

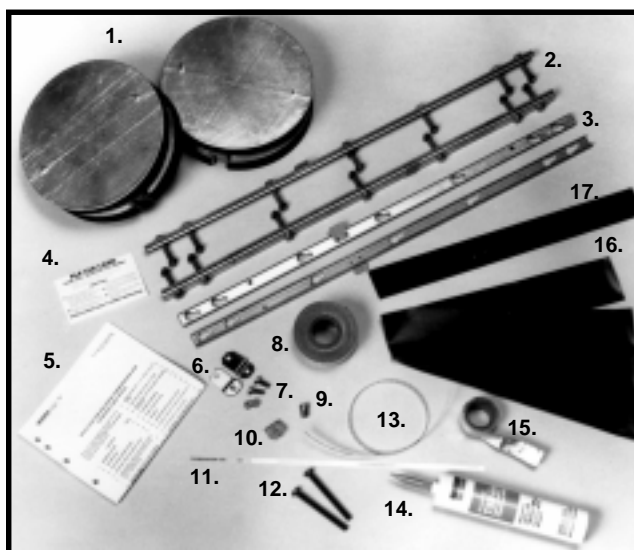
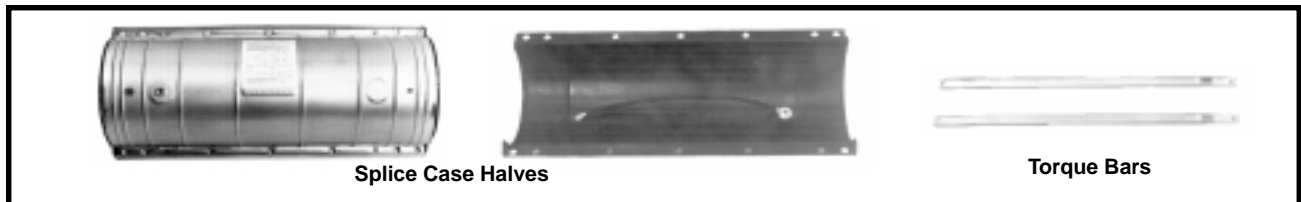
ARMADILLO® STAINLESS VAULT CLOSURE REPLACEMENT KIT

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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1.00 NOMENCLATURE

1.01 Parts shown below are for a common or typical ARMADILLO Stainless Vault Closure Replacement Kit (Figure 1, & Table A)



1. Flame Retardant End Plates
2. LOCKBAR™ Fastener (front)
3. LOCKBAR Fastener (back)
4. PLP® Cue Card
5. Application Procedure
6. Strand Hanger
7. Hanger Studs
8. Cable LOCK-TAPE™ Roll
9. Air Flange Plug
10. Exterior Bonding Clamp
11. Tip CABLE MeaSURE™ Tape
12. Black Starter Bolts
13. Feeder CABLE MeaSURE Tape
14. Silicone Sealant
15. Heat Shield Tape
16. End Plate LOCK-TAPE Strips (for LOCK-TAPE Strip only application)
17. Emery Cloth for Scuffing Sheath

FIGURE 1 - VAULT CLOSURE REPLACEMENT KIT

NOTE: Be sure to order the correct Replacement Kit for each individual splice before application.

2.00 DESCRIPTION

2.01 GENERAL - This application procedure covers the description and installation of the Preformed Line Products Company ARMADILLO Stainless Vault Closure for splices in entrance cables in central office vaults, cable entrance facilities (CEF), and subscriber buildings.

2.02 For the correct method, tools and materials to be used in performing work items not specifically described in this section, refer to the applicable practices of the Company.

2.03 The Preformed Line Products Company ARMADILLO Stainless Vault Closure meets all of the requirements specified in the Bell Core Technical Reference PUB 55006.

2.04 It is usable for straight, branch, butt or special application splice configurations.

2.05 It will accommodate LEAD, STALPETH, or ALVYN sheathed cable or a mixture of all three.

2.06 One side of the feeder-cable end plate is covered with a silver-covered heat shield. Be careful not to damage this covering while working with the end plate.

2.07 The Vault Closure End Plate, tip cable end, is designed to hold a maximum of 5 psi air pressure.

2.08 The fire resistant tip cable end plate will accommodate cables ranging in diameter from .492" (1.25 cm) to 1.502" (3.815 cm).

