4-TYPE CLOSURES

CONTENTS PAGE

1. GENERAL

1.01 This section covers the description and use of the 4-type closures used to enclose straight splices in nonpressurized aerial PIC cable.

1.02 This section is reissued to include the 4C1 Closure. Since this is a general revision, arrows ordinarily used to indicate changes have been omitted.

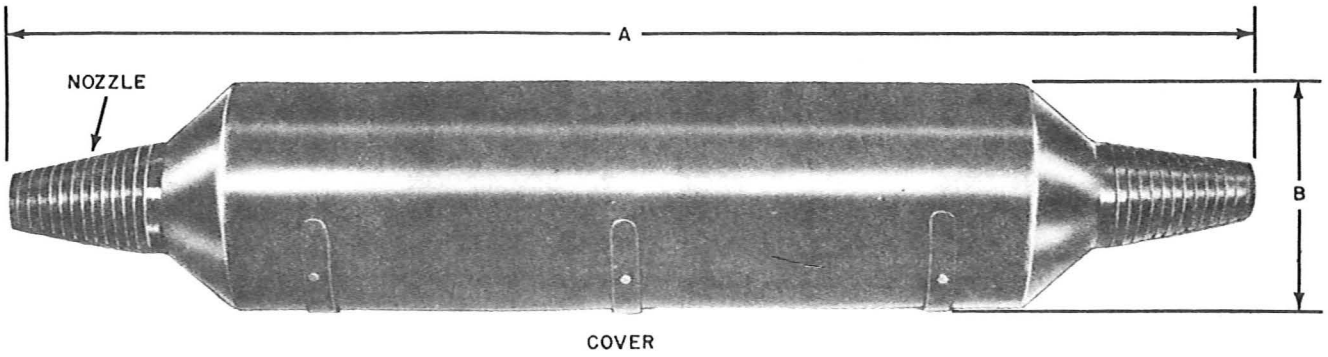
2. DESCRIPTION

2.01 The 4-type closures consist of outer sheath clamps, inner sheath clamps, rod assemblies, clips, B Sealing Tape, and plastic covers (Fig. 1). The sheath clamps and rod assemblies provide an electrical and mechanical bridge across the splice to maintain continuity of the sheath and prevent sheath pullout. Component parts of the 4-type closures and the quantity and part number of each item are given in Table A.

2.02 The 4A1 Closure will accommodate a cable up to 1 inch in diameter.

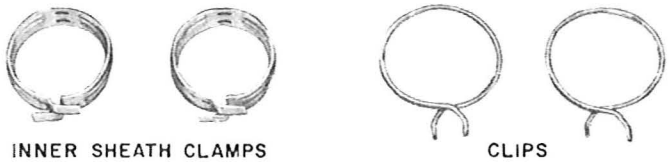
2.03 The 4B1 Closure will accommodate a cable from 1 to 2.2 inches in diameter. On cables 1.0 to 1.5 inches in diameter it is necessary to use P-18E117 Inner Sheath Clamps and 138A Adapters, which must be ordered separately.

2.04 The 4C1 Closure will accommodate a cable from 1.7 to 3.0 inches in diameter. On cables 1.7 to 2.2 inches in diameter it is necessary to use P-18E119 Inner Sheath Clamps and 133C Adapters, which must be ordered separately.

