

**THE SB01 SPLICE ENCLOSURE NOW
INCLUDES A LID GASKET THAT DOES
NOT REQUIRE RTV APPLICATION.**

**DO NOT APPLY RTV TO THE GASKET
WHEN SEALING THE SB01 SPLICE
ENCLOSURE.**

**SEE SECTION 10 FOR UPDATED
INSTRUCTIONS.**

Instructions for Preparing ADSS AND UNARMORED LOOSE TUBE CABLE IN THE SB01 SPLICE ENCLOSURE

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List of Materials

ITEM	DESCRIPTION	QTY
1	Splice Box (consisting of the following):	
	Splice Box Body	1
	CSM Termination Eye Bolt	2 or 4
	Center Shaft	1
	Cover Gasket	1
	Connector Assemblies (consisting of the following items for 1 connector):	2 or 4
	Connector Body	1
	Cable Retainer	1
	Nut Retainer	1
	Entry Bushing	1
	Set Screw – 5/16 – 18 UNC	2
	O-Ring	1
2	Organizer Tray Assembly (consisting of the following items for 1 tray):	2 to 8
	Tray	1
	Cover	1
	Splice Protector Holders (6 Splices / Holder)	2
	Manifold (MCI Tray Only)	1
3	Splice Box Cover	1
4	Spanner Nut or Hex Nut	1
5	O-Ring or Self-Sealing Washer	1
6	Retaining Rings	2
7	Tension Screw	0 to 4
8	Tension Nut	0 to 4
9	Humi – Sorb	1
10	Range-Taking Flanged Sleeve (used with FRP strength member)	0 to 4
11	Mounting Plate	1
12	Slotted Sleeve (used with OPT/GW FRP strength member)	0 to 4
13	Spacer	1
14	Splice Protector Sleeves	10 to 56

Remove all loose parts, top retaining ring, spacer, mounting plate with tray assemblies from the box. Confirm all parts are present (see List of Materials above), then place in a convenient location.

Please see supplemental instruction sheet for ST1-72 Tray installation instructions.

Items Supplied by Customer:

- Lag screws and washers (1/2 in. dia.) or hardware for attachment of assembly to pole or tower
- Silicone sealant for splice protection
- Splicer equipment

1.0 Purpose of Installation

This document describes and illustrates the installation of ADSS and/or Unarmored Loose Tube Cable into the AFL (B8424) Premounted Splice Box.

2.0 Scope

This Splice Box has the following advantages:

1. Capable of storing a minimum of 30 ft. of optical unit per ADSS and/or Unarmored Loose Tube cable inside of the (B8424) Splice Box for immediate or future splicing.
2. The (B8424) Splice Box can be premounted because of its internal unit storage capacity. Typically the Splice Box is mounted to the pole or tower 15-25 ft. (6.1 meters) from the ground.
3. Creates a neater installation of the routing of cables into the (B8424) Splice Box. This eliminates the necessity of coiling of extra cable onto the pole or tower.

3.0 Precautions

3.1 Health

Optical fibers are very thin, fragile, and sharp. Therefore, careful handling is required to avoid either damage to the delicate glass fibers or, more importantly, injury to the technician or bystander. Small fiber scraps should be deposited on strips of adhesive tape, placed in a bottle or vinyl bag, properly disposed. Do not eat or drink when working with optical fibers as small pieces of glass may inadvertently be ingested. Never look directly at the end of a fiber unless certain that no Laser Light is being transmitted through the fiber.

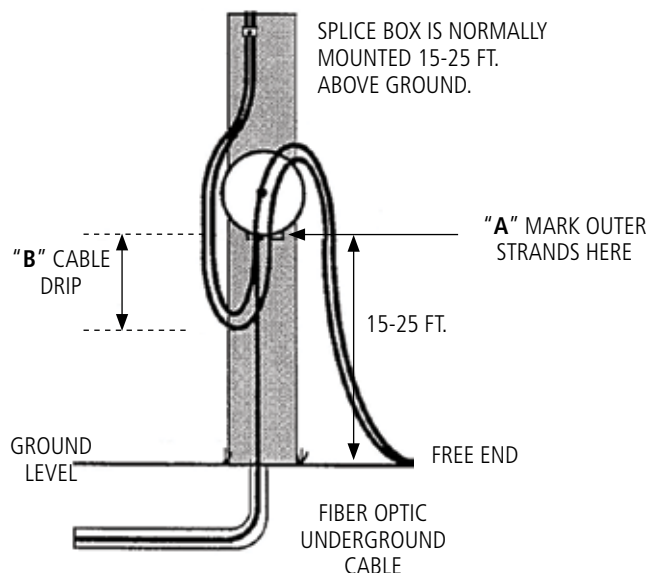
3.2 Work Environment

Handle optical fiber and fiber cable carefully, taking care to impose no damage by physical shock or sharp bends. During the actual splicing, care must be taken to keep hands and work area clean in order that the fibers may be kept clean. Dirty fibers mean poor splices! Keep all tools and equipment in their proper cases or storage pouches when not in use. Consideration should be given to the work area in which the splice box will be organized. A clean, snag free horizontal surface (protected from wind) is necessary.

