

RINGING AND COIN CONTROL TEST

CIRCUIT (SD-2H135) TESTS

NO. 2 AND NO. 2B ELECTRONIC SWITCHING SYSTEMS

1. GENERAL

1.01 This section describes the procedure for testing the ringing and coin control test circuit (SD-2H135) used in the No. 2 and No. 2B Electronic Switching Systems (ESS).

1.02 This section is reissued to include changes due to EF-2 and 2B EF-2 generic programs. This includes the V and T options.

1.03 New (conventional) service order codes were adopted for use with the EF-2 and 2B-EF-2 generic programs. However, the translations can be configured with the old (No. 2 ESS unique) service order codes as an option. These old codes are common to all previous No. 2 and No. 2B ESS generic programs. The EF-2 and 2B-EF-2 generic programs can be arranged to recognize either option. In this section the term "conventional (new)" or "No. 2 ESS unique (old)" is used to identify the service order code for the keywords in each TTY input message given.

1.04 The tests described are:

A. Circuit State Operation: This test verifies relay operation for the required circuit states.

B. Scan Point Operation: This test verifies the saturation of ferrod sensors used to monitor the circuit.

1.05 The ringing and coin control test circuit tests are performed on a periodic basis as prescribed by equipment test list procedures or when malfunction of the circuit is suspected.

1.06 All tests are to be performed from the trunk test panel (TTP). The maintenance display buffer will be used for the scan point

operation tests. For detailed information about the TTP and its operation, refer to Section 232-130-301, Trunk Test Panel—Method of Operation.

1.07 The keys on the TTP may be 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 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 insure system recognition.

1.08 Tables F and G in Section 232-130-301 can be used to convert the TTP meter readings to resistance values in Test A.

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 a 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.

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

2. APPARATUS

2.01 One 2P4A cord assembly consisting of P2B cord 3 feet long equipped with two 310 plugs.

NOTICE

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Bell System except under written agreement

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3. PREPARATION

3.01 Refer to the office records to obtain the member number (MEMN) and directed scan point number (DSP) of the ringing and coin control test circuit to be tested. The trunk group number (TGN) for this circuit is 044.

3.02 Refer to the office records to obtain the MEMN of a coin control circuit (SD-2H125). The TGN for the coin control circuit is 011.

3.03 Refer to the office records to obtain the TGN and MEMN of a ringing circuit for individual, two-party, coin, and PBX lines (SD-2H116-01).

3.04 Verify the DSP obtained from office records as follows:

At maintenance TTY type in:

A VY:SVC:aaa bbb!

aaa = 044

bbb = MEMN

The system response for offices using No. 2 ESS unique (old) code is as follows:

AR VY SVC 044 bbb
TEN nn gcsl
DSP ss rrb

The system response for offices using conventional (new) code is as follows:

AR VY SVC 044 bbb
OE nn gcsl
DSP ss rrb

Where:

ss = scanner number

rr = scanner row

bb = bit in row.

The bb bit represents the first ferrod sensor (0) in the scanner row that is associated with the specific circuit. All other ferrod sensors assigned to the same circuit follow in consecutive order (0, 1, 2, etc.). Refer to the output message manual (OM-2H200) for explanation of other data fields, if required.

3.05 The following is a step-by-step procedure to make the ringing and coin control test circuit traffic busy and connect it to the TTP (Fig. 1).

STEP	ACTION	VERIFICATION
All Tests		
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.

