

CUSTOMER DIAL PULSE RECEIVER CIRCUIT
(SD-2H114 AND SD-2H177)

TESTS

NO. 2 AND NO. 2B ELECTRONIC SWITCHING SYSTEMS

1. GENERAL

1.01 This section describes the procedure for testing customer dial pulse receiver (CDPR) circuits (SD-2H114 and SD-2H177) used in the No. 2 and No. 2B Electronic Switching Systems (ESS).

1.02 This section is reissued to revise the procedure for testing circuits that provide zone 16 service and for the inclusion of No. 2B ESS input messages.

1.03 The tests described are:

A. Circuit State and Scan Point Operation:

This test verifies the operation of the circuit relays and saturation of the ferrod sensor associated with the CDPR circuit.

B. Tip Party Ground or Coin-in-the-Slot

Test: This test verifies the saturation of the ferrod sensor associated with the CDPR circuit in the tip party ground or coin-in-the-slot state.

1.04 Whenever the term TOUCH-TONE® telephone service is used, it refers to the equipment required to provide this service to the customer.

1.05 The customer dial pulse receiver circuit tests are performed on a periodic basis as prescribed by the equipment test list or when malfunction of the circuit is suspected.

1.06 The tests will be performed from the trunk test panel (TTP) in conjunction with the maintenance center display buffer and teletypewriter (TTY). For detailed information about the TTP and its operation, refer to Section 232-130-301, Trunk Test Panel—Method of Operation.

1.07 Testing and adjustments for the TOUCH-TONE calling detector circuit (SD-1A173) shall be conducted in accordance with Section 232-136-502.

1.08 The keys on the TTP are either a locking or a nonlocking type. In order to differentiate between the two types of keys, the use of a locking type key shall be identified by the words "operate" and "release" and the use of a nonlocking type key shall be identified by the word "depress" in the action column

Note: Nonlocking keys require a depression of at least one-half second to ensure system recognition.

1.09 Lettered Steps: A letter a, b, c, etc, added to a step number in Part 3 or 4 of this section indicates an action which may or may not be required depending on local conditions. The condition under which a lettered step or series of lettered steps should be made is given in the ACTION column, and all steps governed by the same condition are designated by the same letter within a test. Where a condition does not apply, all steps designated by that letter should be omitted.

2. APPARATUS

2.01 A KS-14510 L1 Volt-Ohm-Milliammeter (VOM) or equivalent.

2.02 A 35F test set or equivalent.

2.03 A 2P4A cord assembly consisting of a P2B cord, 3 feet long, and two 310 plugs.

2.04 A test lead with alligator clips at both ends.

2.05 A W2DL cord equipped with a 310 plug.

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SECTION 232-147-501

2.06 A 1025A headset consisting of a LB2 receiver, a W2FT cord, and a 310 plug or equivalent.

2.07 A 3-watt, 900-ohm resistor of 10 percent resistance tolerance.

3. PREPARATION

3.01 Refer to the office records to obtain the trunk group number (TGN), member number (MEMN) and the directed scan point number (DSP) of the CDPR circuit to be tested.

3.02 Verify the scan point number obtained in 3.01 as follows:

At maintenance TTY, type in:

A VY:SVC:aaa bbb!

aaa = TGN

bbb = MEMN

The system response is as follows:

AR VY SVC aaa bbb

TEN nn gcsl

DSP ss rrb

ss = scanner number

rr = scanner row

bb = bit in row.

The bb bit represents ferrod sensor 0 in the scanner row that is associated with the specific circuit. Refer to the output message manual (OM-2H200) for explanation of other data fields, if required.

3.03 The following is a step-by-step procedure to make the CDPR circuit traffic busy and connect it to the TTP (Fig. 1 or Fig. 2).

STEP	ACTION	VERIFICATION
1	At telephone set on TTP— Operate access trunk 1 key.	
2	Lift handset off-hook, or operate TRFR key at TEL CKT on TTP if using headset.	At telephone set— Access trunk 1 lamp lighted. At ACCESS TRUNK 1 CONTROL— SUPV lamp lighted. At TEL CKT— TRFR lamp lighted if TRFR key is operated.
3	At TOUCH-TONE dial— Dial 1 + TGN + MEMN + ST.	At ACCESS TRUNK 1 CONTROL— EQPT ST lamp lighted steadily or flashing at a rate of 120 interruptions per minute. At MISC TEST CONTROL— P & E lamp lighted if connection was successful.
4a	If the P & E is not lighted steadily— At ACCESS TRUNK 1 CONTROL— Depress RLS key.	

