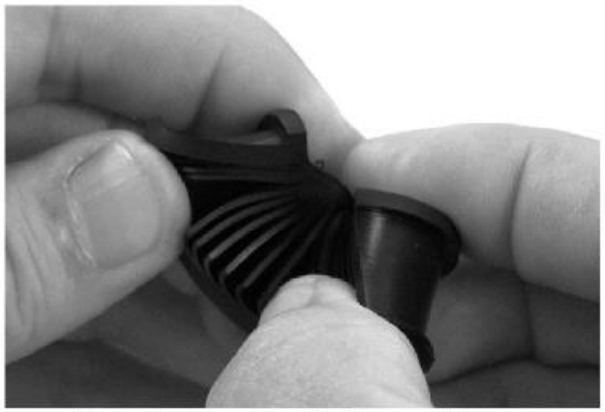

Photo 6a - Counting the Grommet Layers

Photo 6b - Tearing out the Grommet Layers

Photo 6c - Grommet with Center Plug and Layers Removed

8.03 Check the sizing of the grommet with the core and layers removed. Determine if the fit is close to the final sizing requirements. The seam in the grommet should close completely when compressed by hand around the cable. If you can't comfortably close the seam with one hand then another layer must be removed. A small gap may be present at the seam. If so, the gap will be eliminated when the grommet is compressed during final assembly. Refer to ***Photo 7*** **– Closing Grommet by Hand.**

Photo 7 - Closing Grommet by Hand

9.0 GROMMET PLACEMENT AND ORIENTATION

9.01 The grommet must be properly lubricated to get the seal and uniform compression when compressed by the cable clamp. Open the blister pack of lubricant and apply lubricant to the large flange of the grommets. Refer to ***Photo 8*** **– Grommet Lubrication.**

PHOTO 8 - Grommet Lubrication

9.02 The grommets will be placed on the cable in an opposing orientation. The larger flanges of the grommets fit in the first and last slots of the cable entry port. The ends of the grommets where the layers are visible should now be facing each other. The grommets cable access slots must be oriented to two separate positions. The first grommet will be positioned at 2:00 o'clock and the second grommet will be positioned at 10:00 o'clock. Refer to ***Photo 9*** **– Proper Grommet Orientation.**

PHOTO 9 - Proper Grommet Orientation.

9.03 To assure that the cable remains level going through the grommets and seal area of the center-base, a cable retention grommet is used to keep the cable flat and level to assist in cable retention. The cable retention grommet is similar in design to the sealing grommet. It provides a cradle for the cable to lie in under the cable retention clamp. Remove the same number of layers on this ½-grommet as on the sealing grommets. Refer to ***Photo 10*** **– Cable Retention Grommet Position.**

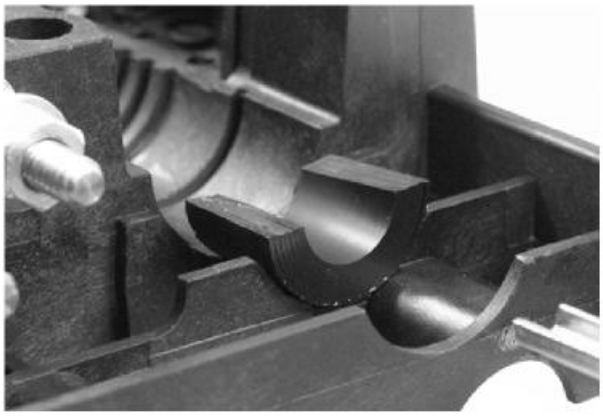

Photo 10 - Cable Retention Grommet Position

9.04 Position the grommets and cable into the cable entry port of the center section being careful to maintain the grommet orientation. Assure that the larger grommet flanges are positioned to the first slot of the cable entry port with one grommet and the last entry port slot with the other grommet. Refer to ***Photo 11*** **– Cable Sealing Grommet in Center Section.**

