

BELL SYSTEM PRACTICES
Station Installation and Maintenance

SECTION C24.161
Issue 1, 9-1-31
Standard

SPLICING CABLE

1. GENERAL

1.01 This section covers methods for splicing cables of the types and sizes generally used in station wiring. The splicing of lead-covered cable as described in this section covers taped joints, and it is intended that these splices should be used only where trouble in the splice due to moisture will not develop, as determined by local instructions.

1.02 Where there is the possibility that moisture will affect the splices made in lead-covered cable, the splices should be made in accordance with standard instructions covering cable splicing for outside plant.

1.03 As an alternative method for splicing, it might be more desirable in some cases to install an H.S. cable terminal, or similar type terminal, as a means for joining the cables rather than make a splice as hereinafter outlined.

2. LOCATING

2.01 It is desirable to locate splices where they will be least conspicuous. Where adjacent cables are to be spliced, it usually will be advantageous to place splices so that they will not be opposite one another. Avoid placing splices at bends or turns.

3. METHOD

Marking Butts

3.01 The correct marking of butts is important and should be checked carefully before cables are stripped. Make allowances for any bends that may be required. Check the cables before stripping if there is any doubt as to their correct location. Ends of cable which have been left unfastened to facilitate the butting and stripping operations should be held or fastened temporarily in place while the location of the butt is being determined. The butt locations for lead-covered cable may be suitably marked by means of a hack-saw blade or knife. A pencil may be used to mark the butt locations for inside wiring cable.

Cutting Off Excess Cable

3.02 After the butt locations have been marked, cut off excess cable, about 15 inches from butt mark. A hack-saw may be used for cutting the lead-covered and larger inside wiring cables, and diagonal or side cutting pliers for the smaller inside wiring cables.

Stripping

3.03 **Braid-Covered (Inside Wiring) Cable:** Fig. 1 shows the method of using the cable stripper (R-62267 tool). Note that the hand supporting the cable is above the hand holding the tool. With the hands in this position, the possibility of injury is eliminated in case the stripper pulls out of the sheathing. This also prevents the loosening of the fastener nearest the butt. Start to strip the cable at a point approximately $\frac{3}{8}$ inch from the butt mark. Holding the tool flat or parallel to the cable when pulling it along tends to prevent the point from "digging into" or "pulling out" of the sheathing.

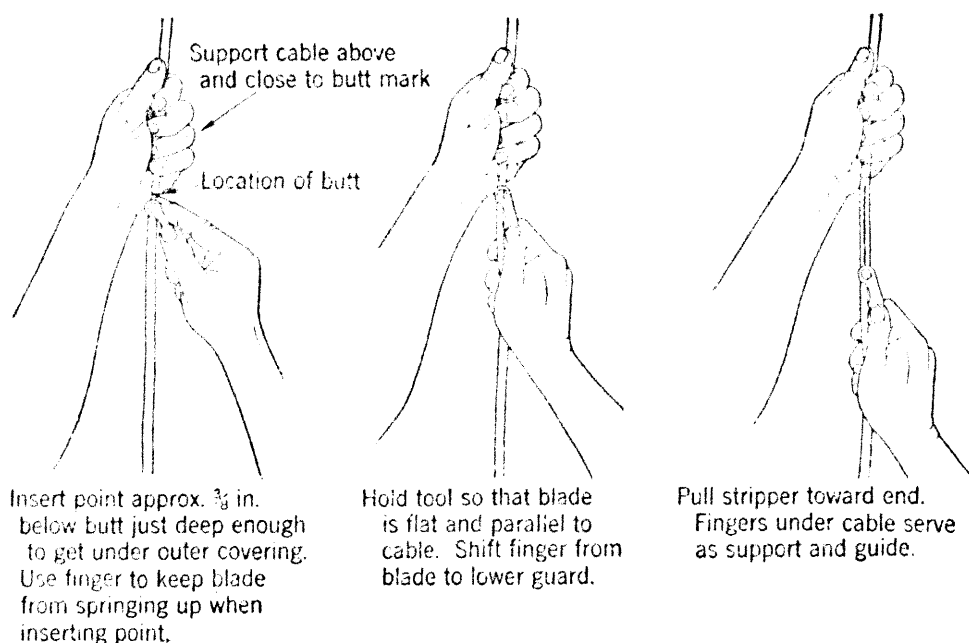


Fig. 1.

