MULTIPLE WIRE
SPLICING

CONTENTS PAGE

1. GENERAL

1.01 This section describes the methods to be used in splicing all types of multiple wire.

1.02 This section is reissued to delete the use of the B Filled Sleeve for clearing the pairs not spliced and to delete the use of the 032-025 S Brass Sleeve for splicing 19-gauge conductors to 22-gauge conductors. Since this is a general revision, arrows ordinarily used to indicate changes have been omitted.

1.03 The conductor color code for each type of multiple wire is given in Section 624-020-100.

1.04 Multiple wire conductors should be spliced color-to-color unless the work print or supervisor specifies another method of splicing.

2. DESCRIPTION OF SPLICE SLEEVE

2.01 The splice sleeve for joining the conductors of multiple wire consists of an assembly of an inner copper sleeve, a plastic liner, and an outer copper shell. The inner copper sleeve is for joining the conductors and is indented in the middle to provide a stop for the conductors. The plastic liner insulates the joint and is color coded to indicate the size of the sleeve. The outer copper shell holds the plastic liner tight against the insulation, making a watertight seal, and also holds the inner sleeve and plastic liner in place. The splice sleeve is illustrated in Fig. 1.

2.02 The size and use of the splice sleeves for multiple wire are as follows:

SPLICE SLEEVE	COLOR OF PLASTIC LINER	USE
F	Gray	Joining 19-gauge copper conductors
K	Yellow	Joining 22-gauge copper conductors
G	Black	Joining 24-gauge copper conductors

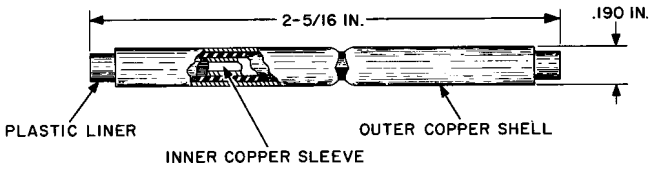


Fig. 1—Splice Sleeve Detail

3. SPLICING

3.01 The splice is made as follows:

(1) Apply five wraps of vinyl tape on the wire about 4 inches back from the overlapped portion. This tape should also hold the yarn serving, if present, so it will not unravel.

(2) Join the support wire with a sleeve, B Wire Splice, or wirelink leaving an overlap in the conductors as shown in Fig. 2. Tape the joint with two layers of half-lapped 3/4-inch DR Tape and two layers of half-lapped vinyl tape.

SUPPORT WIRE

SIZE	MATERIAL	JOIN WIRE WITH
109	Galv Steel	109E S Steel Sleeve 109B Wire Splice 109 Wirelink
120	Galv Steel	120B Wire Splice 120 Wirelink

(3) Cut the pair of wires to be joined to proper length, and remove about 1/2 inch of insulation from ends of conductors with a pair of diagonal pliers using the skinning hole. The 1/2 inch should be reasonably accurate for a proper splice.

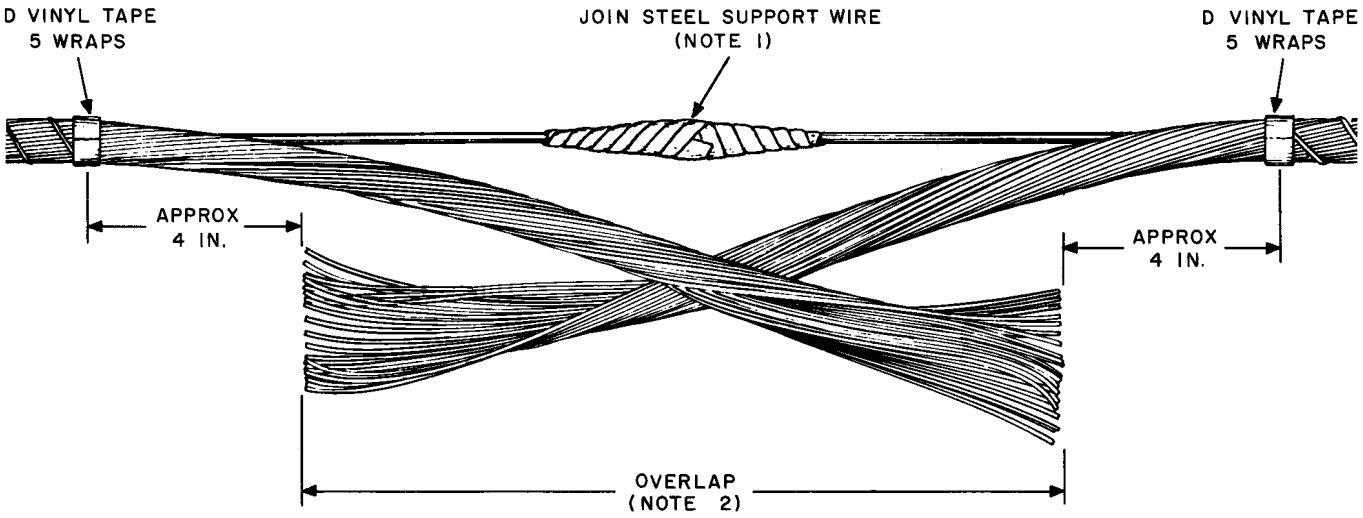
Note: The two inner presses on the splice sleeve provide the electrical connection and mechanical strength. The two outer presses seal the splice sleeve against moisture. If the bare conductor is more than 1/2 inch long or is not properly inserted, the bare copper conductor is exposed beyond the outer press. Such exposure, even though the bare conductor is not visible beyond the plastic liner, will cause the conductor to corrode open. If the bare conductor is less than 1/2 inch long, the inner press may not make a good connection.

