BELL SYSTEM PRACTICES
Outside Plant Construction and Maintenance

SECTION G50.635.2
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AT&T Co Standard

CABLE SPLICING—GENERAL
PUNCHED ALUMINUM JOINTS

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1. GENERAL

1.01 This section describes the splicing of aluminum cable conductors by the punched sleeve method.

1.02 Two or three conductors can be joined in a splice sleeve; however, only one of the conductors should be copper.

1.03 **The method should not be used to splice copper conductors having double paper (conductors of terminal stubs) or plastic insulation; such conductors shall be spliced to aluminum conductors by the pressed sleeve method. The pressed sleeve method of splicing should also be employed where it is necessary to obtain the equivalent of a soldered joint.**

1.04 The D Splice Sleeve is required to join two or three conductors. D sleeves come in two sizes designated 102 and 141 and are colored yellow and white, respectively. The size and number of cable conductors each sleeve will accommodate is given in the table.

1.05 **Precaution:** Aluminum conductors have less tensile strength than the corresponding gauges of copper conductors and it is, therefore necessary to exercise greater care in handling aluminum conductors.

2. DESCRIPTION OF JOINT

2.01 In the punched sleeve method, the electrical connection is made by placing the ends of two or three conductors in a D Splice Sleeve, illustrated below, without removing the insulation from the wires to be spliced and then punching the sleeve with a Pneumatic Presser equipped with a punch die.

2.02 A completed splice made by joining the wires by the punched sleeve method is comparable in size to one made by twisting the wires and insulating them with prepared cotton sleeves. Accordingly, the method entails no change in practices for closing splices.

3. D SPLICE SLEEVES

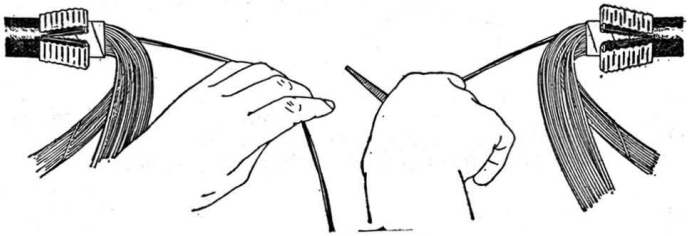
3.01 The following table lists the various conductor combinations and the size of the splice sleeve that should be used on each. The letter "a" designates aluminum and "c" designates copper.

Two-Wire Joints	Size of Sleeve	Three-Wire Joints	Size of Sleeve
20a-19c	102	20a-20a-19c	141
20a-20a	102	20a-20a-20a	141
20a-22a	102	20a-20a-22a	141
20a-22c	102	20a-20a-22c	141
22a-22a	102	20a-22a-19c	141
22a-22c	102	22a-22a-19c	141
20a-24c	102	20a-20a-24c	102
22a-24c	102	20a-22a-22c	102
22a-26c	102	20a-22a-22a	102
		22a-22a-22c	102
		22a-22a-22a	102
		22a-22a-24c	102

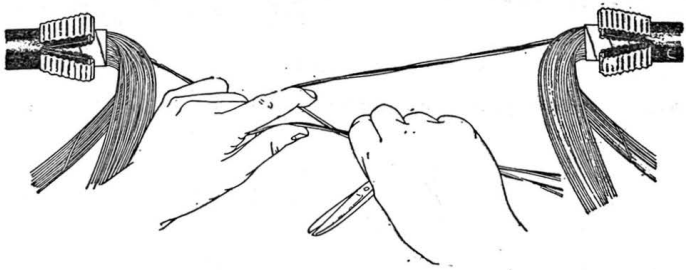
4. JOINING WIRES

4.01 Follow the standard practice in preparing the splice opening.

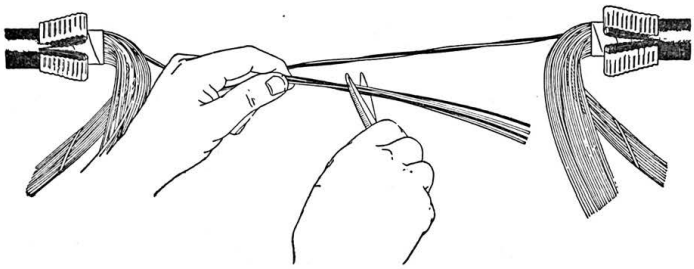
4.02 **Splicing Two Wires:** Grasp a pair of wires from the left-hand side of the splice with the left hand and one from the right with the right hand.



