

PAIR IDENTIFICATION USING THE AT-8121, L1A TEST SET

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1. GENERAL

1.01 This section describes the methods of using the AT-8121, L1A (20 kc inaudible tone) Test Set to identify cable pairs in exchange area loop and trunk plant without interfering with service.

1.02 This section is reissued to revise the limits of the test set. Since this reissue covers a general revision, marginal arrows ordinarily used to indicate changes have been omitted.

1.03 The transmitter of the test set supplies a 20 kc signal of low harmonic content. The output is held between 0.20 and 0.30 volt for loads from 100 ohms to open circuit. This low voltage is used to minimize interference making it unnecessary to monitor pairs before placing tone on them. The low output of the transmitter is compensated for in the receiver through high amplification and sharp filtering of the incoming signal.

1.04 The test set has a limit of about 2 miles on nonloaded loops. Identification of loaded loops is limited to one load section or a maximum of approximately 9000 feet. Usually the sides of the pair (tip and ring) cannot be identified, as the tone spreads to both sides of the pair at distances over approximately 5000 feet.

1.05 Refer to Section 106-310-125 for a description of the AT-8121, L1A Test Set.

2. PRECAUTIONS

2.01 Observe the following precautions when using the AT-8121, L1A Test Set.

(a) Use the receiver at the splice location and the transmitter at the central office or cable terminal. Do not use the receiver at the central office or cable terminal.

(b) When using the probe, *never* make a metallic connection between the probe and cable pairs.

(c) When the test set is not being used, disconnect the cord plugs from the respective jacks in the transmitter and receiver to prevent shortening the life of the batteries.

(d) Remove the batteries prior to storage or during periods of infrequent use of the test set.

(e) *This test set shall NOT be used on circuits itemized in 3.03.*

3. APPLICABLE CIRCUITS

CIRCUITS ON WHICH THE TEST SET MAY BE USED

3.01 The following conditions should be used as a general guide to the types of working cable pairs on which the test set can be used without causing interference.

(a) Cable pairs of any circuits using frequencies below 15 kc, except telemetering circuits as covered in (b) and circuits using dc only.

(b) Cable pairs with telemetering circuits using frequencies not exceeding 3 kc.

3.02 In general the following types of circuits and services satisfy the conditions outlined in 3.01. Therefore, the AT-8121, L1A Test Set may be used to identify the pairs in these circuits unless otherwise restricted by local regulation or authority.

SECTION 634-200-520

(a) Voice-Frequency Circuits and Services

Subscriber Lines — All Classes of Service
PBX Battery and Generator Feeds
Two-Wire Trunks Without Repeaters
Two-Wire Trunks With E6 and E23 Repeaters
Four-Wire Trunks With 22- and 44-Type Repeaters
Four-Wire Trunks With V1 or V3 Repeaters
Foreign Exchange Lines
Off-Premise Extensions
Tie Lines
PBX Secretarial Lines or Answering Service Lines
Private Lines
TD Loop or Terminal
Program Transmission Order Wire
Full Period Local Channels
Full Period Channels Terminated in Radio Outlet
Official Lines
Teletypewriter Exchange Service Trunks
Private Line Teletypewriter
Western Union Telegraph
40 and 43A Telegraph Carrier System
Wide-Area Segregated TWX Trunk (101-Type Data Sets 60, 75, 100 speed)
Audio Program Transmission Channel

Wired Music — 15 kc or Less
Telephoto and Facsimile
Telemetry (below 3 kc)
Radio, Telephone Operation Channel
Protective Alarm
Local Municipal Fire Alarms
Civil Air Defense Warning Lines
Private-Line Data Service, Except 300-Type
DATA-PHONE Services
Telautograph Channel
Leased Lines

(b) Carrier Systems

D, G, and H Carrier
J-, L-, M-, and N-Type Carrier
O-, OA-, and ON-Type Carrier

CIRCUITS ON WHICH THE TEST SET SHOULD NOT BE USED

3.03 The AT-8121, L1A Test Set should *NOT* be used to identify pairs assigned to the following carrier or data systems. However, the test set may be used on any other pairs in the cables containing these systems if they satisfy the conditions outlined in 3.01 and/or are associated with the type of circuit or service mentioned in 3.02.

