

FIBERLIGN® Fiber Safe

FOR ENCLOSING AND ENCAPSULATING UNDERGROUND, AERIAL AND BURIED FIBER OPTIC SPLICES

Be sure to read and completely understand this procedure before applying product.
 Be sure to select the proper PREFORMED™ product before application.

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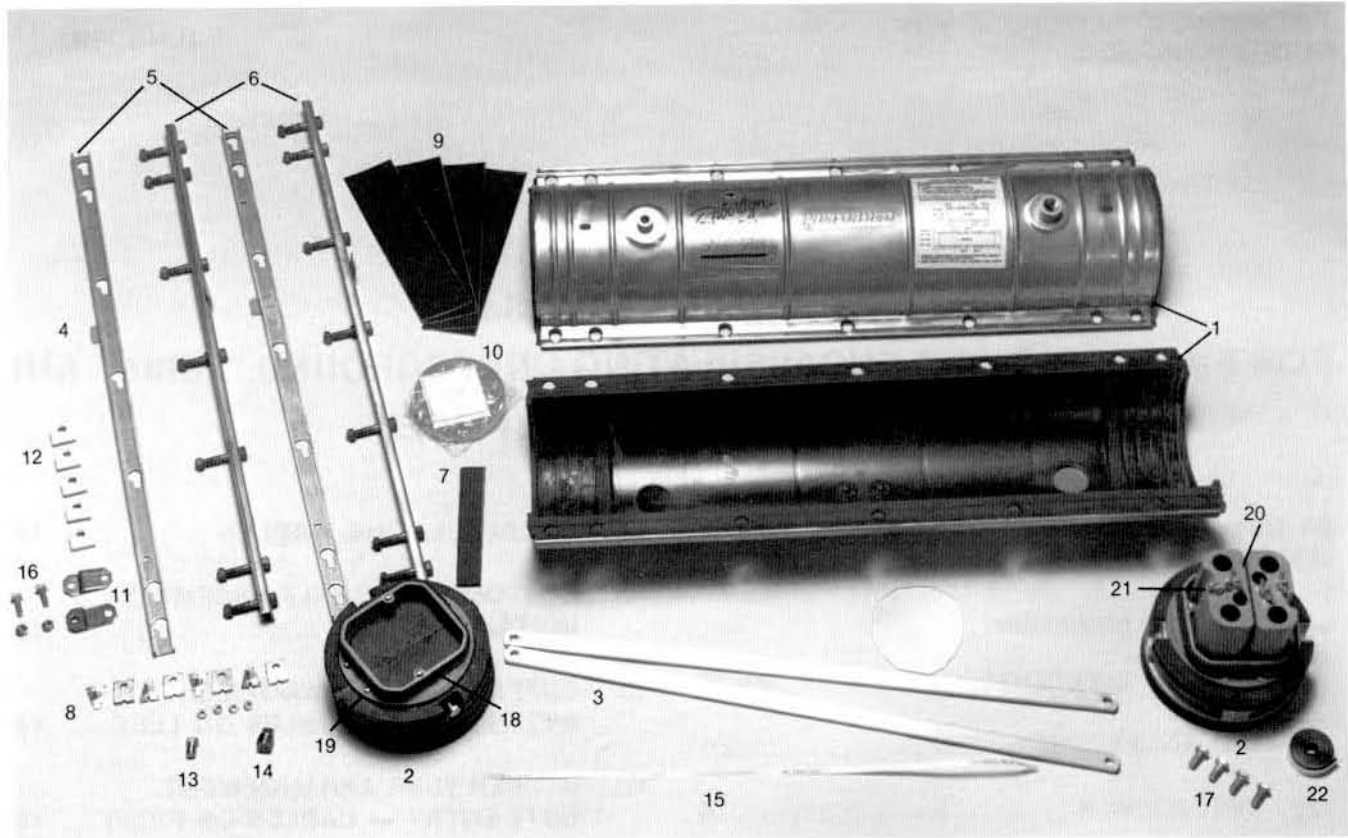


Figure 1 — PREFORMED™ Splice Case Kit for FIBERLIGN® Fiber Safe

1.00 NOMENCLATURE

1. Resin Fill 6½" x 28" Splice Case halves for butt entry applications.

NOTE: For in-line splices the 28" Splice Case halves will be replaced with 38" Splice Case halves.

2. One standard 6½" two section and one 6½" three section end plate for butt entry applications.

NOTE: For in-line splices the two section end plate will be replaced with an additional three section end plate.

3. Torque Bars
4. LOCKBAR™ Fastening Positioning Tab
5. LOCKBAR™ Fastening (Front Key Hole Section)
6. LOCKBAR™ Fastening (Back; Nut and Bolt, Studded Section)
7. Emery Cloth for Scuffing Sheath

8. SURE-GRIP™ Shield Connectors
9. End Plate LOCK-TAPE™ Strips
10. Cable LOCK-TAPE™ ¾" Strips
11. Suspension Plates
12. Exterior Bonding Clips (4)
13. Air Flange Plug
14. Resin Flange Plug
15. Fiber Optic Measure Tape
16. Hanger Studs (¼" x ¾")
17. Bonding Clamp Bolt
18. Adaptor Collar with Sealing Gasket
19. Adaptor Collar Mounting Screws
20. Resin Cups
21. Resin Cup Wing Nuts (4)
22. Sealant for Adaptor Collar

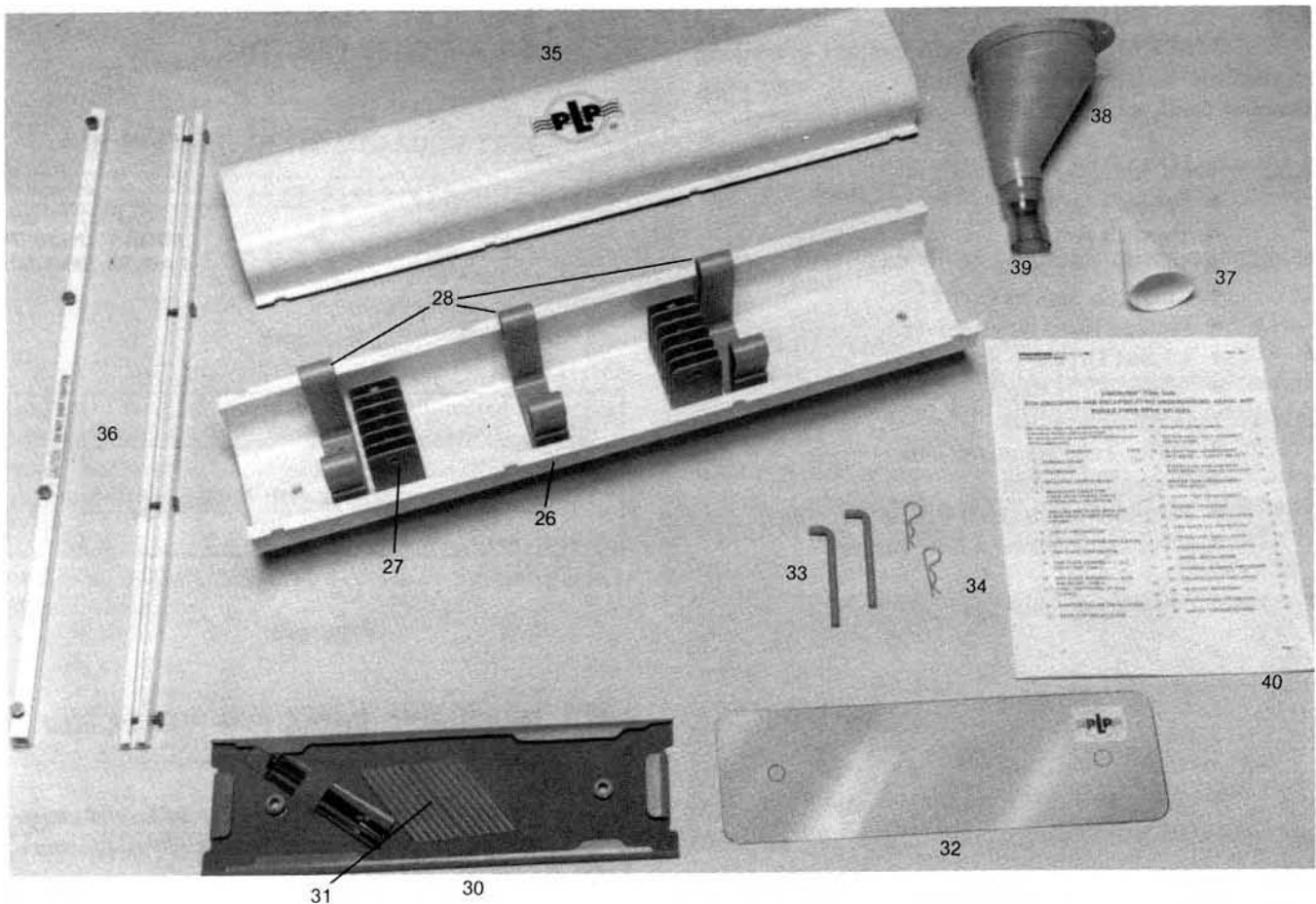


Figure 2 — FIBERLIGN® Fiber Safe Assembly

1.00 (continued)

- | | |
|---|--|
| <ul style="list-style-type: none"> 23. Shield Connector Brackets (not shown) 24. Stand Off Studs with Lock Nuts (not shown) 25. Strength Member Grounding Clamps (not shown) 26. Bottom Shell Half Assembly 27. Splice Tray Retainers 28. Buffer Tube Retainer Clips 29. Shell Supporters (not shown) 30. Splice Tray 31. Splice Retainer Block 32. Splice Tray Cover (clear) | <ul style="list-style-type: none"> 33. Splice Tray Retainer Pins 34. Splice Tray Retainer Pin Clips 35. Top Shell Half 36. Flange Clamp Assemblies 37. Resin Cup Filling Funnel 38. Splice Case Filling Funnel 39. Plastic Coupler for Splice Case Filling Funnel 40. Application Procedure 41. Green Sealant (not shown) |
|---|--|

1.01 The PREFORMED™ Splice Case and FIBERLIGN® Fiber Safe contain everything needed for installation except tools, vinyl tape, rags, cleaning fluid, c-cement and re-enterable encapsulant.

1.02 Tools Needed

- Splicer's Scissors
- Splicer's Knife
- Tabbng Shears
- Common Screwdriver
- Phillips Head Screwdriver
- 3/8" Nut Driver
- 1/2" and 7/16" Deep Well Sockets
- Needlenose Pliers
- Buffer Tube Removal Tube
- Pliers, Sidecutters
- Torque Wrench (Inch Pound Readings)*
- Fiber Optic Power Circle Cutter*

*Available from Preformed Line Products.

