INSULATING JOINTS
GENERAL

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1.01 This appendix supplements Section 633-320-200.

1.02 It is issued to introduce an alternate method for making gas-tight insulating joints in lead- or polyethylene-sheathed cables by using heat-shrink material (WRS, Wraparound Repair Sleeve).

1.03 The illustrations in this appendix show how to place an insulating joint in a pressurized, polyethylene-sheathed cable with the Raygun Torch Light. A propane or acetylene torch should be used where open flame is permitted. Notes will indicate the changes that are required when lead-sheathed cable is used.

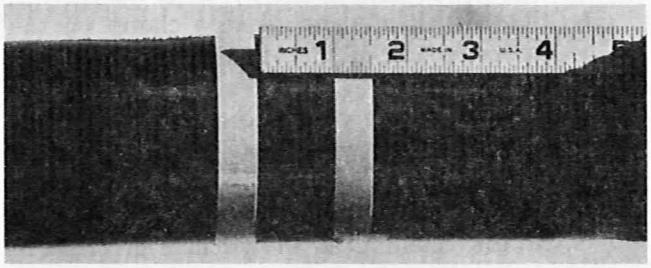
1.04 Section 627-395-330 provides detailed instructions, precautions, and a list of tools and materials required when applying heat-shrink materials.

1.05 The use of insulating joints and the placing of capacitors shall be designated by the Engineering group responsible for electrical protection and noise reduction.

2. PLACING AN INSULATING JOINT USING HEAT-SHRINK MATERIAL

2.01 The following are step-by-step procedures for placing an insulating joint in a pressurized, polyethylene-sheathed cable:

(a) Place paper tape collars one inch apart as shown in Fig. 1.



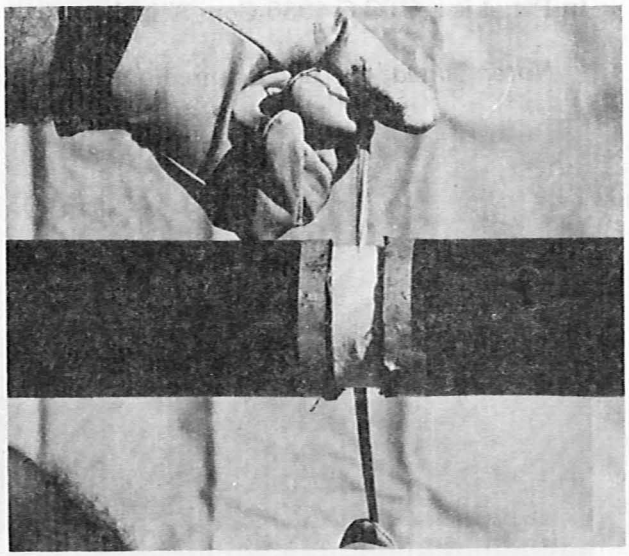
Placing Paper Tape Collars
Fig. 1

(b) Remove the one-inch piece of sheath. If the sheath is polyethylene, save it for filling the void later in the operation.

(c) Peel off the metal shield to produce smooth, flared ends. Remove any sharp points of metal.

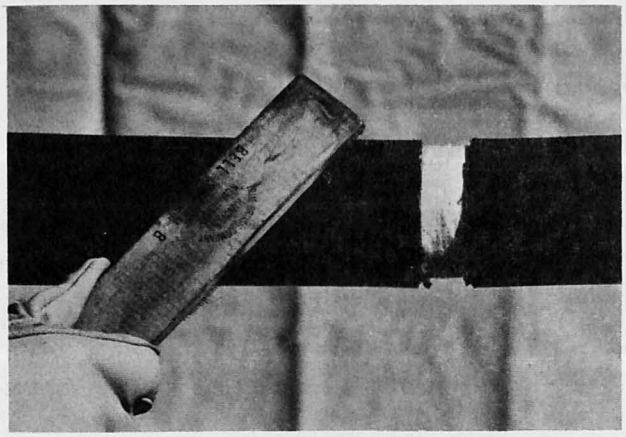
(d) Fill the void with one-inch cotton butting tape or its equivalent. Fig. 2 shows the void being filled with butting tape using a clove hitch tie.

Note: Fill the void flush with the sheath on lead-sheathed cables.