4.0 Cable Preparation

- 4.1 After the stringing or pulling procedure there should be a minimum of a 100 ft. of ADSS and/or Unarmored Loose Tube cable from each pulling direction at the tower. The 100 ft. of ADSS and/or Unarmored Loose Tube cable is measured from the base of the tower.
- 4.2 When marking the ADSS and/or Unarmored Loose Tube cable use yellow or contrasting color tape to add in visibility. Form the ADSS and/or Unarmored Loose Tube cable into drip loops where they will enter the connector body at the splice box. Mark the individual cables at these points. These Marks will be referenced to as Mark "A". (See Fig. 1.)

Fig. 1



4.3 Measure 30 feet from each individual ADSS and/or Unarmored Loose Tube cable from mark "A" toward the Free End. This will give 30 feet of optical units for storage and splicing.

NOTE: These measurements are based on the splice box being mounted 20 feet on the structure.

4.4 From point "A" measure 2 3/4 inches toward the loose end of the cable and carefully ring cut the cable. The ring cut will point "B" (see Figs. 2 and 3). From the ring cut to the loose end of the cable remove the outside jacket/coating. Therefore, from the loose end, expose 4-6 inches of the rip cord. Then, grip the rip cord and pull to point "B". Remove the jacket/coating.

Fig. 2

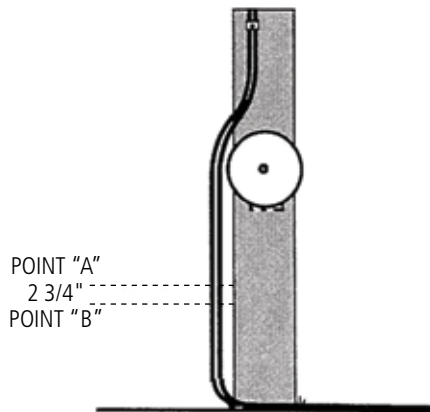
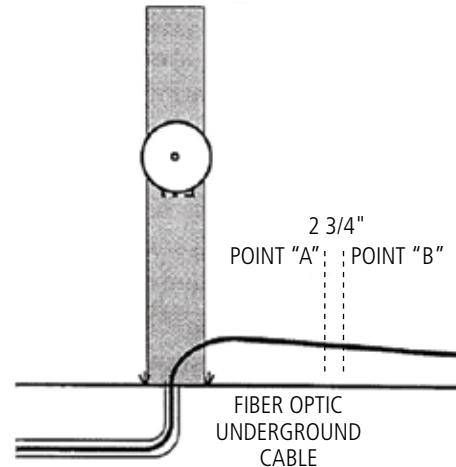
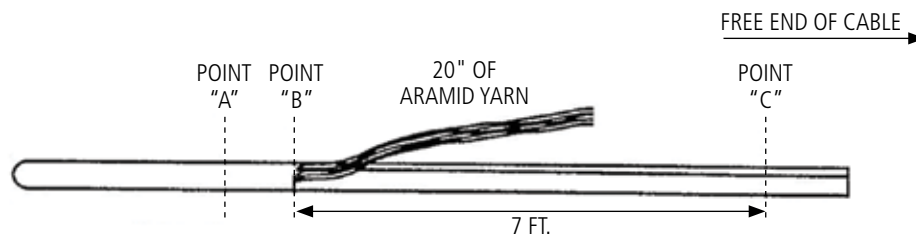


Fig. 3



4.5 If Kevlar is present leave 20 inches from point "B" toward the loose end of the cable. Cut the Kevlar at this 20 inch mark and remove from that point to the end of the cable. Should the ADSS or Loose Tube cable have a inside jacket measure from point "B" out 7 ft. toward the loose end of the cable and mark with a contrasting tape (black may be poor choice). (See Fig. 4.) Call this new point, point "C". Carefully ring cut at point "C". **DO NOT CUT** the rip cord or nick the fibers bearing tubes.

Fig. 4

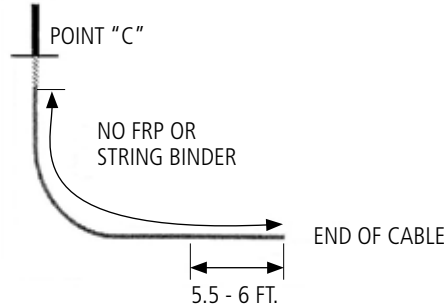


This is for the removal of the inner jacket to the loose end of the cable. Therefore at the loose end of the cable, expose 4-6 inches of the rip cord, pull this cord to Point "C" and remove this jacket.