Note: If the EQPT ST lamp is flashing and the P & E lamp is not lighted steadily, the TTP is not connected to the circuit to be tested.

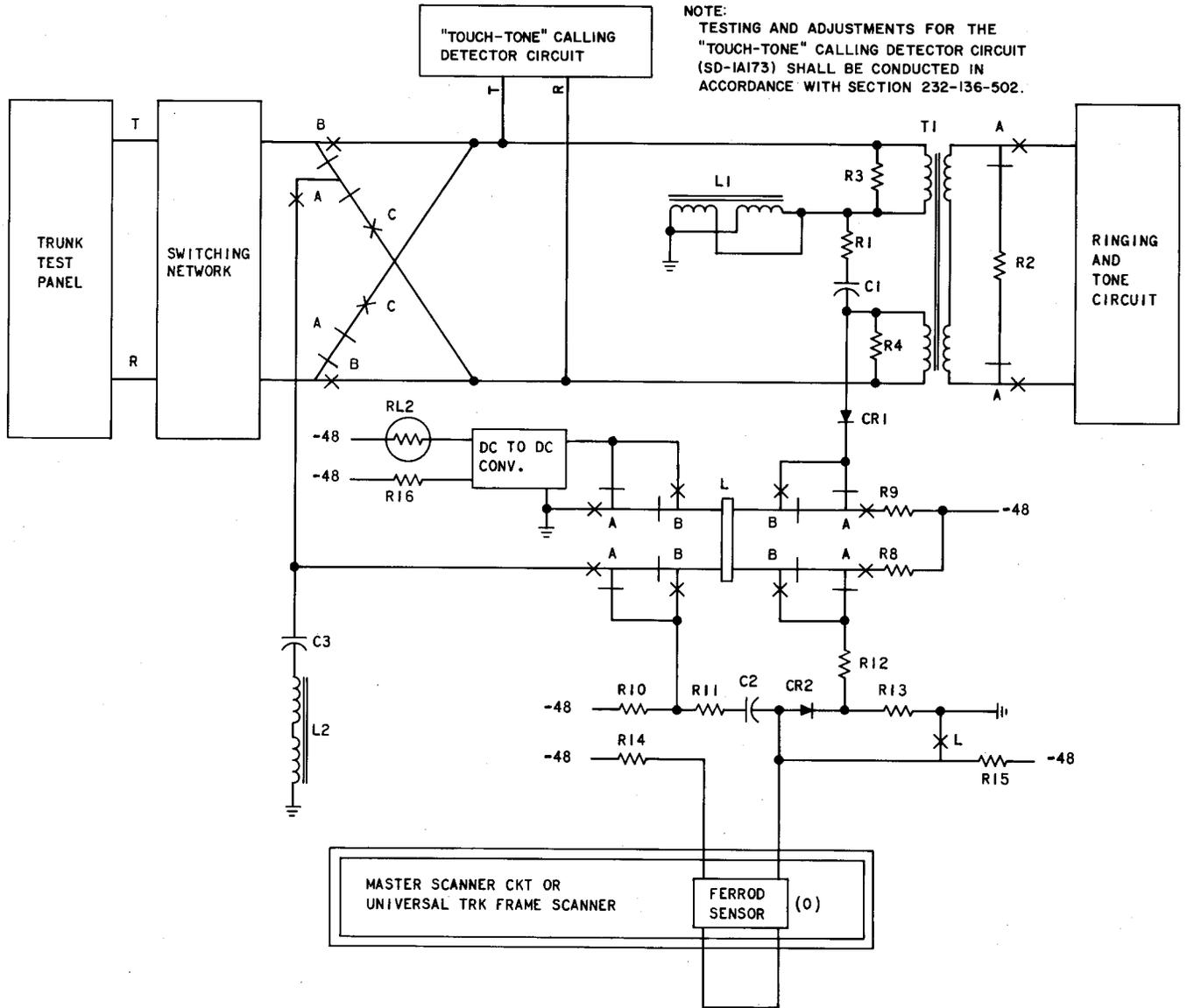


Fig. 1—Customer Dial Pulse Receiver Circuit (SD-2H114-01)

STEP	ACTION	VERIFICATION
5a	Repeat Steps 3 and 4a until connection is successful.	
6	Place handset on-hook, or release TRFR key.	At telephone set— Access trunk 1 lamp extinguished. At TEL CKT— TRFR lamp extinguished.