Clove Hitch — One-Inch Cotton Butting Tape
Fig. 2

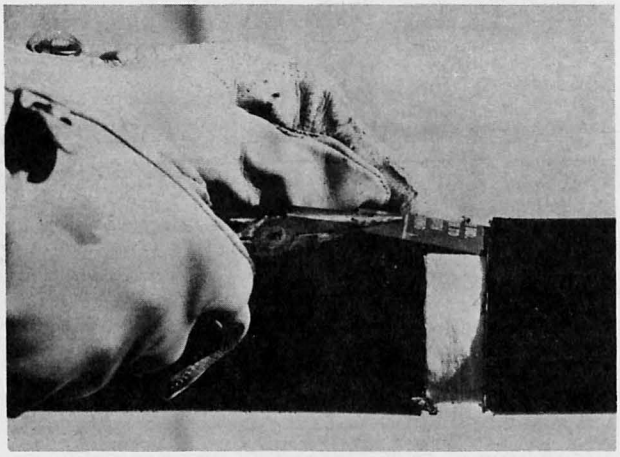
(e) Clean and scuff the sheath (a minimum of 7 inches out on the sheath) as shown in Fig. 3. Remove any longitudinal scratches. *Do not brush horizontally along the sheath.*



Scuffing 7 Inches
of Sheath
Fig. 3

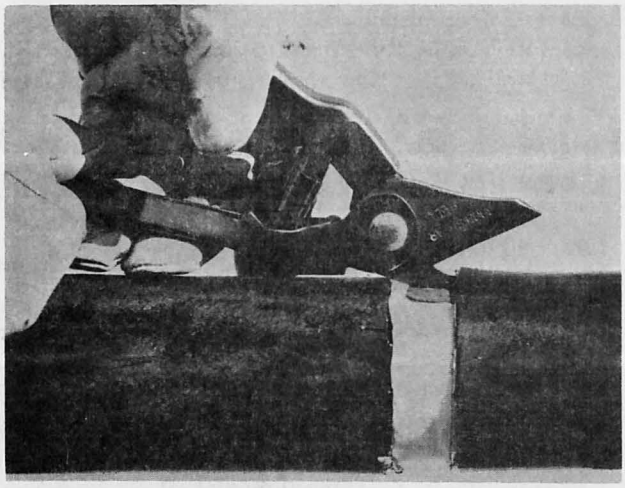
(f) Place core shields or their equivalent before placing the bond clamps. Core shields are commercially available. The one being placed in Fig. 4 is a CTC C-4050 Core Shield.

Note: Shields are not required on lead cables.



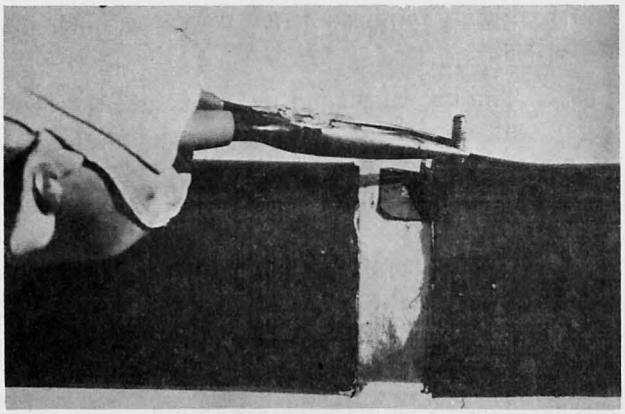
Placing Core
Shield
Fig. 4

(g) Make a tab cut in the sheath for the bond clamp as shown in Fig. 5



Making Tab Cut
For Bond Clamp
Fig. 5

(h) Place a D Bond Clamp or its equivalent as shown in Fig. 6. Seat the clamp so that the protrusion on the base is flush with the edge of the opening.



