

BELL SYSTEM PRACTICES
Outside Plant Construction
and Maintenance

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CABLE TESTING — GENERAL
IDENTIFYING CONDUCTORS—76 TEST SET

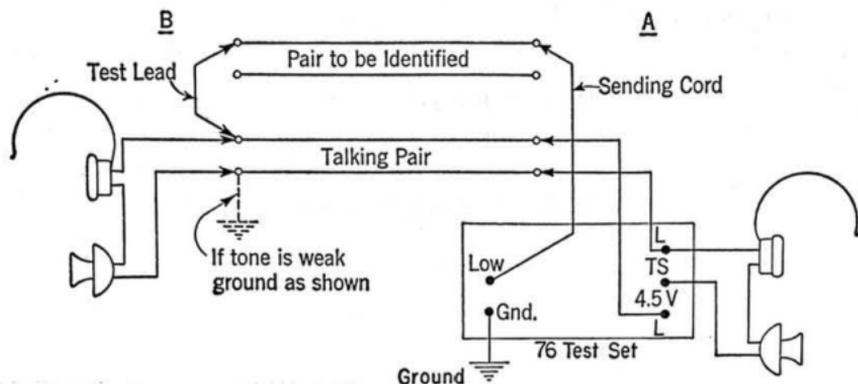
Contents	Page
1. General	1
2. Nonworking Cables	2
3. Working Cable	2
4. Transposed Conductors	8
5. Interconnected Conductors	8

1. GENERAL

- 1.01 This section outlines the method of identifying conductors using the 76-type test set.
- 1.02 The section has been revised to cover an alternate method of identifying conductors in a working cable when noise is encountered. ↗ ↘

2. NONWORKING CABLES

2.01 In nonworking cables, make the connections at the sending end A and at the identifying end B, as illustrated below. Then proceed as outlined.



- (1) At A, select a pair to be identified and connect the sending cord to one wire of the pair. The right-hand key should be in the TLK (talking) position. Operate the left-hand key to the SIG (signal) position. Identifying current (tone) will be heard in the talking circuit indicating to end B that a pair is ready to be identified. Then operate the key to the SND (sending) position.
- (2) At B, run over the conductors until the pair with tone is located.
- (3) After the first pair has been located, proceed with the identification of other pairs in a similar manner.

2.02 If the cable is very short, the tone may be too weak to identify the conductors. In this event, the tone can be increased by placing ground on the talking pair at end B, on the side opposite the one to which the test lead is connected, as indicated by the dotted lines in the sketch in Paragraph 2.01.

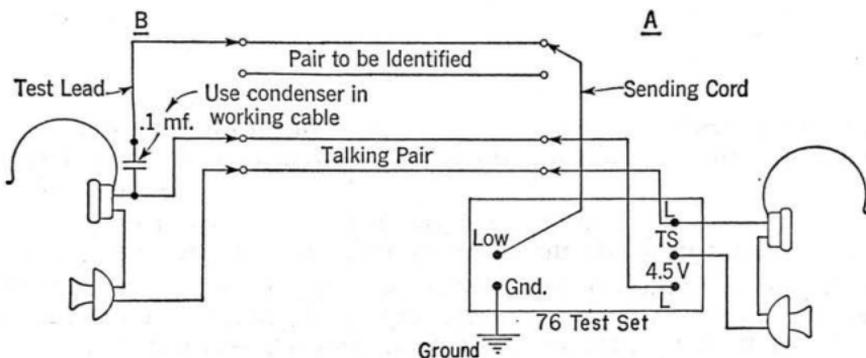
3. WORKING CABLE

3.01 In working cables, the method employed will depend on the type of circuits working in the cable.

3.02 **In a Cable or Group of Conductors in a Cable Containing No Special Circuits**, tone may be sent from the splice and identified at a termination. The method described below can be used under the following conditions:

- (a) In a working cable that does not contain special circuits.
- (b) In a group (or complement) that does not contain special circuits, provided that the group (or complement) can be identified and segregated.

3.03 Make the connections at the sending end A and at the identifying end B, as illustrated below. Then proceed as outlined.

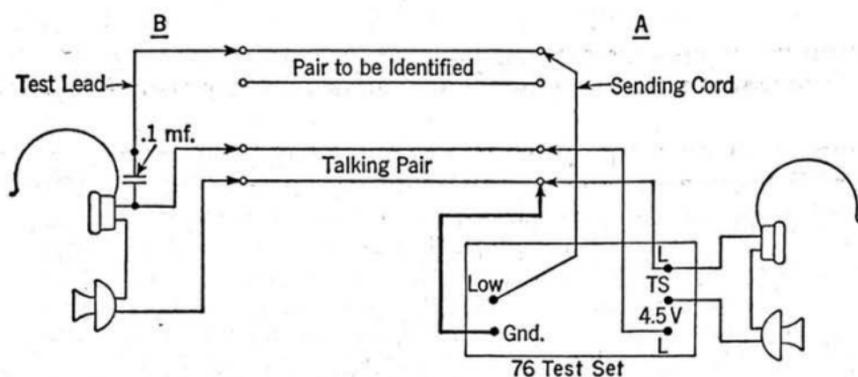


- (1) At A, select a pair to be identified. With the left-hand key in the LIS (listening) position, connect the sending cord to one wire of the pair and listen to determine if the pair is busy. If the pair is idle or spare, operate the left-hand key to the SIG position and then to the SND position. In the SIG position, tone will be heard in the talking circuit indicating that the pair is ready to be identified.
- (2) At B, run over the conductors under test using the lead from the 1/10 mf capacitor, until the pair with tone is located.
- (3) After the first pair has been identified, proceed with the identification of other pairs in a similar manner.

