139A TEST SET
(LINE TONE EMITTER)

1. GENERAL

1.01 This section covers the description, operation, and maintenance of the 139A Test Set.

1.02 This section is reissued to remove the ground terminal from the 139A Test Set.

1.03 The 139A Test Set is a portable transistorized tone source for testing and trouble shooting individual conductors or pairs in cables, D-inside wire, drop wire, etc.

1.04 Identification of the wire(s) is made by the use of an AT-8629 test probe and 1013A, or equivalent, hand test set to identify the alternating tone generated by the 139A Test Set.

2. DESCRIPTION

2.01 The 139A Test Set (Fig. 1 and 2) is 2-1/4 inches by 5-1/2 inches by 1 inch in size and weighs approximately one pound. It consists primarily of a talk-tone-off 3-position slide switch, ringing detector lamp, printed wiring board, two KS-14368, or equivalent, batteries, two test leads with clips, and a lanyard for hanging or carrying.

2.02 Early versions of the 139A Test Set had a ground terminal located on the case near the test leads.

2.03 This test set generates a distinctive alternating 2-frequency (550- and 1100-Hz) tone. This tone can be distinguished even in the presence of a large amount of noise.

2.04 This test set may be used for:

- Pair Identification (Fig. 3)
- Short Detection (Fig. 4)
- Line Verification (Fig. 5)
- Talk Battery (Fig. 6)
- Open Wire Detection (Fig. 7)
- Tracing Station Wire (Fig. 8)
- Grounded Conductor Test (Fig. 9)
- Cross Test (Fig. 10)
- Split Pair Detection (Fig. 11)
- Continuity Test (Fig. 12)
- Buried Service Wire Identification (Fig. 13)

3. OPERATION

Where Long Line equipment is involved, tone should be applied at the vertical side of the main distributing frame.

3.01 To verify that the 139A Test Set is operating properly, set switch to tone position, connect hand test set across the two red leads and listen for alternating tone.

3.02 To perform the desired test, refer to appropriate connection figure as indicated in 2.04 and connect the test set, hand test set, and test probe as required.

3.03 In those tests requiring the use of the test probe, refer to Section 105-241-100.

4. MAINTENANCE

4.01 Maintenance of the 139A Test Set is limited to the replacement of the batteries. When a battery deteriorates the tone will change noticeably. Minimum battery voltage required for proper operation is 2 volts.

4.02 To replace batteries, loosen captive screw located in center of front cover and remove cover. Remove batteries by lifting from retaining clips.