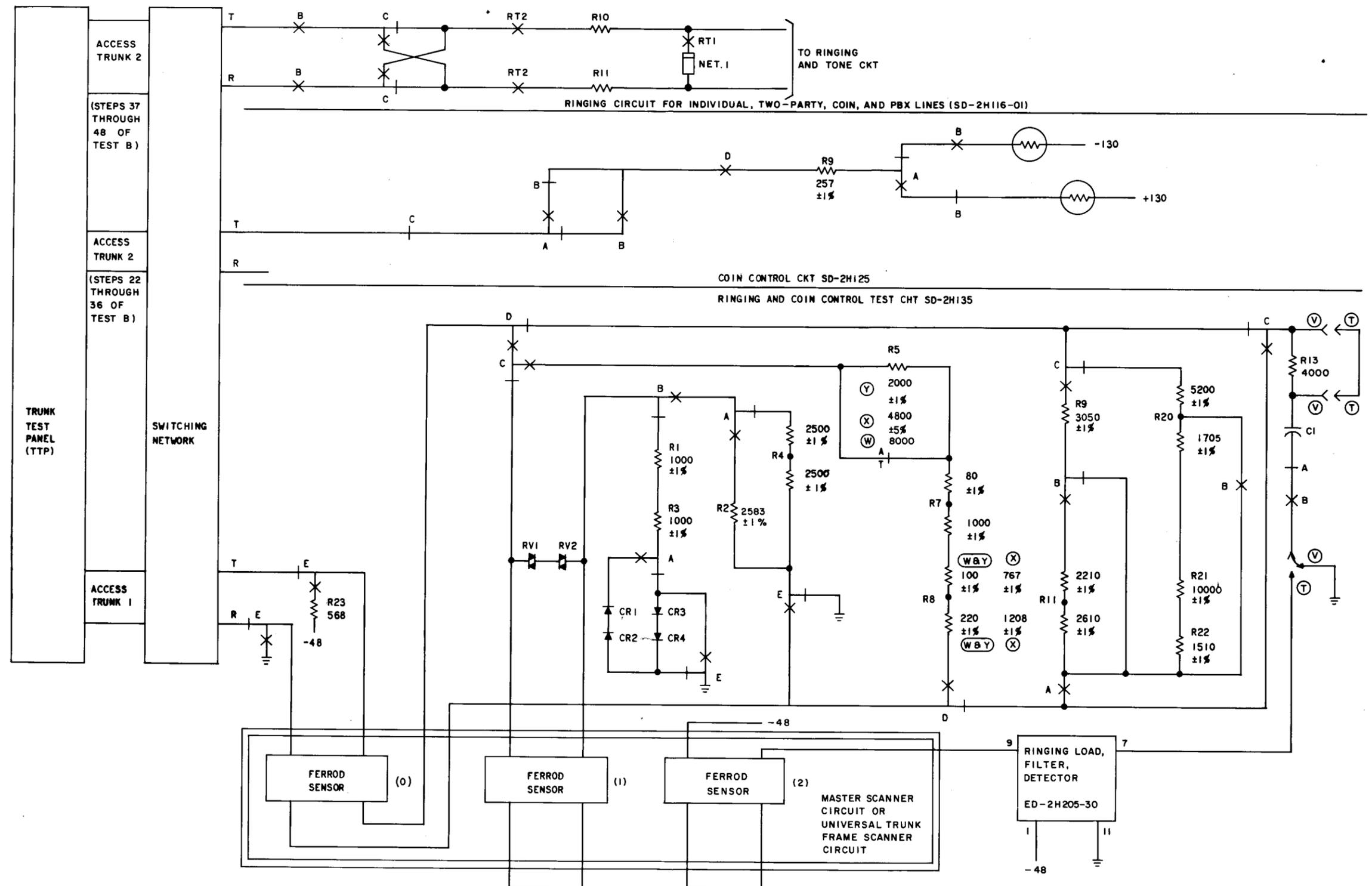


Fig. 1—Test Configuration Using Trunk Test Panel When Testing a Ringing and Coin Control Test Circuit

STEP	ACTION	VERIFICATION
		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.
4a	If P & E lamp is not lighted steadily— At ACCESS TRUNK 1 CONTROL— Depress RLS key.	
5a	Repeat Steps 3 and 4a until connection is successful.	
6	Place handset on-hook or release TRFR key.	At TEL CKT— TRFR lamp extinguished. At telephone set— Access trunk 1 lamp extinguished.
4. METHOD		(2) Troubleshoot the circuit which failed.
4.01	If the verification procedure fails or if a malfunctioning circuit is indicated during any part of these tests, proceed as follows.	(3) Replace faulty circuit components using standard repair procedures.
	(1) Discontinue the test.	(4) Repeat the test that failed. If verification is successful, continue the test.