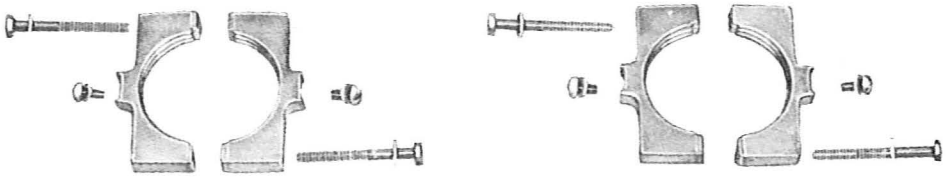


COVER

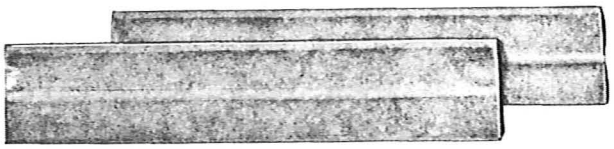
ROD ASSEMBLIES



INNER SHEATH CLAMPS CLIPS



OUTER SHEATH CLAMPS



SEALING TAPE

CLOSURE CODE	DIMENSIONS (INCHES)		APPROX WEIGHT (POUNDS)
	A	B	
4AI	23	3	2
4BI	28	5	4
4CI	31	7	6

Fig. 1—4-Type Closure—Typical

TABLE A

COMPONENT PARTS OF 4-TYPE CLOSURE

PART	PART NO.	QUANTITY OF PARTS FURNISHED WITH EACH CLOSURE		
		CLOSURE CODE		
		4A1	4B1	4C1
Cover	P-46L542	1		
Cover	P-17E895		1	
Cover	P-21E790			1
Rod Assembly	P-16E153	2		
Rod Assembly	P-16E124		2	
Rod Assembly	P-21E791			2
Outer Sheath Clamp	P-46D912	2		
Outer Sheath Clamp	P-17E892		2	
Outer Sheath Clamp	P-21E788			2
Clip	P-46D915	2		
Clip	P-17E894		2	
Clip	P-21E787			2
Screw	P-21E067	4		
Screw	P-21E068		4	
Screw	P-21E875			4
Inner Sheath Clamp	P-18E115	2		
Inner Sheath Clamp	P-18E119		2	
Inner Sheath Clamp	P-18E834			2
B Sealing Tape	P-18A785	2	8	

2.05 The alpeth cable sizes (pairs) and gauge that the 4-type closures will accommodate are listed in Table B.

TABLE B

MAXIMUM NUMBER OF PAIRS ACCOMMODATED

GAUGE	CLOSURE CODE		
	4A1	4B1	4C1
19	25	200	300
22	75	400	600
24	100	600	900
26	150	900	—

3. PREPARATION OF SHEATH OPENING

3.01 Place the clips on each cable, then place B Paper Tape Markers on the sheath to mark the sheath opening and the tab lengths as shown in Fig. 2. Temporarily support the cable ends with marlin or D Vinyl Tape. Cable spacers and lashed cable supports may be placed in their approximate final position if desired, for additional support.

3.02 Remove the polyethylene jacket between the inner paper tape markers. Remove the inner paper tape markers.

3.03 Prepare ***three, four, and six tabs*** when using the 4A1, 4B1, and 4C1 Closures, respectively. Cut the tabs to approximately equal width by making longitudinal cuts through the