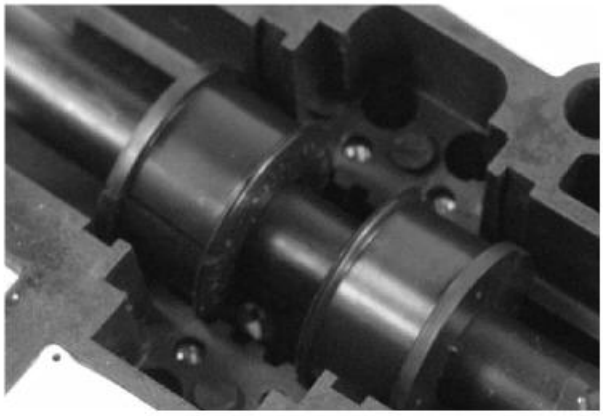

Photo 11 - Cable Sealing Grommet in Center Section

9.05 Move the cable until the sheath opening is even with or just past the retention trough.

9.06 Trim the CSM or outer strength members at this time. Be sure to orient the CSM so that no buffer tubes are trapped under the cable.

10.0 CABLE CLAMP INSTALLATION

10.01 Lubricate the cable clamp over the molded gaskets. Lubricate the interior of the cable clamp where there will be contact with the grommets. Refer to ***Photo 12*** **– Lubrication of Cable Clamp.**

PHOTO 12 - Lubrication of Cable Clamp

10.02 Position the cable clamp over the cable and grommets that are in the entry ports. Be sure to position the cable clamp so that the grommet flanges are lined up properly to the appropriate slot. Press the cable clamp by hand to assure for proper seating. Tighten the cable clamp bolts by alternating in a crossing pattern to lower the cable gradually and evenly to proper grommet compression. Assure that the grommet has compressed around the cable and that there is no apparent seam or gaps between the cable and grommet surface. Refer to ***Photo 13*** **– Grommet and Cable Compressed in Cable Clamp.**

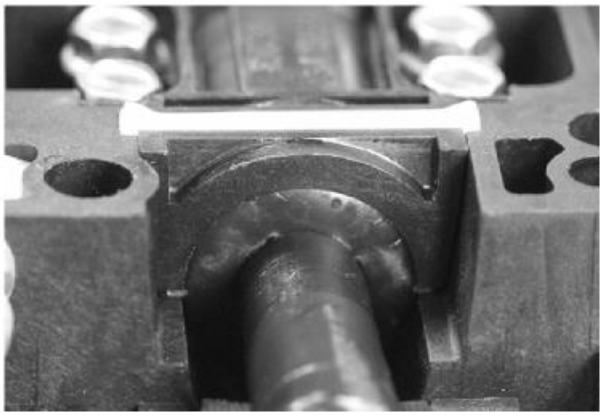

Photo 13 - Grommet and Cable Compressed in Cable Clamp

11.0 CABLE SHEATH AND CSM RETENTION

11.01 Attach the cable to the closures' center section by installing a hose clamp over the cable, sheath retention clamp and cable retention grommet. Sheath retention clamp should be oriented as shown. Do not fully tighten the cable clamp at this time. Refer to ***Figure 5*** **– Attaching Cable and Central Strength Member to Center Section.**

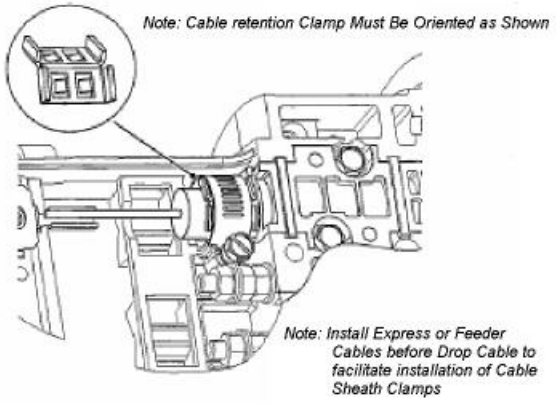

Figure 5 - Attaching Cable and Central Strength Member to Center Section

11.02 Note the orientation of the cable retention clamp. The spurs inside the clamp should grip the cable to prevent it from being accidentally pulled out of the closure. Refer to ***Photo 14*** **– Cable Retention Clamp Orientation.**