- (a) K Carrier.
- (b) T1 Carrier.
- (c) P1 Carrier — Stackable, normal, or staggered.
- (d) 300-type data systems.

4. METHODS OF USING THE TEST SET

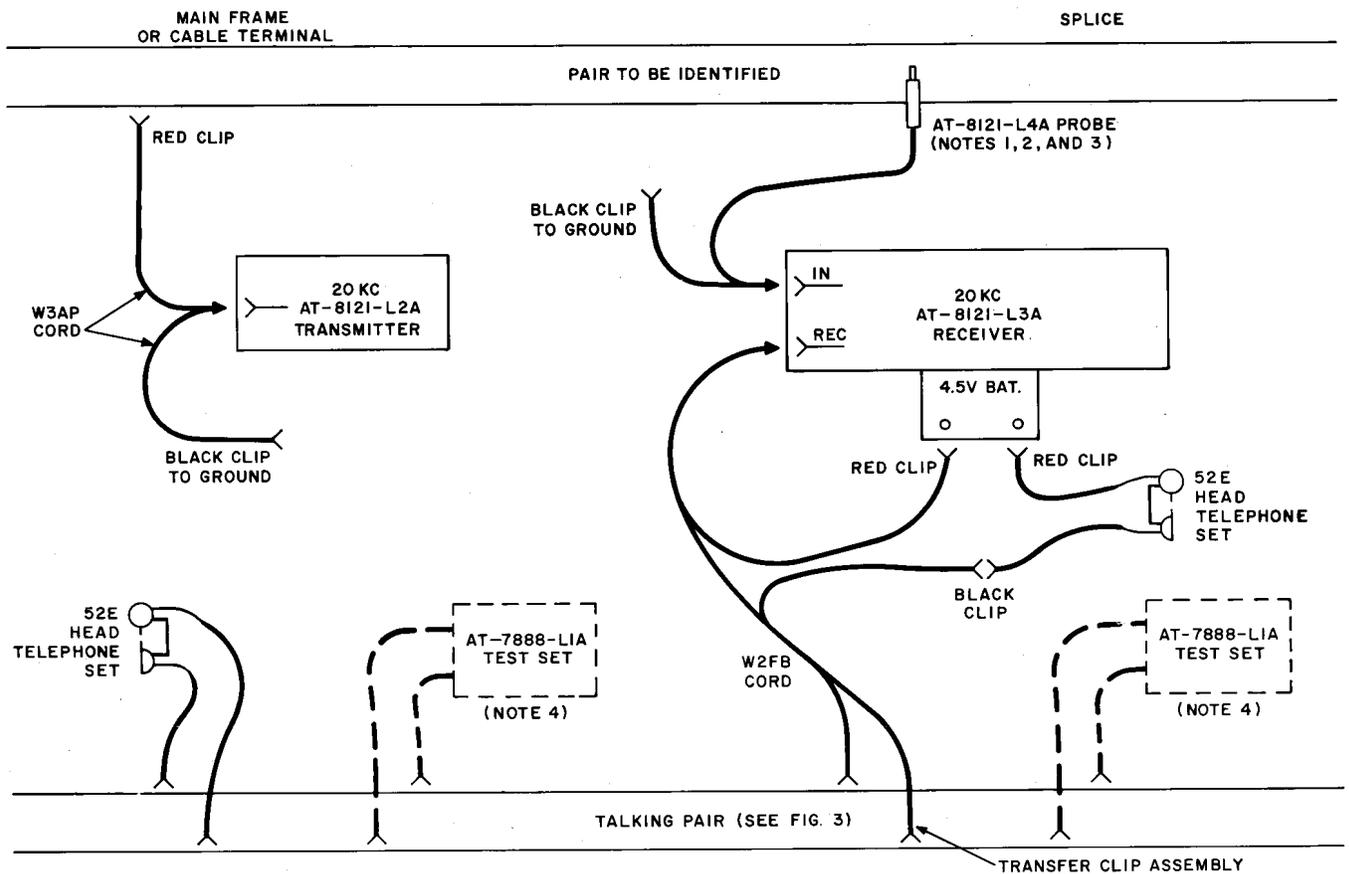
4.01 The two methods of using the test set for cable pair identification are as follows:

(a) **Probing at Splice:** The probing method is used when only a small number of pairs require identification such as in changing the count of 10- or 10-pair cable terminals or small

cable transfers. The probing method is illustrated in Fig. 1.