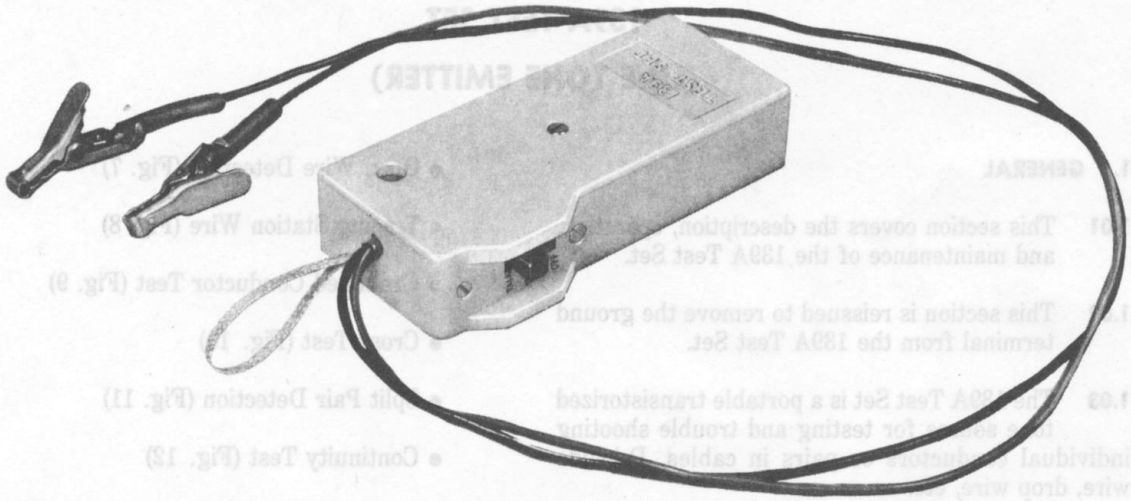


Fig. 1—139A Test Set

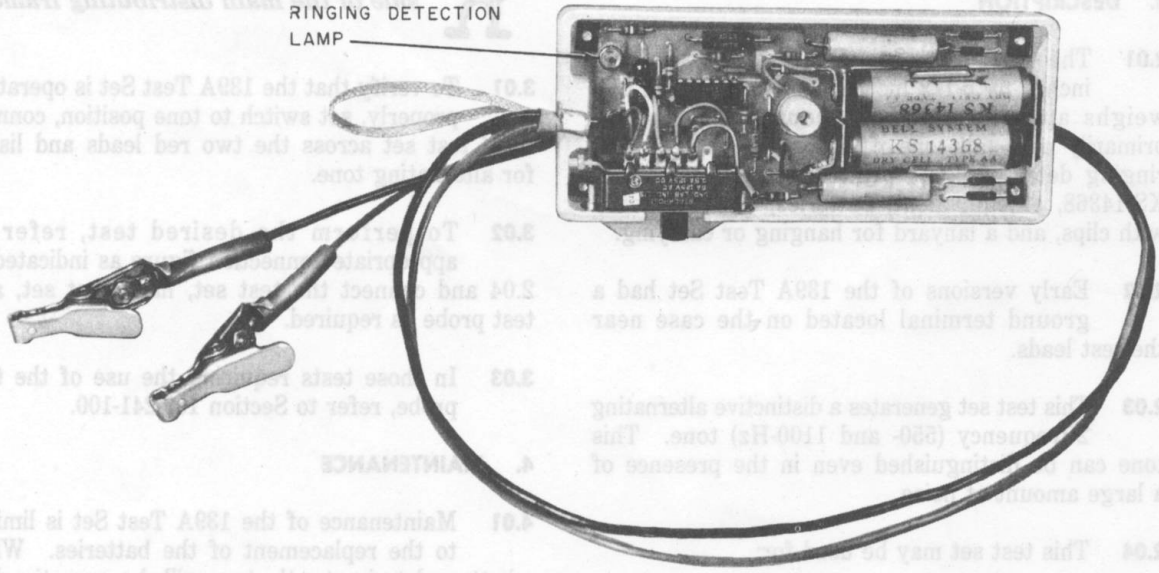
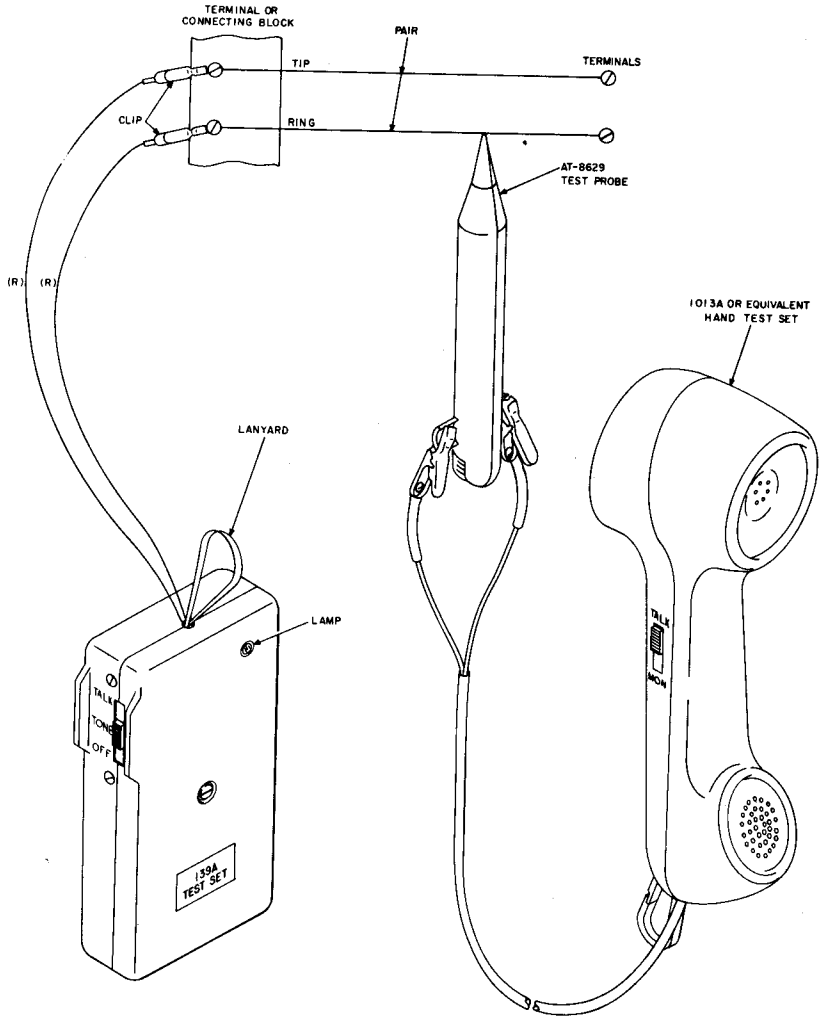


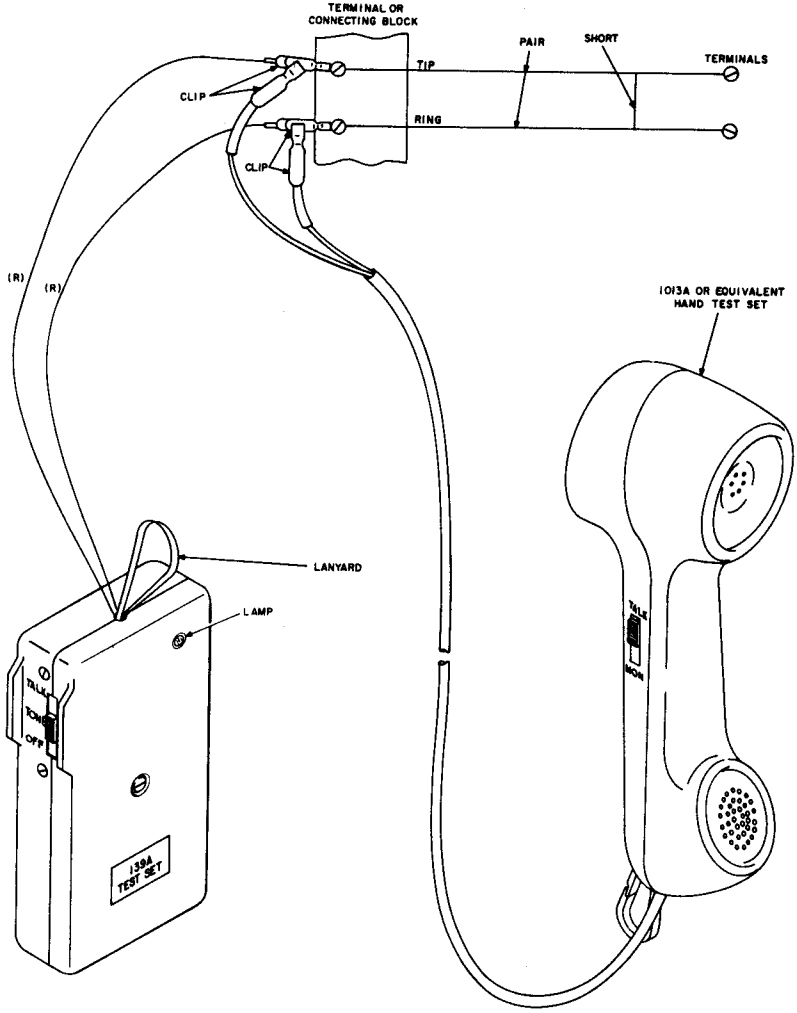
Fig. 2—139A Test Set (Cover Removed)