Placing Bond
Clamp
Fig. 6

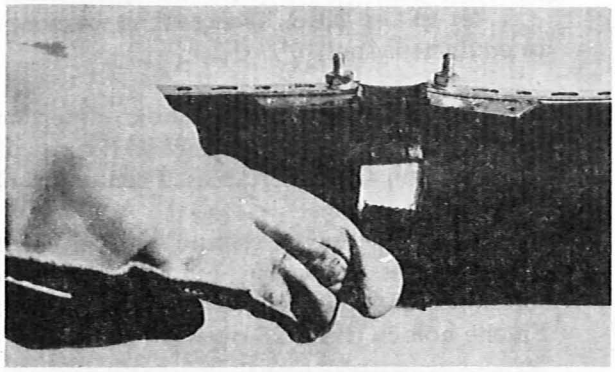
(i) Slit the sheath and place a clamp on the opposite side of the opening.

Note: Make sure that there is no metal-to-metal contact between the clamps.

(j) Place pieces of bonding ribbon on each side of the opening as shown in Fig. 7. Place enough bonding ribbon to connect to the field and central office (CO) bonds. Clean at least 8

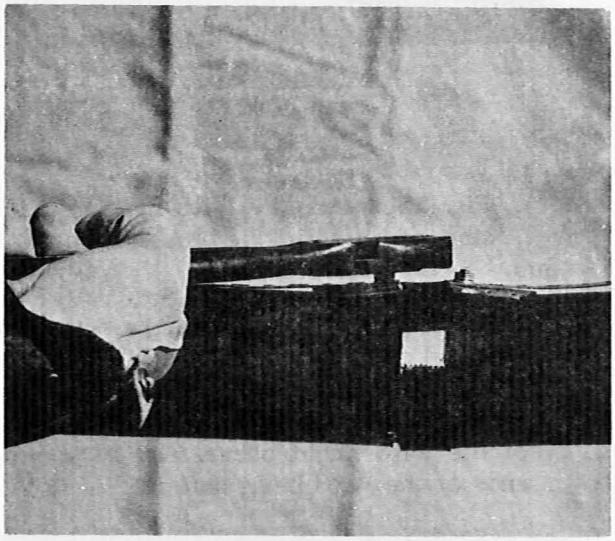
inches of the bonding ribbon on each side of the opening with B Cleaning Fluid.

Note: Solder the bonding ribbon to the sheath when working on lead cable.



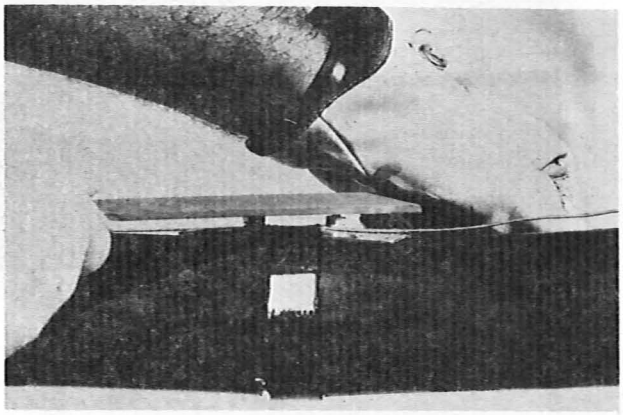
Placing Bonding Ribbon
Fig. 7

(k) Replace the piece of polyethylene sheath and cut the studs from the bond clamps as shown in Fig. 8.



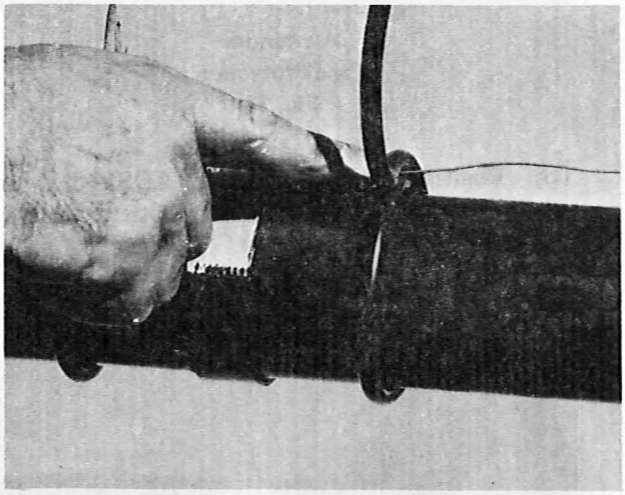
Cutting Off Studs and Replacing Sheath
Fig. 8

(l) File the rough edges from the studs to prevent protrusion through the WRS. (See Fig. 9.)