(b) **Running Main Frame or Cable Terminal:**

The running method is used when a large number of pairs require identification (generally more than half the pairs in a group or unit) such as for a large cable transfer. This



NOTES:

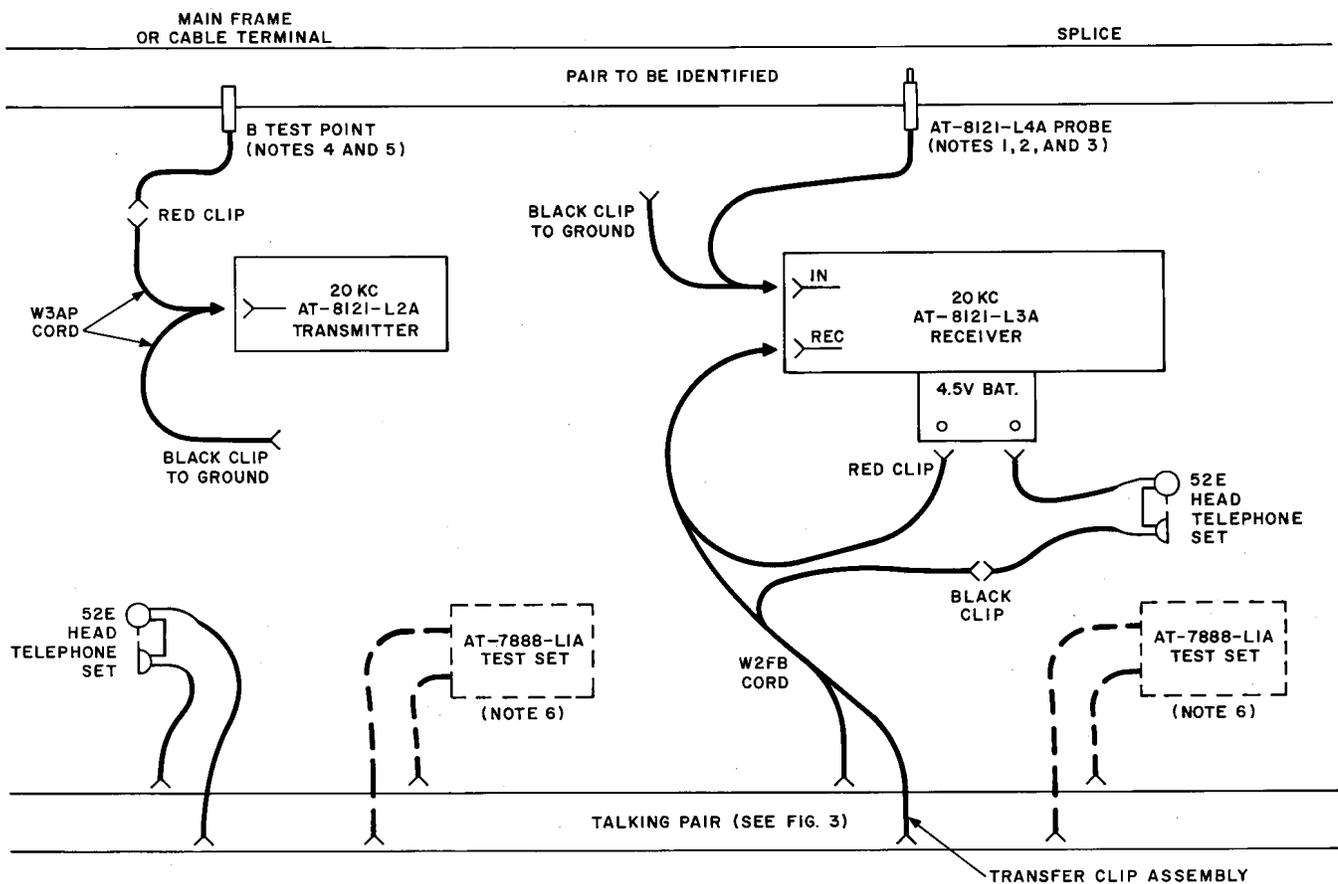
1. MOVE PROBE THROUGH SPLICE UNTIL A WARBLE TONE IS HEARD IN THE HEADSETS. ADJUST VOLUME CONTROL ON RECEIVER SO TONE IS HEARD AT A LOW LEVEL.
2. PAIR WITH LOUDEST TONE IS THE DESIRED PAIR (SEE PART 6).
3. IDENTIFY REMAINING PAIRS IN A SIMILAR MANNER.
4. THE AT-7888, LIA TEST SET (SPEAKER SET) COVERED IN SECTION 106-020-112 MAY BE USED ACROSS THE PAIR AS A LISTENING DEVICE ONLY.