STEPS

1. CONNECT 139A TEST SET, TEST PROBE, AND HAND TEST SET AS SHOWN ABOVE.
2. PLACE 139A TEST SET SWITCH IN TONE POSITION AND HAND TEST SET SWITCH IN TALK POSITION.
3. USING TEST PROBE, LISTEN FOR ALTERNATING TONE IN HAND TEST SET RECEIVER.

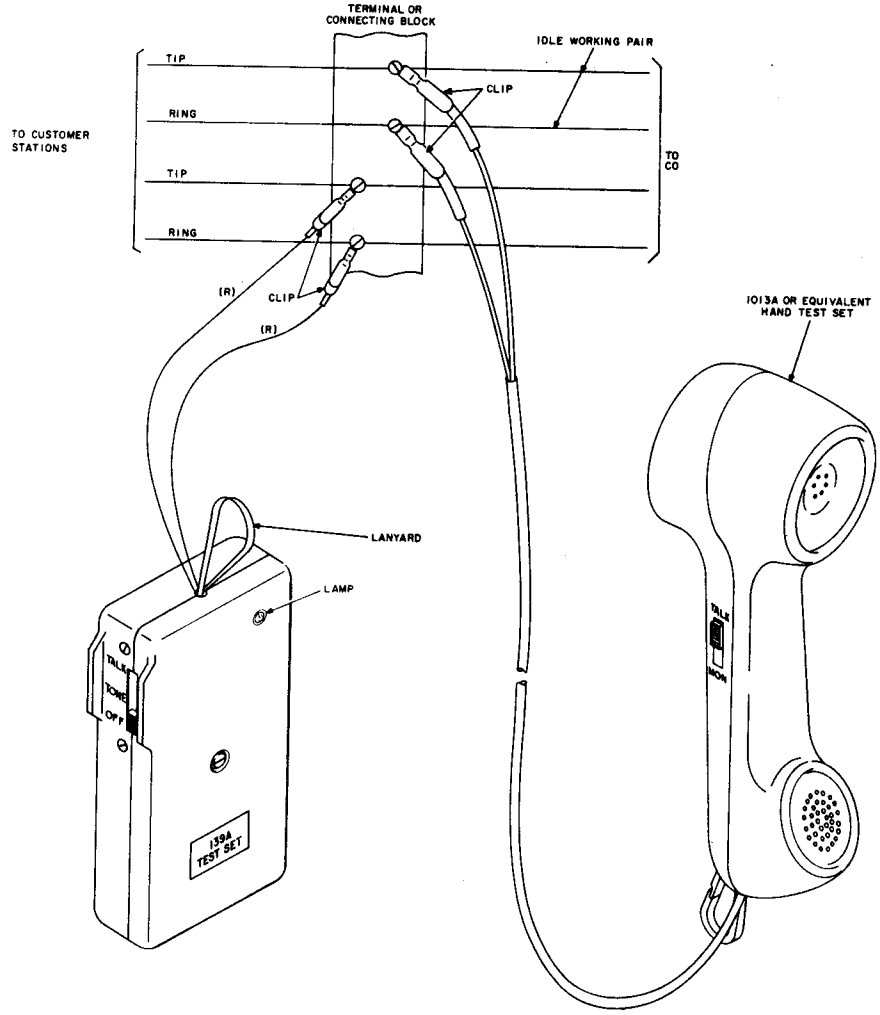
Fig. 3—Pair Identification



STEPS

1. CONNECT HAND TEST SET TO RED LEADS OF 139A TEST SET.
2. PLACE 139A TEST SET SWITCH IN TONE POSITION AND HAND TEST SET SWITCH IN TALK POSITION.
3. LISTEN FOR ALTERNATING TONES.
4. CONNECT 139A TEST SET CLIPS TO PAIR AS SHOWN ABOVE.
5. ABSENCE OR REDUCTION OF TONE IN HAND TEST SET RECEIVER INDICATES A SHORT.