Filing Rough Edges from Bond Clamp Studs
Fig. 9

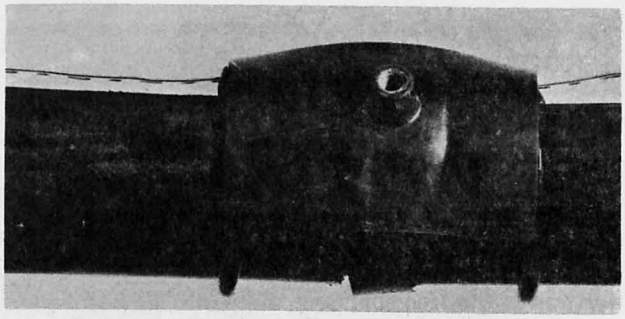
(m) Place a piece of B Sealing Cord or B Sealing Tape between and over the bonding ribbon as shown in Fig. 10. Constrict the sealing cord/tape with DR Tape. This provides an air pressure seal.



Placing Air Pressure Seal
Fig. 10

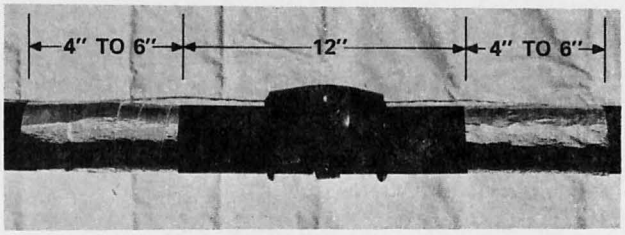
(n) Scuff and clean the surface of a Thermofit Pressure Tap Tee. Place it over the sheath opening as shown in Fig. 11. Center the plug over the opening in the replaced sheath, and place the shoulders of the tee to cover the studs of the bond clamps.

Note: On unpressurized cable, the tee is unnecessary. When the tee is not used, cover the bond clamps with two layers of glass tape.



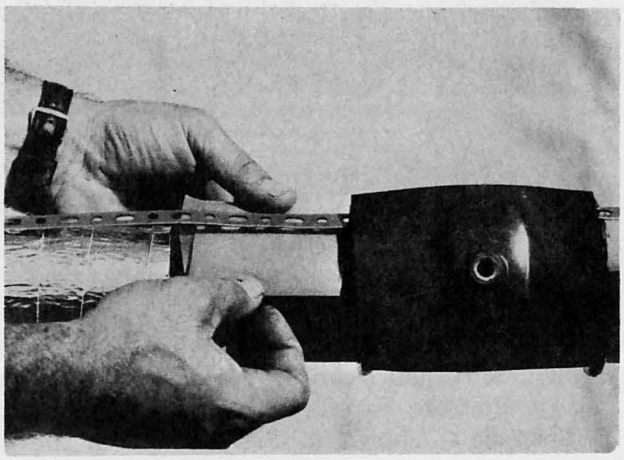
Placing Pressure Tap Tee
Fig. 11

(o) Place aluminum tape protection on the cable as shown in Fig. 12.



Aluminum Tape Protection
Fig. 12

(p) Position Adhesive Pads, ADS 13-1, under the bonding ribbon on both sides of the tee as shown in Fig. 13.



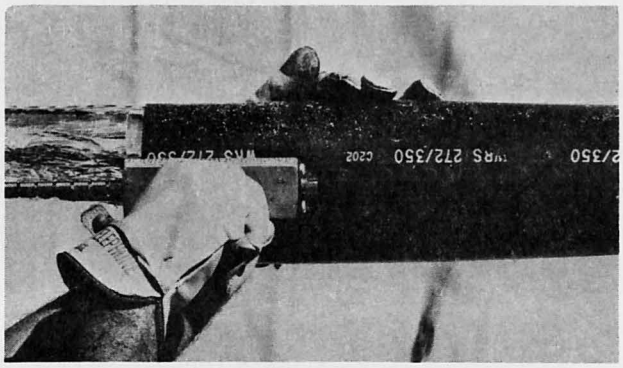
Positioning Adhesive Pads
Fig. 13

(q) Measure the diameter of the cable. Select the proper size WRS and cut it to 13 inches. The ends must be cut squarely with no jagged edges.