PHOTO 14 - Cable Retention Clamp Orientation

11.03 Assemble the CSM retention clamp by installing the bottom plate into two alignment holes. Then, align the CSM or outer strength members and hand start the Allen head screw. Refer to ***Figure 6a*** **– Single CSM Clamp Installation, and** ***Figure 6b*** **– Dual CSM Clamp Installation.**

11.04 Tighten the CSM clamp and then tighten the sheath retention clamp.

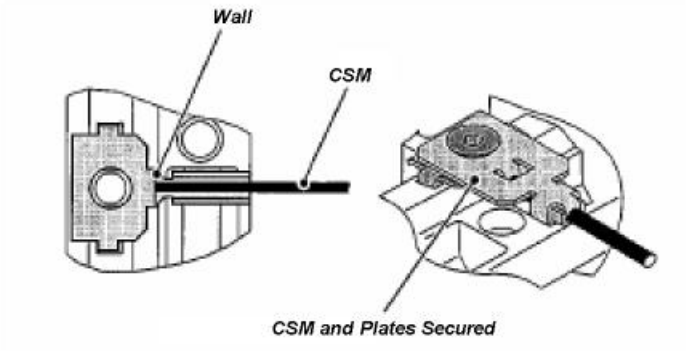

Figure 6a - Single CSM Clamp Installation

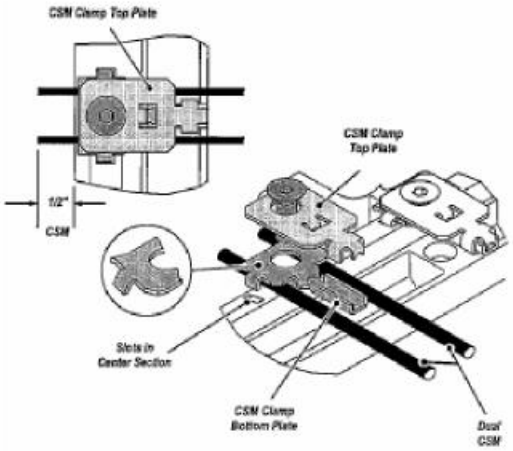

Figure 6b - Dual CSM Clamp Installation

12.0 INSTALLING BONDING ASSEMBLY

12.01 Wrap the Bond Strap with the perforations facing cable and firmly around the cable armor (and the dual metal strength members when using LXE type cable) with the wire and ring terminal pointed away from the cable jacket as shown in ***Figure 7a***.

12.02 Assemble the small hose clamp over the bond strap, ***Figure 7b***, and tighten securely to ensure bond is provided between the armor, the dual strength members and the bond strap.

12.03 Bend the wire and ring terminal up out of the way until used in subsequent assembly operations.

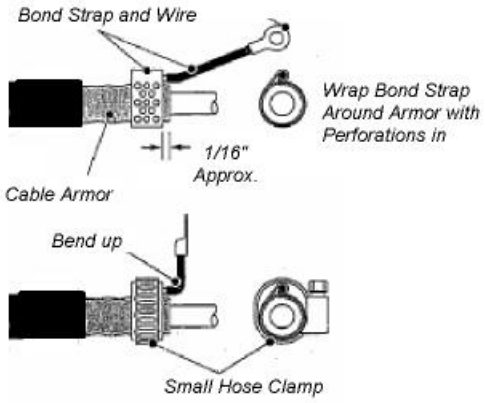

Figure 7a - Applying Bond Strap to Cable

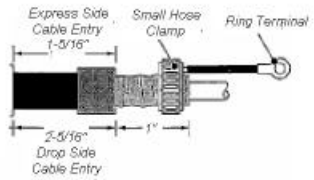

Figure 7b - Cable Preparation Dimensions for bonding

13.0 COMMON AND ISOLATED BOND WIRE INSTALLATION

Common Ground Installation:

13.01 Terminate the ring terminal of the bond wires (previously installed) on each of the cables to a common ground terminal on the inside of the center section. See ***Figure 8a***. Tighten the ground terminal hex nuts securely.