1.03 Remove the piece parts from the packing carton and verify that all parts are accounted for.

PLP® TIP:

This will serve to familiarize you with the component parts.

NOTE: The 3-section End Plate and associated hardware has been pre-assembled to help familiarize the user with part locations.

End Plate **must** be disassembled to enable cable entry holes to be drilled.

2.00 DESCRIPTION

2.01 The FIBERLIGN® Fiber Safe will accommodate 6 trays with 12 splices per tray for a total of 72 splices as standard. The FIBERLIGN® Fiber Safe-144 will accommodate 6 trays with 24 splices per tray for a total of 144 splices. The cables entering the splice may be either in an in-line, or a butt configuration.

For end plate hole locations and Splice Case lengths see Figure 3.

2.02 For Safety Considerations refer to the end of this application procedure.

3.00 END PLATE CAPACITIES AND SPLICE CASE LENGTHS

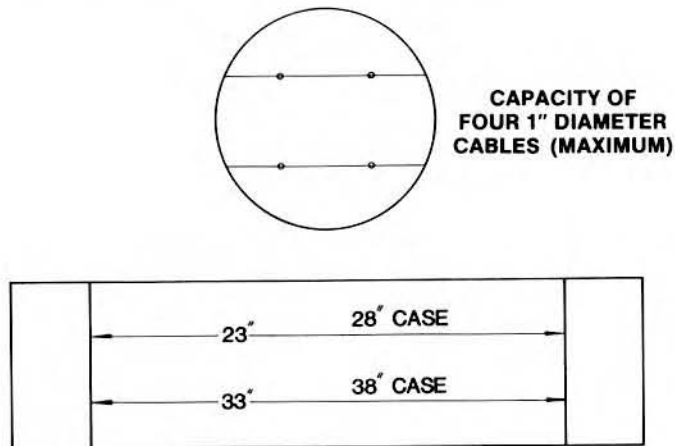


Figure 3

4.00 MEASURING CABLE FOR POWER END PLATE CUTTER DRILL SELECTION

4.01 Measure each cable at the location the end plates will be applied using the Fiber Optic Measure Tape.

4.02 To use the Fiber Optic Measure Tape hold the tape so the index line is facing you. Then wrap the tape around the cable tightly to obtain the reference number. (See Figure 4.)

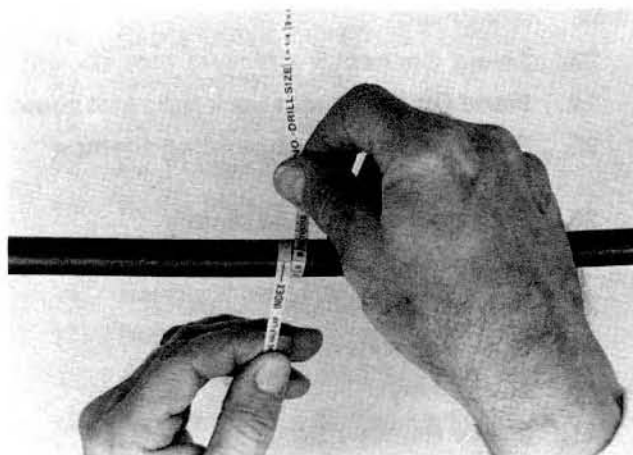


Figure 4

If the index line falls on a line between two numbers, always use the number to the right of the line. Figure 5.

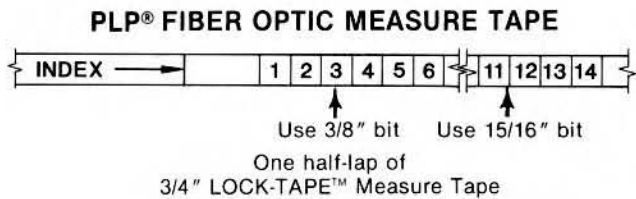


Figure 5

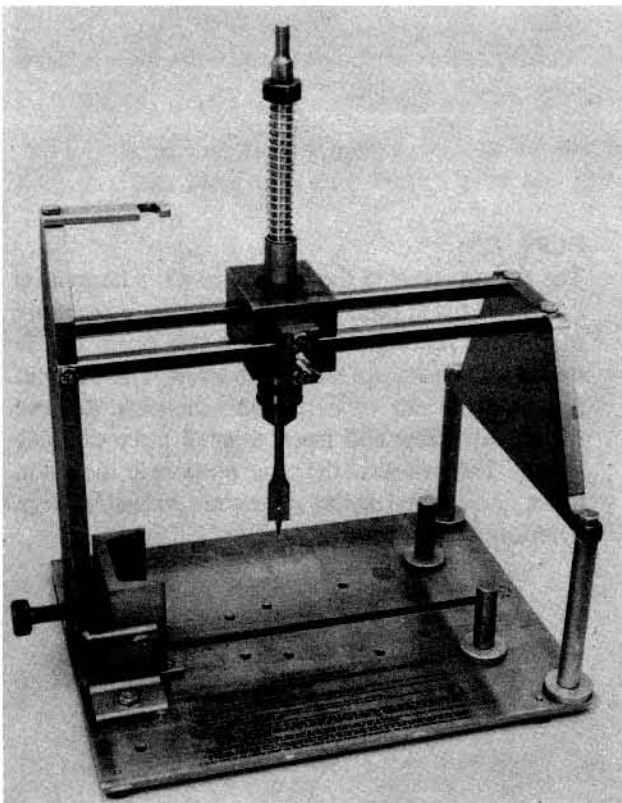
Once you have obtained the cable diameter reference number, use the drill size table to the right of the tape and locate that number. This will indicate the drill size to be used to drill the hole in the end plate.

If using the Blade Kit with A-Z blades (8000453, 8000454 or 8000455), use CABLE Mea-SURE™ Tape and select proper blade size.

PLP® TIP:

Cable will vary in diameter from place to place along its length, so be sure to measure each cable at the area where the end plate is to be placed.

5.00 DRILLING END PLATE WITH THE POWER END PLATE CUTTER



POWER END PLATE CUTTER

5.01 After correct blade size has been determined according to reading from Fiber Optic Measure Tape, choose blade from Blade Kit.

NOTE: When using spade blades, the adaptor is not used.

5.02 Slide blade into cutter shaft, insert and tighten retaining screw.

PLP® TIP:

If retaining screw is difficult to tighten, be sure that it is not clogged with dust from previous cuttings.

5.03 Insert stop-posts in tapped holes in base of cutter corresponding to end plate diameter and hand tighten firmly. Figure 6.

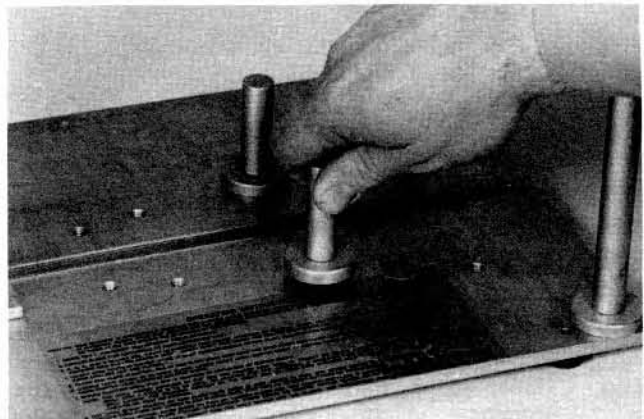


Figure 6

5.04 Adjust clamp screw until end plate can be placed in base of cutter. End plate should lie on top of flanges of stop-posts (or end-posts) and clamp jaw guides. Figure 7.

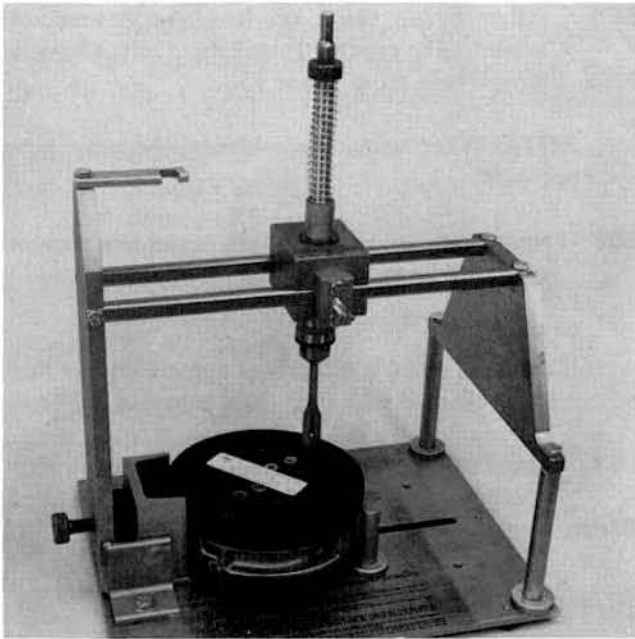


Figure 7

5.05 Back off clamp screw until end plate can be placed. End plates should be on the top of the flanges of the stop posts and clamp jaw guides. Figure 7.

5.06 Cable entry holes in the end plate for the FIBERLIGN® Fiber Safe **must** be drilled at the designated drill point locations which are highlighted in yellow. See Figure 8.

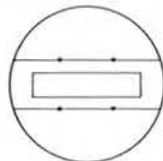


Figure 8

PLP® TIP:

To assure the holes are drilled in correct locations, use caution label in center of end plate to mark proper location of holes to be drilled.

5.07 Rotate the end plate and slide the bearing block along the clamp jaw guides until the drill point is positioned over the drilling location. Tighten the clamp screw to secure end plate and tighten the bearing block thumb screw. Figure 9.

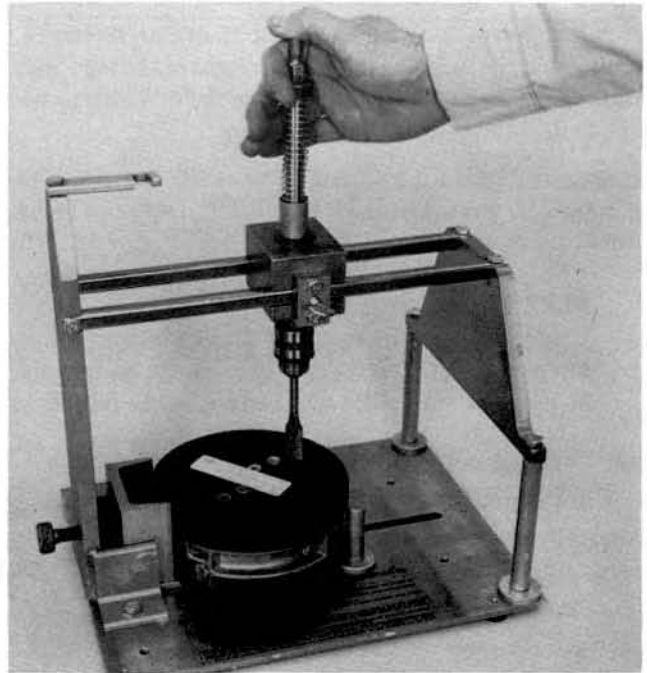


Figure 9

PLP® TIP:

The thumb screw in the bearing block is backed up by a small nylon pellet. If undue pressure is necessary to hold the bearing block in place, this pellet may be missing. Do not force the thumb screw. This can scar the guide rails and render the cutter unusable. Remove the thumb screw and insert a small piece of cable sheath. This will serve the same purpose as the nylon pellet. Additional nylon pellets are available from Preformed Line Products.