STEP	ACTION	VERIFICATION
A. Circuit State Operation		
7	At ACCESS TRUNK 1 CONTROL— Depress VM key.	At ACCESS TRUNK 1 CONTROL— VM lamp lighted. At VOLTMETER CONTROL— 100K lamp lighted. At VOLTMETER— Meter indicates 0.
8	At VOLTMETER CONTROL— Operate GRD key.	At VOLTMETER CONTROL— GRD lamp lighted.
9	At STATE CHANGE CONTROL— Set PD GROUP switch to 0-5 position.	
10	At PERIPHERAL DECODER POINTS— Operate 0 key.	At PERIPHERAL DECODER POINTS— 0 lamp lighted.
11	Depress AT 1 key.	At VOLTMETER— Meter indicates between 82 and 86 volts on 120-volt scale. At circuit under test— Relay A operated.

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STEP	ACTION	VERIFICATION
12	At VOLTMETER CONTROL— Depress 20K key.	At VOLTMETER— Meter indicates between 10 and 11 volts on 24-volt scale. At VOLTMETER CONTROL— 100K lamp extinguished. 20K lamp lighted.
13	At PERIPHERAL DECODER POINTS— Operate 1 key.	At PERIPHERAL DECODER POINTS— 1 lamp lighted.
14	Depress AT 1 key.	At VOLTMETER— Meter indicates between 15.2 and 16.5 volts on 24-volt scale. At circuit under test— Relays A and B operated.
15	At PERIPHERAL DECODER POINTS— Operate 2 key.	At PERIPHERAL DECODER POINTS— 2 lamp lighted.
16	Depress AT 1 key.	At VOLTMETER— Meter indicates between 13.5 and 15.0 volts on 24-volt scale. At circuit under test— Relays A, B, and C operated.
17	At PERIPHERAL DECODER POINTS— Release 1 key.	At PERIPHERAL DECODER POINTS— 1 lamp extinguished.
18	Depress AT 1 key.	At circuit under test— Relays A and C operated. Relay B released.
19	At VOLTMETER CONTROL— Depress 1K key.	At VOLTMETER— Meter indicates between 4.4 and 5.5 volts on 24-volt scale. At VOLTMETER CONTROL— 20K lamp extinguished. 1K lamp lighted.
20	At PERIPHERAL DECODER POINTS— Release 0 key. Operate 3 key.	At PERIPHERAL DECODER POINTS— 0 lamp extinguished. 3 lamp lighted.
21	Depress AT 1 key.	For option X— At VOLTMETER— Meter indicates between 4.4 and 5.5 volts on 24-volt scale. <u>For options W and Y—</u> Meter indicates between 7.5 and 8.5 volts on 24-volt scale. At circuit under test—

STEP	ACTION	VERIFICATION
		Relays C and D operated. Relay A released.
22	At PERIPHERAL DECODER POINTS— Operate 0 key.	At PERIPHERAL DECODER POINTS— 0 lamp lighted.
23	Depress AT 1 key.	At VOLTMETER— <u>For Option W—</u> Meter indicates between <u>1.8 and 2.2</u> volts on 24-volt scale. For Option X— Meter indicates between 2.0 and 2.4 volts on 24-volt scale. For Option Y— Meter indicates between 4.0 and 4.8 volts on 24-volt scale. At circuit under test— Relays A, C, and D operated.
24	At PERIPHERAL DECODER POINTS— Release 0 and 2 keys. Operate 1 key.	At PERIPHERAL DECODER POINTS— 0 and 2 lamps extinguished. 1 lamp lighted.
25	At VOLTMETER CONTROL— Release GRD key. Operate TR REV key. Depress 20K key.	At VOLTMETER CONTROL— GRD lamp extinguished. TR REV lamp lighted. 1K lamp extinguished. 20K lamp lighted.
26	Depress AT 1 key.	At VOLTMETER— Meter indicates between 15.2 and 16.5 volts on 24-volt scale. At circuit under test— Relays B and D operated. Relays A and C released.
27	At PERIPHERAL DECODER POINTS— Operate 0 key.	At PERIPHERAL DECODER POINTS— 0 lamp lighted.
28	At VOLTMETER CONTROL— Depress 1K key.	At VOLTMETER CONTROL— 20K lamp extinguished. 1K lamp lighted.
29	Depress AT 1 key.	At VOLTMETER— Meter indicates between 5.2 and 6.0 volts on 24-volt scale. At circuit under test— Relays A, B, and D operated.
30	At PERIPHERAL DECODER POINTS— Release 0, 1, and 3 keys.	At PERIPHERAL DECODER POINTS— 0, 1, and 3 lamps extinguished.