4.6 Now remove the mylar tape and string binders. Remove short sections of the string binders from the loose end (a mono carbon cleaner works well).

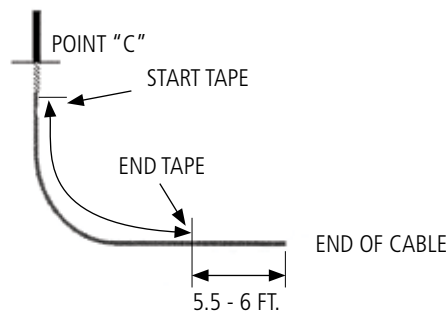
- 4.7** After all of the binders are removed, carefully roll out the FRP Central Member. Be very careful not to collapse the fiber bearing tubes. Remove the RFP about 1/2" ($\pm 1/8"$) or 1/2" ($\pm 5/8"$) from point "C". Clean and dry the area around point "C". (See Fig. 5.)

Fig. 5



- 4.8** With the FRP member removed and point "C" dry, retape this area in a spiral manner with a 2 1/2" to 3" vinyl tape i.e., from point "C" to about 5.5 to 6 feet from the cable end. (See Fig. 6.)

Fig. 6

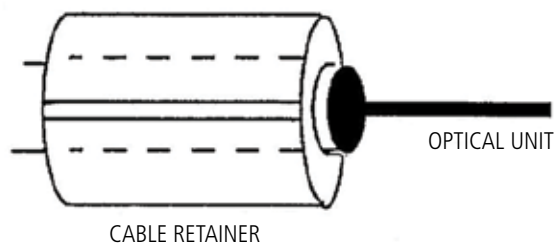


5.0 Cable to Splice Box Preparation

The section will explain how to install the cable into the splice box. This should be performed when the individual ADSS and/or Unarmored Loose Tube cable has been properly prepared.

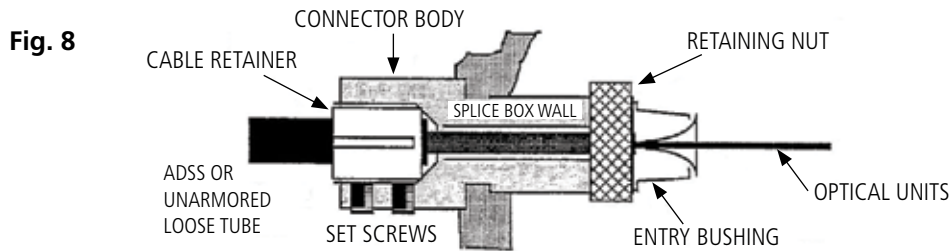
- 5.1** Position the proper size cable retainer against the tape at point "A" and put a wrap or two of tape at both ends of the cable retainer on the cable only.
- 5.2** Install this cable into the splice enclosure until the cable retainer is properly positioned and locked in the connector body. Always be careful to support the cable while inserting it into the splice enclosure so that the tubes are not damaged in any way. (See Fig. 7).

Fig. 7



- 5.3** This procedure must be done to each of the type of cable installed in the enclosure.

5.4 Fig. 8 below is a cross section of the cable connection inside the splice box plus a three step procedure for securing the cable to the splice box.



5.5 Feed the optical units from the cable, through the connector body and entry bushing. Route the optical unit(s) so that they lay on the center shaft of the splice box during the feeding process. This will keep the optical unit(s) from kinking.

5.6 After all of the unit(s) have been fed into the enclosure insert the cable with the cable retainer into the connector body of the splice box. Make sure that the cable retainer is aligned properly and inserted completely. Tighten set screws.

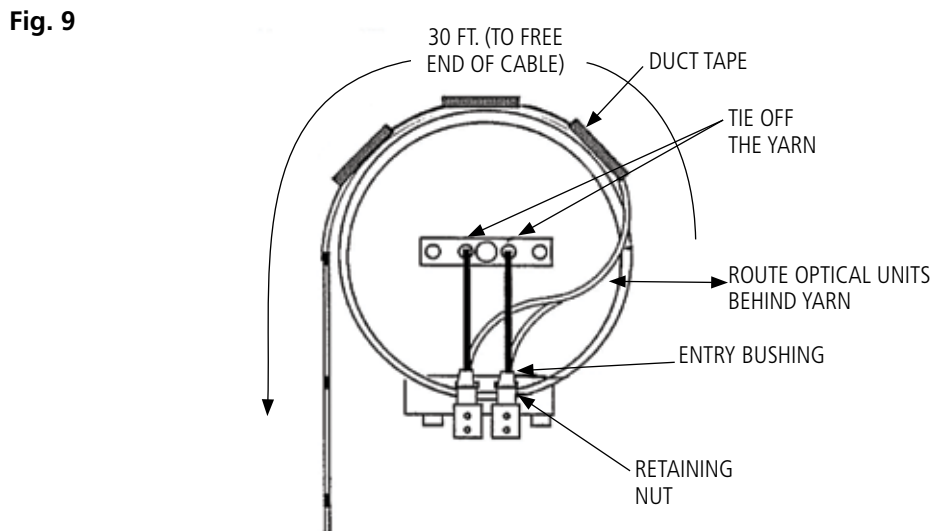
5.7 Each fiber unit(s) should be supported and attached with duct tape to the outer diameter of the splice enclosure (see fig. 9) as soon as the cable has been secured into the connector body. This will secure the optical unit(s) to the splice box and prevent them from kinking.