(4) Insert mating conductors into the proper size splice sleeve as follows:

(a) Measure conductor along the outside edge of the splice sleeve by placing the tip of the bare conductor at the center constriction and grasp the conductor just beyond the end of the plastic liner as shown in Fig. 3.

(b) Insert the conductor into the splice sleeve, rotating slightly to keep it from catching on the edge of the inner sleeve. The fingers holding the conductor should indicate full entrance of the conductor by ending up close to the end of the plastic liner as shown in Fig. 4. Be sure the conductor is inserted as far as possible.

(5) Using the portion of the diagonal pliers between the handles and behind the jaws, temporarily crimp the sleeve 1/8 inch from each end of the copper shell, as shown in Fig. 5.



NOTES:

1. TAPE WITH TWO LAYERS OF HALF-LAPPED 3/4 INCH DR TAPE AND TWO LAYERS OF HALF-LAPPED D VINYL TAPE.
2. FOR 6 PAIR—8 IN.
   FOR 12 OR 16 PAIR—14 IN.

Fig. 2—Joining Support Wire

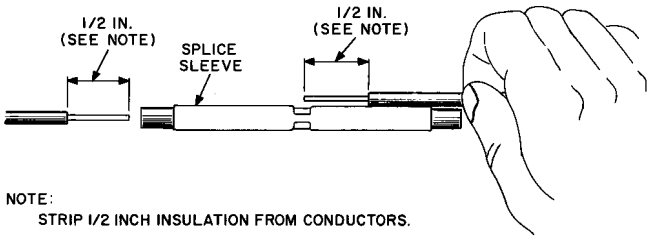


Fig. 3—Measuring Conductors

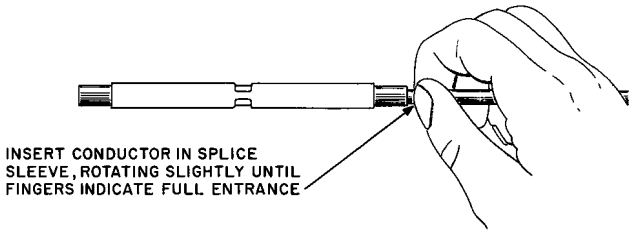


Fig. 4—Conductor Fully Inserted in Sleeve

(6) Using the D Sleeve Presser, make four presses along the length of the sleeve as shown in Fig. 6, making the two inner presses first.