3.00 ORDERING THE REPLACEMENT KIT

3.01 Ordering Form - The tip and feeder cable end plates must be custom drilled to match the vault cable splice since a combination of sizes and pair counts are possible.

3.02 In completing the ordering form the hole size of each tip and feeder cable should be indicated at the desired drill location. Refer to the backside of the form for examples of various end plate designs. (Figure 2)

FIGURE 2 - VAULT CLOSURE ORDERING FORM

3.03 Include the needed length of the PLP closure, a chosen closure identification number, and INDICATE IF ANY CABLES HAVE A LEAD SHEATH. (Figure 3)

FIGURE 3 - ORDERING FORM (EXAMPLE)

3.04 Use the CABLE Mea-SURE™ Tape to determine: (Figure 4)

- Proper size hole in end plate
- Number of wraps of LOCK-TAPE™ sealing system to be applied to the sheath; one or two half-lapped layers to be wrapped around the cable.

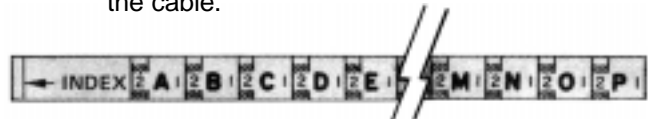


FIGURE 4 - CABLE Mea-SURE™ TAPE

Use A blade and one half-lap of LOCK-TAPE seal Use C blade and one half-lap of LOCK-TAPE seal Use M blade and two half-laps of LOCK-TAPE seal Use O blade and two half-laps of LOCK-TAPE seal

The shaded area = two half-laps The clear area = one half lap

3.05 If the index line falls on the line between areas, proceed as if the index line had fallen immediately to the right of the area division line.

NOTE: Measure the cable at the area where the end plate will be placed, as cable will vary in diameter along its length.

3.06 Measuring Tip Cable - Use the Tip CABLE Mea-SURE Tape to determine the proper size hole in the end plate. (Figure 5)

3.07 If the index line falls on the division line between areas, choose the hole number of either area.

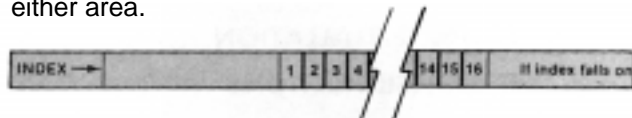


FIGURE 5 - TIP CABLE Mea-SURE™ TAPE

3.08 Allow two weeks from receipt of order for shipment of customized ARMADILLO Stainless Replacement Vault Closure.

3.09 Proceed with installation only after receipt of closure.

4.00 PREPARATION OF SPLICE CLOSURE

- 4.01 Remove present closure from splice bundle and clean the tip and feeder cables in the area where the end plate will be installed.
- 4.02 Check the cable seal area. Cables should be in good condition and not damaged. The end plate should only be applied on undamaged sheath.
- 4.03 If more working room is necessary, loosen bonding hardware.

5.00 DETERMINING CORRECT APPLICATION

- 5.01 Begin the end plate installation by referring to the appropriate application section.

End plate application	Section
Feeder Cable Only	6.01
Tip Cable Only	6.21
Combination of Feeder and Tip Cables	6.33

6.00 END PLATE INSTALLATION

- 6.01 **Feeder Cable Only** - Disassemble the end plate by removing the two bolts.

Warning: Scuff lightly, do not remove too much material.

- 6.02 With the emery cloth provided, remove any sharp edges from plastic and foam in the area of the cable opening(s). (Figure 6)

NOTE: This simple operation will help prevent catching the sheath and pinching it when later drawing the end plate sections together. Use only the emery cloth provided for this procedure.

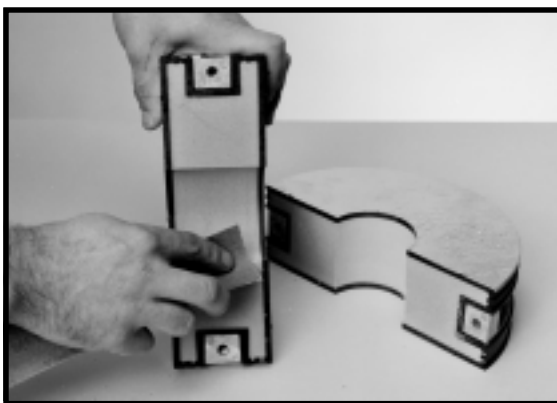


FIGURE 6 - DRESSING CABLE OPENING(S)