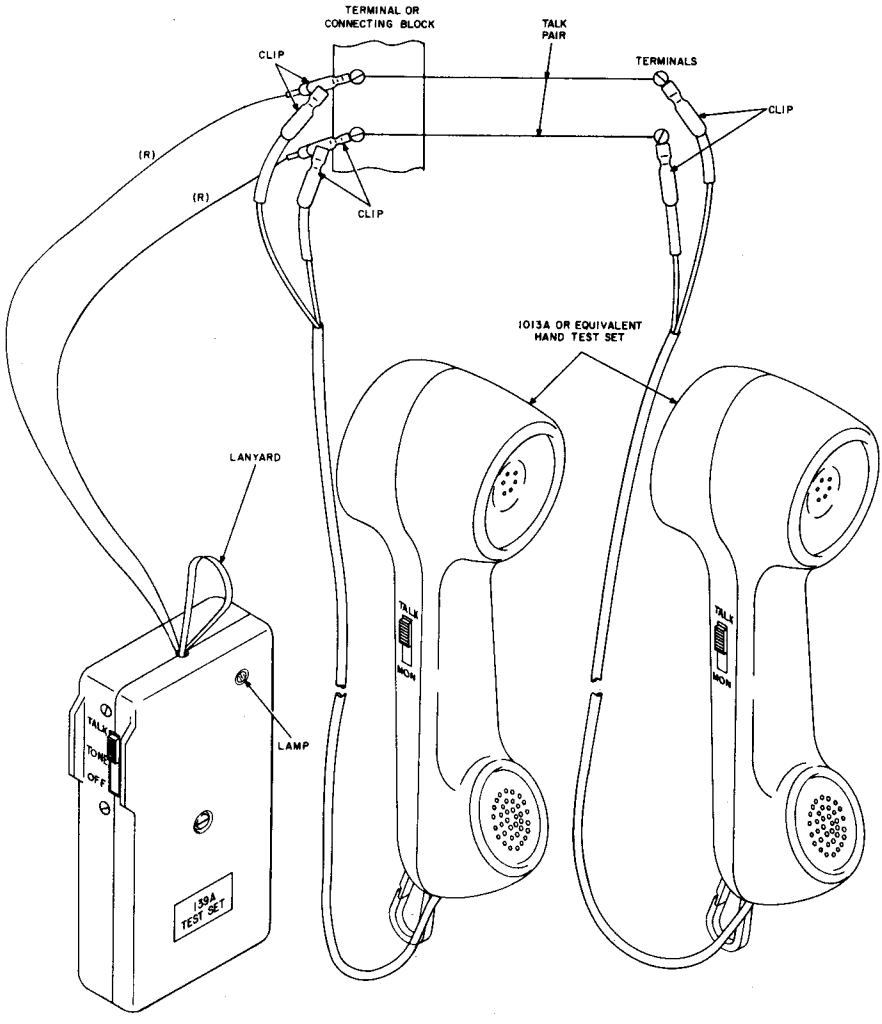
Fig. 4—Short Detection



STEPS

1. CONNECT 139A TEST SET AS SHOWN ABOVE.
2. PLACE 139A TEST SET SWITCH IN OFF POSITION.
3. CONNECT HAND TEST SET TO IDLE PAIR AND PLACE SWITCH TO TALK POSITION.
4. DIAL TONE SHOULD BE HEARD IN HAND TEST SET RECEIVER.
5. DIAL THE TELEPHONE NUMBER ASSOCIATED WITH THE CUSTOMER'S PAIR WHICH HAS THE 139A TEST SET CONNECTED AS SHOWN ABOVE.
6. RINGING CURRENT WILL CAUSE THE LAMP IN THE 139A TEST SET TO FLASH AT THE RINGING RATE.

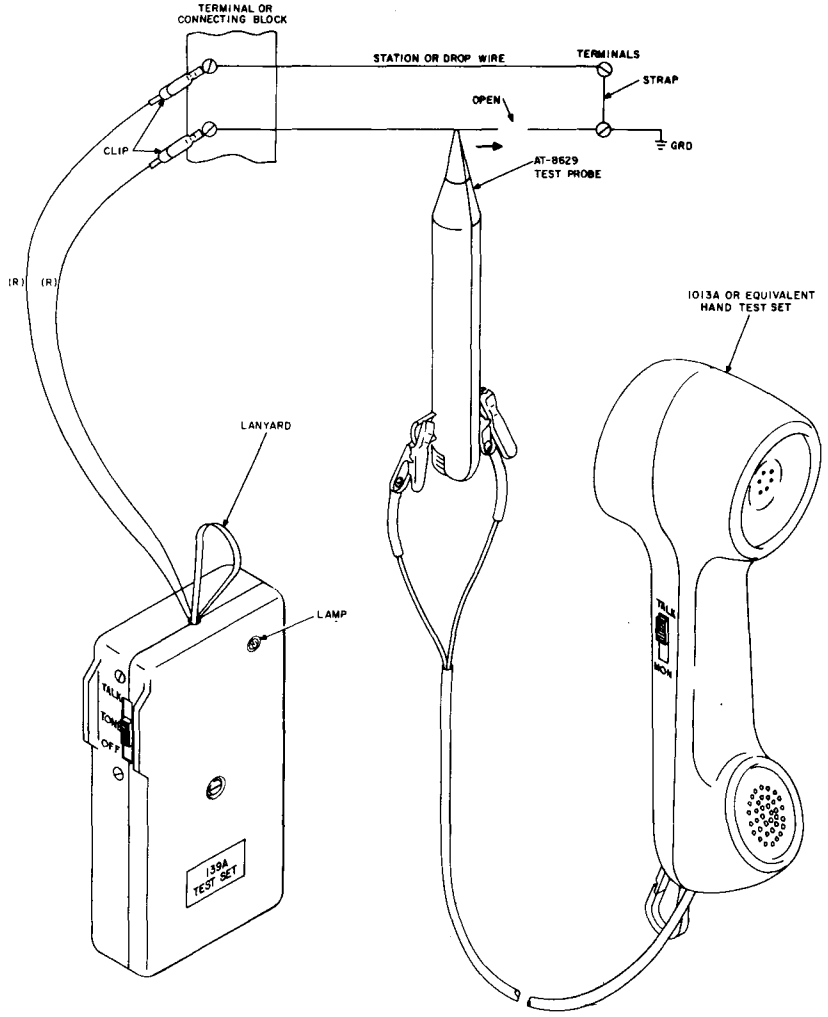
Fig. 5—Line Verification



STEPS

1. CONNECT 139A TEST SET AND HAND TEST SETS AS SHOWN ABOVE.
2. PLACE 139A TEST SET AND HAND TEST SET SWITCHES IN TALK POSITION.
3. A TALKING PATH IS NOW PROVIDED BETWEEN THE TWO HAND TEST SETS.