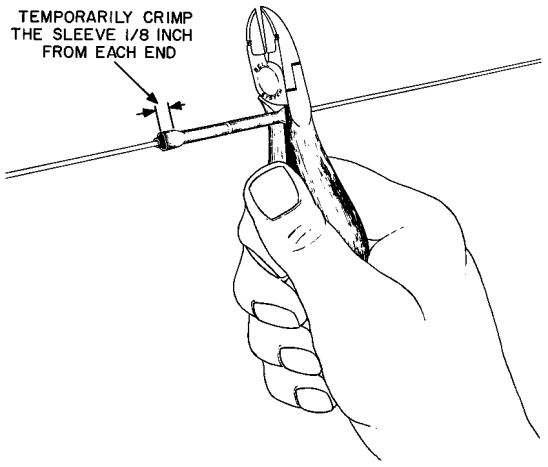


Fig. 5—Temporary Crimp

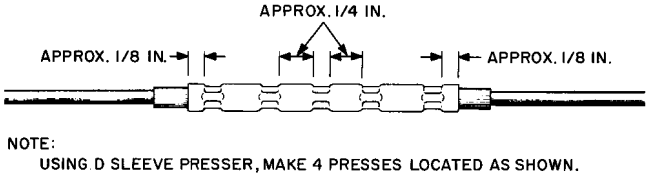


Fig. 6—Completed Conductor Splice

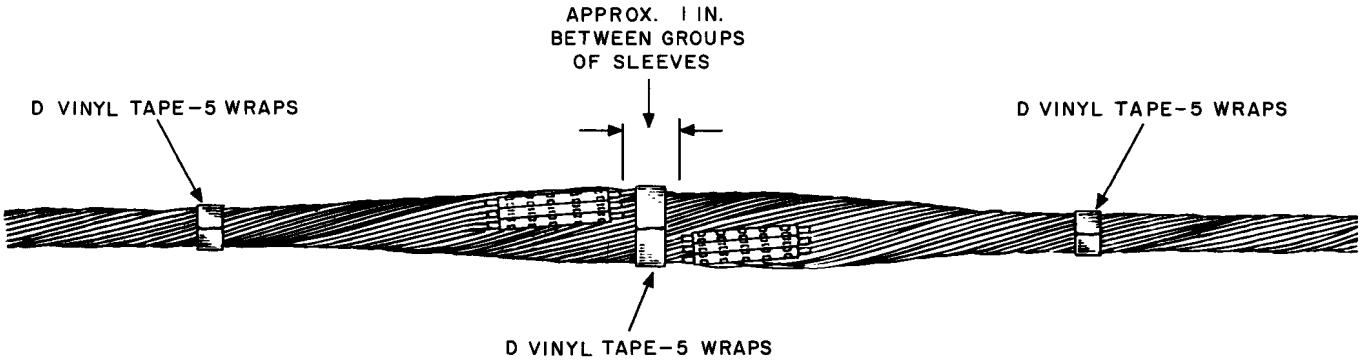
(7) Stagger the individual conductor splices so the completed splice resembles those illustrated in Fig. 7 and 8. Be sure the conductors retain their spiral lay and group relationship.

3.02 Pair ends which are not spliced should be cleared as follows:

(1) Cut the pair of wires to be cleared to proper length and remove about 1/2 inch of insulation from ends of conductors with a pair of diagonal pliers, as shown in Fig. 3.

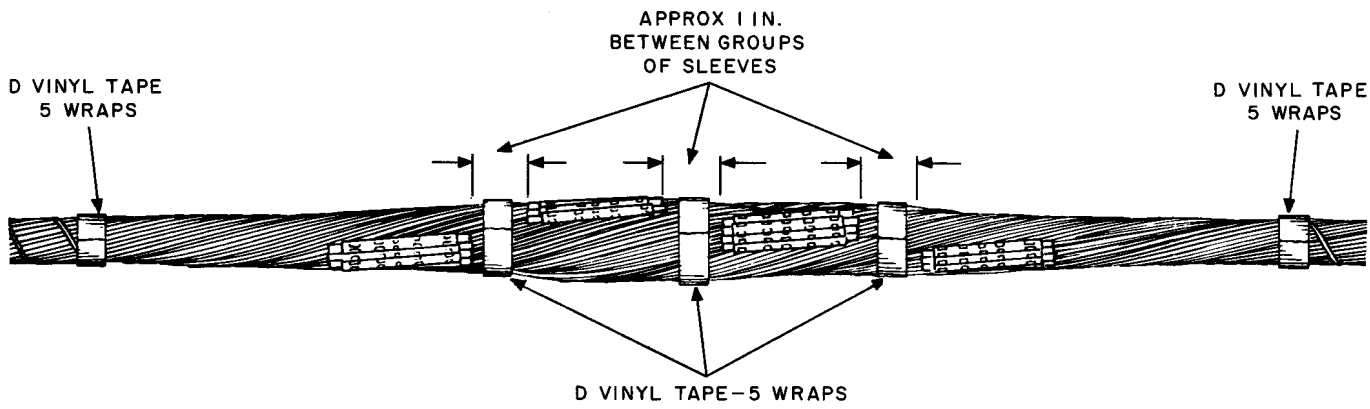
(2) Insert the ends of conductors into the proper size splice sleeve until each end reaches the constriction in the inner sleeve as described in 3.01 (4). Press this end of the sleeve as shown in 3.01 (6).

(3) To close and seal the other end of the splice sleeve, use the diagonal pliers, as shown in Fig. 5, to constrict the last 1/4 inch of the outer copper shell. Be sure to press firmly so that the end is closed tightly. The completed sleeve is shown in Fig. 9.



NOTE:
SPLICE EACH OF TWO GROUPS OF CONDUCTORS SO AS TO RETAIN THEIR SPIRAL LAY.

Fig. 7—Completed Six-Pair Splice



NOTE:

SPLICE EACH OF FOUR GROUPS OF CONDUCTORS SO AS TO RETAIN THEIR SPIRAL LAY.

Fig. 8—Completed Twelve- or Sixteen-Pair Splice

JOINING WIRES OF DIFFERENT GAUGE

3.03 Multiple wire conductors of different gauges cannot be spliced directly to each other. Conductors of different gauges must be connected through the binding posts of an unprotected wire terminal of appropriate size.

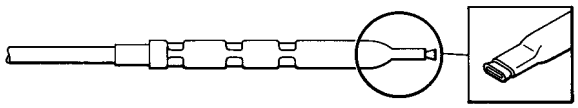


Fig. 9—Splice Sleeve to Clear End