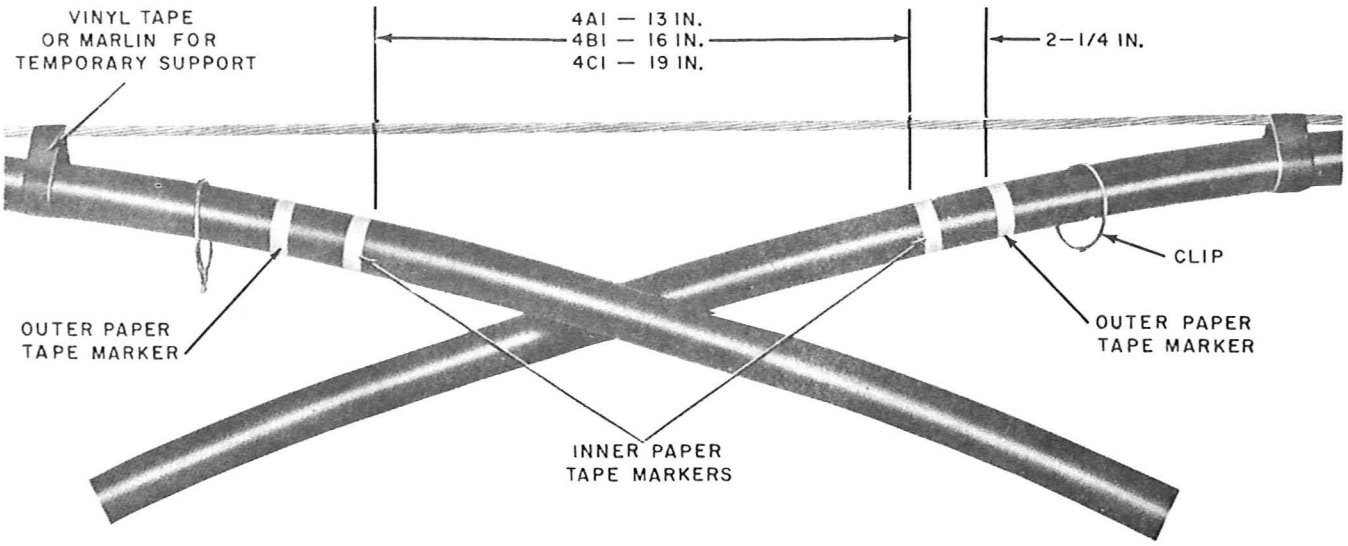


Fig. 2—Clips and B Paper Tape Markers Installed on Cable

polyethylene jacket and metal layers to the edge of the paper tape markers. ***To avoid damage to the core, first tab the polyethylene and then tab the underlying metal layer.***

3.04 Remove the outer paper tape markers, then select the proper size of inner sheath clamp and adapter from Table C.

3.05 Carefully bend the tabs away from the cable core. ***Do not bend sharply as the aluminum may tear at the base of the tabs.***

3.06 Place a collar of vinyl tape and the inner sheath clamp under the tabs at each end of the splice opening, then wrap the tabs with vinyl tape as shown in Fig. 3. ***Do not tape over the ears of the inner sheath clamps.***

TABLE C

GUIDE FOR SELECTING INNER SHEATH CLAMP

CLOSURE	CABLE SIZE OD (INCHES)	INNER SHEATH CLAMP	ADAPTER ASSEMBLY
4A1	Up to 1.0	P-18E115[1]	None
4B1	1.1 to 1.6	P-18E117[2]	138A[2]
4B1	1.7 to 2.2	P-18E119[1]	None
4C1	1.7 to 2.2	P-18E119[2]	133O[2]
4C1	2.2 to 3.0	P-18E834[1]	None