Send to:

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Date: May 14, 1978

Please type or print clearly:

The following comments pertaining to Bell System Practices should be considered in connection with:

(a) Revision of Section Number 232 - 155 - 501, Iss. No. 04

(b) Preparation of a new section on the following subject:

(c) Review by AT&T of Operating Company - prepared section,
number - - , titled _____

which may have system wide application. Attach three copies of section, duplicate E-3973 not required. Acknowledged only upon request.

Comments: **Test B. Scan Point Operation.**

Step 7 should read, Use the TTY print-out from 3.01 to determine the Trunk Scanner and the number of the Scanner Row associated with the Scan points assigned to the Ringing and Coin Control Test Circuit. (The Coin Control Test Ferrods are the ones we are controlling and testing.)

(use separate sheet if required)

Classification

- Urgent
- Necessary
- Deferrable

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Attached:

Duplicate copy
with attachments

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STEP	ACTION	VERIFICATION
31	Depress AT 1 key.	At circuit under test— Relays A, B, and D released.
32	At VOLTMETER CONTROL— Depress 100K key.	At VOLTMETER CONTROL— 1K lamp extinguished. 100K lamp lighted.
33	Release TR REV key.	TR REV lamp extinguished.
34	At ACCESS TRUNK 1 CONTROL— Depress RLS key.	At ACCESS TRUNK 1 CONTROL— SUPV lamp extinguished. EQPT ST lamp extinguished. VM lamp extinguished. At MISC TEST CONTROL— P & E lamp extinguished.
B. Scan Point Operation		
	<i>Note:</i> Perform Steps 1 through 6.	
7	Use the TTY printout from 3.00 ^{3.01} to determine the trunk scanner and the number of the scanner row associated with the scan points assigned to the ringing and coin control circuit.	
8	At maintenance TTY— For No. 2 ESS offices type in: UBRL TS:RSN:ssrr! ss = Number of trunk scanner in decimal (00-11) from Step 7. rr = Number of scanner row in decimal (00-63) from Step 7.	At DISPLAY BUFFER— Scanner row containing specific scan points displayed on DISPLAY BUFFER. Lamps associated with ferrod sensors connected to circuit under test lighted.
	For No. 2B ESS office type in: MON:TSSN ssrr;RDT LAMPS! ss = Number of trunk scanner in decimal (00-11 for the 2B-EF-1 generic program) and (00-30 for the 2B-EF-2 generic program) from Step 7. rr = Number of scanner row in decimal (0-63) from Step 7. RDT LAMPS = Direct the result to the DISPLAY BUFFER.	
9	At STATE CHANGE CONTROL— Set PD GROUP switch to 0-5 position.	
10	At PERIPHERAL DECODER POINTS— Operate 0, 1, and 4 keys.	At PERIPHERAL DECODER POINTS— 0, 1, and 4 lamps lighted.
11	Depress AT 1 key.	At DISPLAY BUFFER— Lamp associated with ferrod sensor 0 extinguished.