- 6.03 Use an end plate half to mark the sheath area at the cable opening to be cleaned and scuffed. (Figure 7)

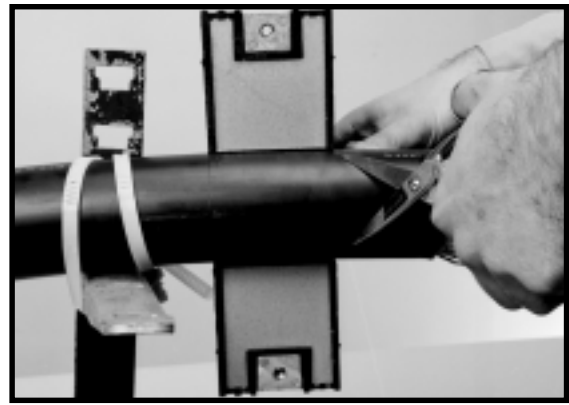


FIGURE 7 - MARKING SHEATH AREA TO BE CLOSED

- 6.04 Remove all grease, cable lubricant, mud, etc. from the sheath. Using the emery cloth provided, thoroughly scuff AROUND THE CABLE, NEVER LENGTHWISE along it; scuff sheath for 6 inches (152 mm).

- 6.05 Coat the scuffed area of the sheath with "C" cement and allow it to dry to a tacky base. Use the removed backing from a LOCK-TAPE strip to wipe off any excess cement to help it dry fast.

- 6.06 Half-lap 1-1/2" (38 mm) LOCK-TAPE sealant around cable (back side up) in area coated with "C" cement. Stretch tape to reduce its width to 1-1/8" (29 mm) while applying. Use one or two half-lapped layers as determined by the previously made measurement. (Figure 8)

NOTE: 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 9 shows the completed application of one half-lap of LOCK-TAPE strip.

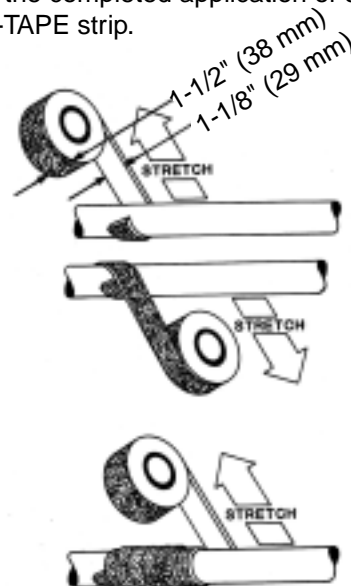


FIGURE 8 - APPLYING LOCK-TAPE STRIP

FIGURE 9 - LOCK-TAPE STRIP APPLIED TO SHEATH (FOR LEAD SHEATH CABLE, APPLY ONE EXTRA HALF-LAP.)

6.07 FOR LEAD CABLES ONLY. Follow the above procedure for sheath preparation but apply only ONE EXTRA half-lapped layer of LOCK-TAPE sealing system.

6.08 Be sure to keep the LOCK-TAPE sealant wrap dry and free from grease and dirt.

6.09 Apply a thin coat of "C" cement to the inside surfaces of the end plate. (Figure 10)
Use backing removed from LOCK-TAPE strips to dry "C" cement applied to end plate. (Figure 11)