5.08 Mount a 3/8" drill (Catalog No. 80851659) with a 1/2" deep well socket to upper end of shaft.

PLP® TIP:

This special drill motor is available from Preformed Line Products. If using other than a PLP® drill, use at least a 4.0 amp rated drill with PLP® adaptor #80801944. No matter what type of electric drill you use, be sure to press down on the body of the drill so the pressure is not exerted sideways on the shaft. This will result in a much longer life of the bearing blocks. Drill through the end plate slowly.

5.09 Using moderate pressure drill through the end plate until the drill shaft bottoms out on the stop collar. **Stop the drill.** Bring the drill bit up through the end plate. **Never** bring the drill bit back up while it is still turning, as this could result in an oversized hole.

5.10 Remove the drill motor. If another of the same or different size hole is required in the end plate, follow the appropriate steps to change the drill bit or to move the bearing block to a new position.

5.11 After drilling is complete, remove the end plate from the Power End Plate Cutter and remove caution label.

5.12 Disassemble end plates by removing the two bolts.

PLP® TIP:

Prior to disassembly scribe a line across the seam of the end plate. This will help to assure correct matching of the halves during reassembly.

5.13 Use emery cloth provided to remove sharp edges on plastic and foam in area of opening. Figure 10. **Scuff lightly. DO NOT REMOVE TOO MUCH MATERIAL.**

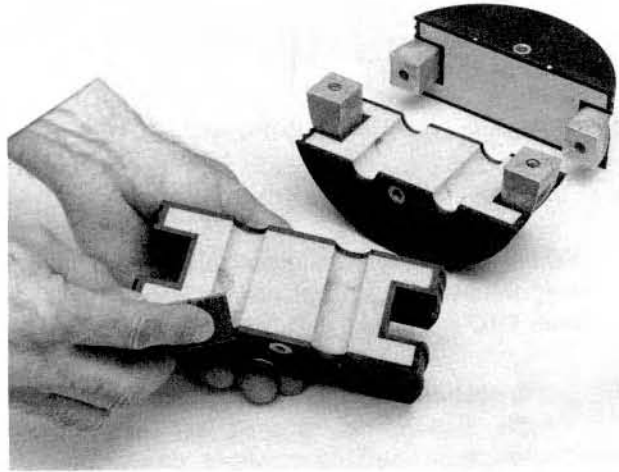


Figure 10

PLP® TIP:

This simple operation will help prevent catching the sheath and pinching it when drawing the end plates together. **ONLY USE EMERY CLOTH PROVIDED FOR THIS PROCEDURE.**

5.14 Set the end plate aside until the cable opening procedure is complete.

6.00 CABLE PREPARATION

6.01 Measure and mark the cables to remove a minimum 89" of sheath for a standard 28" closure. If a 38" stretch closure is used increase this minimum distance to 100".

6.02 Scuff the cable for a length of 6" where the end plate is to be placed. Use the emery cloth provided. Always scuff **around** the cable, **never** scuff lengthwise. Make sure all deep grooves are removed.

6.03 Cover the scuffed areas with vinyl tape. (The vinyl tape is applied to prevent any filling compound from getting onto the sheath during the cable opening procedure.)

6.04 Remove the cable sheath to the cable opening mark. Remove any other coverings to expose the buffer tubes.

6.05 If the cable has a metallic central strength member, cut off the strength member to leave a length of 4" at the butt of the cable. If the cable has a non-metallic central strength member it may be cut off at the butt of the cable.

6.06 Thoroughly remove all filling compound from the buffer tubes and central strength member using your company standard filled cable cleaner.

NOTE: If the cable is all dielectric and no bonding or grounding is required proceed to Steps 6.10, 7.00, 8.00, 9.00 and Step 11.00.

6.07 If the cable has a metallic shield, cut a tab in the cable sheath and shield. Install a Shield Connector according to your company standards.

6.08 Select one of the "L" shaped Shield Connector brackets from the package. Install it over the Shield Connector stud. Secure it loosely with the Shield Connector stud nut. Figure 11.

6.09 If the cable has a metallic central strength member, lead it between the buffer tubes adjacent to the Shield Connector. At the butt of the cable, bend the strength member sharply out of the center of the cable toward the Shield Connector. Select a stand-off stud and a strength member grounding clamp from the package. Insert the end of the stand-off stud with the nut on it into the hole of the Shield Connector bracket. Temporarily hold the stud in place using the wing nut included in the package. Remove the protective covering from the strength member at a point after it exits the buffer tubes. Figure 12. Bend the exposed strength member so that it lays adjacent to the stand off stud. Mark where the ground clamp will be placed and cut off excess strength member. Install the strength member grounding clamp over the exposed strength member and stand-off stud until it reaches the strength member covering. Tighten the clamp. Figure 13. Remove the wing nut that was used to hold the stand-off stud to the Shield Connector bracket.

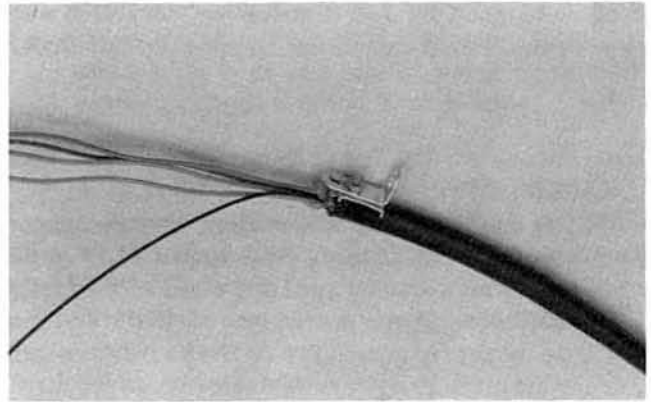


Figure 11

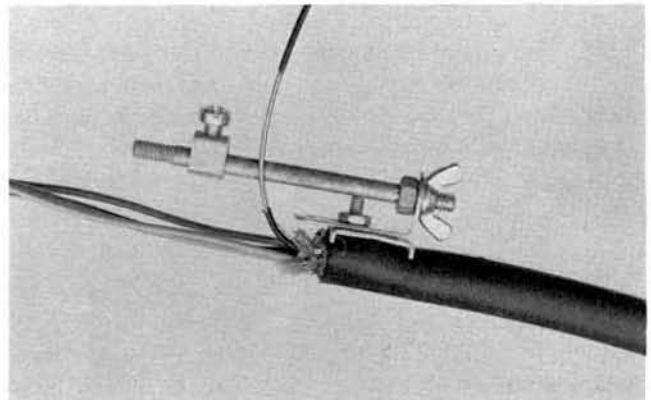


Figure 12

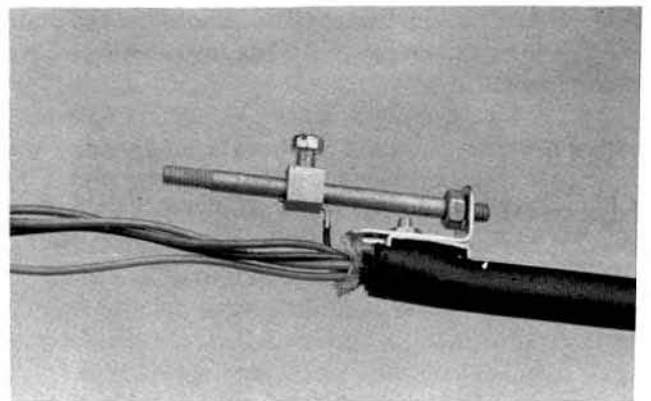


Figure 13

6.10 Remove the green mastic sealant from the package. Remove enough of the paper backing to roll the mastic tape into a solid plug approximately $\frac{1}{2}$ " in diameter and cut the tape. Spread the buffer tubes apart at the butt of the cable and insert the mastic sealant plug in between the buffer tubes approximately $\frac{3}{8}$ " from the butt of the cable. Position the buffer tubes around the sealant plug leaving a slight separation between the buffer tubes. Depress the buffer tubes into the sealant plug and apply one layer of green mastic sealant around the buffer tube bundle at the point where the plug was installed. Figure 14.

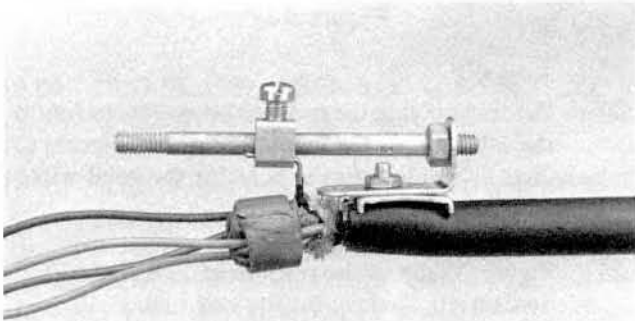


Figure 14

NOTE: This procedure will create a moisture block around the buffer tubes and will allow resin to flow around the buffer tubes when resin is poured during a later step.

7.00 APPLICATION OF $\frac{3}{4}$ " LOCK-TAPE™ SEALANT TO CABLE

7.01 Remove the vinyl tape from the scuffed area of the cable.

7.02 Coat the scuffed area of cable with C-Cement and allow to dry to tacky base. Use the procedure described in the PLP TIP following 8.02 to speed up drying time of C-Cement.

7.03 Half lap $\frac{3}{4}$ " LOCK-TAPE™ Sealant around the cable (black side up) in area of cable coated with C-Cement. Stretch tape while applying. Use one half lapped layer only. Figure 15.

PLP TIP:

Stretch tape enough to reduce its width to $\frac{1}{2}$ ". Be sure to remove backing from white side while applying tape. The white side is the sticky side and should be applied toward the cable. Figure 16 shows the completed application of one half-lap of LOCK-TAPE™ Sealant.