5.8 If Dielectric Cables are being used, the connector body may have a conduit fitting attached to it. To verify the cable retainer on the Dielectric cable has been aligned properly, remove the top allen screw and visually align and tighten set screws.

5.9 **Repeat all of these steps for the remaining cables that are to be installed into this particular splice location. Remember to prep only one cable at a time.**

6.0 Anchoring the Optical Units

6.1 To anchor the optical thread the yarn through the eye-bolt and tying in a series of half-hitches. Make sure that the yarn is tied off in line and to the eye bolt in the proper position from where the individual cable enters the splice box. Repeat the following steps for the remaining cable(s). Tape the optical units together after they have been secured to the eye-bolts. (See Fig. 9.)



NOTE: There should be 50 ft. of optical unit(s) prepped for each individual cable that is to be inserted into the Splice Box. The 50 ft. of optical unit(s) is broken down into two sections:

1. 20 ft. from splice box to ground, and
2. 30 ft. for storing and splicing.

Should the Splice Box be mounted at a different height, then adjust the amount of cable to be prepped, stored and spliced to fit.

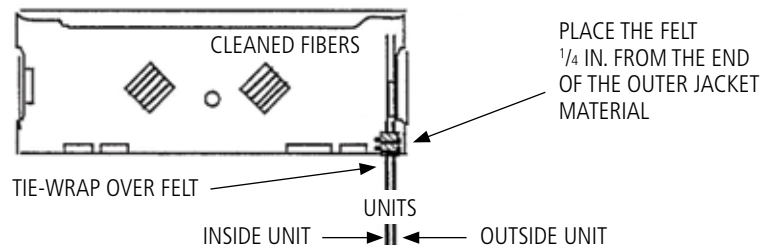
- 6.2 Tape (duct tape is recommended) the units to the top outside radius of the box. (See Fig. 9.) This will help support the units and prevent damage of the units at the bushing. Also explained in Section 5.6.
- 6.3 Tighten the retaining nut so that the bushing is sealed around the units.
- 6.4 Tape the optical units together every 2 feet. Stop taping the optical units 6 feet from the free end. Tape each individual optical unit(s) 4 ft. 10 inches from the free end. Remove the yarn and tape from the optical unit(s) from the 4 ft. 10 inch section from the free end.

7.0 Optical Unit Preparation

- 7.1 Starting at the Free End of one of the units, separate the individual colored units one at a time by unlaying them back to the 4 ft. 10 inch tape mark (This only applies to the multiple unit configurations). Now proceed to the other cable units and repeat the same steps.
- 7.2 Mark the individual colored unit(s) 4 ft. from the free end with a permanent marker. In case of multiple units pair the like colored buffers together. (For example: Match the blue units from each of the cable units. Orange to orange, green to green, etc.)
- 7.3 With a buffer tube cutter, ring cut the tube at the 4 ft. mark. One or two revolutions will score the tube enough. Remove the buffer tube cutter. Grip the buffer tube on either side of the scored area and bend tube back and forth until it breaks. Remove the buffer tube slowly exposing the fibers.
- 7.4 Remove the gel from the fibers.
- 7.5 Then verify that all fibers are identified.
- 7.6 After the like cable optical units (blue to blue) have been prepared, cleaned and separated, tape the blue units together by placing a piece of double-back tape $\frac{1}{4}$ inch back from the end of the outer jacket material of the optical units. Place the double-backed section of the blue units onto the splice tray and secure them to the splice tray with tie-wraps. (See Fig. 10.) If multiple units exist, follow the same steps for the remainder of the like-colored units.

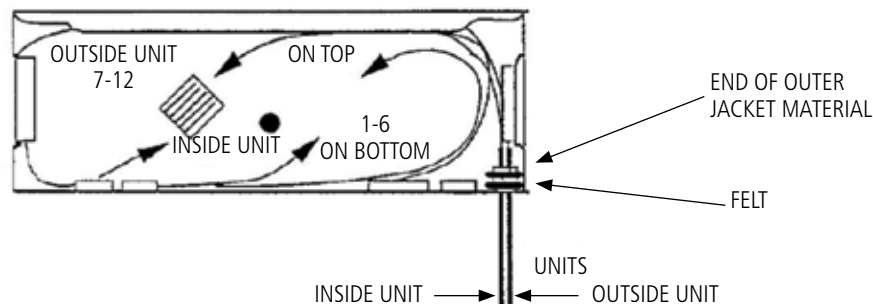
NOTE: The felt serves to cushion the optical units from the tie-wraps to be applied.