Note 1: Furnished with 4-type closure

Note 2: Order as separate items

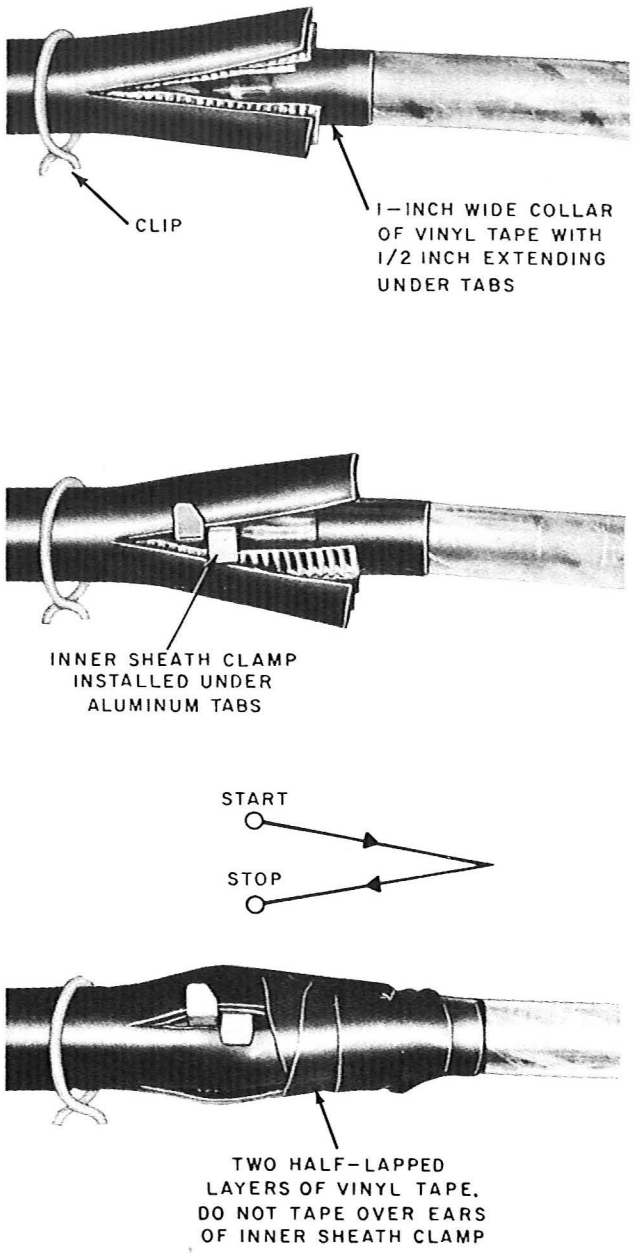


Fig. 3—Installation of Inner Sheath Clamp

4. INSTALLATION

4.01 Install adapter assembly, if required, and the outer sheath clamps over the inner sheath clamps as shown in Fig. 4. Place the upper rod assembly and check for proper spacing and alignment of the outer sheath clamps, rod assembly, and inner sheath clamps. Form a loop of copper lashing wire long enough to reach the lashing wire clamp at one end of the splice. Place the loop under the head of one of the outer sheath clamp screws holding the rod assembly. Spiral the lashing wire around the cable and fasten the opposite end under the bolt head of the lashing wire clamp. ***Tighten all screws securely, making sure of metal-to-metal contact between the outer sheath clamps and inner sheath clamps and rod assemblies.*** This prevents sheath pullout, ensures shield continuity, and provides grounding for lightning protection.