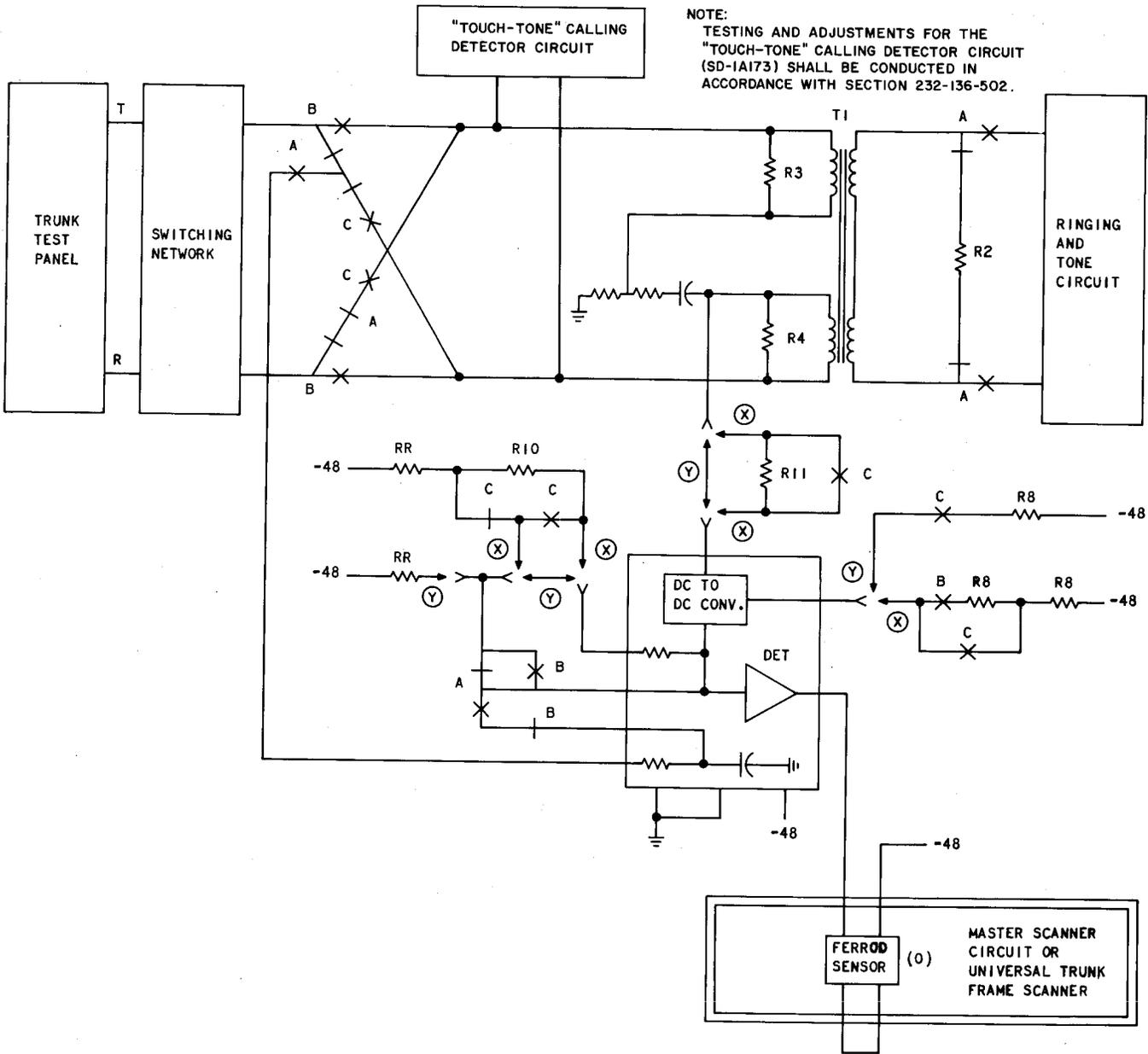


Fig. 2—Customer Dial Pulse Receiver Circuit (SD-2H177-01)