Fig. 10

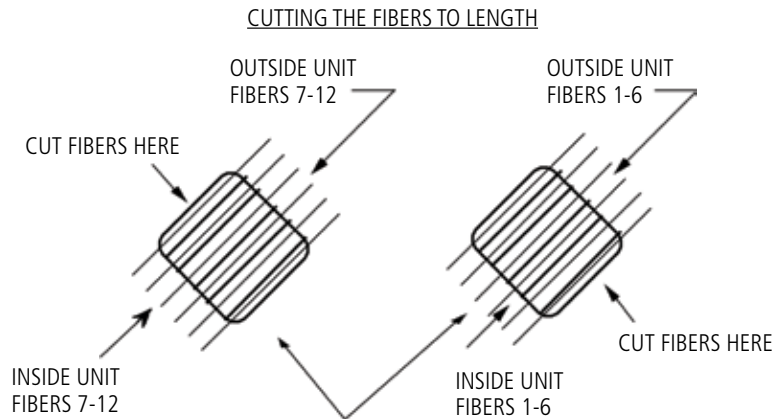


- 7.7 When cutting fibers to length wrap the four feet of fibers of the inside unit around the tray in a counterclockwise direction. Cut the fibers so that the splice section will fit into the splice-protector-holders. Be sure that the fibers are cut and positioned in COLOR CODE ORDER. Prepare the outside unit in the same manner. The first six fibers will be shorter than the last six fibers in the outside unit (See figure 11). The inside unit, the first six fibers will be longer than the last six fibers (this figure is based on a 12-fiber unit design). **Place the splice tray cover onto the splice tray making sure that all of the fibers are wrapped inside of the splice tray.**

Fig. 11



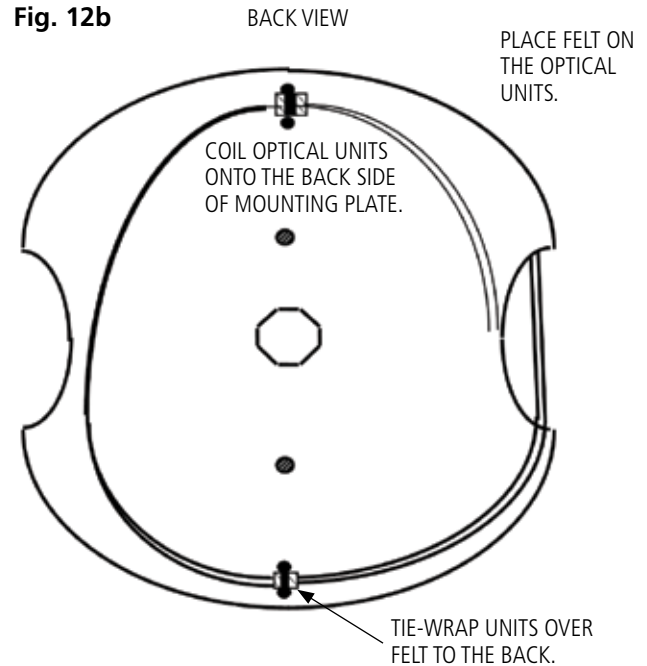
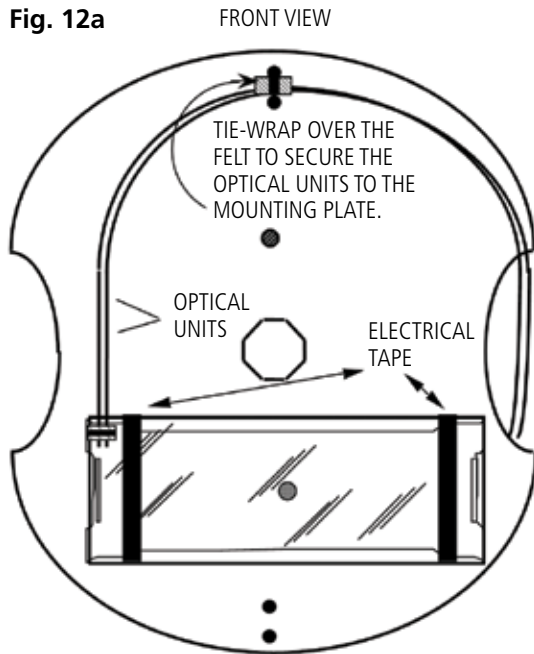
- 7.8** Prep all trays in the same manner as in (Fig. 12) before any splicing is performed. This may vary due to fiber count configurations. Lay the fibers across their appropriate Splice Protector Holder and then cut the fibers at the mid-point of the Splice Protector Holder.