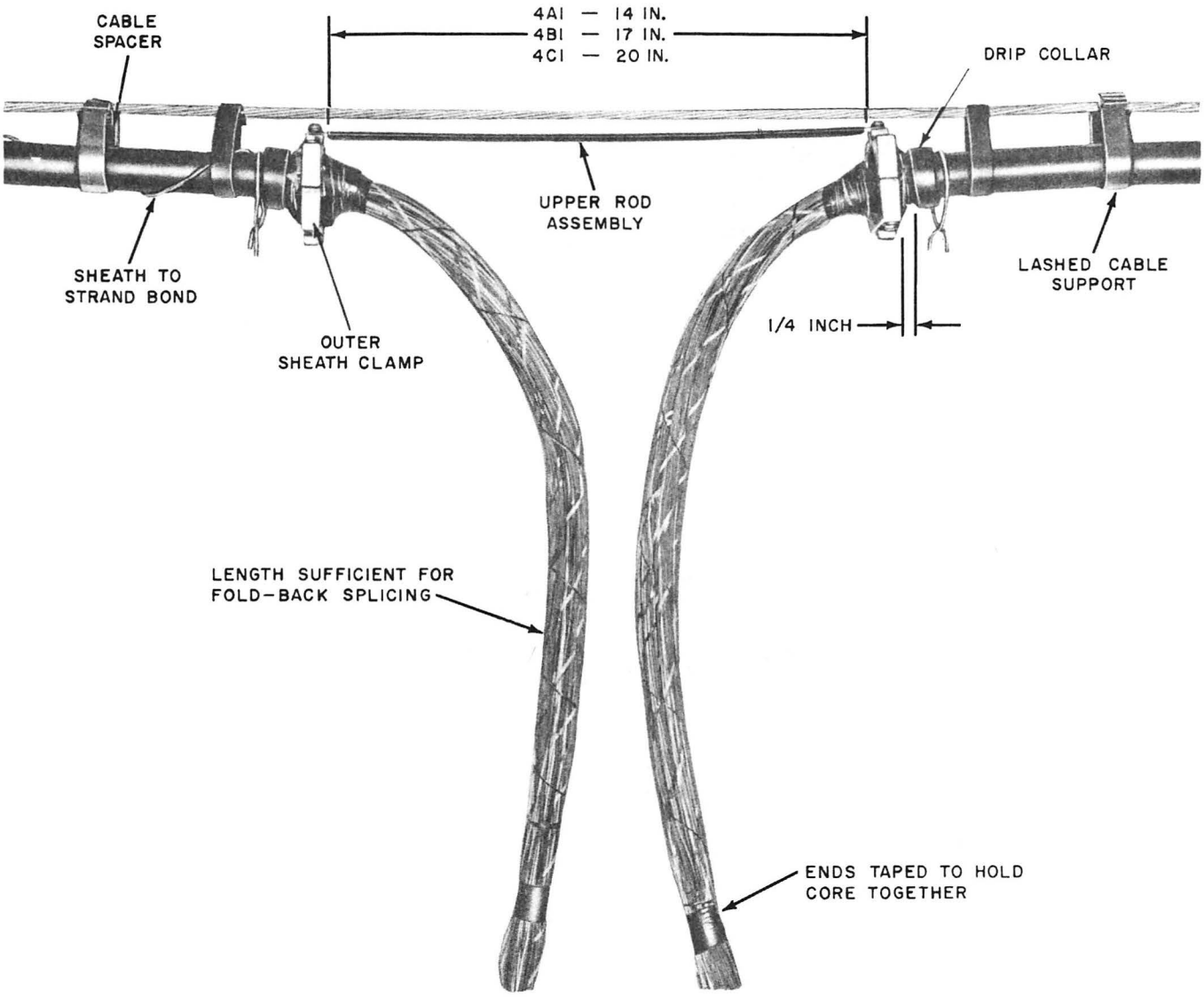


Fig. 4—Outer Sheath Clamps and Upper Rod Assembly Installed

4.02 Install a drip collar on each sheath using B Sealing Tape. Form the first layer of the sealing tape drip collar around the bonding wire. Apply a layer of vinyl tape over the drip collar.

4.03 Splice the conductors in the usual manner. A completed splice using the foldback method and B Wire Connectors is shown in Fig. 5.

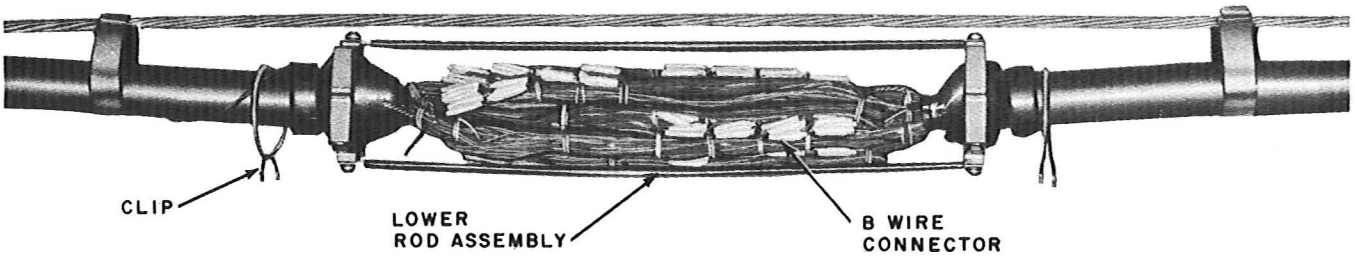


Fig. 5—Completed Splice

4.04 Wrap the splice bundle with two half-lapped layers of B Polyethylene Tape. ***Do not pull B Polyethylene Tape tightly at ends