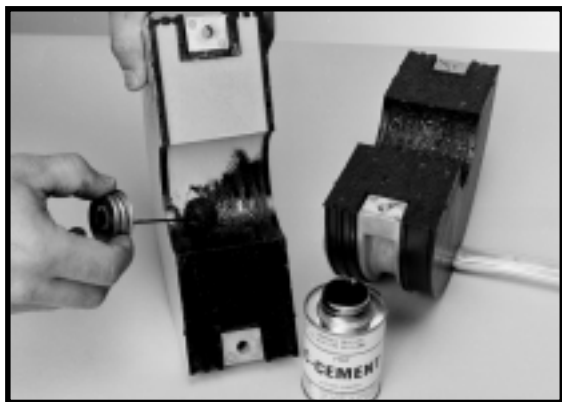


FIGURE 10 - APPLICATION OF "C" CEMENT TO END PLATE SURFACE

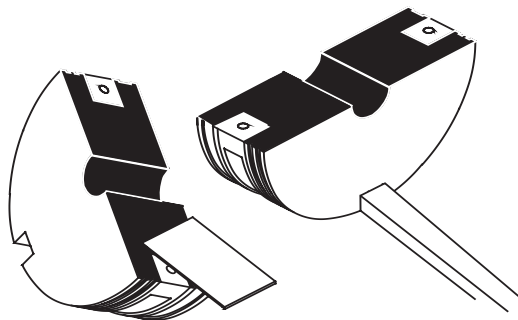


FIGURE 11 - DRYING "C" CEMENT

6.10 When "C" cement becomes tacky, remove protective backing from LOCK-TAPE strips and without stretching it apply it, white side down, to each end plate half. Follow the curve of the hole cut for the cable. Trim end of strips allowing 1/2" (38 mm) of overhang. (Figure 12)

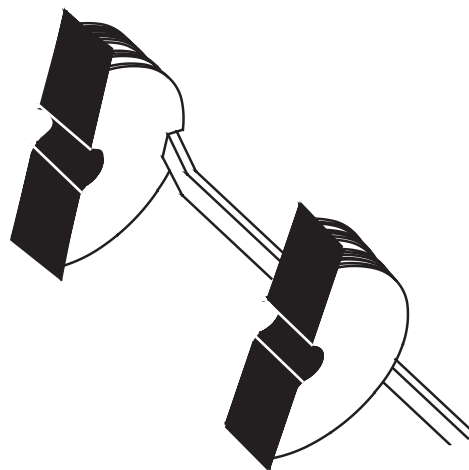


FIGURE 12 - LOCK-TAPE STRIP APPLIED TO END PLATE HALF

6.11 Square cut the tape away from the bolt hole areas just beyond the metal inset. (Figure 13)

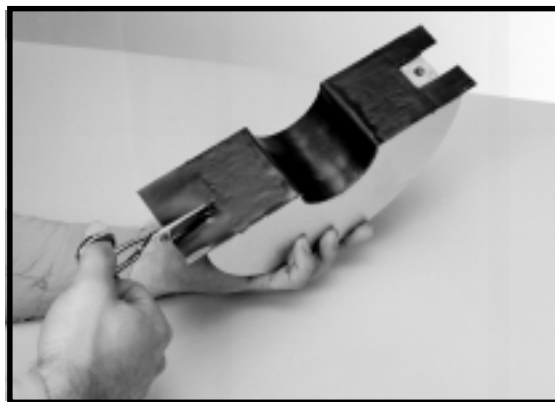


FIGURE 13 - TRIMMING LOCK-TAPE STRIP FROM AROUND BOLT HOLE

6.12 Before applying the end plate halves to the cable, apply "C" cement 1/2" (38 mm) wide adjustment to the hole and 1/2" (38 mm) wide into the hole for the total width of the end plate. (Figure 14)

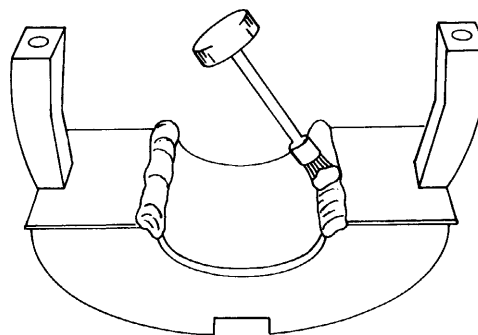


FIGURE 14 - APPLYING "C" CEMENT TO END PLATE HALF

6.13 The completed preparation of the feeder cable end plate halves. (Figure 15)

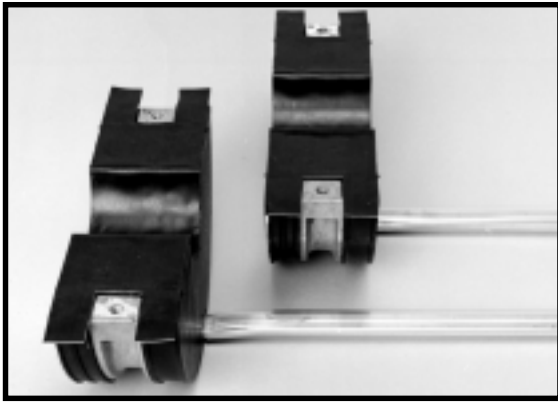


FIGURE 15 - COMPLETED PREPARATION OF END PLATE HALVES

6.14 Before applying the end plate, use the 800-422 Cable Shaper to produce a slightly oval shape to the cable to prevent pinching the sheath. (Figure 16) **DO NOT OVERSHAPE LEAD CABLES!**

Warning: Do not use air-wrenches for the following operation.