Fig. 1 — Probing at Splice

method is more convenient than the probing method and has the advantage of permitting the man at the splice location to proceed with other duties while the pair is being identified at the main frame or cable terminal. The running method is illustrated in Fig. 2.

5. IDENTIFICATION OF TALKING PAIR

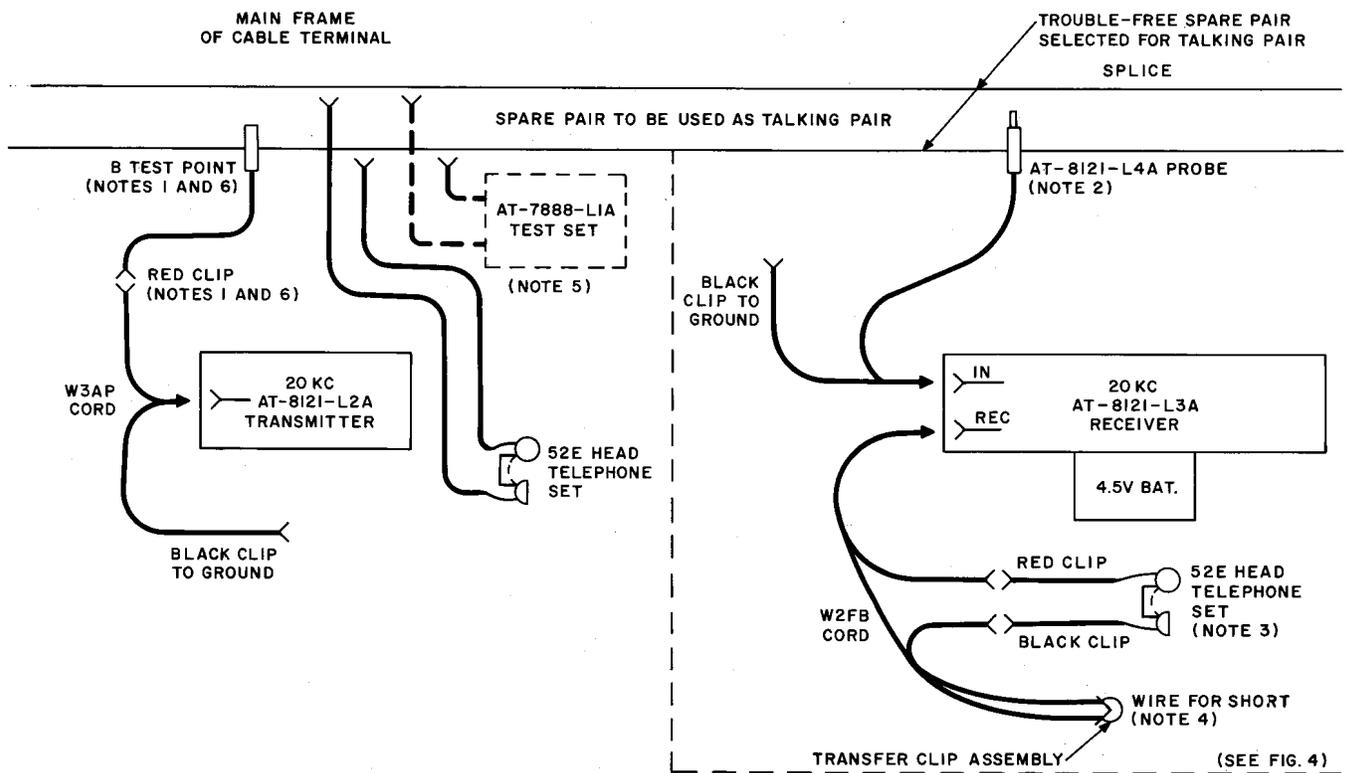
5.01 The method of establishing a talking pair is illustrated in Fig. 3. For clarification a graphic representation of the setup at the splice location is shown in Fig. 4.