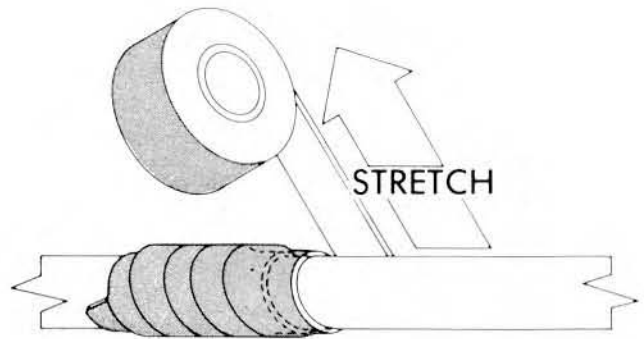


Figure 15



Figure 16

7.04 Be sure to keep the LOCK-TAPE™ Sealant wrap dry and free from grease and dirt.

8.00 END PLATE PREPARATION

8.01 Apply a thin coat of C-Cement to each inside surface of the end plates as shown in Figure 17.

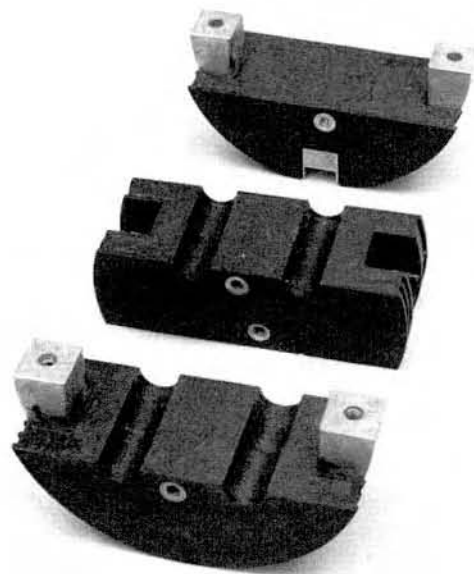


Figure 17

8.02 Select the end plate LOCK-TAPE™ Sealant strips from the package.

PLP TIP:

Use removed backing from a LOCK-TAPE™ Strip to dry C-Cement applied to end plate. Figure 18.

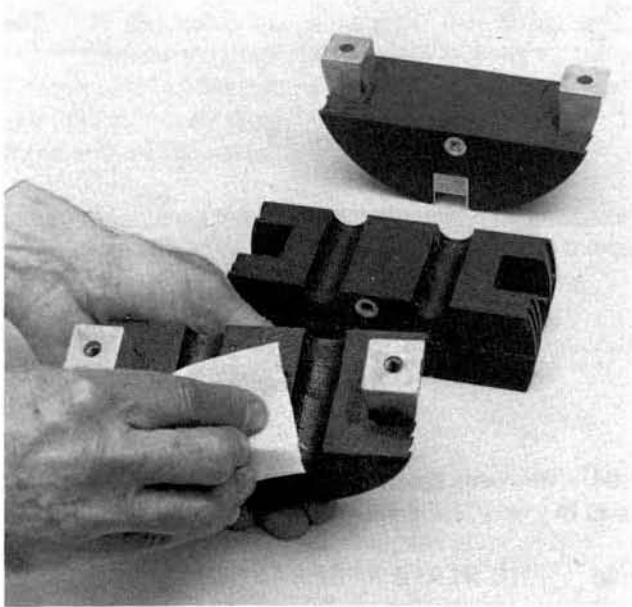


Figure 18

8.03 When C-Cement becomes tacky, remove the protective backing from a strip of LOCK-TAPE™ Sealant and apply LOCK-TAPE™ Sealant, white side down without stretching, on the foam side of the end plate piece, following the contour of the cable holes. *Allow approximately 3/4" of LOCK-TAPE™ Sealant to extend beyond each end of the end plate. Square cut the tape away from the bolt hole area just beyond the metal insert. Figure 19.

***NOTE:** This will serve as an indicator during the end plate assembly procedure in a later step.

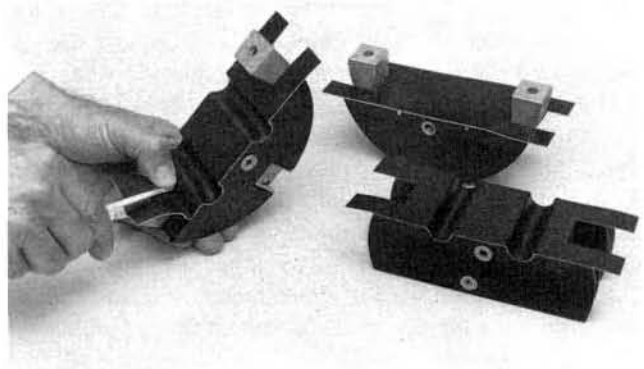


Figure 19

8.04 Before applying the prepared end plate halves to the cable, apply C-Cement 1/4" wide, adjacent to the hole and 1/4" wide into the hole for the total width of the end plate. Figure 20.

8.05 Figure 20 shows the completed LOCK-TAPE™ Sealant application on the end plates.

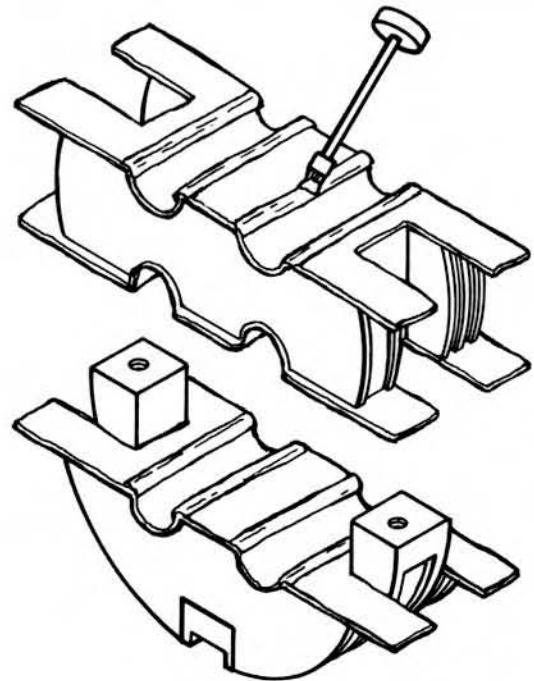


Figure 20

9.00 END PLATE ASSEMBLY — ALL DIELECTRIC CABLE

9.01 Position the cables into the holes in the end plate allowing 1" of cable sheath to extend into the splice area. Apply the mating end plate sections. Insert bolts and using a ratchet wrench draw the end plate sections together evenly, tightening each bolt in rotation 2 or 3 turns at a time. **DO NOT USE AIR WRENCHES FOR THIS OPERATION.** (Use extra length starting bolts if necessary.) Replace with standard length bolts for final tightening.

NOTE: Proceed to Step 11.00 for the final tightening procedure.

10.00 END PLATE ASSEMBLY — NON DIELECTRIC CABLE

10.01 Select one of the cables that has been previously prepared with the Shield Connector bracket, stand off stud, and strength member ground clamp. Thread one of the wing nuts on the end of the stand off stud that is toward the splice until it bottoms out. Position the stud so that it may be threaded into the hole in the bottom end plate section and the cable will lay into the hole in the end plate. Figure 21. Be sure that the slot in the end plate for the torque bar is directed toward the splice. Loosen the strength member clamp and turn the wing nut clockwise until the stud and Shield Connector bracket have been securely tightened to the end plate. Tighten the strength member clamp. Tighten the lock nut where the stud threads into the end plate. Tighten the nut on the Shield Connector. Remove the wing nut from stand off stud.

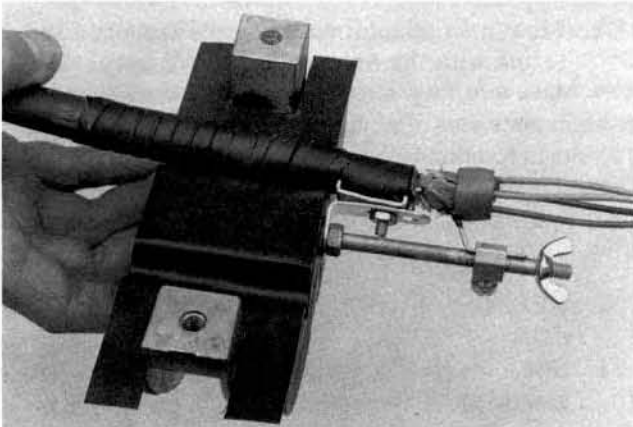


Figure 21

If the end plate has been drilled for a butt entry, select the center end plate section and follow the previous instructions to secure the cable to the end plate. Figure 22.

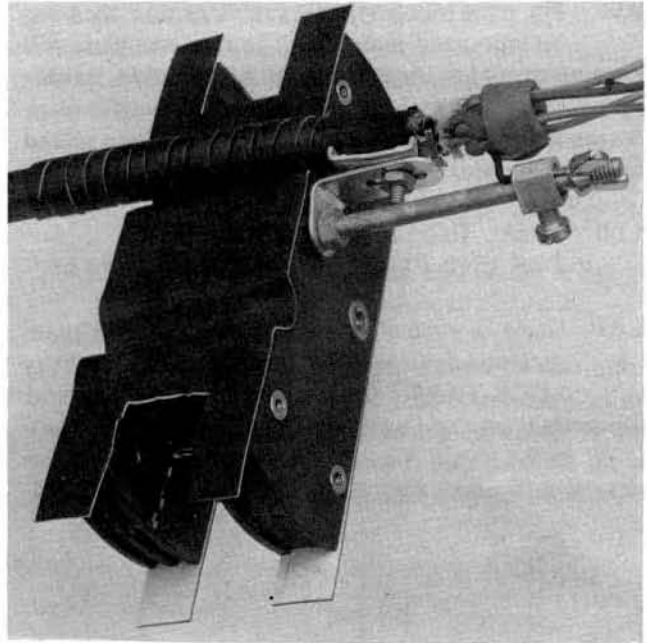


Figure 22

When the cable has been secured to the end plate section, lower the middle section of the end plate down onto the bottom section until the two sections mate. Figure 23.