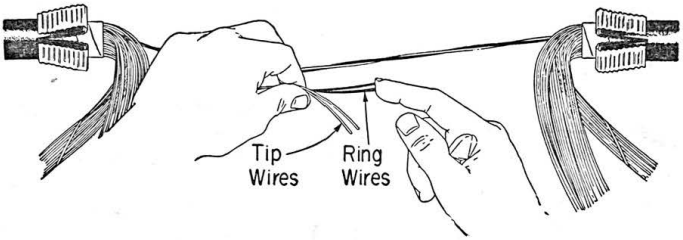
4.03 Make a loop in the right-hand pair holding the loop with the forefinger of the left hand and then bring the free ends of the wires together.



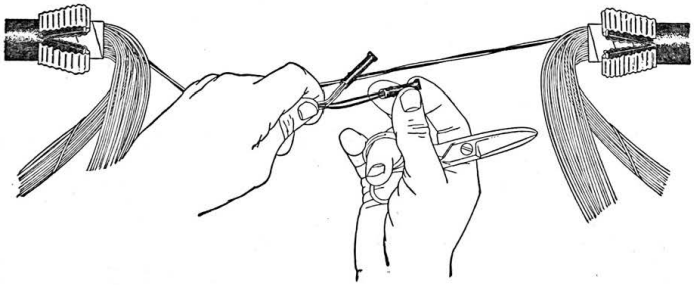
4.04 Hold the two pairs with the left hand, as shown, and cut the wires about 2 inches from the left thumb. Cut the ends about 2-1/2 inches long if it is known that a wire will subsequently be bridged to the conductor.



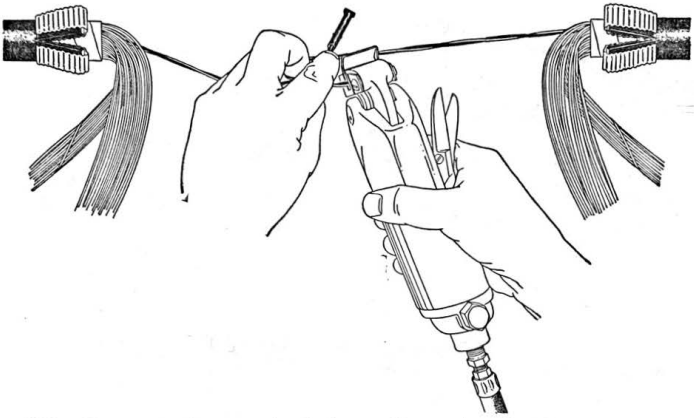
4.05 Separate the pairs bringing the two tips and the two ring wires together.



4.06 Place D Splice Sleeves over the ends of the conductors, making sure that the ends of the wires butt against the closed ends of the sleeves.

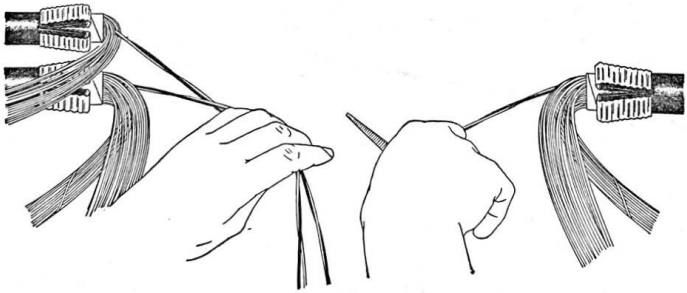


4.07 Place a splice sleeve in the die of the pneumatic presser making sure that the closed end of the sleeve butts against the guard and is to the back of the die (toward body of tool). Give the wires a slight push to the right to ensure that they are completely inserted into the sleeve. Then punch the sleeve by pressing the lever. The lever should be pressed long enough to ensure that the jaws have closed completely.