STEP	ACTION	VERIFICATION
7	<p>At maintenance TTY— ◆ For No. 2 ESS offices type in: ◆ Type in: UBRL TS:RSN:ssrr! ss = Number of trunk scanner in decimal (0-11) from 3.02. rr = Number of scanner row in decimal (0-63) from 3.02.</p>	<p>◆ At DISPLAY BUFFER for No. 2 ESS or the System Status Panel (SSP) for No. 2B ESS—◆ Scanner row containing specific scan points displayed on DISPLAY BUFFER lamps. The lamps associated with the ferrod sensor connected to circuit under test lighted.</p>

STEP	ACTION	VERIFICATION
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For No. 2B ESS offices type in:
 MON:TSSN ssrr;RDT LAMPS!
 ss = Number of trunk scanner in decimal
 (0-11) from Step 3.02.
 rr = Number of scanner row in decimal (0-63)
 from Step 3.02.
 RDT LAMPS = Direct the result to the
 DISPLAY BUFFER.

4. METHOD

4.01 If the verification procedure fails or if a malfunctioning circuit is indicated during any part of this test, proceed as follows:

- (1) Discontinue the test.

- (2) Troubleshoot the circuit which failed.
- (3) Replace faulty circuit components using standard repair procedures.
- (4) Repeat the test step which failed. If verification indicates that the faulty circuit has been repaired, continue the test.

STEP	ACTION	VERIFICATION
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A. Circuit State and Scan Point Operation

8	At ACCESS TRUNK 1 CONTROL— Depress VM key.	At VOLTMETER— Meter indicates 0. At ACCESS TRUNK 1 CONTROL— VM lamp lighted. At VOLTMETER CONTROL— 100K lamp lighted.
9	At VOLTMETER CONTROL— Operate TR REV key.	At VOLTMETER— Meter indicates 0. At VOLTMETER CONTROL— TR REV lamp lighted.
10	Depress FEMF key.	At VOLTMETER— Meter indicates 0. At VOLTMETER CONTROL— FEMF lamp lighted. 100K lamp extinguished.
11	Release TR REV key.	At VOLTMETER— Meter indicates 0. At VOLTMETER CONTROL— TR REV lamp extinguished.
12	Depress MET VM key.	At VOLTMETER— Meter indicates 0. At VOLTMETER CONTROL— FEMF lamp extinguished. MET VM lamp lighted.
13	Set PD GROUP switch to 0-5 position.	

SECTION 232-147-501

STEP	ACTION	VERIFICATION
14	At PERIPHERAL DECODER POINTS— Operate 1 key.	At PERIPHERAL DECODER POINTS— 1 lamp lighted.
15	◆Depress AT 1 key.	At VOLTMETER— For a circuit that uses option X (zone 16 service)— Meter indicates between 63.5 and 82.0 volts on the 120-volt scale. <i>over = 82 to 84V</i> For a circuit that uses the Y option— Meter indicates between 42.75 and 52.50 volts on the 120-volt scale. At circuit under test— Relay B operated.
16a	If a circuit uses option X (zone 16 service) Set the selector switch on the VOM to DC VOLTS for the 60-volt scale. Connect the positive lead of the VOM to one end of a 900 ohm resistor. Connect the negative lead of the VOM to the other end of the 900-ohm resistor. Connect the leads of a W2DL cord assembly across the 900-ohm resistor such that the white lead is connected to the positive side, while the black lead is connected to the negative side. Insert the 310 plug end of the W2DL cord assembly into ACCESS TRK-1 jack.	At VOM— Meter indicates less than 52.50 volts on the 60-volt scale. At circuit under test— Relay B remains operated.
17a	Remove the 310 plug end of the W2DL cord from ACCESS TRK-1 jack. Remove the 900-ohm resistor from the connector end of the cord and from the VOM.	
18	Set the ohms selector switch on the VOM to the X100 scale. Insert the 310 plug, connected to a 2P4A cord assembly, into the 35F test set.	
19	Operate the BATT & GRD C.O. and G (ground) keys on the 35F test set.	
20	Operate the No. 1 telegraph key on the 35F test set. Move all of the resistance sliders (red & black knobs) to the extreme right side.	
21	Connect the VOM to the 2P4A cord assembly.	
22	Move the No. 1 course (red) slider on the 35F test set until the meter indicates approximately 2050 ohms. Move the No. 1	