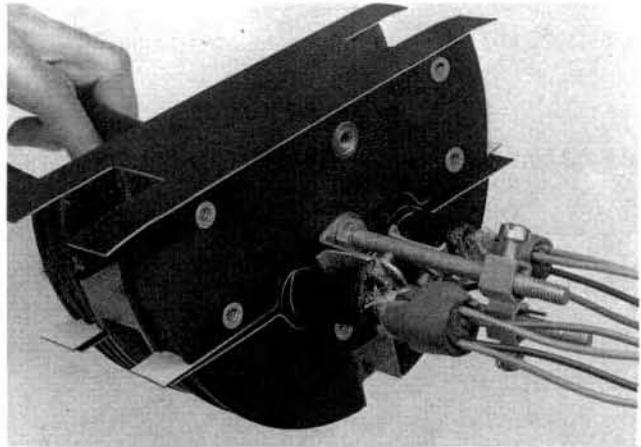


Figure 23

Select the top section of the end plate and install it onto the middle section. Again be sure the torque bar slot is directed toward the splice. Insert bolts and using a ratchet wrench draw the end plate sections together evenly, tightening each bolt in rotation 2 or 3 turns at a time. **DO NOT USE AIR WRENCHES FOR THIS OPERATION.** (Use extra length starting bolts if necessary.) Replace with standard bolts for final tightening.

NOTE: Proceed to step 11.00 for final tightening procedure.

10.02 On units shipped with one 2-section and one 3-section end plate, the 2-section end plate will be pre-assembled at the factory. **As a precaution, double check the 2-section end plate to assure the tape is in place between the end plate halves, and sealant has been placed under the adaptor collar.**

11.00 FINAL TIGHTENING PROCEDURE FOR END PLATES

11.01 Using a ratchet wrench, draw the end plate sections together until the excess LOCK-TAPE™ Sealant on the ends of the end plate sections separate and lay back as illustrated in Figure 24. When the LOCK-TAPE™ Sealant stops moving the bolts are sufficiently tight. **DO NOT OVER TIGHTEN.**

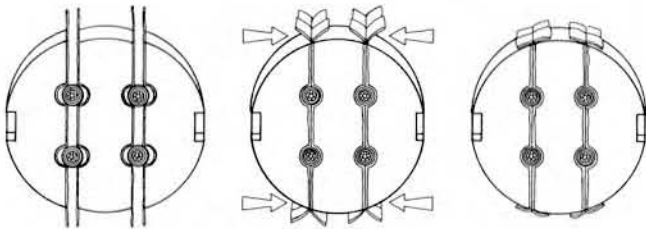


Figure 24

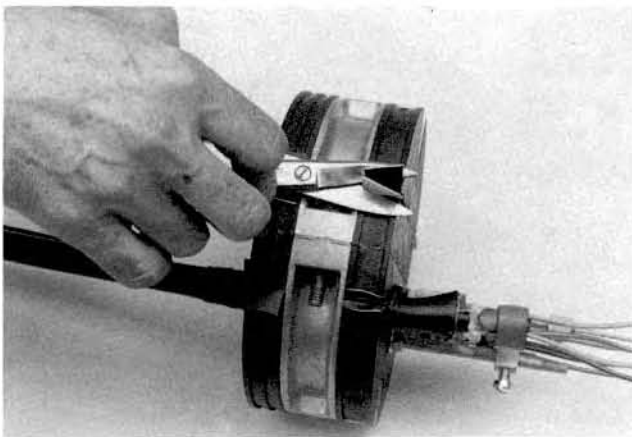


Figure 25

11.02 After the tightening procedure is complete, trim the excess LOCK-TAPE™ Sealant with snips to within 1/8" of the end plate. Do not pull the tape when trimming. Figure 25.

12.00 ADAPTOR COLLAR INSTALLATION

12.01 Select the adaptor collar mounting screws and 1/8" sealing cord from the package.

12.02 With the flat side of the adaptor collar toward the end plate, slide the collar over the buffer tubes until it contacts the end plate.

12.03 Visualize where the adaptor collar is to be placed and move it back out of the way. Using a splicer's knife, cut the excess LOCK-TAPE™ Sealant from the seam areas where the collar will be placed. Figure 26.

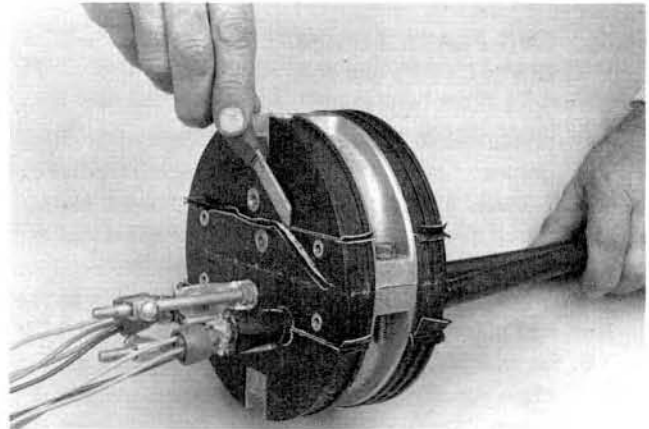


Figure 26

12.04 Place the 1/8" sealing cord in the groove on the flat side of the adaptor collar.

12.05 Mount the adaptor collar on the end plate and secure with the 4 short (1/2") and 2 long (1 1/4") screws. **Make sure the protective cover over the collar gasket remains in place until after the screws are tightened.** Tighten the screws in rotation being careful not to strip the threads in the end plate. Follow this procedure on the opposite end plate if in-line application. If butt, the opposite end plate will be factory assembled with the collar.

13.00 RESIN CUP INSTALLATION

13.01 Select the resin cup, wing nuts and black mastic sealant from the package.

13.02 Carefully place the 1/2" wide black mastic sealant tape into the off-set at the base of the resin cup marking. Figure 27. Be sure the tape ends are well sealed.

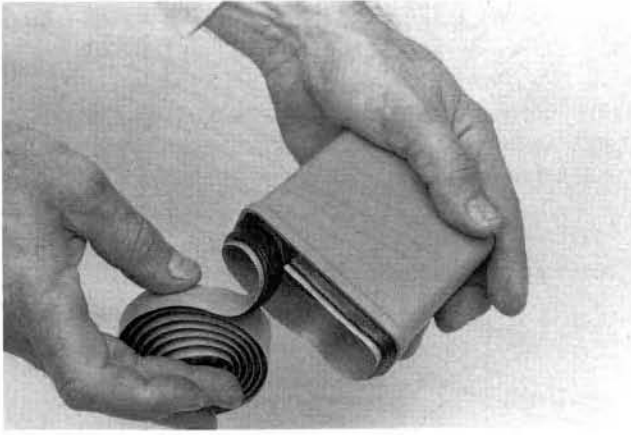


Figure 28

PLP TIP:

When sliding cup is in place, it is best to leave the paper over the sealant until approximately 1 foot from the end plate.

- 13.03 Place the cup in the area it will be used, and note the position it is to be installed.
- 13.04 Install the resin cup by leading the buffer tubes through the open end of the cup, through the cup and out the larger holes in the closed end of the cup. Be sure that buffer tubes from different cables do not go through the same hole. Slide the cup along the buffer tubes until it seats onto the mastic sealant on the end plate and the stand-off studs extend through the small holes in the cup. Wiggle the cup slightly to be sure it is seated properly. Thread the wing nuts onto the stand-off studs and tighten. If the cable is set up for an in-line splice, repeat Steps 13.01 through 13.03 for the opposite end of the splice. Figure 28 illustrates a completed installation for butt splice configuration.

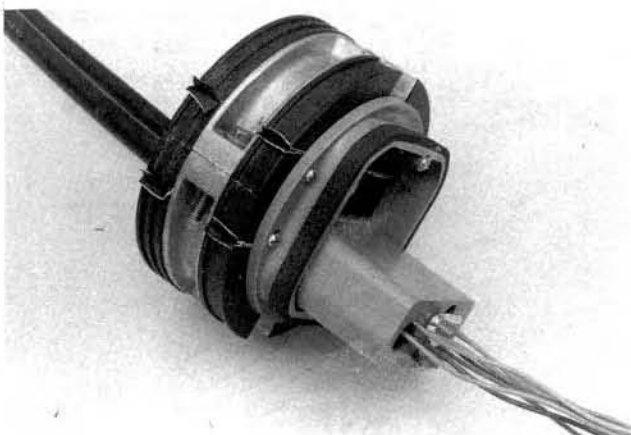


Figure 28

14.00 ENCAPSULATING CABLES

NOTE: Hard resin will develop the best moisture block, however, re-enterable encapsulant may be used if desired.

- 14.01 Select the small paper funnel from the package.
- 14.02 Support the cables and end plates so the resin cup is in a vertical position Figure 29.
- 14.03 Follow the mixing instructions on the resin kit. Insert the small funnel into the resin port in the resin cup. Pour until the resin is approximately 1/8" below the holes in the cup. **Allow sufficient time for the resin to set up before moving from a vertical position.**

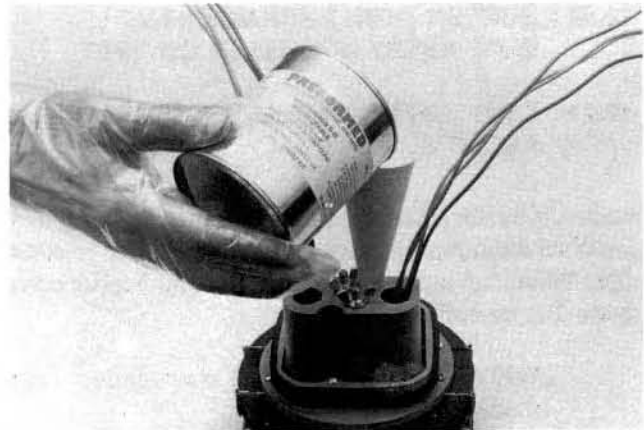


Figure 29

- 14.04 If the cables are configured for an in-line splice, both resin cups should be poured at the same time.

15.00 INSTALLING BOTTOM SHELL HALF ASSEMBLY

- 15.01 Install a torque bar loosely on the bottom of one end plate. Turn the bottom shell half assembly so that the end with the greater space between the end of the assembly and the first buffer tube retainer clip is toward the resin cup. Being careful not to damage the gasket on the adaptor collar, slide the bottom shell half assembly along the torque bar until it butts against the adaptor collar.
- 15.02 Again, being sure not to damage the gasket on the adaptor collar, install the other end plate onto the torque bar.

15.03 Securely tighten the bolts on the torque bar. See Figure 30 for completed installation of bottom shell half assembly.