Fig. 6—Talk Battery

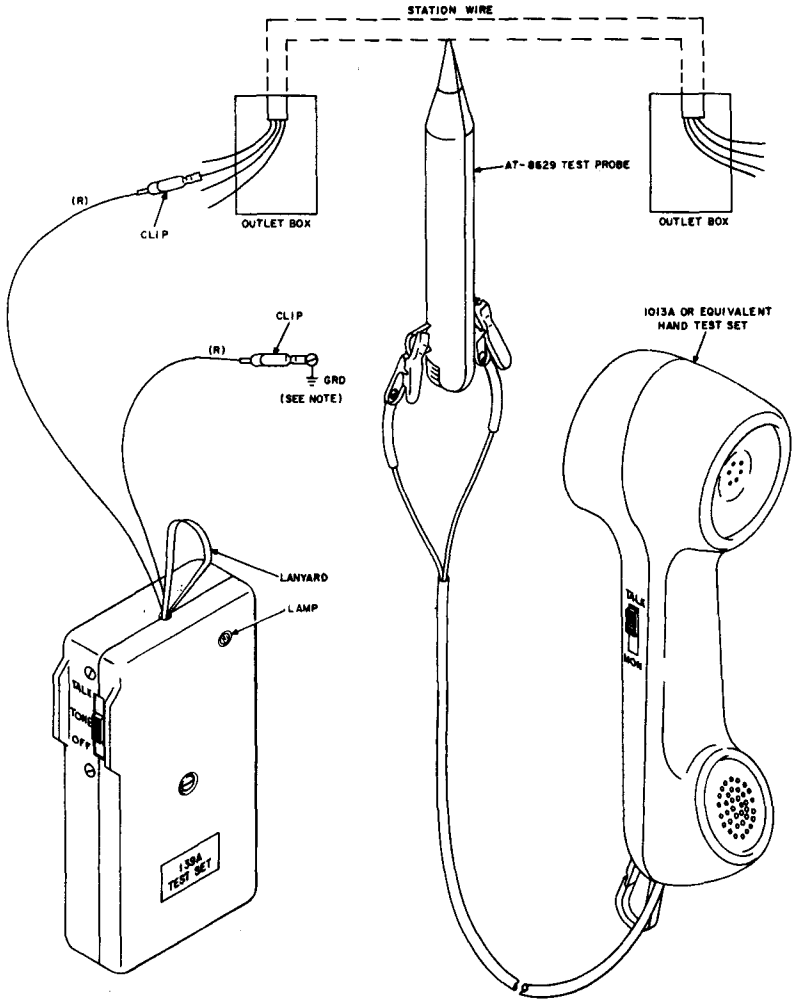


STEPS

1. CONNECT 139A TEST SET, TEST PROBE, AND HAND TEST SET AS SHOWN ABOVE.
2. PLACE 139A TEST SET SWITCH IN TONE POSITION AND HAND TEST SET SWITCH IN TALK POSITION.
3. PLACE STRAP AS SHOWN ABOVE AND GROUND ONE SIDE OF PAIR.
4. AS TEST PROBE IS MOVED ALONG STATION OR DROP WIRE FROM TONE SOURCE ALTERNATING TONE WILL DECREASE WHEN OPEN IS PASSED.

NOTE:
FOR MULTIPLE PAIRED STATION WIRE ALL NON-WORKING PAIRS MUST BE SHORTED AND GROUNDED.