of splice, and do not apply tape over last inch of the splice bundle, to allow splice to "breathe".*** Place two or three turns of vinyl tape over the polyethylene tape to hold tape in place. Install lower rod assembly (Fig. 6).

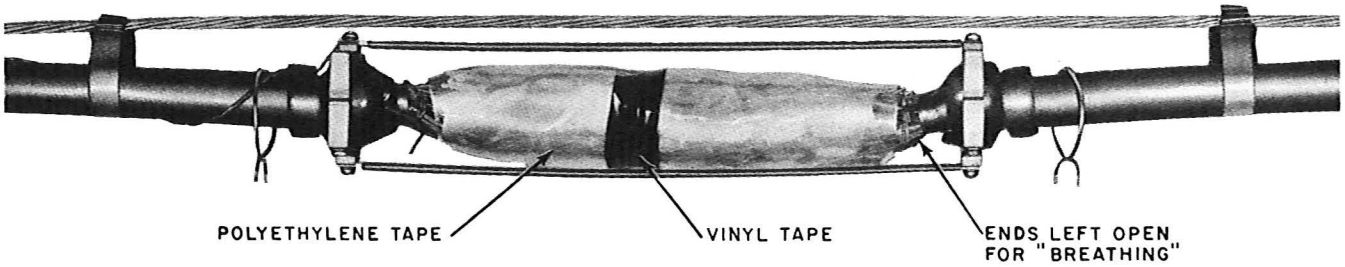


Fig. 6—Splice Wrapped with B Polyethylene Tape

4.05 Measure the cable diameter with a B Measuring Tape (Fig. 7). Slit the cover nozzle at each end to the measured diameter of the cable. ***Do not cut off any of the nozzle*** (Fig. 8). The tapered ends of the cover (nozzle) are grooved and marked with the cable diameter in inches and tenths of an inch.