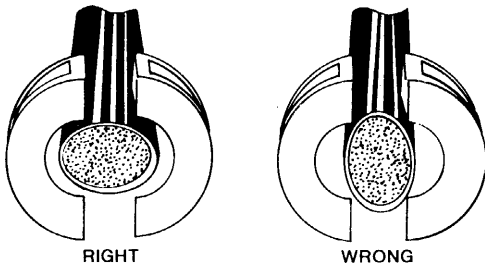


FIGURE 16 - PLACING END PLATE ON CABLE

6.15 Position the end plate on the cable at the proper point so as to align the torque bar slot near the bottom of the splice. Bring the end plate halves together evenly, tightening each bolt in rotation 2 or 3 turns at a time.

6.16 Using a ratchet wrench draw the end plate halves completely together until the excess LOCK-TAPE strips separate and lay back. (Figure 17)

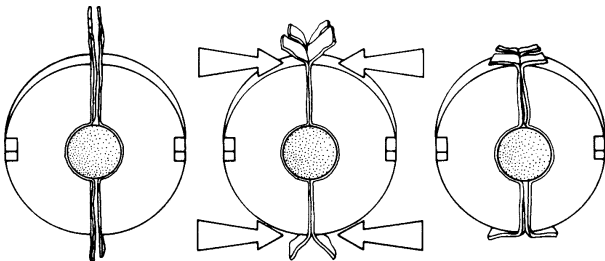


FIGURE 17 - LOCK-TAPE STRIPS SEPARATED AND FOLDED BACK

6.17 When end plates are completely together, trim excess LOCK-TAPE strips with snips to within approximately 1/4" (.62 cm) of the end plate. Do not pull the tape when trimming. (Figure 18)

(Figure 19 Illustrates the appearance of the LOCK-TAPE sealant application after trimming.)

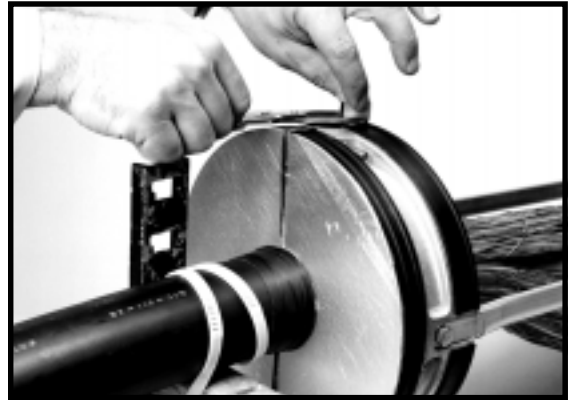


FIGURE 18 - TRIMMING EXCESS LOCK-TAPE STRIP

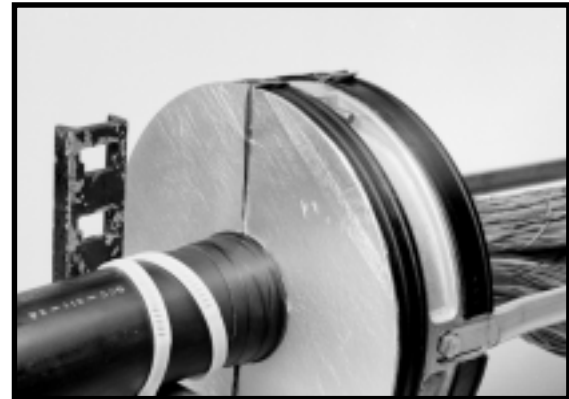


FIGURE 19 - LOCK-TAPE SEALANT APPLICATION AFTER TRIMMING

6.18 Cover outside seam of end plate with 1-1/2" (38 mm) wide heat-shield tape. Apply tape to one side of seam first, then allowing room for LOCK-TAPE strips to expand, apply to other side of seam. Use sufficient tape to extend 1/6" to 1/4" (.62 cm) onto circumference of the end plate and 1" (25 mm) onto the cable. (Figure 20)