STEP	ACTION	VERIFICATION
	fine (black) slider until the meter indicates 2000 ohms.	
23	At front of writing shelf— With one end of the 2P4A cord assembly connected to the tip and ring of the 35F test set, insert the 310 plug of the other end of the 2P4A cord into ACCESS TRK-1 jack.	At DISPLAY BUFFER— Lamp associated with ferrod sensor 0 extinguished.
24	Remove the 310 plug from ACCESS TRK-1 jack.	Lamp associated with ferrod sensor 0 lighted.
25	At PERIPHERAL DECODER POINTS— Operate 0 key.	At PERIPHERAL DECODER POINTS— 0 lamp lighted.
26	Depress AT 1 key.	At VOLTMETER— Meter indicates between 63.5 and 82.0 volts on the 120-volt scale. At circuit under test— Relay A operated. Relay B remains operated.♦
27	At front of writing shelf— Insert headset into ACCESS TRK-1 jack.	At headset— Dial tone present.
28	Remove headset from ACCESS TRK-1 jack.	
29	At PERIPHERAL DECODER POINTS— Operate 2 key.	At PERIPHERAL DECODER POINTS— 2 lamp lighted.
30	Depress AT 1 key.	At VOLTMETER— Meter indicates between 63.5 and 82.0 volts on 120-volt scale. At circuit under test— Relay C operated. Relays A and B remain operated.
31	At front of writing shelf— Insert headset into ACCESS TRK-1 jack.	At headset— Dial tone present.
32	Remove headset from ACCESS TRK-1 jack.	
33	At PERIPHERAL DECODER POINTS— Release 0 key.	At PERIPHERAL DECODER POINTS— 0 lamp extinguished.
34	Depress AT 1 key.	At VOLTMETER— Meter indicates between 63.5 and 82.0 volts on 120-volt scale. At circuit under test— Relay A released. Relays B and C remain operated.

SECTION 232-147-501

STEP	ACTION	VERIFICATION
35	At PERIPHERAL DECODER POINTS— Release 1 key.	At PERIPHERAL DECODER POINTS— 1 lamp extinguished.
36	Using the KS-14510 L1 (VOM), set the ohms scale to X100. Insert the 310 plug, connected to the 2P4A cord assembly, into the 35F test set.	
37	Operate the BATT & GRD C.O. and G (ground) keys on the 35F test set.	
38	Operate the No. 1 telegraph key on the 35F test set. Move all of the resistance sliders (red & black knobs) to the extreme right side. Connect the VOM to the 2P4A cord.	
39	Move the No. 1 course (red) slider on the 35F test set until meter indicates approximately 2050 ohms. Then move the No. 1 fine (black) slider until meter indicates 2000 ohms.	
40	At front of writing shelf— Insert the 310 plug into ACCESS TRK-1 jack.	At DISPLAY BUFFER— Lamp associated with ferrod sensor 0 extinguished.
41	At PERIPHERAL DECODER POINTS— Depress AT 1 key.	At DISPLAY BUFFER— Lamp associated with ferrod sensor 0 remains extinguished. At circuit under test— Relay B released. Relay C remains operated.
42	At VOLTMETER CONTROL— Operate TR REV key.	At VOLTMETER CONTROL— TR REV lamp lighted.
43	Remove the 310 plug from ACCESS TRK-1 jack.	At VOLTMETER— Meter indicates between 63.5 and 82.0 volts on the 120-volt scale. At DISPLAY BUFFER— Lamp associated with ferrod sensor 0 lighted.
44	At PERIPHERAL DECODER POINTS— Release 2 key.	At PERIPHERAL DECODER POINTS— 2 lamp extinguished.
45	Depress AT 1 key.	At circuit under test— Relay C released.
46	At VOLTMETER CONTROL— Release TR REV key.	At VOLTMETER CONTROL— TR REV lamp extinguished.