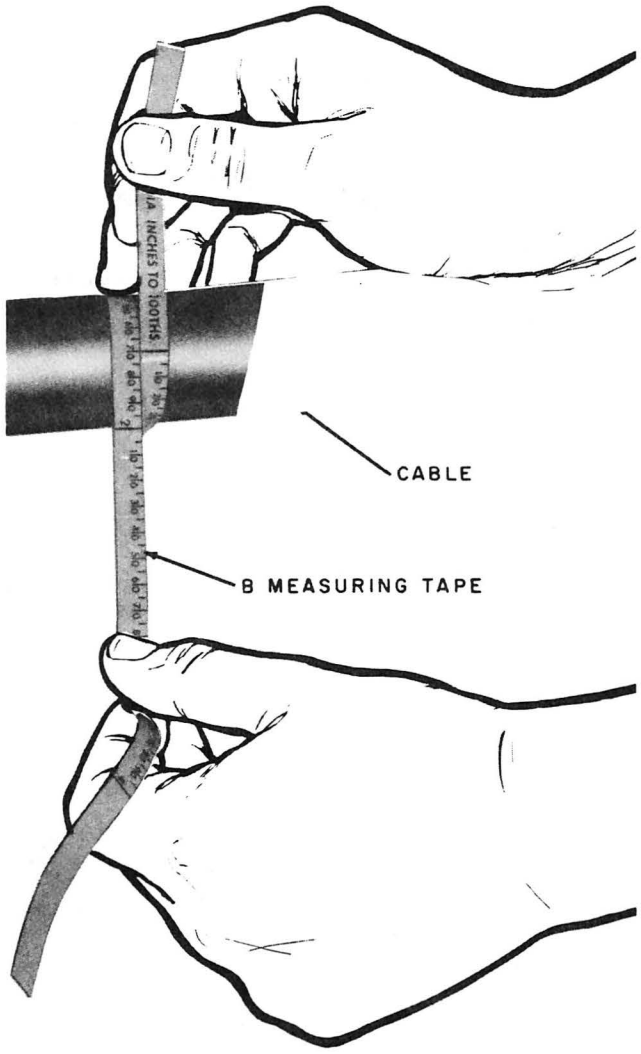


Fig. 7—Checking Cable Diameter

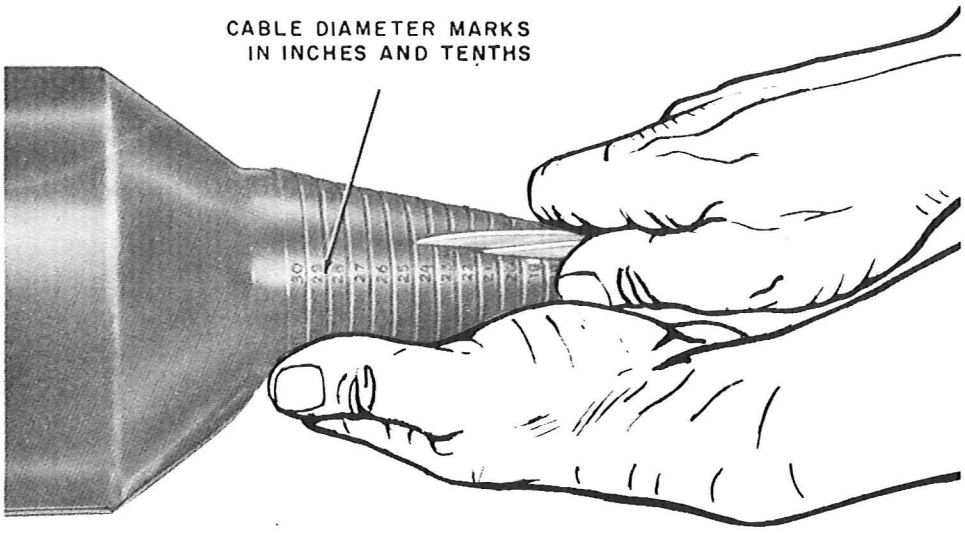


Fig. 8—Slitting Cover Nozzle to Cable Diameter

4.06 Center the cover over the splice on the sheath opening with the slit edge at the bottom. Engage the metal buttons with the cover straps, then place the clips over the retaining collars in the ends of the cover. Wrap two half-lapped layers of vinyl tape around each cover nozzle and cable to prevent the closure from turning on the cable (Fig. 9).

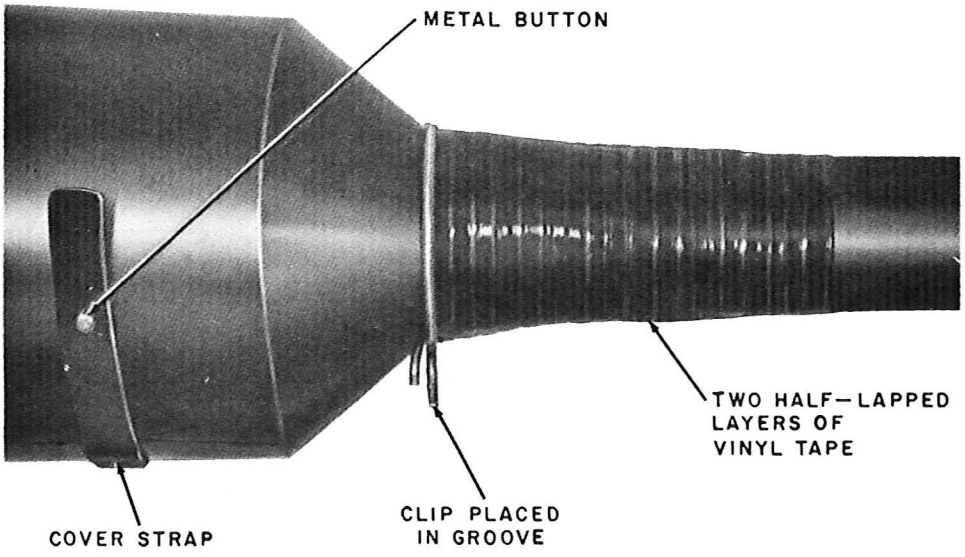


Fig. 9—Cover Nozzle Taped to Cable

4.07 Install cable spacers and lashed cable supports in their final position to maintain separation between the closure and the strand (Fig. 10, 11, and 12).