Isolated ground Installations:

13.02 Terminate the bond strap ring terminal(s) from the cable(s) to be isolated to an inside ground terminal. Tighten the ground terminal hex nuts securely. See ***Figure 8b***.

13.03 When isolating the cable(s) in drop ports D1 and D3, provide two to three layers of insulating tape over 5/8" back side of the Express/Feeder central strength member tie down nut(s). This will insulate them from the Drop/Lateral cables and any subsequently installed conductive strength members.

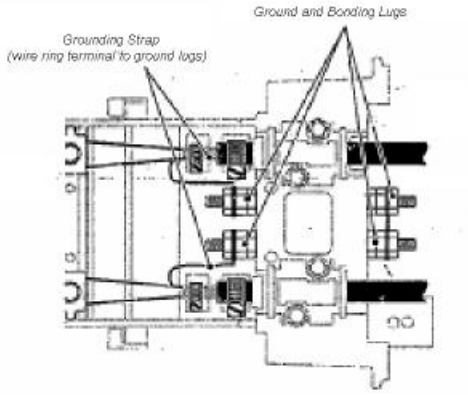

Figure 8a - Grounding and Bonding Terminal Lugs

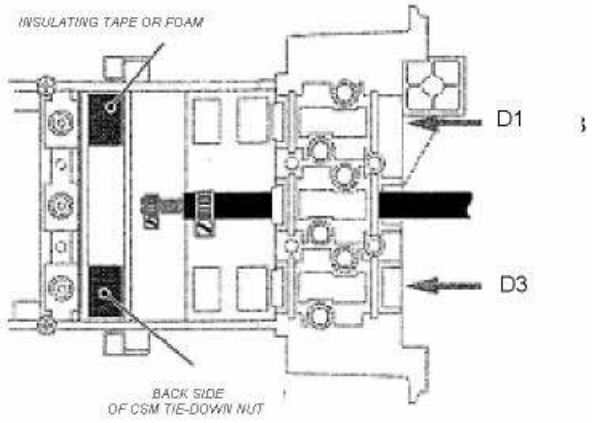

Figure 8b - Isolated D1 and D3 Cables

14.0 STORAGE AND ROUTING OF FIBER BUNDLES

Note: there are several methods of routing fiber bundles to splice trays. The following illustrates one of the most common ones referred to as a "paperclip".

14.01 Full Cut Cables (Loose Tube and Ribbon) Fiber bundles from the Express/Feeder cables or from Drop/Lateral cables can be safely routed into the flexible routing clips molded into the sides of the center section frame. It is recommended that loose buffer tubes be routed directly into and out of the transition area. (It is not necessary to transition the loose tube bundles into transition tubing. See ***Figure 9a and 9b***.

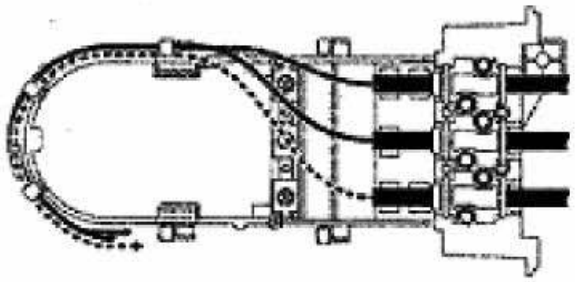

Figure 9a - Routing Express/Feeder Side Cables

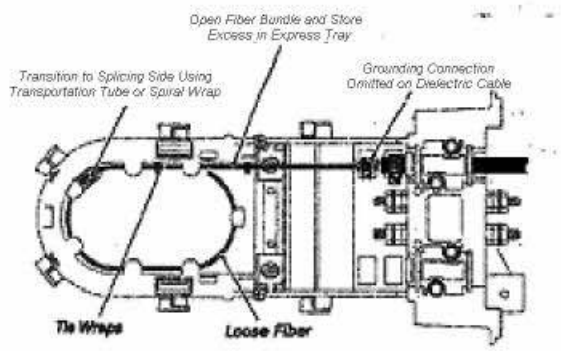

Figure 9b - Routing Drop/Lateral Side Cables

Note: Use cut sections of spiral wrap supplied with the closure for providing additional mechanical protection for fiber bundles as required.