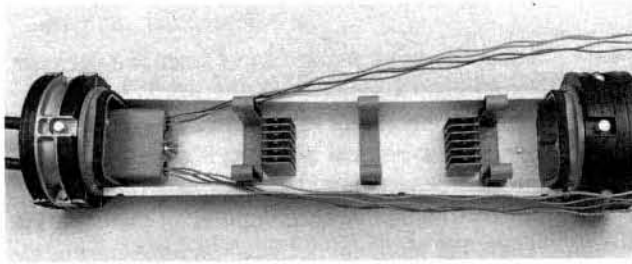


Figure 30

**16.00 BUFFER TUBE ARRANGEMENT
BUTT ENTRY — CABLES ON LEFT**

**16.01 BUTT ENTRY CABLES LEFT —
FRONT 3 TRAYS**

Route the buffer tubes for the left front three splice tray positions through the bottom set of buffer tube retainer clips. These buffer tubes will enter the front 3 splice trays at the left top corner. Figure 31.

NOTE: See Step 19.00 for splice tray arrangement.

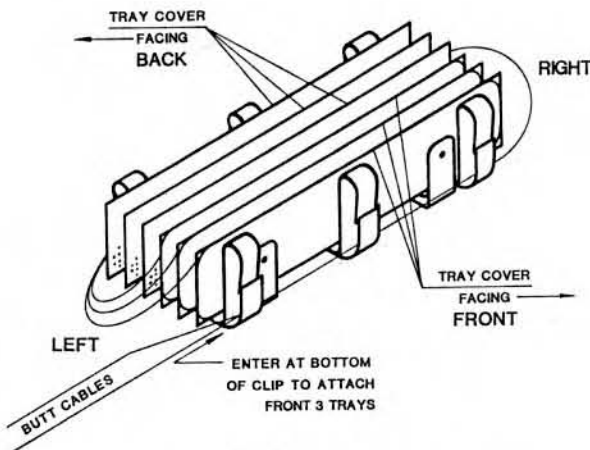


Figure 31 Front 3 Trays

**16.02 BUTT ENTRY CABLES —
LEFT BACK 3 TRAYS**

Route the buffer tubes for the back right three positions through the bottom set of buffer tube retainer clips. These buffer tubes will enter the top right of the back 3 splice trays. Figure 32.

NOTE: See Step 19.00 for splice tray arrangement.

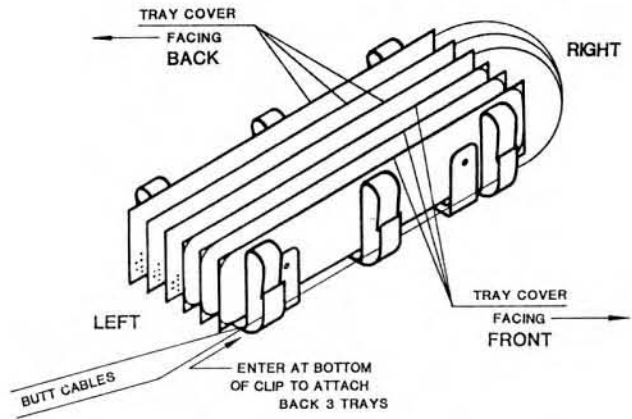


Figure 32 Back 3 Trays

**17.00 BUFFER TUBE ARRANGEMENT
BUFFER ENTRY — CABLES ON RIGHT**

**17.01 BUTT ENTRY CABLES RIGHT —
BACK 3 TRAYS**

Route the buffer tubes for the back three splice tray positions through the bottom clips. These buffer tubes will enter the back 3 splice trays at the top right corner. Figure 33.

NOTE: See Step 19.00 for splice tray arrangement.

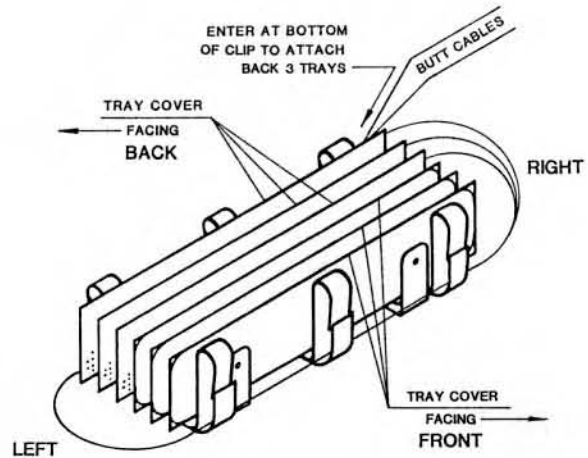


Figure 33 Back 3 Trays

17.02 BUTT ENTRY CABLES RIGHT — FRONT 3 TRAYS

Route the buffer tubes for the front three splice tray positions through the bottom buffer tube retainer clips. These buffer tubes will enter the front 3 splice trays at the left top corner. Figure 34.

NOTE: See Step 19.00 for splice tray arrangement.

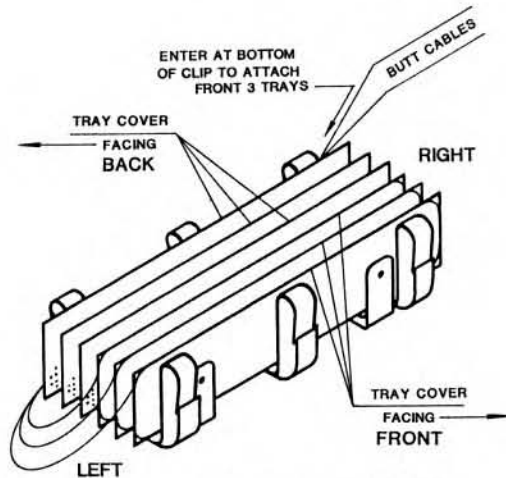


Figure 34 Front 3 Trays

18.00 BUFFER TUBE ARRANGEMENT IN-LINE SPlice

18.01 IN-LINE CABLE ENTRY — FRONT 3 TRAYS

Select the buffer tubes from the left cable that will occupy the front three tray positions. Route them through the bottom set of the buffer tube retainer clips. Loop them at the right end of the tray assembly and route them through the bottom set of buffer tube retainer clips. Select the matching buffer tubes from the right cable. Route them through the bottom set of buffer tube retainer clips. These buffer tubes will enter the splice tray at the left top corner. Figure 35.

NOTE: See Step 19.00 for splice tray arrangement.

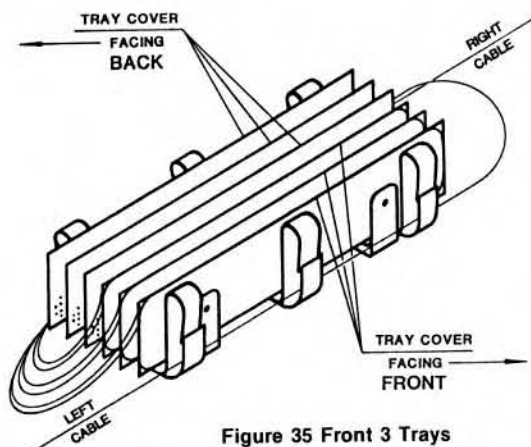


Figure 35 Front 3 Trays

18.02 IN-LINE CABLE ENTRY-BACK 3 TRAYS

Select the buffer tubes from the right cable that will occupy the back three tray positions. Route them through the bottom set of buffer tube retainer clips. Loop them at the left end of the tray assembly and route them through the bottom set of buffer tube retainer clips. Select the matching buffer tubes from the left cable. Route them through the bottom set of buffer tube clips. These buffer tubes will enter the splice tray at the right top corner. Figure 36.

NOTE: See Step 19.00 for splice tray arrangement.

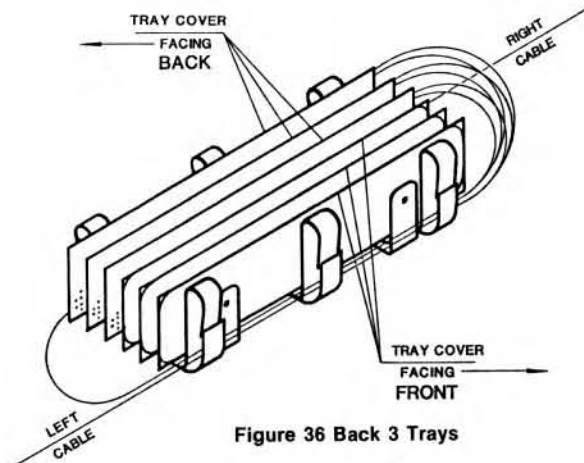


Figure 36 Back 3 Trays

19.00 SPLICE TRAY ARRANGEMENT

19.01 Using a buffer tube removal tool, remove 54" of buffer tube from the fibers. Thoroughly remove all filling compound from the fibers, using your company standard filled cable cleaner.

PLP® TIP:

It is recommended that the buffer tubes be removed in 8" to 10" sections to avoid fiber damage during the removal process.

19.02 Unsnap and remove the splice tray cover.

19.03 There are two buffer tube entry points into the tray. The upper left and lower right corners. The entry point will be determined by the cable entry into the end plates. Refer to Steps 16.00 through 18.02.

19.04 After determining the entry point into the tray, identify the buffer tubes and fiber ends for splicing purposes.

19.05 Place cable ties through the holes at the entry point. A double hole arrangement has been provided which will enable two tie wraps per buffer tube for better stability. Figure 37.

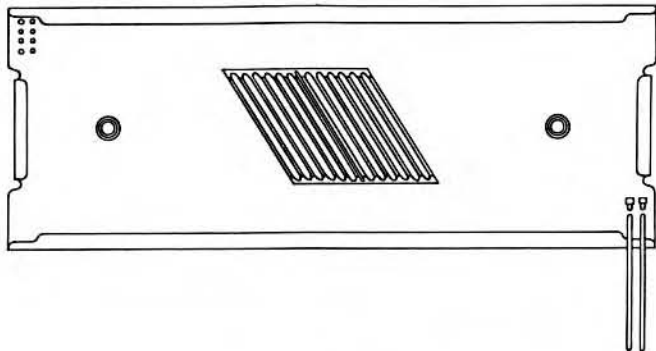


Figure 37

19.06 Thoroughly “squeaky” clean the buffer tube of any grease, etc., for a width of 2 inches in from the glass fiber.

19.07 With the ends of the buffer tubes held evenly, wrap two layers of felt tape around each buffer tube. Figure 38.



Figure 38

PLP TIP:

Step 19.07 will be a necessary procedure to properly cushion and secure the buffer tube.

19.08 Lay the buffer tubes onto the tray so the felt taped area will lay within the tie wraps. Securely tighten the tie wraps to hold each buffer tube to the tray. Figure 39.

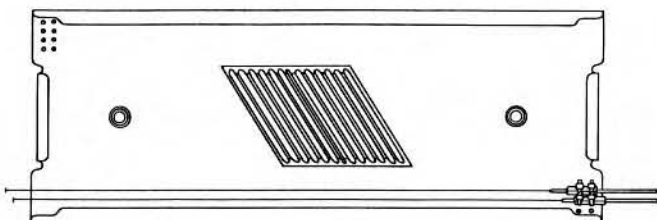


Figure 39

19.09 Select the fibers from one direction of transmission and route them around the tray under the retainer lip until the fibers have made one and a half loops in the tray. Lead the fibers into the splice storage block. Figure 40.