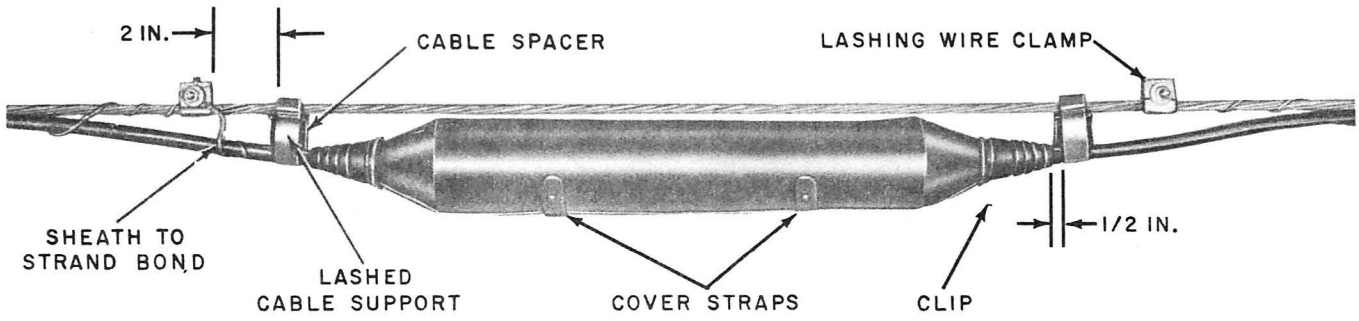


Fig. 10—Completed 4A1 Installation

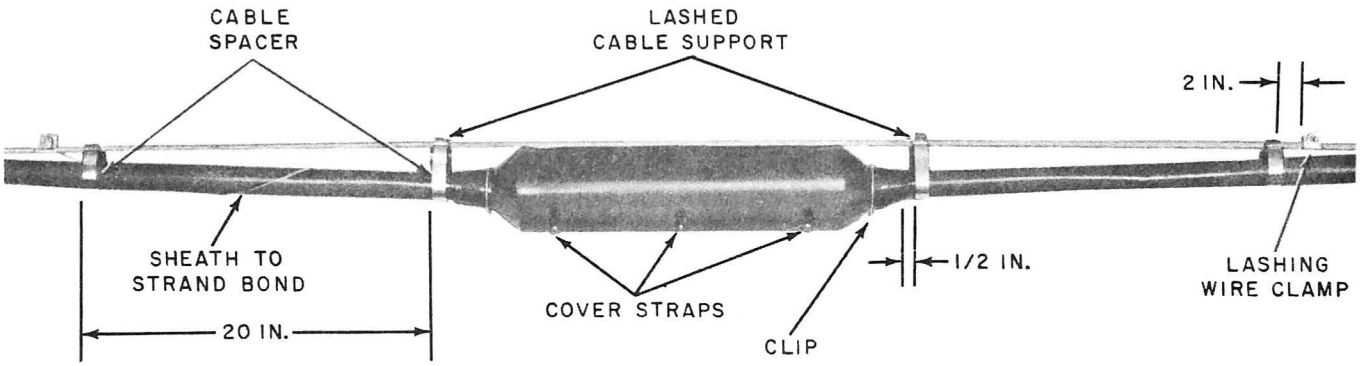


Fig. 11—Completed 4B1 Installation

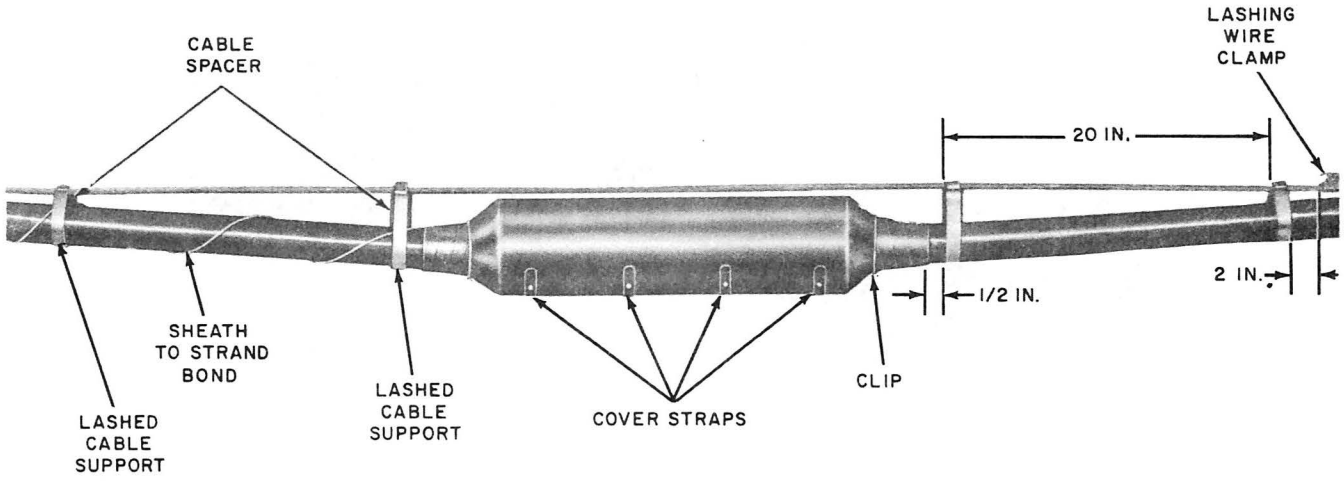


Fig. 12—Completed 4C1 Installation