Fig. 12

8.0 Splicing Fibers

When splicing, follow these steps:

- 8.1** Splicing will be easier if the splice tray is level with the top of the splicer.
- 8.2** Lay out only enough fiber to cleave and place into the splicer.
- 8.3** Slide splice protector sleeve over one of the fibers BEFORE STRIPPING, CLEANING, CLEAVING AND LOADING INTO SPLICER.
- 8.4** After splicing is completed and the splice has been accepted by the splicing technician, slide the splice protector over the spliced area and place in the tube heater. Once the splice protector has cooled and has become rigid, place and center it into splice protector holder in the tray.
- 8.5** After all of the fibers have been spliced, protected and positioned, make sure that all fibers are stored on the inside of the splice tray. Place the splice tray cover onto the splice tray. Secure the splice tray cover to the splice tray by wrapping both ends of the splice tray with electrical tape. (See Front View, Fig. 12a, on following page).
- 8.6** If multiple splice trays are present, work only with one splice tray at a time. Make sure that Step 8.5 is completed before continuing to the remaining trays.
- 8.7** Place the splice tray(s) on the mounting plate bolt. If multiple splice trays are present, be sure to stack all splice tray(s) on the same side of the mounting plate. Place the tension nut on the bolt and tighten it down snug. This will keep the splice tray(s) secured to the mounting plate.



8.8 Place felt around the mylar tape on both units and tie-wrap as shown on the Front View in Fig. 12a above.

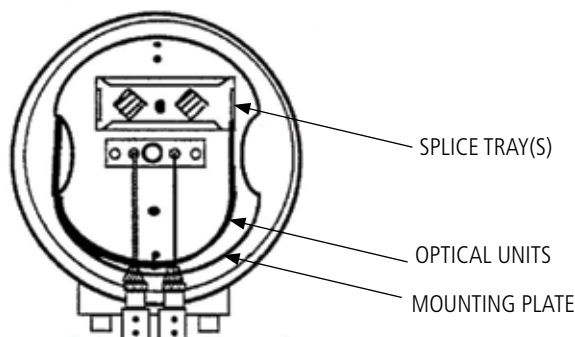
9.0 Installing Mounting Plate to Splice Box

- 9.1** Using double-back tape, secure the optical units to the back side of the mounting plate. Tie-wrap the optical units (snug) as shown in Fig. 12b above.
- 9.2** Coil the optical units in a counter-clockwise direction on to the back side of the mounting plate. Coil just enough of the optical units so that the mounting plate would lie on the ground. (The reason for this is to prevent a tremendous mechanical shock to the optical units in the event that the technician drops the mounting plate while coiling the optical units as he climbs the tower.)
- 9.3** After coiling as much of the optical units (while on the ground, tie-wrap the units snug, but not too tight), continue to coil the optical units around the back side of the mounting plate about 1 inch from the edge until the splice box has been reached. Remove the duct tape from the top front rim of the splice box. Proceed to coil the small section of optical units in a counter-clockwise direction and by aligning and positioning the mounting plate to the center shaft.

NOTE: Coiling the optical units should be done by rotating the mounting plate. This avoids twisting and stressing the fiber units. (See Back View, Fig. 12b, above).

- 9.4** When all of the slack is coiled and stored behind the mounting plate, align the mounting plate and secure it to the center shaft by placing the spacer on the center shaft and installing the outside retaining clip ring (See Fig. 13).

Fig. 13



- 9.5 When all of the slack is coiled and stored behind the mounting plate, align the mounting plate and secure it to the center shaft by placing the spacer on the center shaft, and installing the outside retaining "clip" ring. (See Fig. 14 below left.)