Fig. 7—Open Wire Detection

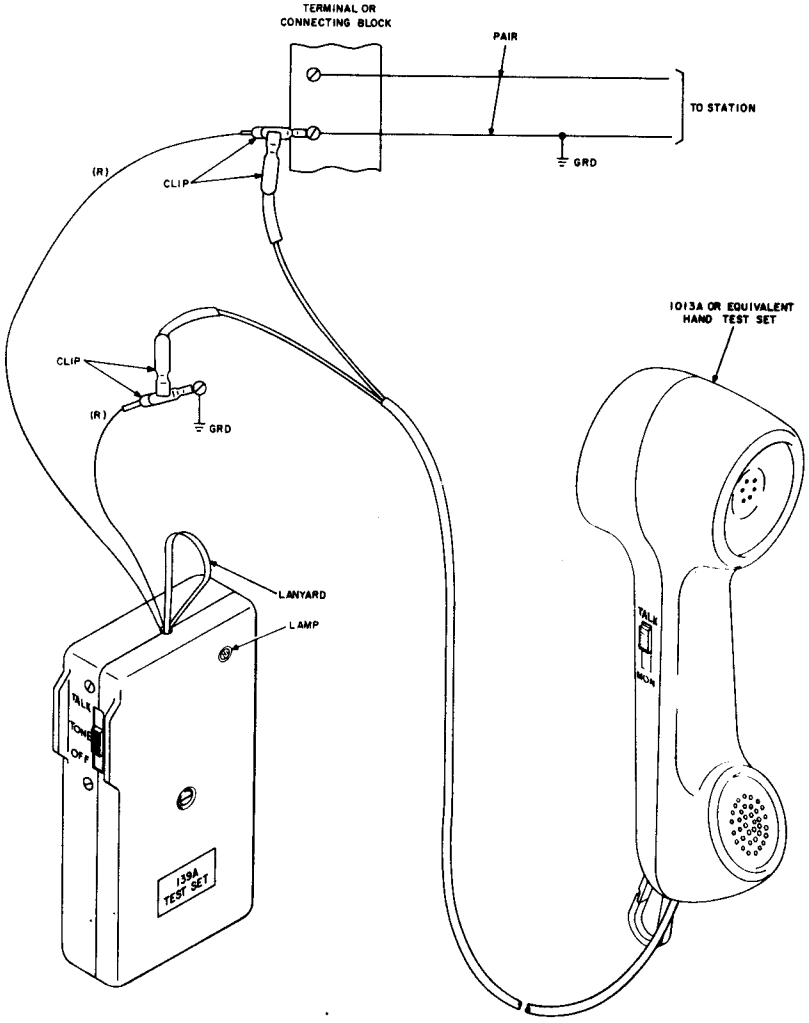


STEPS

1. CONNECT 139A TEST SET, TEST PROBE, AND HAND TEST SET AS SHOWN ABOVE.
2. PLACE 139A TEST SET SWITCH IN TONE POSITION AND HAND TEST SET SWITCH IN TALK POSITION.
3. WITH TEST PROBE HELD CLOSE TO WALL LISTEN FOR ALTERNATING TONE AND TRACE WIRE PATH WITH TEST PROBE.

NOTE:
IF NO GROUND IS AVAILABLE, THE OTHER RED 139A TEST SET LEAD SHOULD BE CONNECTED TO ANOTHER CONDUCTOR AND FOLLOW ABOVE STEPS.

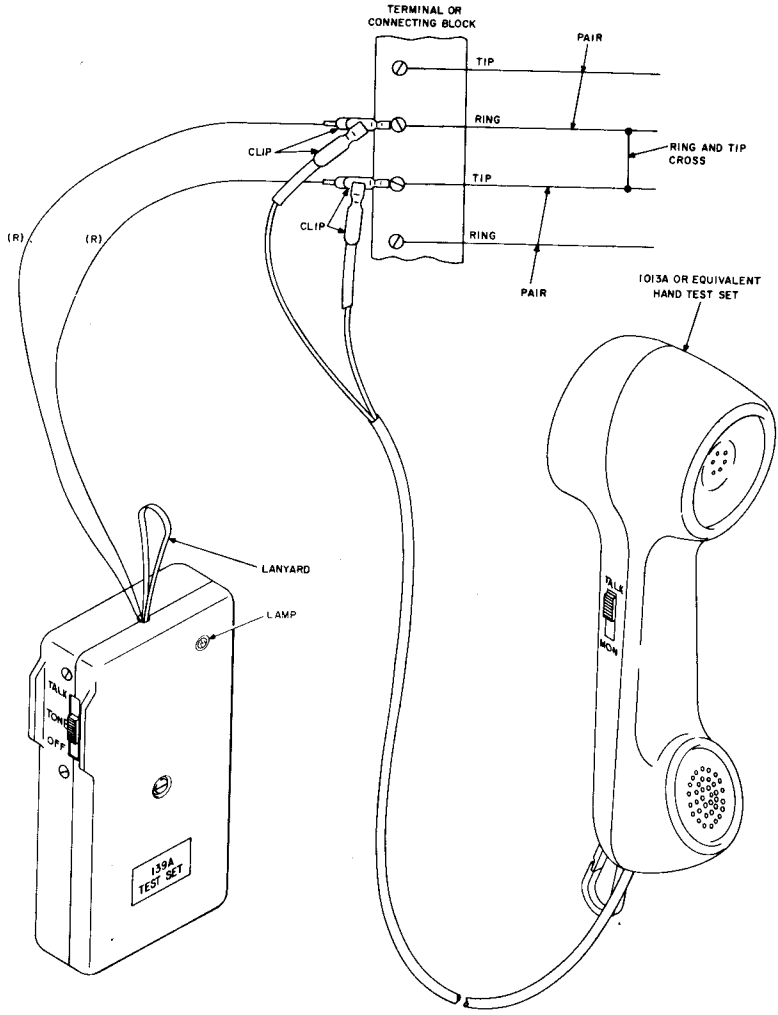
Fig. 8—Tracing Station Wire



STEPS

1. CONNECT HAND TEST SET TO RED LEADS OF 139A TEST SET.
2. PLACE 139A TEST SET SWITCH IN TONE POSITION AND HAND TEST SET SWITCH IN TALK POSITION.
3. LISTEN FOR ALTERNATING TONES.
4. CONNECT 139A TEST SET AND HAND TEST SET AS SHOWN ABOVE.
5. LISTEN FOR ALTERNATING TONE IN HAND TEST SET RECEIVER. ABSENCE OR REDUCTION OF TONE INDICATES A GROUNDED CONDUCTOR.

