

CABLE SPLICING—GENERAL

GENERAL RULES FOR MAKING A SPLICE

1. GENERAL

1.01 This section covers the important factors that should be taken into account in splicing cables. General instructions for working on pulp-insulated cable conductors are included. Detailed instructions are given in other sections of the 632 Division of Bell System Practices.

1.02 This section is reissued to include the use of:

- 700-2A Connectors and 700-3A Connectors for joining aluminum or copper, pulp, paper or PIC paired cable conductors without stripping of insulation.
- B Modular Connector for joining pulp, paper, or plastic insulated 22 through 26 gauge paired copper cable conductors without stripping of insulation.
- Delete reference to UG SCOTCHLOK Connector.

1.03 For specific instructions for joining plastic-insulated conductors, refer to Section 632-410-200.

1.04 *Tools and Materials:* Before starting a splice, make sure that all required tools and materials are on hand.

1.05 *Cables Under Gas Pressure:* Maintaining gas pressure on cables being worked on shall be handled in accordance with local practices.

1.06 *Sheath Continuity:* A temporary bond shall be placed across the splice to provide a path for sheath currents.

**Reprinted to comply with modified final judgment.

2. SIZE AND TYPE OF CLOSURE AND TYPES OF SPLICES

2.01 The types of splices, joints, and splice closures are as follows:

Type of Splice

- (1) Straight
- (2) Bridge
- (3) Bridge—Tap (also called half-tap)

Type of Joint

- (1) B Wire Connector
- (2) Twisted-Soldered
- (3) 700-2A or 700-3A Connector
- (4) B Modular Connector

Type of Splice Closure

- (1) Splice Case
- (2) Ready Access
- (3) Wrapped Joint
- (4) Lead Sleeve
- (5) Taped

2.02 Refer to the 633 Division of Bell System Practices for information covering dimensions and other details of splice openings.

2.03 Select a suitable location for the splice opening and prepare the sheath for the type of closure to be used.

2.04 If a lead sleeve will be used for the splice closure, locate the splice so that a split sleeve

will not be required. Prepare the lead sleeve and slide it over one cable end before the wires are joined.

2.05 In multiple unit type cables, if necessary for easier splicing, rotate the core to bring the units in alignment across the splice.

2.06 If two cables enter the splice at the same end and a lead sleeve will be used, place a lead wedge to maintain proper separation of the cables.

3. PROTECTION OF THE SPLICE OPENING

3.01 Protect the splice against moisture while it is being made.

3.02 While working in a manhole, splicing pit, or trench, hang a tarpaulin or other approved protection behind the splice opening so that insulation on the conductors will not absorb moisture from the adjacent surface. If necessary, hang a tarpaulin or rubber blanket above the splice to prevent drippings from the street or manhole roof from falling into the splice or on the conductors.

3.03 While working on aerial cables during rainy weather, wrap a collar of friction tape around the cable on each side of the splice. These collars will prevent water from running along the cable sheath and into the splice.

4. CONDUCTOR JOINTS AND SLEEVES

4.01 Use the foldback method in joining conductors.

4.02 Determine whether the conductors are to be joined by means of twisted-soldered connections, B Wire Connectors, or Code 700-type Connectors, or B Modular Connector.

5. MARKING UNITS IN CABLE

5.01 Mark units permanently by tying linen tags around each 100-pair unit near the butt ends of the sheath opening. The tags shall be left in place to facilitate identification on subsequent entries.

5.02 The tags shall be clearly marked with the number of the unit.

6. METHODS OF SPLICING

6.01 In splicing conductors, one or more of the following methods may be used.

(a) **Random Splicing:** In random splicing, the conductors are joined according to the color code of the cable and count of the units. No attempt is made to identify pairs in the units.

(b) **Test Splicing:** In test splicing, it is necessary to establish the identity of each conductor that is to be spliced. In paired cable, the pair numbers are determined from terminations or from some point where the cable is boarded. In quadded cable, the conductors may be spliced according to the measured electrical characteristics, such as capacitance unbalance, as well as by identification from a termination.

(c) **Boarding:** Boarding is the term which indicates the operation of identifying conductors in advance of splicing and placing them in numbered holes in testboards made of linen or fiber. In working cables, one end of a short length of insulated wire is tied around the conductor and the other end is placed through the hole in the testboard and twisted. Boarding may be done at random, by identifying from a termination, or by selecting conductors according to color or number sequence in layers.

(d) **Cable Transfer or Throw:** A cable transfer or throw is the term which indicates the transfer of conductors from an existing count to a new count in the same cable or a new cable. Circuit transfers at terminations are often associated with cable transfers, and in many cases the circuit and the cable transfers must be made simultaneously.

(e) **Section Throw:** Section throw is the term which indicates the replacement of a length of cable between two points because of failure or for other reasons, and the associated transfer of all the conductors in the old section to the new section.

7. GENERAL RULES

7.01 All splices should be planned so that they will be suitably located for splicing operations and in proper position for final supporting.

- 7.02** Defective pairs should be identified and spliced in accordance with Section 632-020-200.
- 7.03** Cables should be supported and tied to prevent movement during the splicing operations.
- 7.04** Work prints are generally issued for most splicing operations. These should be studied carefully to determine the sequence of operations and the need for testing, boarding, etc.
- 7.05** Before opening a working cable, notify the test center responsible for the cable.
- 7.06** In cables containing working circuits, conduct all operations carefully to avoid interference with service. Never splice a working circuit to a defective cable pair.
- 7.07** Start the splice by joining conductors that are located toward the back of the splice and work toward the front. Avoid unnecessary interweaving and crossovers.
- 7.08** In joining paired conductors, splice tip-to-tip and ring-to-ring. Do not reverse pairs except under the following conditions:
- (a) At terminals where reversal of the stub cable pairs is necessary to maintain the correct position of tip and ring binding posts in the terminal.
 - (b) In splices in order to correct for existing reversals in a working pair which would otherwise require reversing a cross connection at an unattended office.
- 7.09** *Never* split pairs or quads. If necessary, identify the conductors from the opposite end of the cable to make certain that the conductors are correctly associated.
- 7.10** Conductors must remain in their correct color groups or units. Do not transpose conductors unless specified on the work prints.
- 7.11** Splice extra pairs to extra pairs except as required in splicing defective pairs. The defective pair in the section is cut off at both ends of the section and an extra pair is used in place of the defective pair. This will ensure, eg, that a 900-pair cable will have 900 good pairs from end to end.
- 7.12** Quadded conductors in toll or toll entrance cables which are to be left dead at a splice but which terminate at some point along the route shall be looped at the splice for testing purposes. One pair of the quad should be spliced to the other pair of the same quad connecting tip-to-tip and ring-to-ring.
- 7.13** Tie all unit tightly, and as pairs are removed retighten the ties on the units. This will prevent conductors from unwinding and becoming split.
- 7.14** When piecing-out any pairs, use the foldback method. This will ensure slack for working in the splice during re-entry.