STEP	ACTION	VERIFICATION
		At circuit under test— Relays A, B, and E operated.
12	At PERIPHERAL DECODER POINTS— Release 0 and 1 keys.	At PERIPHERAL DECODER POINTS— 0 and 1 lamps extinguished.
13	Depress AT 1 key.	At DISPLAY BUFFER— Lamp associated with ferrod sensor 0 lighted. At circuit under test— Relay E remains operated. Relays A and B released.
14	At PERIPHERAL DECODER POINTS— Operate 2 and 3 keys.	At PERIPHERAL DECODER POINTS— 2 and 3 lamps lighted.
15	Depress AT 1 key.	At DISPLAY BUFFER— Lamp associated with ferrod sensor 0 extinguished. At circuit under test— Relays C and D operated. Relay E remains operated.
16	At PERIPHERAL DECODER POINTS— Operate 1 key. Release 2 key.	At PERIPHERAL DECODER POINTS— 1 lamp lighted. 2 lamp extinguished.
17	Depress AT 1 key.	At DISPLAY BUFFER— Lamp associated with ferrod sensor 0 remains extinguished. Lamp associated with ferrod sensor 1 extinguished. At circuit under test— Relay B operated. Relays D and E remain operated. Relay C released.
18	At PERIPHERAL DECODER POINTS— Release 1 key.	At PERIPHERAL DECODER POINTS— 1 lamp extinguished.
19	Depress AT 1 key.	At DISPLAY BUFFER— Lamp associated with ferrod sensor 0 remains extinguished. Lamp associated with ferrod sensor 1 remains extinguished. At circuit under test— Relays D and E remain operated. Relay B released.
20	At PERIPHERAL DECODER POINTS— Release 4 key.	At PERIPHERAL DECODER POINTS— 4 lamp extinguished.
21	Depress AT 1 key.	At DISPLAY BUFFER— Lamp associated with ferrod sensor 0 lighted. Lamp associated with ferrod sensor 1 lighted.

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STEP	ACTION	VERIFICATION
		At circuit under test— Relay D remains operated. Relay E released.
22	On access trunk 2, repeat Steps 1 through 6 using the TGN and MEMN of the coin control circuit obtained in 3.02 (Fig. 1). <i>Note:</i> If the coin control circuit used has not been tested within the time period specified by the equipment test list procedure, refer to Section 232-142-501 to test the circuit before it is used. This action is required to insure a valid test of the ringing and coin control test circuit.	Same as Steps 1 through 6.
23	At front of writing shelf— Use 2P4A cord to patch ACCESS TRK-1 jack to ACCESS TRK-2 jack.	
24	At PERIPHERAL DECODER POINTS— Operate 0 key.	At PERIPHERAL DECODER POINTS— 0 lamp lighted. 3 lamp remains lighted.
25	Depress AT 2 key.	At DISPLAY BUFFER— Lamp associated with ferrod sensor 0 extinguished. Lamp associated with ferrod sensor 1 extinguished. At coin control circuit— Relays A and D operated. At circuit under test— Relay D remains operated.
26	Depress AT 1 key.	At DISPLAY BUFFER— Lamps associated with ferrod sensor 0 lighted. Lamps associated with ferrod sensor 1 lighted. At circuit under test— Relay A operated. Relay D remains operated.
27	At PERIPHERAL DECODER POINTS— Operate 1 key. Release 0 key.	At PERIPHERAL DECODER POINTS— 1 lamp lighted. 0 lamp extinguished.
28	Depress AT 2 key.	At DISPLAY BUFFER— Lamp associated with ferrod sensor 0 extinguished. Lamp associated with ferrod sensor 1 extinguished. At coin control circuit— Relay B operated. Relay D remains operated. Relay A released.

