BELL SYSTEM PRACTICES
Outside Plant Construction and Maintenance

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CABLE TESTING — GENERAL
PAIR IDENTIFICATION USING THE 108A AND 109A TEST SETS

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1. GENERAL

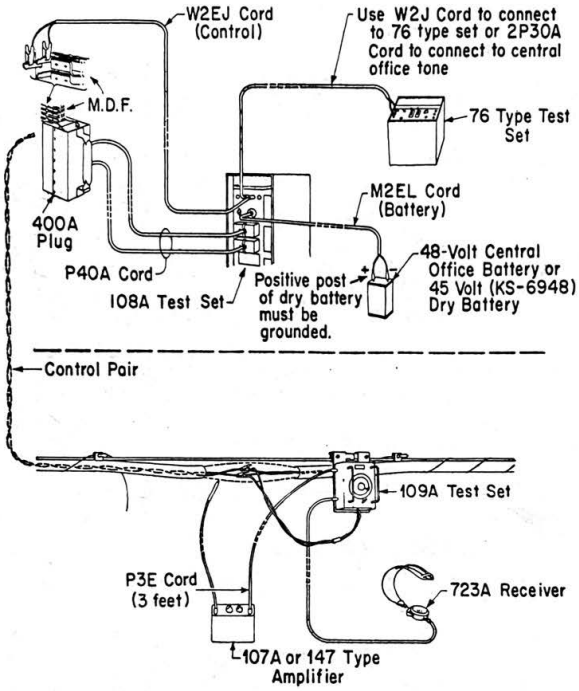
1.01 This section replaces Issue 1. It outlines the method of using the 108A and 109A Test Sets to identify working or nonworking cable pairs terminated on C50, C52 or 1177 Protector Mountings.

1.02 The section has been revised to cover the use of the 2P30A Cord in connecting central office tone to the 108A Test Set.

1.03 To ensure satisfactory contact when the plugs of the P40A and P20F Cords are placed over the protector springs, the protector springs must be in a straight vertical line, the springs must be equally spaced with respect to adjacent springs and the tip and ring springs must be in the same horizontal plane. The latter requirement also applies when placing the plugs of the P20G Cord.

2. ARRANGEMENT OF TEST SETS

2.01 The general arrangement of the 108A Test Set in the central office and the 109A Test Set at the splice is illustrated in the following sketch.



3. CONNECTING 108A TEST SET

3.01 The 108A set should be placed at the main or combined distributing frame near the vertical or verticals on which the pairs to be identified are terminated. Attach the guard supplied with the set to the frame to minimize accidental moving of the 108A set. Then proceed as follows:

(1) Unlock the switch shaft.

(2) Connect the tone jack either to a 76-type set (or the equivalent) using the W2J Cord or the central office tone using the 2P30A Cord.

(3) Connect the control (CONT) jack to the control pair using the W2EJ Cord. The control pair must be a spare pair that appears in the cable at the splice, but not necessarily one of the pairs to be identified.

(4) Connect the battery (BAT) jack to 48-volt central office battery on the horizontal side of the distributing frame or to a KS-6948 Dry Battery (45 volts) using the M2EL Cord. When a dry battery is used, the positive terminal of the battery must be grounded. (The 108A set generally will not respond to the battery available on the vertical side of the distributing frame.)

(5) The pairs to be identified and the 108A set are interconnected using the P40A, P20F, and P20G Cords. The P40A Cord contacts 20 consecutive pairs. Five of these cords are provided. The 20F Cord contacts 10 consecutive pairs and the P20G Cord 10 pairs individually. One each of these cords is provided and can be used in conjunction with the P40A Cords to connect 100 pairs to the 108A set. The pairs may be in one or more verticals. By means of the P20G Cord, pairs can be conveniently omitted from connection to the 108A set where interference with special circuits must be avoided.

(6) Place the 398A (single pair), 399A (10 pair) and 400A (20 pair) Plugs over the protector springs of the pairs to be identified with the cords at the right-hand side. **In placing the plugs, especially on 1177 protectors, make sure that the protector blocks and springs are in alignment, as covered in Paragraph 1.03. Press the plug gently forward and at the same time work the plug up and down to facilitate engagement.** Care should be exercised to ensure that the cords are properly connected. The last two digits of the pair numbers stamped on the frame must be connected to the correspondingly numbered terminations on the 108A set, using the P20G Cord; connect the 398A Plugs to the pairs whose last digit corresponds to the number on the plug. Connect the other end of the cord to the KS-8585, List 47 Plug in the 108A set whose number corresponds to the pair contacted by the plug. If a pair is not to be identified (because it forms a circuit which must not be disturbed), do not connect a 398A Plug to that pair. In placing the P20F Cord, connect the 399A Plug to the main frame so that the last two digits of the first pair contacted correspond to the first number on the KS-8585, List 47 Plug in the 108A set. In placing the P40A Cords, connect the 400A Plugs to the protectors so that the last two digits of the first pair contacted correspond to the first number on the KS-8585, List 47 Plugs in the 108A set. Then connect the other end of the cord

marked "A" to the KS-8585, List 47 Plug and the end marked "B," to the next succeeding KS-8585, List 47 Plug.