14.02 ***Loose Tube Bundles*** Starting with the Express/Feeder cable(s), provide a method of identifying and separation for the Input versus Output Express/Feeder bundles. Then, route the Input and Output bundles into the flexible routing clips that are aligned with the center sections' hanger attachment.

14.03 Turn the center section over onto the Drop/Lateral side and route the Drop/Lateral loose tube bundles into the same routing clips with the Express/Feeder bundles. Again, provide a method of identifying the bundles.

Note: If all fibers in the Drop/Lateral cable bundles are not assigned for splicing, the AFL 1x6 Router Kit (P/N: FC000070) is recommended for use to route those fibers into the tray at this time.

14.04 Route all bundles around the center section and direct them back towards the cable seals.

14.05 Temporarily install a splice tray into the tray support. While maintaining minimum bending radii, route a bundle up and into the tray. Place a mark on the bundle for the desired opening (this routing will provide sufficient working slack and bare fiber for splicing). See ***Figure 9c***.

Ribbon Bundles

14.06 Starting with the Express/Feeder cable(s), provide a method of identifying and separation for the Input versus Output bundles. Route the Input and Output bundles in and out of the transition area.

14.07 Using either solid transition tubing or flexible spiral wrap, route the two bundles around and through the routing rings and back towards the sealing clamps.

14.08 Rotate the closure over to the Drop/Lateral side and then route the drop cable bundles into the flexible routing rings to join up with the Express/Feeder bundles.

14.09 Determine the amount of slack required and mark all bundles. Dress slack back towards the storage area.

Note: If the ribbons are to be single fused, treat the ribbon in the same manner as a loose tube with all slack fiber not needed, route and store in the slack tray.

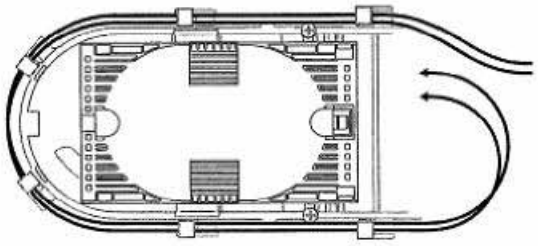

Figure 9c - Routing/Marking Bundles for Tray Entry

14.10 Express/Feeder Cable (Loose tube and Ribbon) Express Fiber Bundles can be safely stored on the Express/Feeder side of the closure until required for splicing. Ribbon bundles can be stored in either the molded-in transition area or in the optional Slack Storage Module. Loose tube bundles can be stored in the routing rings. See ***Figure 9d and 9e***.

14.11 Loose Tube Bundles Separate the loose tube(s) required for mid-access splice and store the remainder in the routing rings.

14.12 Route the tube(s) into the routing rings and rotate the closure to the drop side.

14.13 Route the Drop/Lateral bundles to join up with the Express/Feeder bundles and route all up to the splice tray. Mark the bundles as 'entry bundles'.

Note: If all fibers in the Drop/Lateral cable bundles are not assigned for splicing, the AFL 1x6 Router Kit (P/N: FC000070) is recommended for use to route into the trays at this time.

14.14 *Ribbon Bundles* Express or mid-accessed Ribbon Bundles are stored in the transition area of the closure. Remove the bundles required for splicing and store all unused bundles into the storage or module area.

14.15 Route the required bundles around to the Drop/Lateral side using the routing rings. ***Ribbon can be installed into the top of the splice trays if more working fiber is desired.***

14.16 Route the drop and express bundles to the tray and prepare as required.

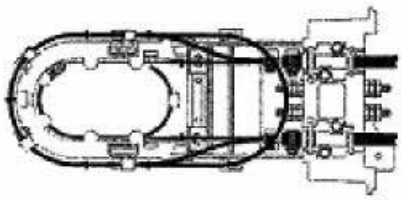

Figure 9d - Express Routing

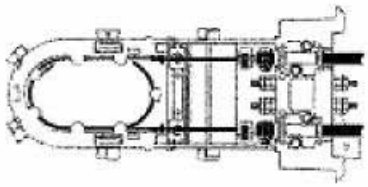

Figure 9e - Express Routing
(Central Core Ribbon or Loose Tube Bundles)