Fig. 14

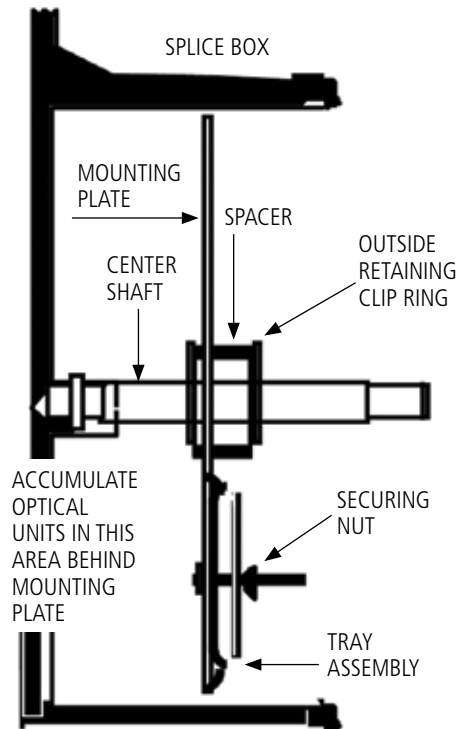
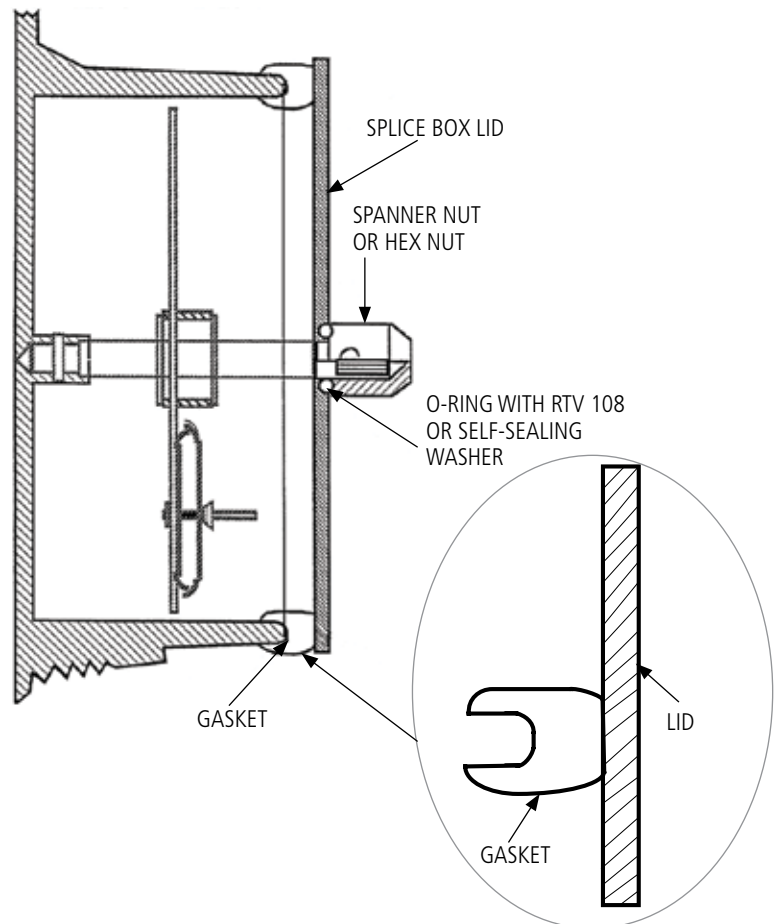


Fig. 15



10.0 Sealing Splice Box

- 10.1 Using alcohol $\geq 91\%$ and a clean cloth, wipe down the inside groove (both sides) of the gasket and the inside of the splice box lid.
- 10.2 Place the gasket on the splice box with the beveled side on the lip of the splice box.
- 10.3 Place the splice box lid on the splice box.

WITH SPANNER NUT

- 10.4 Place the O-ring over shaft. Cover the O-ring with RTV. Screw the spanner nut on the shaft.
- 10.5 Tighten the spanner nut on the center shaft until the lid bottoms out (45 ft-lbs).

WITH JAM NUT

- 10.4 Place the self-sealing washer over the shaft. Screw the nut on the shaft.
- 10.5 Tighten the spanner nut on the center shaft until the lid bottoms out (45 ft-lbs).

Instructions for Preparing AFL ST1-72 FIBER SPLICE TRAY INTO THE AFL SB01 SPLICE ENCLOSURE

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1.0 Tray Description

Fig. 1



- 1.1** The AFL ST1-72 Splice Tray is capable of holding up to 72 individual splices per tray. The circular tray is constructed of high impact resistant Lexan with a black base and a clear lid. Each tray assembly contains eight, twelve fiber manifolds. Of the eight manifolds, only six are used in the splicing process with the remaining two manifolds being placed in the top positions to help secure the fibers within the tray.

NOTE: All eight manifolds must remain within the tray

2.0 Maximum Fiber Capacity

- 2.1** A maximum fiber count of 144 splices (two ST1-72 trays) can be stored within the AFL SB01 Splice Enclosure.

NOTE: Prior to installing any cable combination, be sure to verify that the required splice lay out can be contained within each of the two 72 fiber trays without the need to furcate the fibers from one tray to the other. If the customer requires more than the AFL recommended unit storage, confirm that the storage area is adequate prior to splicing the cable.

3.0 ADSS or Loose Tube Installation



- 3.1** When installing an ADSS or Loose Tube cable into the SB01 enclosure and ST1-72 tray, it requires a minimum of 10.5 feet of optical unit. A minimum of 4 feet (48 inches) of optical unit is stored within the enclosure with an additional 6.5 feet (78 inches) of open fiber being placed within the splice tray. The aramid yarn or central strength member shall be secured within the enclosure with the optical units being routed in a clockwise direction.

NOTE: Fig. 2 above shows an AFL 144 fiber ADSS design. Storage of Loose Tube or ADSS cables can be increased in length (over 4 feet) depending on the customer's required cable design. If the customer requires more than the AFL recommended unit storage, confirm that the storage area is adequate prior to splicing the cable.