(7) Turn the power switch to the "ON" position and observe whether the standby lamp (STN-BY) is burning.

(8) Turn on tone by operating the SIG-LIS-SND key to the SND position, if 76 set is used.

(9) Check to determine whether tone is present on the control pair by temporarily connecting a 1011-type handset or a receiver across the control pair at the protector springs.

(10) Connect a 1011-type handset to the "TALK" jack or across the control pair. The cord of a handset to be connected to the "TALK" jack must be equipped with a 310 Plug. Place the "TALK-MON" switch of the 1011-type handset in the "TALK" position. The operate (OPR) lamp should light. Choose any nonworking pair in the cable count to be identified and dial its number. Place tone between the wires of this pair by dialing the digit one (1). Connect another 1011-type handset across this pair at the protector springs to determine whether tone is present. If a second 1011-type handset is not available, a 147- or 107-type amplifier, a 723A receiver and a 513A Tool (capacitance probe) may be used to make the test. **At the conclusion of this test, return the handset switch to the "MON" position and remove the 1011 set.**

(11) The 108A set contains an alarm that is under the control of the splicer. Sounding of the alarm indicates that the splicer wishes to talk to the central office attendant. To talk to the splicer, connect a 1011-type handset to the "TALK" jack or across the control pair. Place the "TALK-MON" switch in the "TALK" position and answer the splicer. **At the conclusion of the conversation, return the handset switch to the "MON" position and remove the handset.**

(12) To contact the splicer, wait until the operate (OPR) lamp is burning indicating that the splicer is using the equipment. Connect a 1011-type handset to the "TALK" jack or across the control pair. Place the "TALK-MON" switch in the "TALK" position and talk to the splicer. Allow a few minutes for the splicer to answer for, in order to talk, it may be necessary for the splicer to connect a talking set to the 109A set. **At the conclusion of the conversation return the handset switch to the "MON" position and remove the set.** At the conclusion of the test, disconnect tone, turn the power switch of the 108A set to OFF, disconnect all patch and test cords, remove the guard, lock the shaft

of the selector switch and replace the cover on the 108A Test Set.

4. CONNECTING 109A TEST SET

4.01 At the splice attach the 109A set to the strand or cable where it will be convenient to operate the dial and switch. Connect the ground terminal to the cable sheath.

4.02 Using an amplifier and probe, identify the control pair in the cable. After it has been located, connect the pair to the 109A set using the cords of the set.

4.03 Connect a receiver to the jack in the 109A set designated "REC." Connect the output jack of the amplifier to the "AMPL" jack of the 109A set, using the P3E Cord. Turn the switch of the 109A set to the "DIAL" position and the apparatus is ready for dialing the number of the pairs to be identified.

5. IDENTIFYING CABLE PAIRS

5.01 After the 108A and 109A sets have been set up, proceed as follows:

(1) Dial the last two digits of the first pair to be identified. (The last two digits of the pairs to be identified should correspond to the pair numbers on the faceplate of the 108A set.) This will bridge the 108A set to this pair.

(2) Listen to determine whether the pair is in use. If busy, release this pair and select another.

(3) If the pair is not in use, dial one (1) digit. This will place tone across the pair.

(4) Probe for the pair in the splice using the 513A Tool.

(5) After the pair has been identified, the tip side is determined by dialing the digit one (1). This will place tone between the tip side of the pair and ground. The ring side can next be identified by dialing the digit one (1) again. This will place tone between the ring side and ground. Generally the tone heard on the ring side of the pair will be considerably louder than that heard on the tip side.

(6) If there is any question as to the identity of the sides, a check test should be made. Dial one (1) digit to remove tone from the pair. Then dial one (1) digit again and this will place tone on the tip side. Dialing one (1) again will place tone on the ring side.

(7) After the sides have been identified, turn the switch to the "RELEASE" position. This will place the 108A set in position for dialing up the next pair for identification.

(8) Splice the identified pair to the stub in the terminal or place it in a testboard, as required.

(9) Identify other pairs by following the above procedure.

6. SIGNALING

6.01 The splicer can signal the central office attendant by depressing the "SIG" key on the right-hand side of the 109A set. This will sound an alarm in the 108A set.

6.02 The central office attendant can talk to the splicer as described in subparagraphs (11) and (12) of Paragraph 3.01. The splicer's talking set must be connected to the terminals on the 109A set designated "TALK SET."