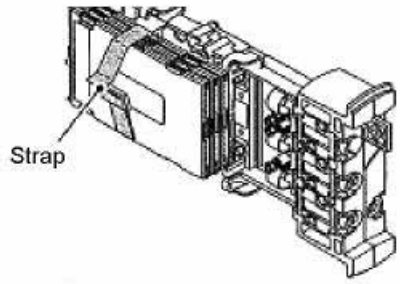

Figure 10b - Securing Splice Trays

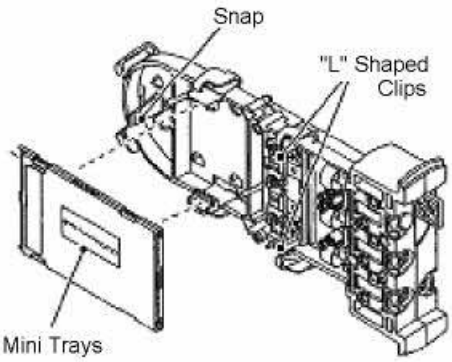

Figure 10a - Storing Fiber trays

15.0 SPLICE TRAY STORAGE

15.01 The center section is provided with 'L' shaped supports and a snap to retain the bottom splice tray. Additional trays are secured by a hook and loop strap provided with the closure. See ***Figures 10a and 10b***.

Note: The area beneath the trays is designed to store unused fiber slack from drop cable bundles.

15.02 Fiber bundles can be routed and secured through the tray end with exposed tie wrap securing slots (seen after the cover is

15.03 After splicing is complete and the trays are stored, secure them by using the hook and loop strap provided. See ***Figure 10b***.

16.0 SECURING C-HALF SECTIONS

16.01 Prior to securing the C-Half sections to the center section, recheck the torque of each cable entry clamp. Confirm that the bolts are torques down and the top of the cable(s) clamp(s) are even with the top of the center section. (Cable clamp torque is 23 in./lbs.) Check each cable retention clamp and CSM clamp to assure these are tight.

16.02 Apply lubricant to the gasket surfaces of the C-Half sections and tighten firmly the four (4) captive hex bolts. Use a 216 style tool (or 3/8" socket) and tighten inside bolts first then tighten outside bolts. Refer to ***Figure 11 – Tightening Sequence for C-Half Sections, and Photo 15 – Lubrication of C-Half Section Gaskets, and Photo 16 – Tightening of C-Halves***.

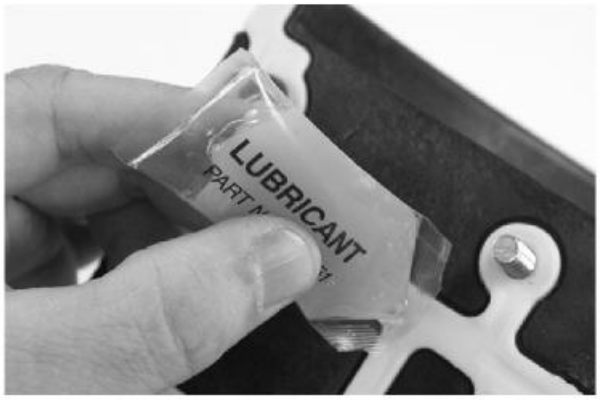

PHOTO 15 - Lubrication of C-Halves

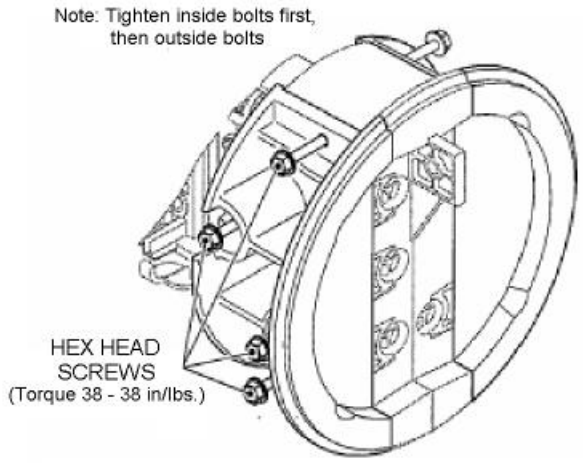

Figure 11 - Tightening Sequence for C-Halves

PHOTO 16 - Tightening of C-Halves

17.0 FINAL CLOSURE ASSEMBLY

17.01 Ensure that the fiber bundles are routed and stored correctly, all central strength member clamps and hose clamps are tightened, splice trays are secured with the hook and loop straps and that all bolts are checked for tightness.