Fig. 3



- 3.2** Each bundle of optical units shall be wrapped with an adhesive backed felt tape and secured within the tray with black UV cable ties. Once the excess has been cut from the cable tie, move the connection point away from the fibers and towards the edge of the enclosure.

4.0 Stainless Steel Tube Installation

Fig. 4a



Fig. 4b



- 4.1** When installing a Stainless Steel Tube cable design (CentraCore design shown) into the AFL SB01 enclosure and ST1-72 tray, it requires a minimum of 10.5 feet of optical fiber. A minimum of 4 feet (48 inches) of transition tubing (with fiber) is stored within the enclosure with an additional 6.5 feet (78 inches) of open fiber being placed within the splice tray. The transition tubing (with fiber) shall be routed within the enclosure in a clockwise direction.

Fig. 5



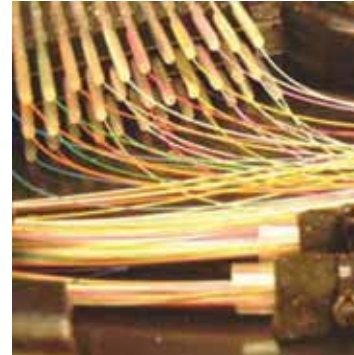
- 4.2** Each transition tube containing optical fibers shall be wrapped with an adhesive backed felt and then secured within the tray with black UV cable ties. (**NOTE:** Once the excess has been cut from the cable tie, move the connection point away from the fibers and towards the edge of the enclosure.)

5.0 Routing of Optical Fibers

Fig. 6a



Fig. 6b



5.1 Route all of the fibers into the tray by using the following procedure: (36F on Left / 36F on Right)

5.1.1 A length of 6.5 feet of fiber is used in order to complete two full wraps within the splice tray.

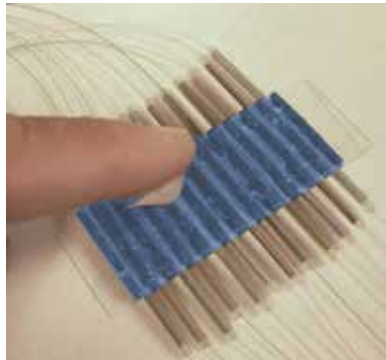
5.1.2 Each set of optical fibers should be separated by unit and individually measured and cut to length.

EXAMPLE: If cutting the fibers to length within the blue units, one of the two units would be measured from the top left side of the manifold facing down with the other unit being measure from the bottom left side facing up. All fibers should be stacked in sequence with the lowest number being placed on the bottom. Fibers 1-36 are to be placed on the left hand side of the tray with fibers 37-72 being placed on the right.

NOTE: Each tray assembly contains eight, twelve fiber manifolds. Of the eight manifolds, only six are used in the splicing process with the remaining two manifolds being placed in the top positions to help secure the fibers within the tray.

6.0 Fiber Splice Sleeves

Fig. 7



6.1 AFL recommends using the Fujikura 60 mm (#500065) splice sleeves for this application.

6.1 **NOTE:** To ensure that the recommended sleeves are being used, all contractors should check the tightness of their splice sleeves within each of the manifolds used. If necessary, a small bead of RTV can be placed and spread evenly over the splice sleeves to help secure them in place. If this method is used, allow a few minutes for the RTV to begin curing so that the manifolds will not stick together within the tray.

7.0 Closing the ST1-72 Tray

Fig. 8a



Fig. 8b



7.1 After splicing, ensure that all of the fibers are located under the tabs and are free of any pinch points that may be caused from securing the lid.

7.2 Apply the lid as follows:

7.2.1 Align the open portion of the lid with the fiber entry location on the tray.

7.2.2 Place the lid under the locking portion of the tray (above photos).

7.2.3 Secure the lid in place by pressing down on the center of the tray.

8.0 Routing and Securing the ST1-72 Tray

Fig. 9a



Fig. 9b



8.1 Route the fiber units back into the SB01 enclosure in a clockwise direction. If longer lengths of fiber unit were required, remove any excess torque by rotating the tray during the routing process. Always install the tray with the lid of the tray facing the lid of the SB01 enclosure.



- 8.2 Place the center of the tray over the center shaft of the SB01 enclosure.
- 8.3 Place the aluminum spacer ring over the center shaft and onto the tray lid.
- 8.4 Secure the tray by installing the retainer ring above the spacer and onto the center shaft of the enclosure.
- 8.5 Seal the SB01 enclosure according to the AFL standard procedure.

9.0 Removing the ST1-72 Tray

Fig. 11



- 9.1 To remove the tray from within the enclosure, place two fingers on each of the two raised taps and slightly move the tray to the left (against the torque of the tray) and lift upward.



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