Note: If Test B is to be performed, omit Steps 47 and 48.

STEP	ACTION	VERIFICATION
47	At maintenance TTY— ◆For No. 2 ESS offices type in:◆ UB SY:CLB! ◆For No. 2B ESS offices type in: STOP:UTIL!◆	Ferrod sensor display removed from DISPLAY
48	At ACCESS TRUNK 1 CONTROL— Depress RLS key.	At ACCESS TRUNK 1 CONTROL— VM lamp extinguished. SUPV lamp extinguished. EQPT ST lamp extinguished. At MISC TEST CONTROL— P & E lamp extinguished.

B. Tip Party Ground or Coin-in-the-Slot Test

Note: If Steps 47 and 48 of Test A were omitted, depress 100K key and omit Step 8.

8	At ACCESS TRUNK 1 CONTROL— Depress VM key.	At VOLTMETER CONTROL— 100K lamp lighted. At ACCESS TRUNK 1 CONTROL— VM lamp lighted.
9	At PERIPHERAL DECODER POINTS— Operate 0 key.	At PERIPHERAL DECODER POINTS— 0 lamp lighted.
10	Depress AT 1 key.	At VOLTMETER— Meter indicates 0 volts. At circuit under test— Relay A operated.
11	At VOLTMETER CONTROL— Depress FEMF key.	At VOLTMETER— Meter indicates 0 volts. At VOLTMETER CONTROL— FEMF lamp lighted.
12	Operate TR REV key.	At VOLTMETER— Meter indicates between 42.75 and 52.50 volts on the 120-volt scale. At VOLTMETER CONTROL— TR REV lamp lighted.
13	At 35F test set— Connect the GRD terminal to system ground (frame) with a test lead with alligator clips.	
14	◆Operate the BATT. & GRD. C.O., REV and G (ground) keys.◆	

SECTION 232-147-501

STEP	ACTION	VERIFICATION
15	Insert one 310 plug of 2P4A cord assembly into top T & R jack of the front of 35F test set.	
16	At front of writing shelf— Insert other 310 plug of 2P4A cord assembly into ACCESS TRK-1 jack.	
17	At 35F test set— Operate No. 1 telegraph key.	
18	Move No. 1 Coarse (red) rheostat slider to left until meter indicates at least 3.15 ma current flow on 15 MIL AMP scale.	At DISPLAY BUFFER— Lamp associated with ferrod sensor 0 remains lighted.
19	Move No. 1 coarse (red) rheostat slider to left until meter indicates approximately 6 ma current flow on 15 MIL AMP scale. <i>Note:</i> Lamp associated with ferrod sensor 0 must not be extinguished. If lamp extinguished, reduce current flow.	
20	Move No. 1 fine (black) rheostat slider to left until lamp associated with ferrod sensor 0 extinguished. <i>Note:</i> Do not exceed 20 ma current flow.	At 35F test set— ♦Meter indicates greater than 5.50 ma current flow on 15 MIL AMP scale.♦
21	Release No. 1 telegraph key. Remove 310 plug from 35F test set and ACCESS TRK-1 jack.	At DISPLAY BUFFER— Lamp associated with ferrod sensor 0 lighted.
22	At PERIPHERAL DECODER POINTS— Release 0 key.	At PERIPHERAL DECODER POINTS— 0 lamp extinguished.
23	Depress AT 1 key.	At circuit under test— Relay A released.
24	At VOLTMETER CONTROL— Release TR REV key.	At VOLTMETER CONTROL— TR REV lamp extinguished.
25	At ACCESS TRUNK 1 CONTROL— Depress RLS key.	At VOLTMETER CONTROL— FEMF lamp extinguished. At ACCESS TRUNK 1 CONTROL— VM lamp extinguished. SUPV lamp extinguished. EQPT ST lamp extinguished. At MISC TEST CONTROL— P & E lamp extinguished.

STEP	ACTION	VERIFICATION
26	At maintenance TTY— ◆For No. 2 ESS offices type in:◆ UB SY:CLB! ◆For No. 2B ESS offices type in: STOP:UTIL!◆	Ferrod sensor display cleared from DISPLAY BUFFER.
27	Remove all test connections.	
28	At telephone set on TTP— Operate green release key.	