3.04 If the conductors are being identified at a main frame by running a test point along the springs, do not make contact between adjacent springs as this will cross two working circuits and may result in service interruption.

3.05 In identifying conductors in a cable containing working pairs, care should be exercised at ends A and B to avoid contact with any wire in a group or complement that may contain special circuits.

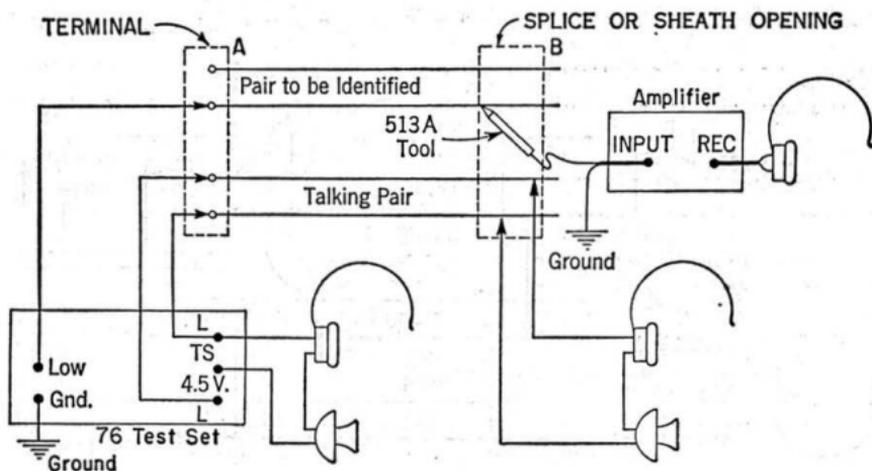
3.06 If the cable is short, the tone heard may be too weak, making identification difficult. In this event, the tone can be increased by connecting the GND post to one side of the talking circuit instead of to ground at A. As indicated below, the connection should be made to the side opposite the one to which the test lead is connected at B.



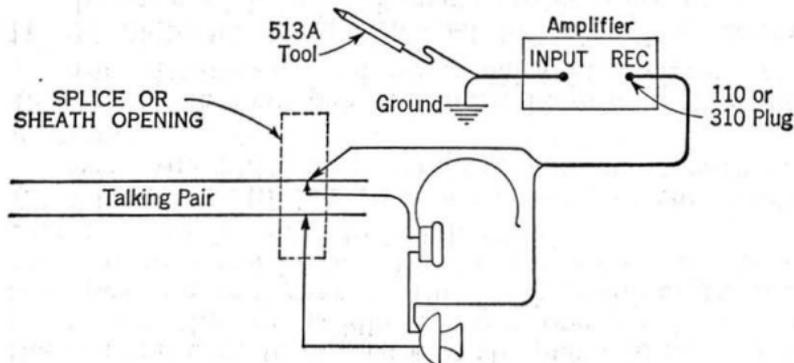
3.07 **In a Cable or Group of Conductors in a Cable Contain-
ing Special Circuit**, tone may be sent from a termination where the identity of the circuits is known. The method described below may be used under the following conditions:

- (a) After a listening test is made on spare conductors and conductors used for subscriber circuits or interoffice trunks.
- (b) After authorization has been obtained to turn down or open conductors that are assigned to special circuits.

3.08 At the identifying end, the conductors must be identified by means of an amplifier and a probe. The connections at the sending end A and at the identifying point B are made as illustrated below.



3.09 The above diagram shows the amplifier and the talking set at the identifying end operated with separate receivers. For convenience, the talking set and the amplifier can be connected, as shown below, which requires the use of only one receiver.



3.10 The conductors should be identified as follows:

(1) At the sending end, select a conductor to be identified. With the left-hand key in the LIS position, connect the sending cord to one wire of the pair and make a listening test. If the pair is idle or spare, operate the key to the SIG position and then to the SND position. In the SIG position, tone will be heard in the talking circuit, indicating that the pair is ready to be identified.