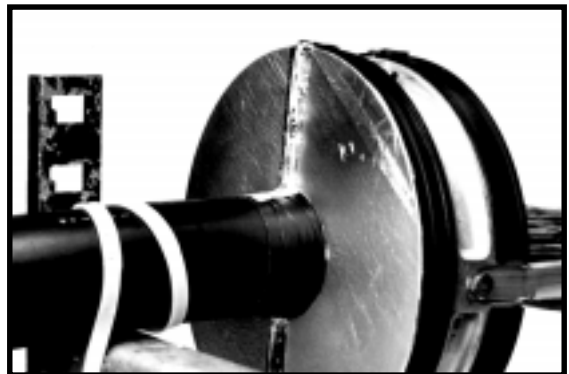


FIGURE 20 - APPLYING HEAT SHIELD MATERIAL TO SEAM

6.19 Use heat-shield tape to cover LOCK-TAPE strips over cable with 2 half-lapped layers; start at the end plate and work out to 3 inches (76 mm) or beyond end of LOCK-TAPE sealant application and work back. (Figure 21)



FIGURE 21 - HEAT SHIELD MATERIAL ON CABLE

6.20 If there is any damage to the heat-shield tape on the end plate, cover such places with pieces of heat-shield tape/material.

6.21 Tip Cable Only - Feeder cable end plate must first be applied. Refer to section 6.01.

6.22 After Feeder cable end plate is in place apply the bottom torque bar. The offset in the torque bar should face the splice bundle. Use the free end of the torque bar to mark the area on the tip cables where the end plate will be placed. (Figure 22)

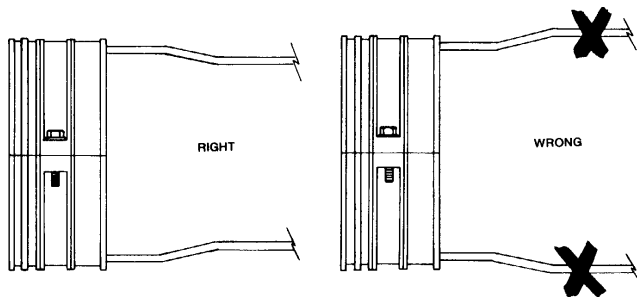


FIGURE 22 - CORRECT POSITION OF TORQUE BAR

6.23 Remeasure tip cables and confirm proper end plate selection.

6.24 Disassemble the end plate.

NOTE: Each section is lettered on the outside face. End plate must be reassembled in the same order to assure the proper alignment of the holes. All letters will be on the same surface.

6.25 FOR LEAD SHEATH CABLE ONLY.

Thoroughly scuff around the cable using the emery cloth provided and coat the area with "C" cement. Apply one half-lapped layer of 1-1/2" (38 mm) LOCK-TAPE sealant adhesive to the area of cable where the end plate will be placed.

6.26 Before applying the end plate, oval the tip cables to prevent pinching the sheath. (Figure 23)

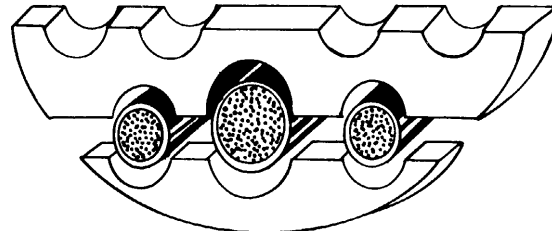


FIGURE 23 - CORRECT SHAPE OF TIP CABLES

6.27 Attach torque bar to bottom retainer core and using the core as a fixture, begin assembling unit starting with the bottom section.

PLP TIP

Before assembling, support the tip cables in the alignment they'll lay into the end plate grooves.

6.28 Use the tube of sealant and a caulking gun to lay 1/4" (.62 cm) wide beads of silicone lengthwise across seam and 1/4" (.62 cm) from each outside edge. (Figure 24)

Silicone should follow down into the contour of each groove. Lay cables in the grooves on top of the sealant. (Figure 25)