(r) Cut a hole for the pressure plug in the center of the WRS. Use a sealing washer punch or equivalent tool.

Note: Before placing the hole, determine at what angle the rail of the WRS is to be placed in relation to other cables. Then cut the hole.

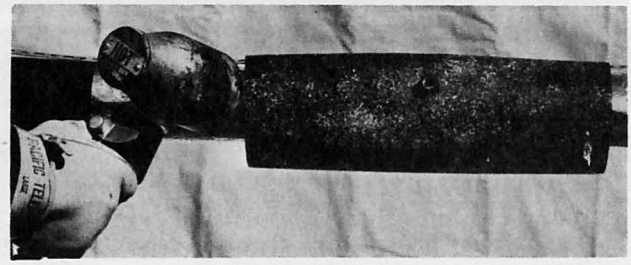
(s) Place the metal channel on the piece of WRS as shown in Fig. 14. The channel should extend at least ¼-inch beyond the edges. Fit the hole in the WRS over the tee fitting.



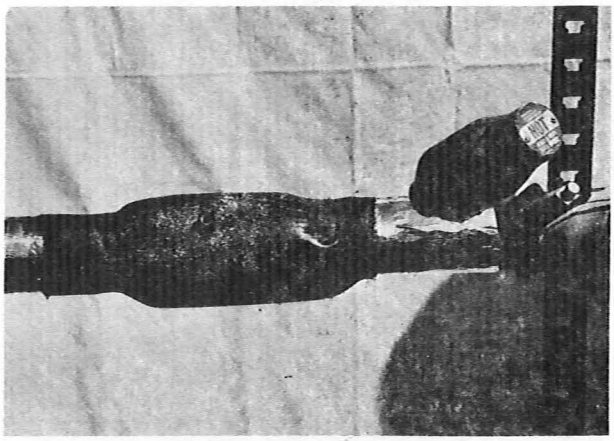
Placing the Metal Channel
Fig. 14

(t) Fig. 15 shows the WRS in place and the start of the shrinking process with the Raygun.

Note: If the cable is under pressure, shrink each end of the WRS first. Then work towards the center. *DO NOT* apply heat directly around the pressure plug fitting as a splitting of the WRS might occur. Fig. 16 shows the ends of the WRS being shrunk.

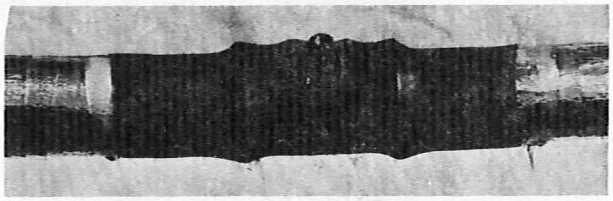


WRS Positioned Ready for Shrinking
Fig. 15



Shrinking URS
Fig. 16

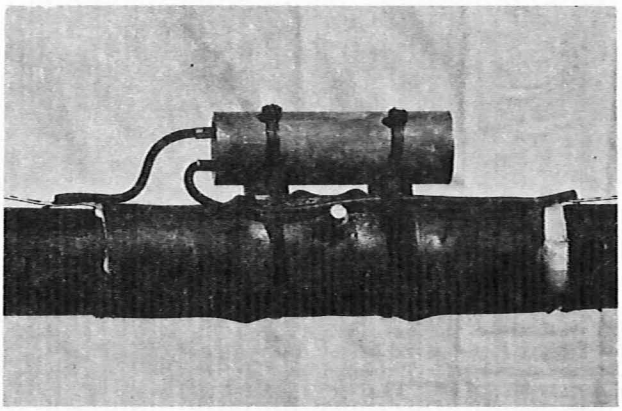
(u) Fig. 17 shows the completed job. Note the adhesive running from the ends of the WRS and the pressure plug fitting hole.



Completed Job
Fig. 17

(v) Let the WRS and cable cool to the touch (approximately 30 minutes), then flash-test for pressure leaks.

(w) Fig. 18 shows a KS 14595-L1 Capacitor in place on an insulating joint. The leads of the capacitor should be as short as possible; 4½ inches for the shortest and 10 inches for the longest.



A KS 14595-L1
Capacitor in Place
Fig. 18