

## CABLE TESTING—GENERAL

### SECTION REPLACEMENT—GENERAL RULES

#### 1. GENERAL

**1.01** This section outlines a method of replacing one or more sections of cable where the condition of pulp or paper insulated conductors permits identification through the use of either an audible or inaudible tone test set.

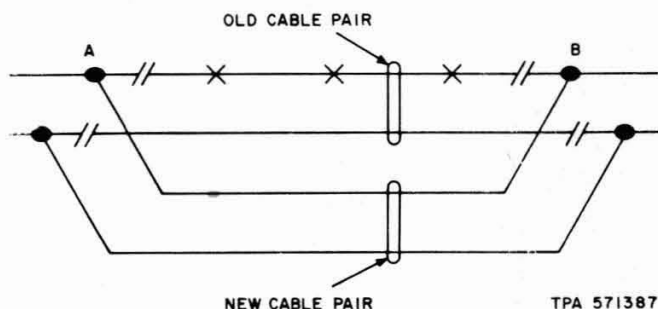
**1.02** This section is reissued to include an alternate method of boarding new cable pairs for identification.

**1.03** The method of identifying conductors and the procedures for making replacements are covered in Section 634-355-501.

**1.04** Where PIC cable is replaced with PIC cable, the tone test should be used to verify the identity of the special circuits in the cable. After the special circuits have been identified, the remainder of the conductors should be transferred, splicing color to color.

#### 2. IN-SERVICE REPLACEMENT

**2.01** In making a section replacement, identify the conductors in the old and new cables, cut the old conductors, and splice them to the new conductors, as shown in Fig. 1. During the transfer, the old and new cable pairs shall be bridged together at each splice using B Cable Clips to maintain continuity of service.



**Fig. 1—Section Replacement—Large Cable**

**2.02** In no case should a defective conductor in new cable be spliced to a working conductor.

**2.03** If the old cable has segregated conductor groups for 4-wire circuits, 2-wire circuits, K carrier circuits, etc, similar groups should be established in the new cable.

**2.04** In pressurized cable systems, gas pressure protection should be maintained during the replacement operation (Section 637-305-303).

**2.05** If the new cable consists of one or more lengths of cable, the intermediate splices should be completed and a test then made for defective conductors.

**2.06** In large cables, splicing at the two ends of the section is generally done simultaneously.

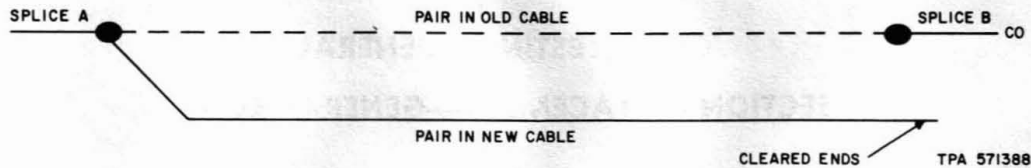
**2.07** In small cables, the work may be arranged to make only one splice at a time. Proceed as follows:

- (1) From the central office, identify all special circuits in the old cable at Splices A and B (see Fig. 2) following local instructions for identifying them.
- (2) Clear the pairs at the end of the new cable section nearest the central office (splice B in Fig. 2).
- (3) Test the new cable for defects.
- (4) Bridge the new cable into the old cable at the splice away from the central office (splice A in Fig. 2). The bridging may be done at random, except in PIC cable where the bridging shall be done by splicing color to color. After splicing is completed, protect the temporary opening with an approved closure.
- (5) At the splice location toward the central office (splice B in Fig. 3), place tone on a pair in the old cable and identify the associated

#### NOTICE

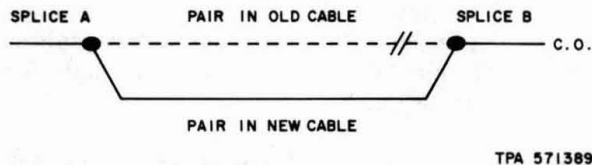
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**Fig. 2—New Cable Bridged to Old**

pair in the new cable. Place a temporary bridge between the old and new pairs. Cut the old pair and splice through one wire at a time, to avoid shorting the pair. Make sure that the ends of the pair in the section being replaced are clear and then remove the temporary bridge.