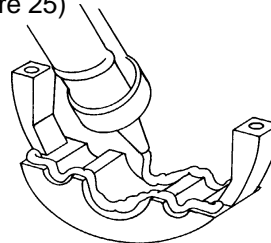


FIGURE 24 - APPLICATION OF SILICONE SEALANT

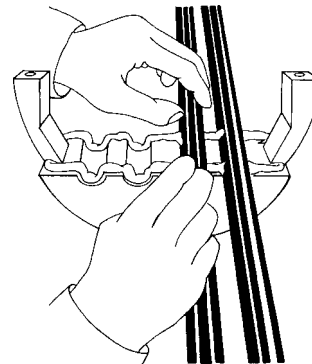


FIGURE 25 - APPLICATION OF TIP CABLES

- 6.29** In the same manner, lay silicone beads to bottom of the matching section and place over top of cables and squeeze hand tight. The silicone will remain workable for approximately 45 minutes, depending on the temperature.
- 6.30** Build up the remaining sections of the unit by using the same procedure.
- 6.31** Upon completion, apply top retainer core and tighten bolts on the end plate until the aluminum cores bottom against each other. **DO NOT EXCEED 140 IN LBS OF TORQUE (.0158 kNm).** (Use extra length starter bolts if necessary. Replace with standard length bolts to final tightening.)
- 6.32** The silicone will be extruded out from all of the seams. **DO NOT REMOVE EXCESS SILICONE AT THIS TIME.** (Figure 26)

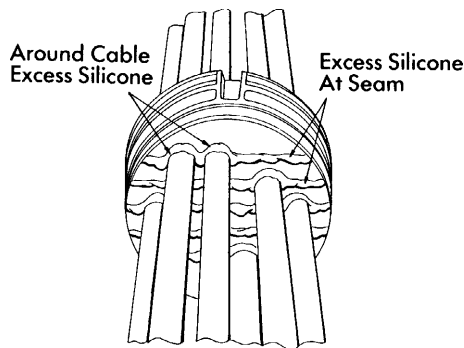


FIGURE 26 - COMPLETED APPLICATION OF TIP CABLES

- 6.33 Combination Feeder and Tip Cables -** Remasure feeder and tip cables to confirm proper end plate selection.
- 6.34** Disassemble the end plate.
- NOTE:** each section is lettered on the outside face. End plate must be reassembled in the same order to assure the proper alignment of the holes. All letters will be on the same surface.
- Preparation of Feeder Cable(s) only
- 6.35** Mark the sheath area at the feeder cable opening to be cleaned and scuffed.
- 6.36** Remove all grease, cable lubricant, mud, etc. from only the feeder cable(s) sheath. Using the emery cloth provided, thoroughly scuff **AROUND THE CABLE, NEVER LENGTHWISE** along it; scuff sheath for 6 inches.
- 6.37** Coat the scuffed area of the sheath with "C" cement and allow it to dry to a tacky base. Use the removed backing from a LOCK-TAPE strip to wipe off any excess cement to help it dry fast.
- 6.38** Half-lap 1-1/2" (38 mm) LOCK-TAPE strip around cable (black side up) in area coated with "C" cement. Stretch tape to reduce its width to 1-1/8" (29 mm) while applying. Use one or two half-lapped layers as determined by the previously made measurement. (Figure 27)

NOTE: 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.

- 8.39** FOR LEAD CABLES ONLY - Follow the above procedure for sheath preparation but apply only **ONE EXTRA** half-lapped layer of LOCK-TAPE adhesive strip.

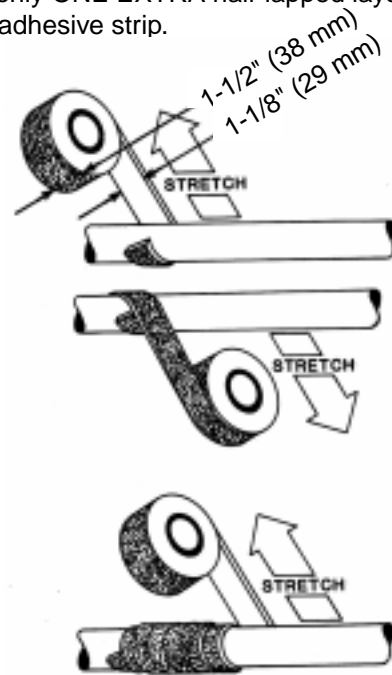


FIGURE 27 - APPLYING LOCK-TAPE STRIP (SEE FIGURE 9)

- 6.40** Be sure to keep the LOCK-TAPE Sealant wrap dry and free from grease and dirt.
- NOTE:** Do not wrap LOCK-TAPE strip on tip cables
- Installation of End Plate
- 6.41** Before applying the end plate, oval the cables to prevent pinching the sheath. (Figure 28)