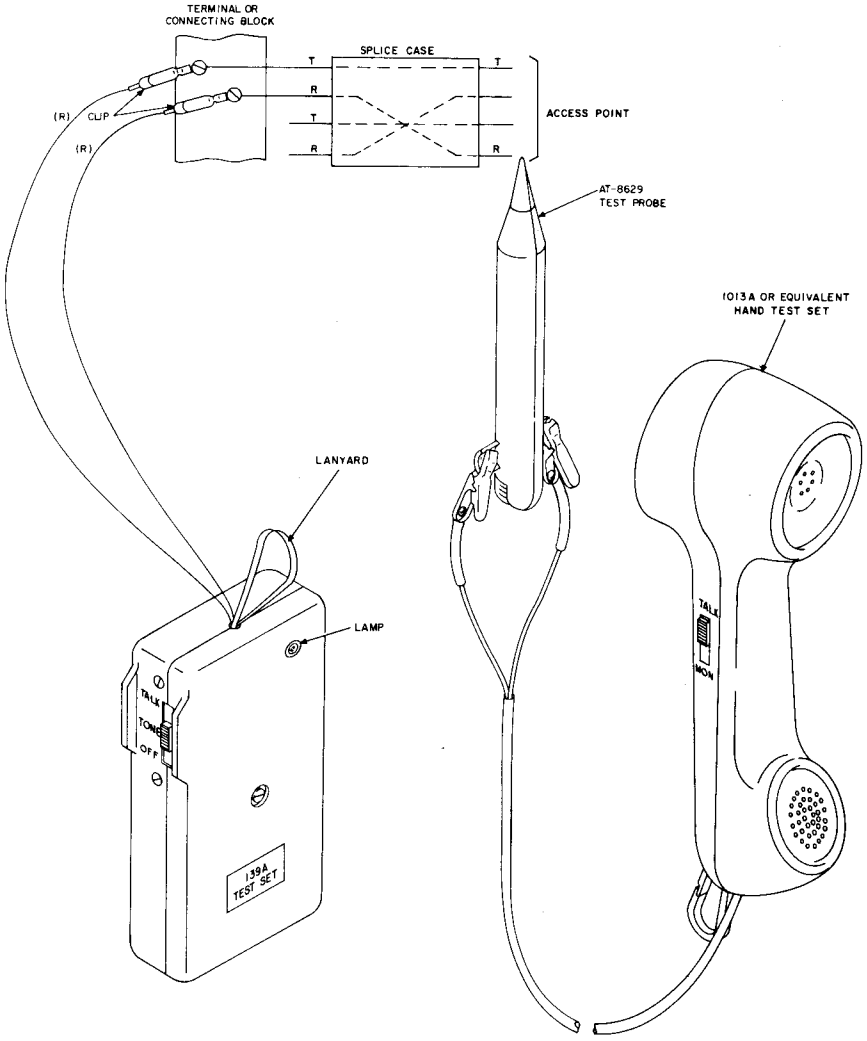
Fig. 9—Grounded Conductor Test



STEPS

1. CONNECT HAND TEST SET TO RED LEADS OF 139A TEST SET.
2. PLACE 139A TEST SET SWITCH IN TONE POSITION AND HAND TEST SET SWITCH IN TALK POSITION.
3. LISTEN FOR ALTERNATING TONES.
4. CONNECT LINE TONE EMITTER CLIPS TO CROSSED PAIR AS SHOWN ABOVE.
5. ABSENCE OR REDUCTION OF TONE IN HAND TEST SET RECEIVER INDICATES A CROSS BETWEEN CONDUCTORS.