17.02 Lubricate lip of the base (C-Halves and Center Section) of the closure where the O-ring will make contact. Lubricate both sides of the O-ring. Refer to ***Photo 17 – O-ring Placement on Base. Slide O-ring over the assembled Center Section and C-half sections***.

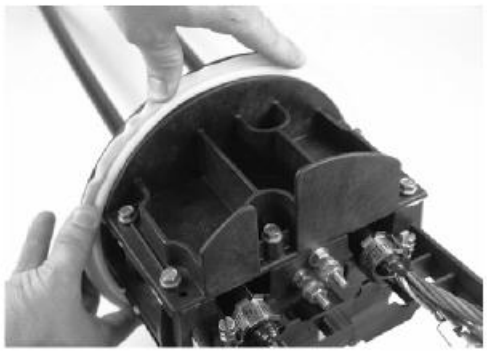

Photo 17 - O-Ring Placement on Base

18.0 PLACING DOME ONTO BASE

18.01 Position front hanger bracket mount of dome inline with the rear bracket mount on the center-section and slide the dome over the assembly. Assure that the O-Ring has not slipped and is not pinched when the dome is seated. Refer to ***Figure 12 –*** **Alignment of Mounting Brackets and** ***Photo 18*** **– Dome Alignment**.

18.02 Lubricate the interior of the V-Band and both sides of the Base/Dome flange lip. Assemble V-Band over front of dome and

position over the V-type protrusion and close the V-Band clamp handle. Position handle of the V-Band so that it is adjacent to the mounting tab of the hanger bracket. Refer ***to Photo 19* – V-Band Alignment to Base.**

18.03 Flash test the closure to **5-7 psi maximum**, using air-valve at end of dome. (Do not over-pressurize).

18.04 After pressurizing closure to **5-7 psi**, check for leaks by using a soap solution around all cable seals, clamps and dome seals. If leaks are detected, increase tension on the V-Band bolt and re-test. Release pressure from closure after testing for leaks.

19.0 AERIAL STRAND MOUNTING LG CLOSURES

19.01 Using the Universal Offset Hanger (OHK) bracket, the installed closure may be installed as shown in ***Figure 13* – Aerial Mounting of LG150.**

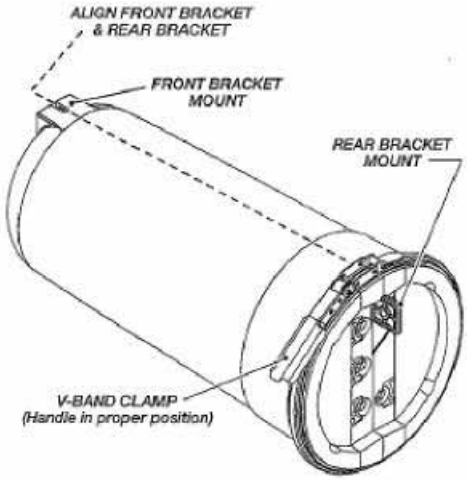

Figure 12 - Alignment of Mounting Brackets

PHOTO 18 - Dome Alignment

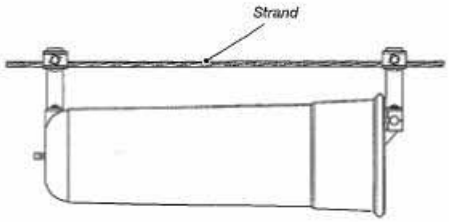

Figure 13 - Aerial Mounting of LG250

PHOTO 19 - V-Band Alignment to Base