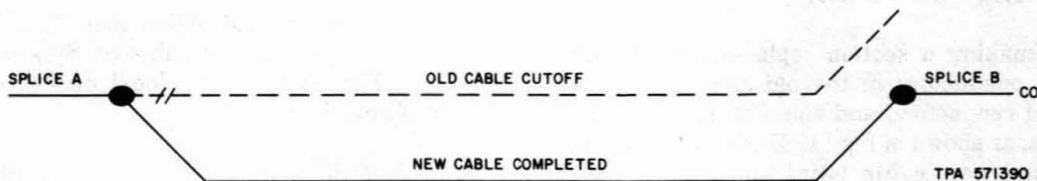


**Fig. 3—Old Cable Cut at Splice B**

(6) In a similar manner, identify and splice the remaining pairs.

(7) After the splicing has been completed and the closure made at the location toward the central office (splice B in Fig. 4), return to the splice away from the central office (splice A in Fig. 4). There remove the temporary splice closure and cut out the bridges wire by wire. Then place a permanent closure over the cable.

(8) Remove the old cable.



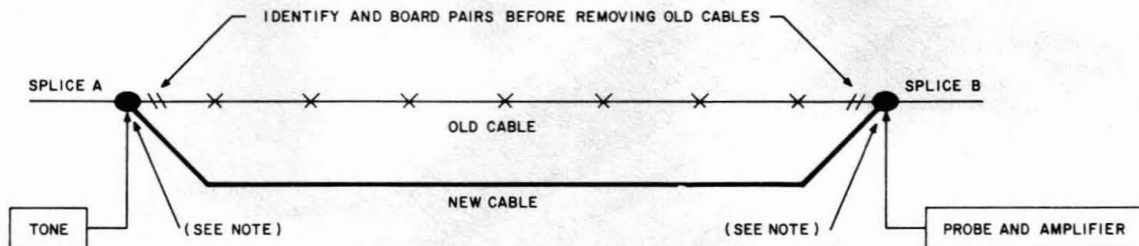
**Fig. 4—New Cable Working—Old Cable Cut Off**

### 3. REPLACEMENT ON AN OUT-OF-SERVICE BASIS

**3.01** In making an out-of-service replacement, the old cable is cut and removed before the new cable is placed. As service to customers is temporarily interrupted, this method should be used only when it is impractical to transfer by the method covered in Part 2. The out-of-service replacement should be made at a time when it will cause the least inconvenience to customers. (Late at night or on a Sunday.) If necessary to supply

essential services, temporarily bridge the gap with a small cable placed on the ground, with drop wires, or by other approved means.

**3.02** Before replacing the old cable in making an out-of-service transfer, identify and board all of the pairs at each end of the cable with short lengths of wire tied to testboards. The pairs can be boarded rapidly by sending tone from splice A while an amplifier is used at splice B, as shown in Fig. 5. An alternate method of boarding is described in Part 4.



**NOTE:**

BOARD ALL THE NEW CABLE PAIRS AT SPLICE A AND THEN IDENTIFY THEM AT SPLICE B BEFORE STARTING TRANSFER WORK.

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**Fig. 5—Out-of-Service Section Replacement**

### 4. ♦ALTERNATE METHOD OF BOARDING FOR PAIR IDENTIFICATION♦

**4.01** ♦An alternate method of boarding the new pulp conductors for identification is by utilizing a 66M1-50 Connecting Block mounted on a 1/2-inch plywood mounting board approximately 4-inch by 12-inch (Fig. 6). Number the block from 1 to 100. The procedure for this method is as follows:

- (1) At the central office end of the new cable, terminate 100 pairs in the outside clip rows of the connecting block. Using a 714-B tool, place both tip and ring conductors in the same clip.