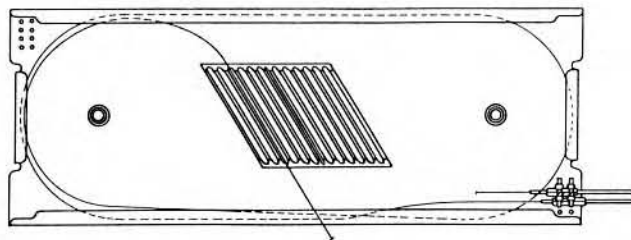


Figure 40

19.10 Select the fibers from the opposite direction of transmission and route them around the tray, under the retainer lip, until the fibers have made one complete loop in the tray. Lead the fibers into the splice storage block. Figure 41.

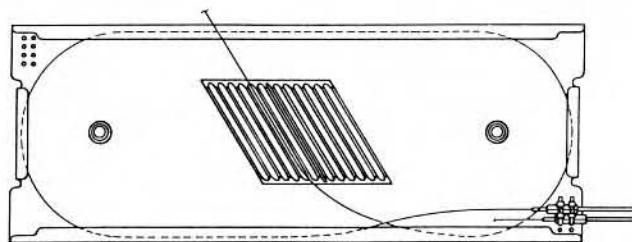


Figure 41

NOTE: One fiber route per figure is shown for clarity in Figures 40 and 41.

19.11 Determine the amount of fiber required for splicing. Retain the identification on the fibers and cut off the excess fiber.

19.12 When the buffer tube storage and splice tray preparation has been completed, refer to Step 20.00 for splicing procedure.

20.00 SPLICING PROCEDURE

20.01 Remove a splicing tray from the shell half assembly and place it in a convenient location for splicing.

20.02 Remove the fibers from the splicing tray.

20.03 As the fibers are spliced and splice protection is installed, rotate the fibers and loop them back into the splice tray. Be sure the completed splice lays well into a slot in the splice retainer block.

20.04 When all fibers within the splice tray are spliced, snap on the tray cover and replace the tray in the shell half assembly.

20.05 Proceed until all splicing trays are completed. Align the holes in the splice trays with the holes in the splice tray retainers. Insert the splice tray retainer pins and retainer clips. Figure 42.

21.00 TOP SHELL HALF INSTALLATION

21.01 Select the top shell half and the two flange clamp assemblies from the package.

21.02 Lower the top shell half over the sealing area of the adaptor collars.

21.03 Install the top torque bar and tighten the torque bar retainer bolts.

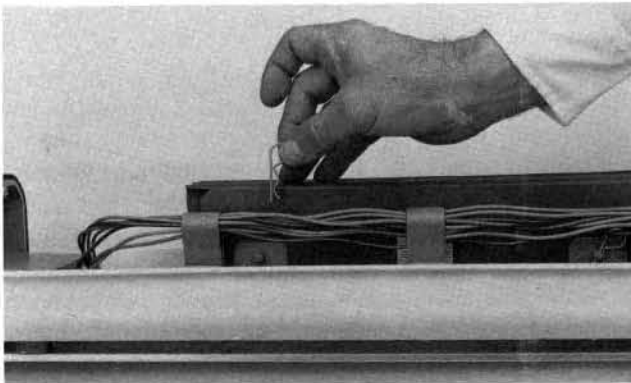


Figure 42

21.04 Loosen the screws on the flange clamp assemblies. Install the flange clamp assemblies over the flanges of the shell halves, with the larger of the clamp assembly openings toward the shell halves.

Using $\frac{3}{8}$ " nut driver tighten the screws on the clamp assemblies until the outer edges of the clamp assemblies come together. Figure 43.

NOTE: Do not over tighten the flange clamp assemblies.

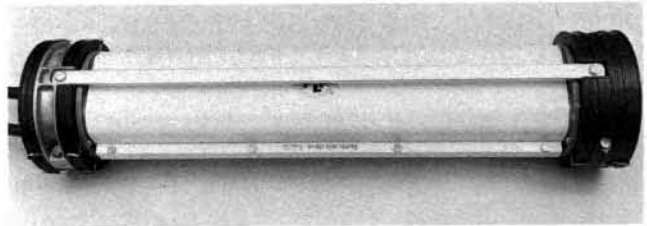


Figure 43

22.00 VINYL TAPE APPLICATION

22.01 Apply two wraps of vinyl tape over exposed LOCK-TAPE™ Sealant on cables. Figure 44.

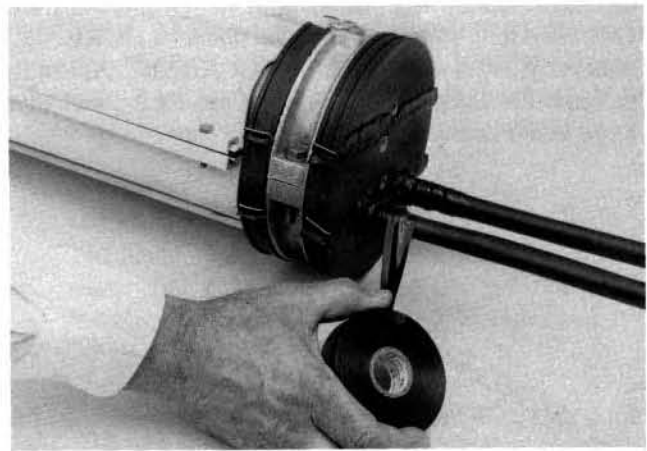


Figure 44

23.00 INSTALLING THE SPLICE CASE USING LOCKBAR™ FASTENING

23.01 The neoprene in the outer shells must be pliable when installed. In cold weather, for new installation or re-entry, warm outer shells prior to installation. Remove protective paper liners.

PLP® TIP:

Shells may be warmed in a truck cab or by placing near manhole vent hose. If space permits, bring the shells down into the manhole during splicing operation.

23.02 LOCKBAR™ Fastening — Important Information Prior to Shell Installation.

LOCKBAR™ Fastening consists of a (back) studded LOCKBAR™ Assembly with factory assembled threaded bolts and nuts, and a (front) keyhole LOCKBAR™ Assembly. The back LOCKBAR™ Assembly mates with the front LOCKBAR™ Assembly through the flange of the Splice Case shells, and then locks into position. Figure 45.

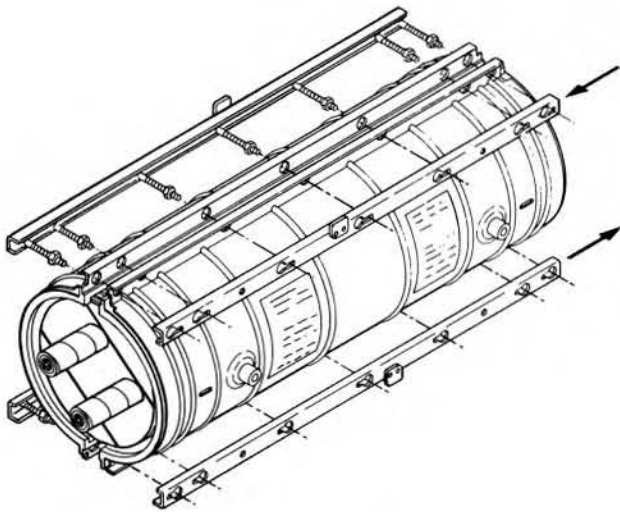


Figure 45

Prior to the application of the back LOCKBAR™ Assembly, be certain that the nuts are near the end of the threaded bolts. The ends of the threaded bolts have been treated so that the nuts remain on them, and cannot be easily removed without possible damage (stripping). If damage does occur to the bolts or nuts, replacement assemblies are available from the factory. These replacement assemblies consist of two nuts, a lockwasher, and a replacement bolt. The end of the replacement bolt is **not** specially treated so that it will allow application of the nut.

LOCKBAR Stud Replacement Kits	
Catalog Number	Description
8003026	Accommodates 6½" PREFORMED™ Splice Cases

Aerial applications require that the suspension plates be installed to the back LOCKBAR™ Fastener prior to its application to the Splice Case. Special holes are provided on either side of the back LOCKBAR™ Fastening Assembly for this purpose. Figure 46.

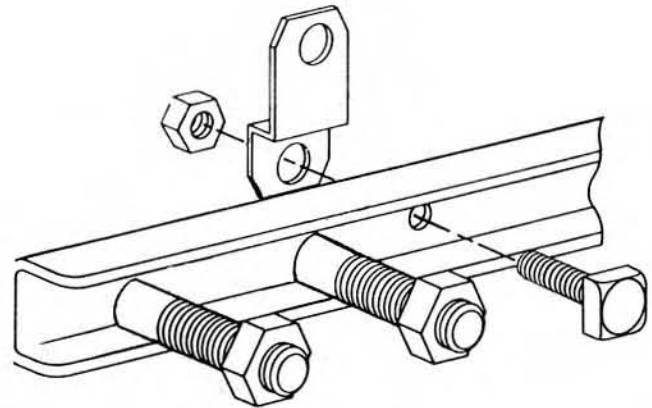


Figure 46

23.02 (continued)

For external bonding, the bolt, bonding clip, and nut must be applied to the front keyhole LOCKBAR™ Assembly prior to its mating with the back LOCKBAR™ Assembly. Special holes are provided on either side of the front LOCKBAR™ Assembly for this purpose. The bolt head is applied inside the LOCKBAR™ Channel, the bonding clip and nut are applied to the bolt on the outside LOCKBAR™ Assembly face. Refer to Figure 47 for proper alignment of parts.

NOTE: The external bonding clamp **must** be used for all aerial, buried and underground installations.

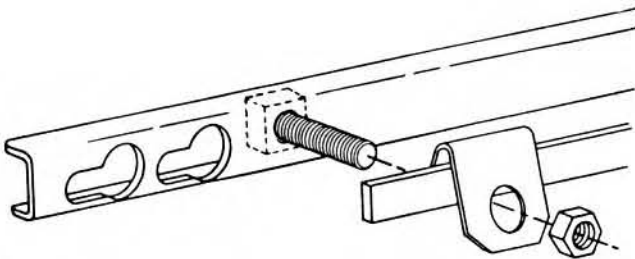


Figure 47

Positioning tabs have been added to each LOCKBAR™ Fastener (front and back). These tabs should always point away from the Splice Case and will help assure proper alignment and eliminate the chance of a bar being misapplied. Figure 46.