NOTES:

1. EXTEND PROBE END BY DEPRESSING BUTTON ON HANDLE OF PROBE AND SLIDING IT TOWARD THE TIP OF THE PROBE THUS EXPOSING SLOT IN TIP OF PROBE.
2. PLACE PROBE END ON WIRE. DEPRESS BUTTON AND SLIDE IT BACK TO ORIGINAL POSITION ON HANDLE THUS LOCKING WIRE IN PROBE. ATTACHING THE PROBE IN THIS FASHION DOES NOT PIERCE THE INSULATION ON THE WIRE.
3. CHECK THAT PROBE END IS NOT CONTACTING ANY OTHER PAIRS, OTHERWISE TONE WILL ALSO BE HEARD ON THOSE PAIRS.
4. FOR 121-TYPE PROTECTORS OR 300-TYPE CONNECTORS, SUBSTITUTE "B" PAIR IDENTIFIER FOR "B" TEST POINT.
5. "RUN" THE FRAME OR TERMINAL BINDING POST UNTIL TONE IS HEARD IN HEAD SET, INDICATING TERMINATION OF WIRE SELECTED AT SPLICE HAS BEEN CONTACTED. IDENTIFY REMAINING PAIRS IN A SIMILAR MANNER.
6. THE AT-7888, LIA TEST SET (SPEAKER SET) COVERED IN SECTION 106-020-112 MAY BE USED ACROSS THE PAIR AS A LISTENING DEVICE ONLY.

Fig. 2 — Running Main Frame or Cable Terminal



NOTES:

1. FOR 121-TYPE PROTECTORS AND 300-TYPE CONNECTORS ONLY: CONNECT RED CLIP DIRECTLY TO ONE SIDE OF THE TALKING PAIR. AFTER TALKING PAIR IS ESTABLISHED REMOVE RED CLIP FROM TALKING PAIR AND CONNECT CLIP TO B PAIR IDENTIFIER.
2. USE PROBE TO IDENTIFY PAIR SELECTED FOR TALKING CIRCUIT AS EXPLAINED IN FIG. 1.
3. AFTER PAIR HAS BEEN IDENTIFIED, CONNECT THE 52E HEAD TELEPHONE SET TO THE 4.5-VOLT BATTERY ON THE RECEIVER AS SHOWN IN FIG. 1 AND 2.
4. REMOVE THE WIRE USED TO SHORT THE TRANSFER CLIP ASSEMBLY AND CONNECT THE CLIP ASSEMBLY TO THE TIP AND RING SIDES OF THE SELECTED TALKING PAIR AS SHOWN IN FIG. 1 AND 2.
5. THE AT-7888, LIA TEST SET (SPEAKER SET) MAY BE USED ACROSS THE TALKING PAIR SO 52E HEAD TELEPHONE SET WILL NOT HAVE TO BE WORN WHILE THE PAIR IS BEING IDENTIFIED, THUS PERMITTING OTHER DUTIES TO BE PERFORMED. WHEN AT-8121, L4A PROBE IS CLAMPED TO PAIR AT SPLICE LOCATION, TONE WILL BE HEARD THROUGH SPEAKER AT CENTRAL OFFICE THUS SIGNALING THAT THE TALKING PAIR IS COMPLETED.
6. AFTER ESTABLISHING THE TALKING PAIR, REMOVE THE RED CLIP OR B TEST POINT THUS DISCONNECTING THE TRANSMITTER FROM THE TALKING PAIR.