3.04 **Lead-Covered Cable:** Score a groove around the cable at the butt mark with a hack-saw blade or knife. Be careful not to cut through the sheath; cut it only deep enough to permit of its being broken by bending without flattening it. Then bend cable back and forth until the sheath parts. Remove the cable sheath by pulling on it, taking especial care that wires and their insulation are not damaged in this operation.

Butting

3.05 **Braid-Covered (Inside Wiring) Cable:** With diagonal cutting pliers or electrician's scissors, trim sheathing neatly to butt mark, bending wires as may be necessary to make room for pliers or scissors. Be careful not to damage wires. To prevent braid from unravelling wrap sheathing at butt with two layers of friction tape. In this case no twine around butt is necessary.

3.06 **Lead-Covered Cable:** Remove paper from under sheath and then flare the sheath at the butt by slightly bending the edge of the sheath away from the conductors, taking care to avoid damaging the insulation of wires. Long nose pliers may be used for this operation.

3.07 Place a band of No. 12 twine around the butt in the manner shown in Fig. 2.

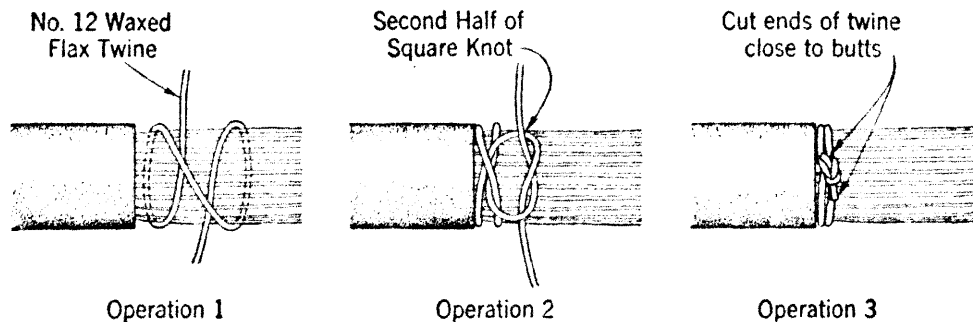


Fig. 2.

Fastening

3.08 To prevent cables from creeping together when wires are being joined, securely fasten ends of cables by tying them to a supporting surface. The distance at which to space cable butts is shown in Fig. 3.

Splicing

3.09 The splicing methods hereinafter outlined apply to both the lead-covered and braid-covered cables.

3.10 Place a 5/32 inch prepared cotton sleeve over each wire to be joined. Then splice like colored pairs together in order to retain the continuity of the color code at terminating points.

3.11 Mark the point at which insulation is to be broken by bringing wires together and giving them a sharp twist as shown in Fig. 3.

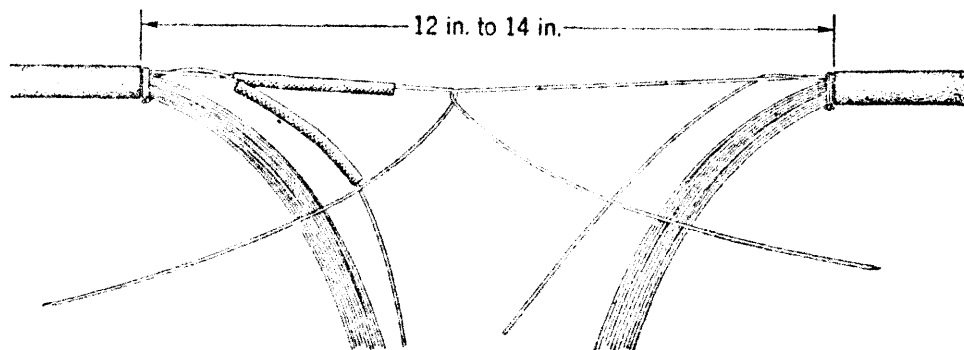


Fig. 3.