23.03 Now that all LOCKBAR™ System preparatory steps have been accomplished, apply the back shell half (not having air flange and resin port) over end plates. Figure 50.

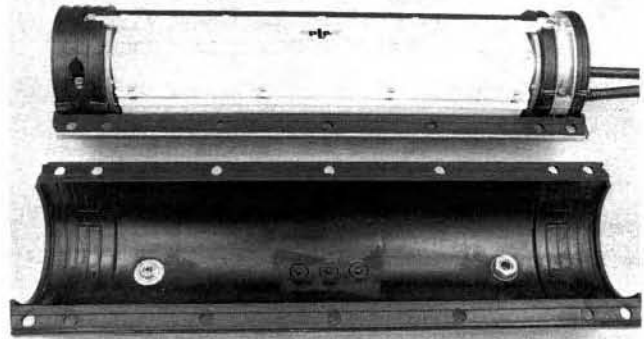


Figure 48

23.04 Apply the front shell and close the case using the LOCKBAR™ Fastening system. First apply the (back) studded LOCKBAR™ Assembly. Lock into position so that the shells are secure. Figure 45. Be certain to apply the LOCKBAR™ Fasteners into the flange of the splice case, not over it. Also, check to see that the resin flange opening is not over a torque bar.

PLP® TIP:

To enable minimum resin removal if re-entry is necessary, position the FIBERLIGN® Fiber Safe within the outer shells so that one outer and one inner shell will expose the splice trays.

23.05 Sequence and Torquing procedure. Figure 49.

1. Nuts have been grouped into sets. Tighten all nuts within each set, beginning at the "X" in the direction of the arrow. Start with set #1 etc.
 - a. Tighten all nuts until shell flanges meet.
 - b. Repeat "a", torquing each nut to 125 in/lbs.
 - c. Retorque 8 corner nuts, example 6.5" x 28" - sets #3, #4, #5, #6.
2. Metric Torque: All 6.5 cases 1.44 m-kg.

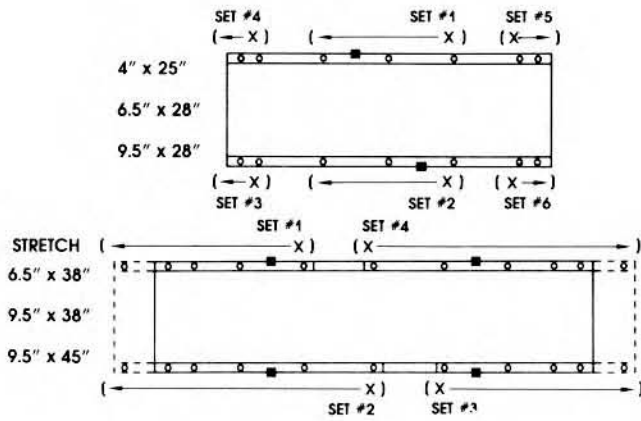


Figure 49

23.06 After nuts have been tightened to the required torque value, a certain amount of relaxation occurs. This is to be expected. **DO NOT RE-TORQUE.** This can damage the Splice Case.

24.00 UNDERGROUND INSTALLATION

24.01 The Splice Case should be installed between the manhole racks.

24.02 PLP® Splice Cases are very light and will float in a water filled manhole. They must be tied down.

NOTE: It is recommended that the PLP Splice Case Manhole Support, Catalog number 80007614, be used to support and tie down the Splice Case.

25.00 AERIAL INSTALLATION

25.01 Place 2 lashing wire clamps (not supplied) on the suspension strand. See Figure 50. One directly above each aerial suspension plate that was placed in Step 23.02. See Figure 46.

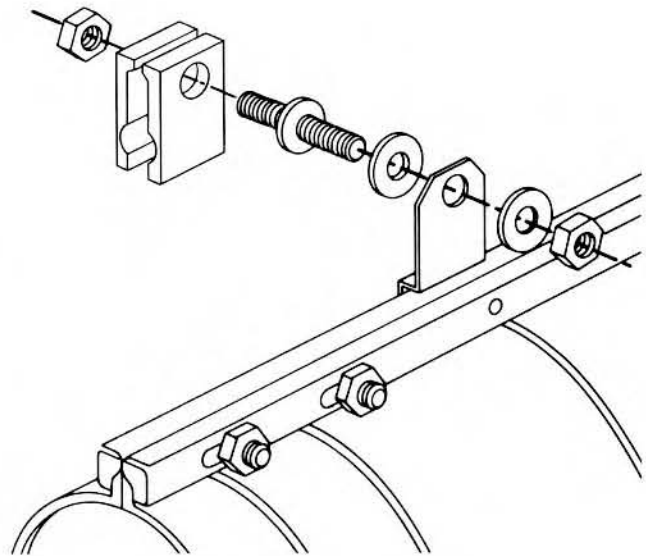


Figure 50

25.02 Be sure all nuts and washers are in their proper position. Tighten nuts securely.

26.00 EXTERNAL BONDING PROCEDURE

External bond methods will be shown, but company practice should be followed.

26.01 Select the external bonding clamp and bonding bolt from the package.

26.02 Loosely bolt the bonding clamp to one of the threaded inserts in the bottom section of the end plate where the cables were installed. Install a length of bonding ribbon (not supplied) from the bonding clamp on the LOCKBAR™ System to the bonding clamp on the end plate. Securely tighten the bolt on the end plate. Figure 51.

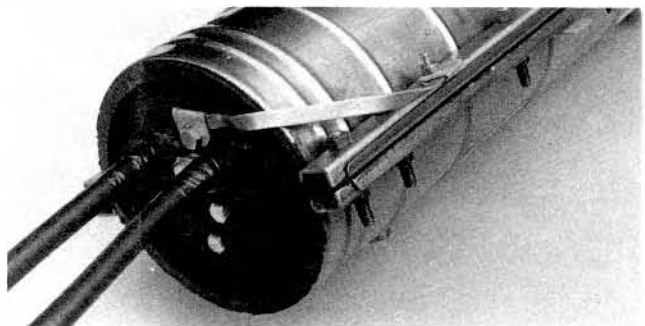


Figure 51

NOTE: This will bond the cable shield and strength member to the Splice Case. If all-dielectric cable was installed, Steps 25.01 and 25.02 may be omitted.

26.03 For manhole installations, extend a length of bonding ribbon from the bond clamp on the LOCKBAR™ Assembly to the bonding and grounding harness of the manhole. Securely tighten all connections.

26.04 For direct buried installations, extend a length of bonding ribbon (not supplied) from the bonding clamp on the LOCKBAR™ Assembly to a ground rod. Securely tighten all connections.

26.05 For aerial installations, the case is bonded to the suspension strand through the suspension plate assembly. Securely tighten all connections.

NOTE: If non dielectric cable was used, Steps 25.01 and 25.02 must be followed in all installations.

27.00 ENCAPSULATION PROCEDURE

27.01 Select the large funnel with the plastic coupler, the air flange plug and the resin flange plug from the package.

27.02 Rotate the Splice Case until the air flange and resin flange are facing straight up.

27.03 Elevate the end of the case with the air flange approximately one inch. Figure 52.

27.04 Install the funnel and plastic coupler over the pouring flange. Figure 52.

NOTE: Moistening the inside of the coupler will facilitate placing it over the pouring flange. **DO NOT USE GREASE** for this purpose.

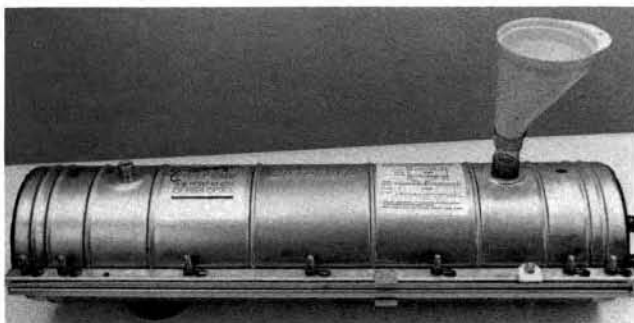


Figure 52

27.05 Mix the encapsulant according to the instructions on the package.

27.06 Pour the encapsulant slowly into the funnel until the encapsulant can be seen through the air flange hole.

27.07 Level the Splice Case and continue pouring until the encapsulant runs out of both the air flange and resin flange holes. Install both plugs.

27.08 Rotate the Splice Case back to its standard position. Figure 50.

28.00 RE-ENTRY PROCEDURE

28.01 Loosen the nut on the external bonding clamp and remove bonding ribbon (ribbons).

28.02 Loosen the nuts on the LOCKBAR™ System to allow removal of the LOCKBAR™ Assemblies.

NOTE: Do not unscrew nuts beyond the treated area. **DO NOT USE AIR WRENCHES** for this operation.

28.03 Remove the case halves.

28.04 Remove the encapsulant from the Splice Case halves, the inner shell half assembly and the end plates.

PLP® TIP:

To facilitate re-entry, use a splicers knife to cut the encapsulant into large squares, then remove with your fingers. Be careful not to damage parts during this operation.

28.05 Remove four screws from each clamp as assembly to assist in ease of removal of the clamps.

28.06 After work is complete, re-assemble and re-encapsulate following the appropriate steps in this procedure.

28.07 If new cables are to be added, a new end plate must be used. Remove all old sealing or LOCK-TAPE™ Sealant from the cables. Install new end plate using the appropriate steps in this procedure.

29.00 MAINTENANCE PROCEDURES

29.01 The PREFORMED™ Splice Case is designed for numerous re-entries. However, certain precautions must be taken prior to re-application.

29.02 Be sure to clean shells and end plates thoroughly, to remove sand, dirt and other foreign substances.

29.03 Any bent or stripped nuts or bolts should be replaced. Only use hardware supplied by Preformed Line Products.

29.04 The shells should be lubricated prior to re-application. A uniform thin layer is all that is necessary. Only use lubrication supplied by Preformed Line Products. Catalog Number 80801566.

29.05 Any shells that are bent or distorted should not be used.

29.06 Prior to re-installation, the neoprene on the shells should be allowed to return to its original state. Warming the shells speeds up the process.

30.00 SAFETY CONSIDERATIONS

30.01 This application procedure is not intended to supersede any company construction or safety standards. This procedure is offered only to illustrate safe application for the individual. Failure to follow these procedures may result in personal injury.

30.02 When working in the area of energized lines, extra care should be taken to prevent accidental electrical contact.

30.03 For proper performance and personal safety be sure to select the proper size PREFORMED Product before application.

30.04 This product is intended for use by trained craftspeople only. This product **should not be used** by anyone who is not familiar with, and not trained to use it.

PREFORMED LINE PRODUCTS 

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