STEP	ACTION	VERIFICATION
29	At PERIPHERAL DECODER POINTS— Release 1 and 3 keys.	At PERIPHERAL DECODER POINTS— 1 and 3 lamps extinguished.
30	Depress AT 1 and AT 2 keys.	At DISPLAY BUFFER— Lamp associated with ferrod sensor 0 lighted. Lamp associated with ferrod sensor 1 lighted. At coin control circuit— Relays B and D released. At circuit under test— Relays A and D released.
31	At front of writing shelf— Remove 2P4A cord between ACCESS TRK-1 and ACCESS TRK-2 jacks.	
32	At PERIPHERAL DECODER POINTS— Operate 1 and 2 keys.	At PERIPHERAL DECODER POINTS— 1 and 2 lamps lighted.
33	Depress AT 1 key.	At circuit under test— Relays B and C operated.
34	At ACCESS TRUNK 1 CONTROL— Depress TALK key.	At ACCESS TRUNK 1 CONTROL— TALK lamp lighted.
35	At MISC TEST CONTROL— Depress and hold MR (Man Ring) key.	At DISPLAY BUFFER— Lamps associated with ferrod sensors 0 and 24 extinguished.
36	Release MR key.	<i>we only have ferrods</i> <i>0+1 for this chd as of 5/14/78</i> Lamps associated with ferrod sensors 0 and 24 lighted.
37b	<i>NO</i> <i>I</i> If circuit under test has T option— At ACCESS TRUNK 2 CONTROL— Depress RLS key.	At ACCESS TRUNK 2 CONTROL— EQPT ST lamp extinguished. SUPV lamp extinguished.
38b	On access trunk 2, repeat Steps 1 through 6 using TGN and MEMN of the ringing circuit for individual, two-party, coin, and PBX lines obtained in 3.03 (Fig. 1).	
39b	At PERIPHERAL DECODER POINTS— Operate 0 key. Release 2 key.	At PERIPHERAL DECODER POINTS— 0 lamp lighted. 1 lamp remains lighted. 2 lamp extinguished.
40b	Depress AT 2 key.	At ringing circuit— Relays A and B operated. At circuit under test— Relays B and C remain operated.

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STEP	ACTION	VERIFICATION
41b	At front of writing shelf— Use 2P4A cord to patch ACCESS TRK-1 jack to ACCESS TRK-2 jack.	
	<i>Note:</i> Telephone set on TTP must be on-hook.	
42b	At PERIPHERAL DECODER POINTS— Release 0 key.	At PERIPHERAL DECODER POINTS— 0 lamp extinguished.
43b	Depress AT 2 key.	At DISPLAY BUFFER— Lamps associated with ferrod sensors 0 and 2 alternate lighted for 4 seconds and extinguished for 2 seconds. Lamp associated with ferrod sensor 0 may flicker. At ringing circuit— Relay A released. Relay B remains operated. At circuit under test— Relays B and C remain operated.
44b	At PERIPHERAL DECODER POINTS— Operate 2 and 5 keys.	At PERIPHERAL DECODER POINTS— 2 and 5 lamps lighted. 1 lamp remains lighted.
45b	Depress AT 1 key.	At DISPLAY BUFFER— Lamp associated with ferrod sensor 2 lighted. Lamp associated with ferrod sensor 0 alternates lighted for 4 seconds and extinguished for 2 seconds. Lamp associated with ferrod sensor 0 may flicker: At circuit under test— Relay F operated. Relays B and C remain operated. At ringing circuit— Relay B remains operated.
46b	At PERIPHERAL DECODER POINTS— Release 1, 2, and 5 keys.	At PERIPHERAL DECODER POINTS— 1, 2, and 5 lamps extinguished.
47b	Depress AT 1 and AT 2 keys.	At circuit under test— Relays B, C, and F released. At ringing circuit— Relay B released.
48b	At front of writing shelf— Remove 2P4A cord between ACCESS TRK-1 and ACCESS TRK-2 jacks.♦	
49c	♦If circuit under test has V option♦ — At PERIPHERAL DECODER POINTS— Release 1 and 2 keys.	At PERIPHERAL DECODER POINTS— 1 and 2 lamps extinguished.

YES
✓

STEP	ACTION	VERIFICATION
50c	Depress AT 1 key.	At circuit under test— Relays B and C released.
51	At ACCESS TRUNK 1 CONTROL and at ACCESS TRUNK 2 CONTROL— Depress RLS keys.	At ACCESS TRUNK 1 CONTROL— TALK lamp extinguished. EQPT ST lamp extinguished. SUPV lamp extinguished. At ACCESS TRUNK 2 CONTROL— EQPT ST lamp extinguished. SUPV lamp extinguished. At MISC TEST CONTROL— P & E lamp extinguished.
52	At maintenance TTY— For No. 2 ESS offices type in: UB SY:CLB!	Ferrod sensor display removed from DISPLAY BUFFER.
	◆For No. 2B ESS offices type in: STOP:UTIL!◆	
53	At telephone set on TTP— Operate green release key.	