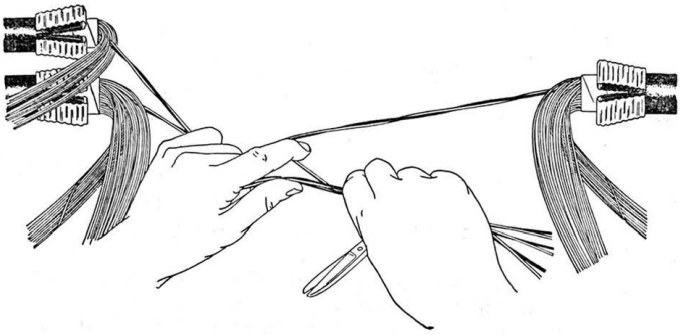


4.08 Remove the punched sleeve from the die. If the sleeve tends to stick in the teeth, loosen it with a slight rocking motion. Then insert the next sleeve into the presser and punch it.

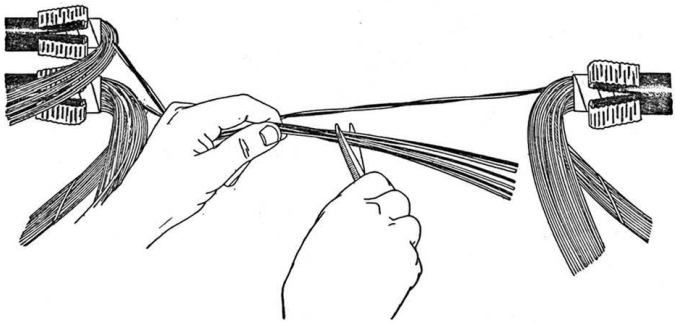
4.09 **Splicing Three Wires:** Grasp a pair of wires from each cable, as shown.



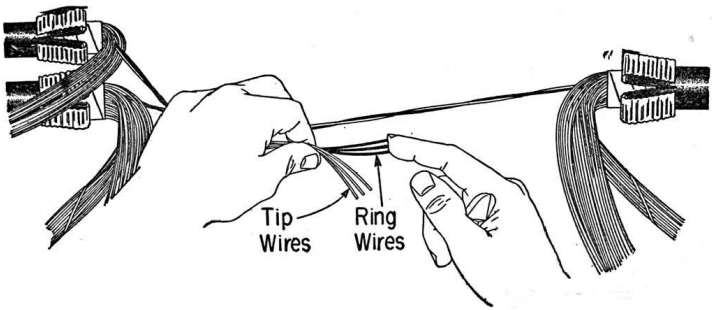
4.10 Make a loop in the right-hand pair holding the loop in the forefinger of the left hand and then bring the free ends of the wires together.



4.11 Hold the three pairs of wires in the left hand and cut them about 2 inches from the left thumb.



4.12 Separate the pairs bringing the three tip and the three ring wires together.



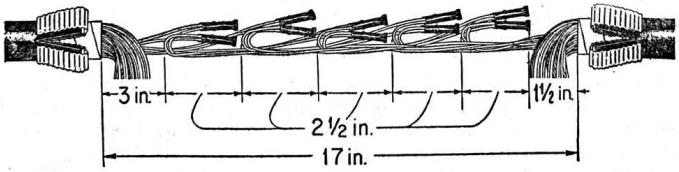
4.13 Complete the splice as outlined for a two-wire joint.

5. FORMING THE SPLICE

5.01 Joints should be made in rows and the number of rows should depend on the size of the splice opening. The following is the suggested number of rows of joints in a splice.

Sheath Opening (Inches)	Row of Joints
12	3
13-1/2 to 14	4
17	5

5.02 The sleeves of the right-hand row of joints should be about 1-1/2 inches from the right-hand side sheath opening. The loop in the conductors in the left-hand row should be about 3 inches from the left-hand side of the sheath opening. The arrangement of the joints in a splice having a 17-inch opening is shown below.



5.03 Two pairs of conductors should be prepared for punching in each row across the splice beginning at the right-hand side and then all these sleeves punched, working from left to right across the splice, with one handling of the presser.

5.04 Press the completed splices down into the splice to provide clearance for the next conductors to be spliced. After a group of about 50 conductors have been spliced, tie the punched sleeves down to prevent them from interfering with the splicing of other conductors.

5.05 If necessary, in order to facilitate forming the splice, the loops may be formed in the left-hand pairs.

5.06 After the wires have been spliced, the splice should be wrapped in the usual manner.