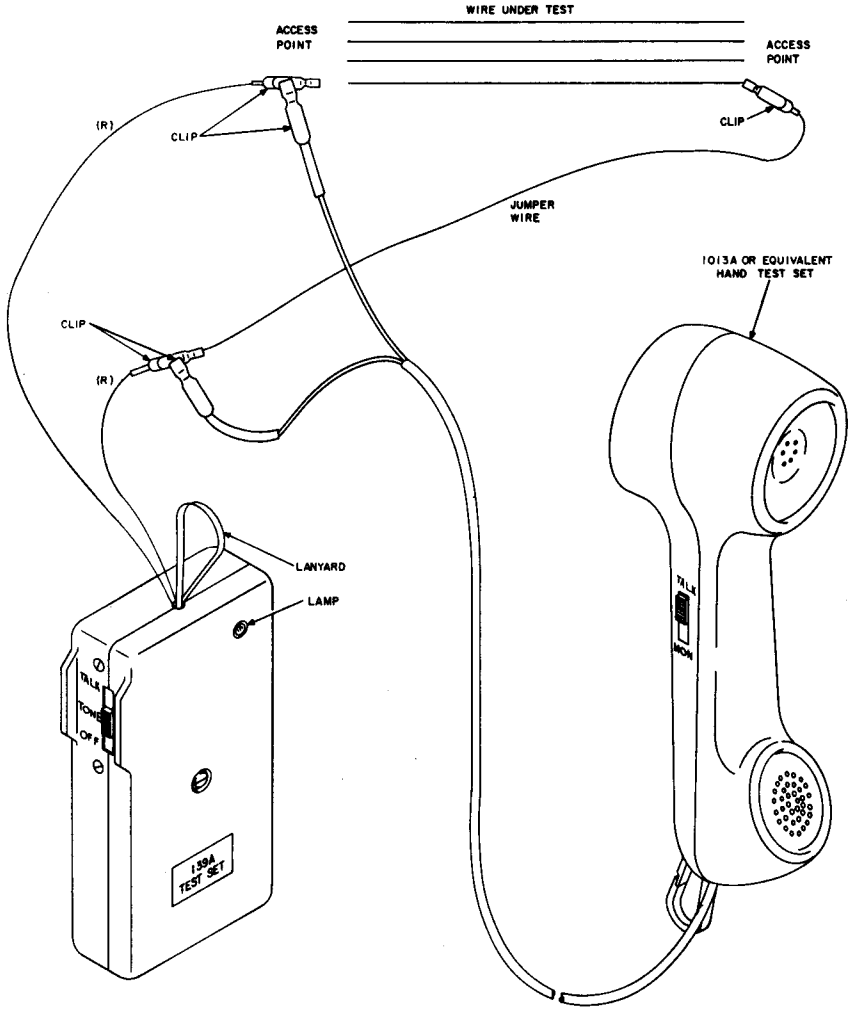
Fig. 10—Cross Test



STEPS

1. CONNECT 139A TEST SET, TEST PROBE, AND HAND TEST SET AS SHOWN ABOVE.
2. PLACE 139A TEST SET SWITCH IN TONE POSITION AND HAND TEST SET SWITCH IN TALK POSITION.
3. USING TEST PROBE, IDENTIFY TIP AND RING CONDUCTORS BY LISTENING FOR ALTERNATING TONE FROM 139A TEST SET.
4. VERIFY SPLIT PAIR BY CONNECTING HAND TEST SET LEADS ACROSS THE IDENTIFIED CONDUCTORS.

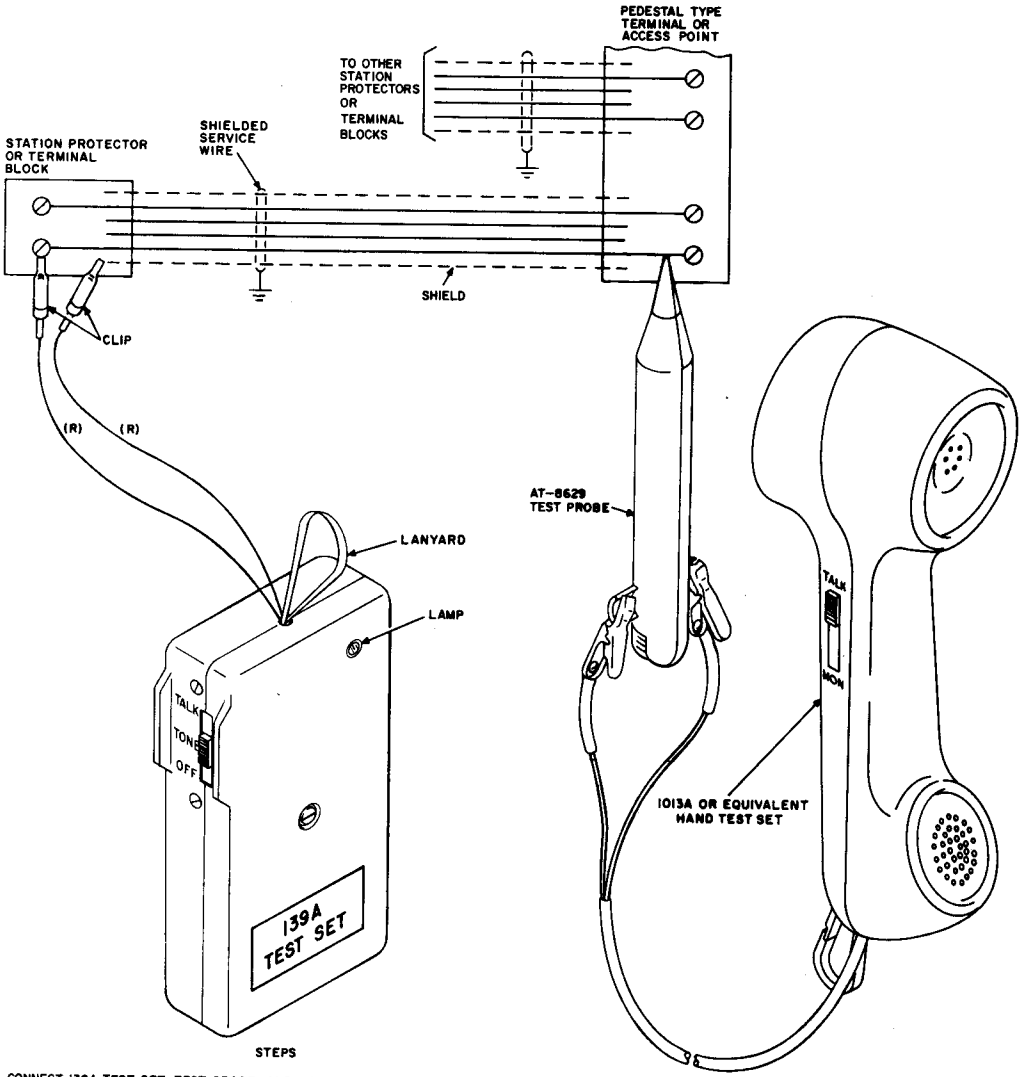
Fig. 11—Split Pair Detection



STEPS

1. CONNECT 139A TEST SET AND HAND TEST SET AS SHOWN ABOVE.
2. PLACE 139A TEST SET SWITCH IN TONE POSITION AND HAND TEST SET SWITCH IN TALK POSITION.
3. LISTEN FOR ALTERNATING TONES IN HAND TEST SET RECEIVER.
4. USING RED LEAD NOT CONNECTED TO JUMPER WIRE, CONTACT NEAR END OF WIRE UNDER TEST.
5. IF WIRE IS CONTINUOUS, TONE WILL STOP OR BE REDUCED IN INTENSITY.

Fig. 12—Continuity Test



STEPS

1. CONNECT 139A TEST SET, TEST PROBE, AND HAND TEST SET AS SHOWN.
2. PLACE 139A TEST SET SWITCH IN TONE POSITION AND HAND TEST SET SWITCH IN TALK POSITION.
3. USING TEST PROBE, LISTEN FOR ALTERNATING TONE IN HAND TEST SET RECEIVER.

Fig. 13—Buried Service Wire Identification