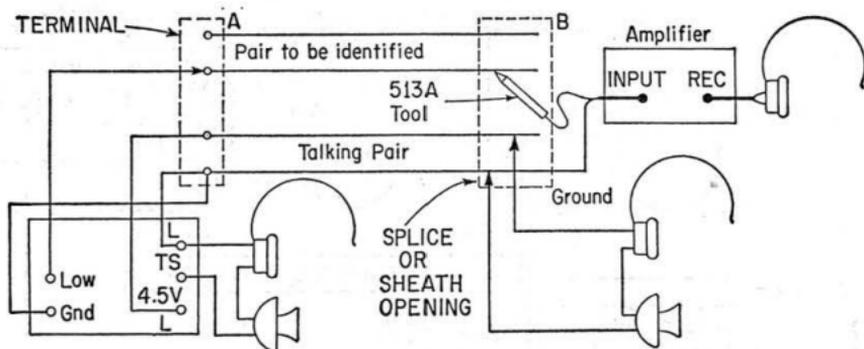
(2) At the identifying end, probe through the conductors with the 513A tool until the conductor with tone is located.

(3) After the first pair has been identified, proceed with the identification of other pairs in a similar manner.

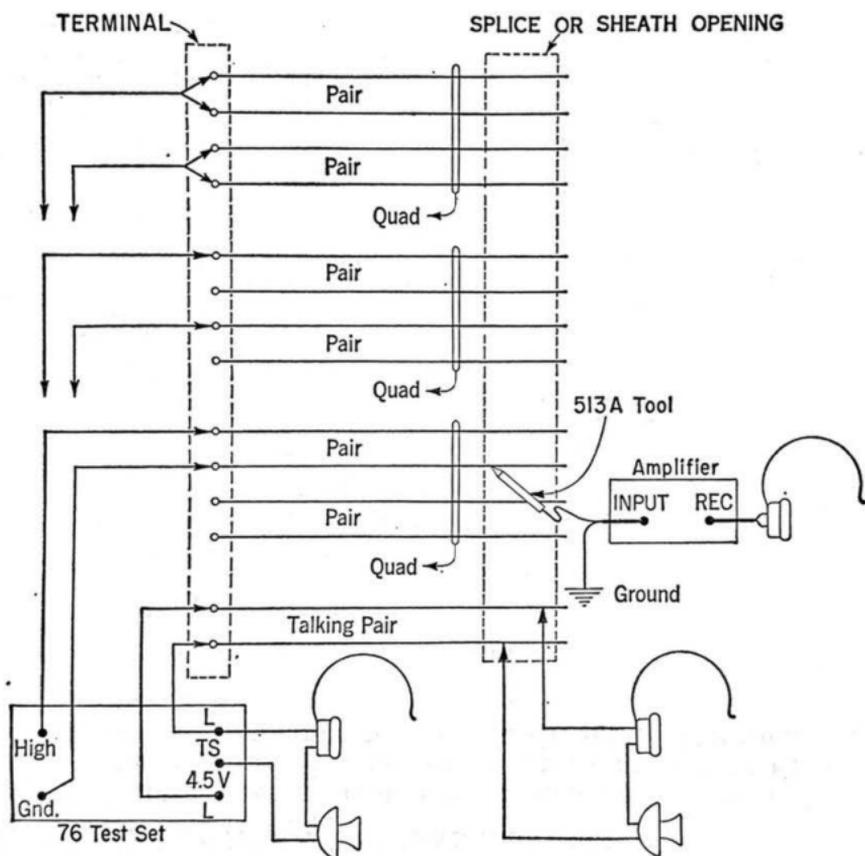
3.11 If difficulty is experienced in identifying conductors⁷ because of induced 60-cycle power noise on the wires, the interference may be reduced by making one of the following changes in the connections:

(a) Disconnect the ground lead of the amplifier from ground and allow it to hang free, or

(b) Disconnect the ground lead of the amplifier from ground and connect it and the ground lead of the 76 set to the same side of the talking pair, as illustrated below.



3.12 In long quadded cables, it is advisable to use the non-grounded (metallic) tone from the HIGH and GND posts. The quad on which tone is sent must be nonworking, either a spare or one from which the circuits have been rerouted or turned down. The listening (LIS) position does not operate when using the HIGH post; the signaling position (SIG) merely connects low tone to the talking circuit. Nongrounded tone can be sent in one of the following ways.



3.13 When grounded tone is sent in a long cable, particularly if the cable is loaded, or when the tone is sent nongrounded, as in a long quadded cable, it may be impossible to distinguish the individual wires on which tone is sent. If the individual wires of the pair or quad must be identified, it can be done by one of the methods given in the section on **Identifying Long Conductors**.

4. TRANSPOSED CONDUCTORS

4.01 Care must be exercised in identifying conductors that are apparently transposed with a pair in a different complement. If the identification is being done in a complement that does not contain special circuits and it is believed that a conductor is transposed with one in a complement containing special circuits, the identification in the suspected complement must be made as outlined in Paragraphs 3.07 to 3.09.

5. INTERCONNECTED CONDUCTORS

5.01 Interconnected conductors, such as battery feeders or those joined through signal lamps, as well as PBX lines that have low resistance to ground, should be identified with a 79-type test set.