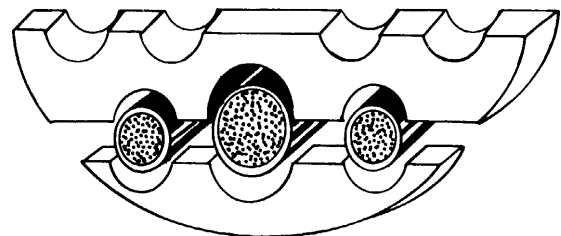


FIGURE 28 - CORRECT SHAPE OF CABLES

- 6.42** Using two half-lapped layers of heat shield tape, cover the LOCK-TAPE wrap expected to protrude out from end plate; start at the estimated location of the end plate and work out to 3 inches (76 mm) or beyond end of LOCK-TAPE strip and work back.
- 6.43** Using the threaded retainer core as a fixture, begin assembling the unit starting with the bottom section.

PLP TIP

Before assembling, support the cables in the alignment they'll lay into the end plate grooves.

6.44 Use the tube of sealant and a caulking gun to lay 1/4" (.62 cm) wide beads of silicone lengthwise across seam and 1/4" (.62 cm) from each outside edge. (Figure 29) Silicone should follow down into the contour of each groove. Lay cables in the grooves on top of the sealant.

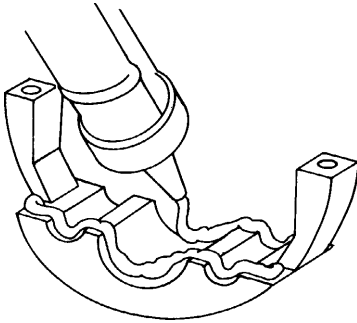


FIGURE 29 - APPLICATION OF SILICONE SEALANT

6.45 In a similar manner, lay silicone beads to bottom of the matching section and over top of cables and squeeze hand tight. Insure that any feeder cables are only applied over LOCK-TAPE wrap. The silicone will remain workable for approximately 45 minutes, depending on temperature.

6.46 Build up the remaining sections of the unit by using the same procedure.

6.47 Upon completion, apply top retainer core and tighten bolts on the end plate until the aluminum cores bottom against each other. **DO NOT EXCEED 140 IN LBS OF TORQUE (.0158 kN).** Use extra length starter bolts if necessary. Replace with standard length bolts to final tightening.

6.48 The silicone will be extruded out from all the seams, **DO NOT REMOVE EXCESS SILICONE AT THIS TIME.** (Figure 30)

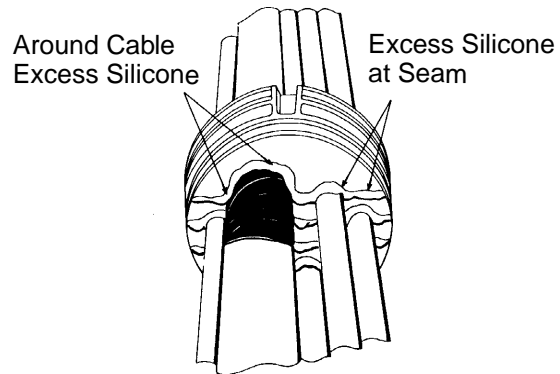


FIGURE 30 - COMPLETED APPLICATION OF CABLES

7.00 SPLICE CASE APPLICATION

7.01 To complete application, attach the top torque bar to the tip cable end plate and the feeder cable end plate, and tighten the bolts.

7.02 Assemble the shells over both end plates by referring to the LOCK-BAR cue card or the tightening instructions label affixed to the front shell.

8.00 COMPLETED INSTALLATION

8.01 After it sets (at least 24 hours), the dried silicone may be torn easily from the seams and not damage the seal. **DO NOT ATTEMPT TO REMOVE EXCESS SILICONE FROM AROUND THE CABLES.**

8.02 The maximum recommended pressure for the Vault Closure End Plate is 5 psi (34.5 kPa) after a 24 hour cure time. The unit should be flashtested at no more than 3 psi (20.7 kPa) immediately after installation.

9.00 SAFETY CONSIDERATIONS

9.01 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.

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

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

9.04 This product is intended for use by trained craftsman only. This product **should not be used** by anyone who is not familiar with, and not trained in the use of it.

PREFORMED LINE PRODUCTS 

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