**Note:** Since this is a temporary connection, 26-gauge conductors may be terminated. The insulation need not be stripped from any conductors, regardless of gauge or insulation.

- (2) Place tone on a pair at the field end of the new cable.
- (3) At the central office end, run a test pick over the inside rows of clips on the connecting block until tone is heard.
- (4) Relay the pair number to the field end of the cable, where the pair is placed in the correspondingly numbered position of a tag board.
- (5) After 100 pairs are identified and tagged, the transfer operation may begin.♦

**Note:** ♦During splicing, trim off conductor ends to remove nicks made by connecting block clips.♦

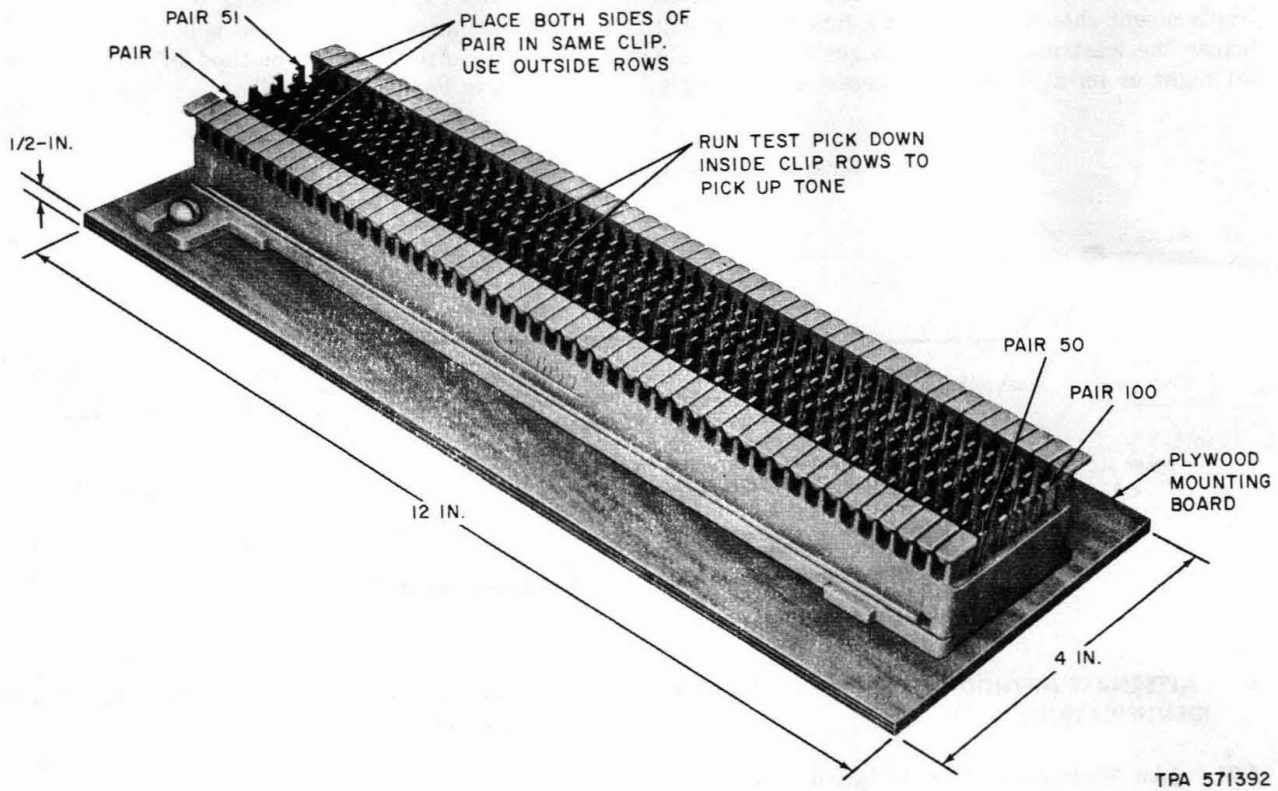


Fig. 6—66M1-50 Connecting Block for Pair Identification