Fig. 3 — Establishing a Talking Pair

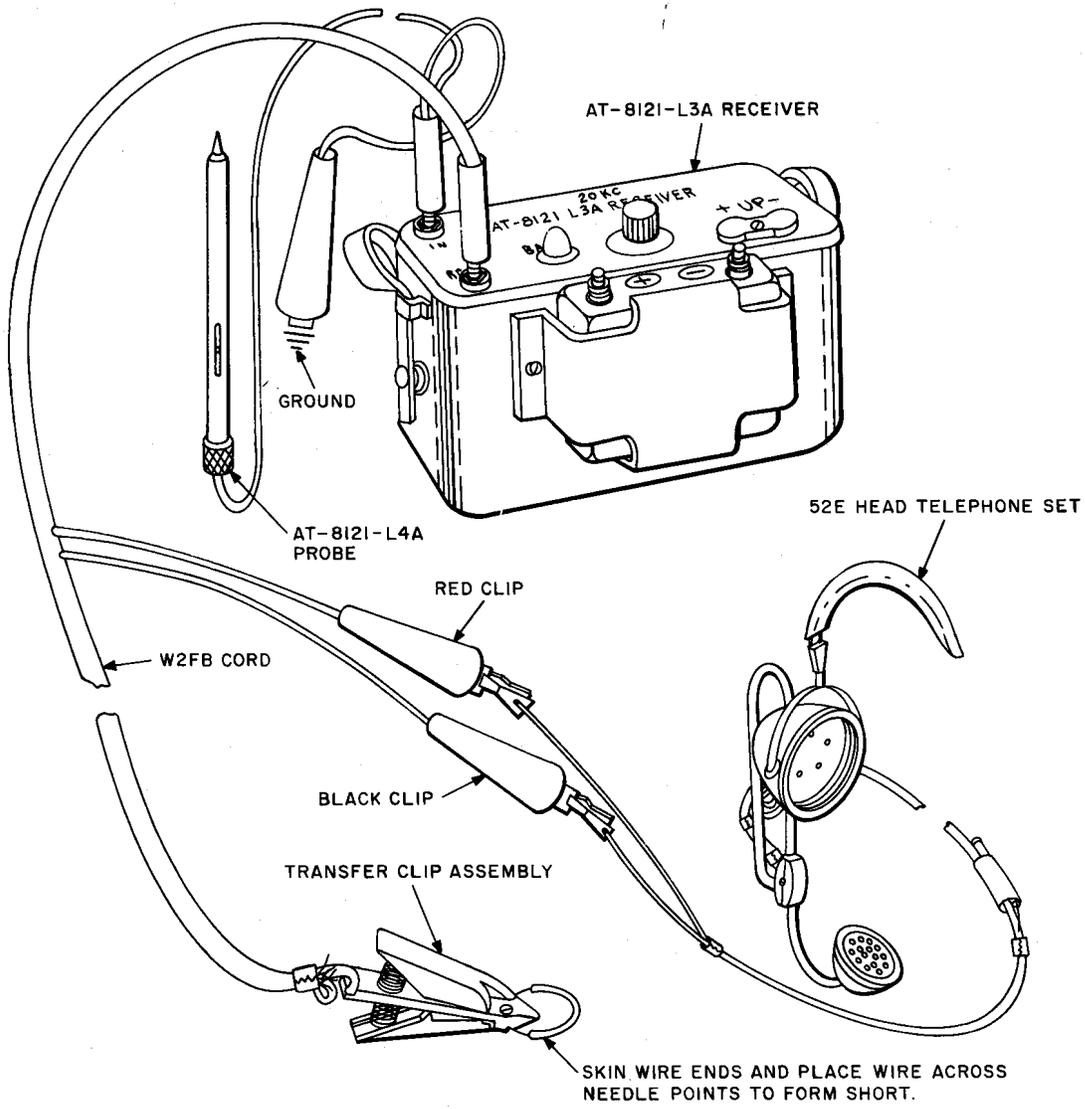
6. DIFFICULTY IN IDENTIFYING PAIRS IN SPLICES

6.01 If tone is present on several pairs in the splice making it difficult to determine the pair with the loudest tone, the correct pair may be identified more easily using one of the procedures as follows:

- (1) Adjust volume control on receiver for the lowest tone that can be heard in the headset.

- (2) Disconnect the black clip of the AT-8121, L4A Probe from the cable sheath (or other ground) and place the clip (no metallic connection) among the wires in the splice being tested.

- (3) Disconnect the black clip of the AT-8121, L4A Probe from the cable sheath (or other ground) and connect the clip to a spare wire selected at random from the wires in the splice.



NOTE:
THIS METHOD IS TO BE USED ONLY TO IDENTIFY A TALKING PAIR.

Fig. 4 — Initial Setup at Splice Location