3.12 Remove insulation by crushing with long nose pliers at the point where it is to be broken. Pressure must be applied to the pliers only until a snap is heard or distinct give is felt in order to avoid damaging the wire. Pull insulation back over wire for a distance of about three inches. Twist wires together and cut off excess so that completed joint is 1-1/2 inches long. (If wires have an enamel coating, take care to thoroughly remove the enamel by grasping the wire between end of long nose plier jaws and scraping it with long smooth strokes before twisting wires together.) Cut end of wire clean to avoid puncturing cotton sleeves where splice is taped down. Solder about 1/2 inch of end of wire with rosin core solder to prevent corrosion of joints as shown in Fig. 4.

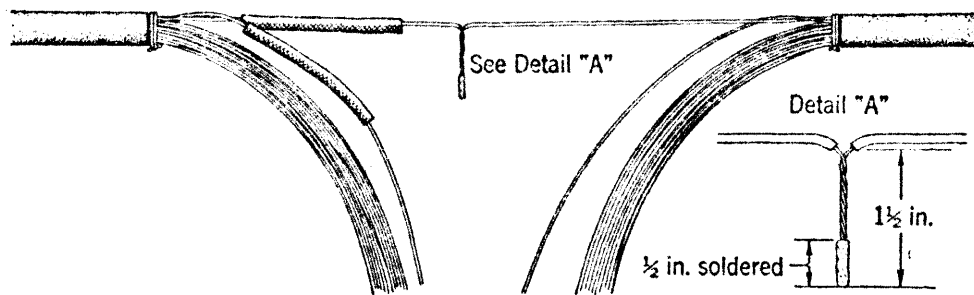


Fig. 4.

3.13 After joint is soldered, bend spliced end to wire and slip sleeve over joint, centering sleeve over splice.

3.14 Distribute joints so that there will be three rows of sleeves in the middle part of the completed splice. Do not allow the cotton sleeves of one row to overlap the sleeves of the next row. Build up the splice by working from the back to the front, making sure that the proper amount of slack is left in the outer layers to give the splice a neat compact lay-up when it is finished. When splice is completed it should be as shown in Fig. 5.

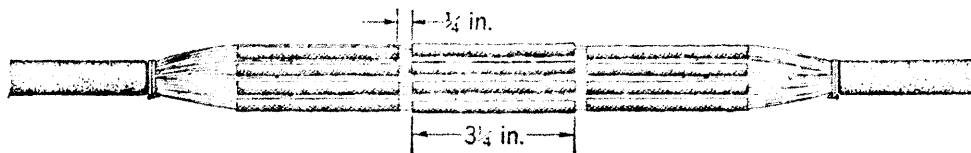


Fig. 5.

3.15 Tape completed splice with two layers of rubber tape 1-1/2 inches beyond ends of sheath and two layers of friction tape 2-1/2 inches beyond end of sheath. (If ivory inside wiring cable is spliced, use ivory friction tape.) To prevent damage through bending, support splice at its center and at ends of sheath as shown in Fig. 6.

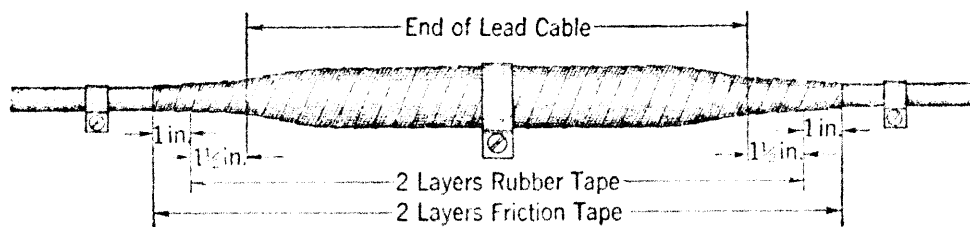


Fig. 6.