COIN CONTROL CIRCUIT (SD-2H125) WITH DIAL TONE FIRST FEATURES—TESTS NO. 2 AND ▸NO. 2B◂ ELECTRONIC SWITCHING SYSTEMS

1. GENERAL

1.01 This section describes the method of testing the coin control circuit (SD-1H125) with dial tone first features used in the No. 2 and No. 2B Electronic Switching Systems (ESS).

1.02 This section is reissued to include the No. 2B ESS.

1.03 The coin control circuit provides the means for the system to perform the calling functions required at coin operated telephones. The circuit is arranged to work with:

- Ground-start (prepay)
- Loop-start (prepay)
- Loop-start (dial tone first).

1.04 The following tests will be performed:

*A. **Relay Operation:*** This test checks the operation of the individual relays in the circuit.

*B. **Circuit State Operation:*** This test checks the circuit operation and span point operation in the required circuit states. In addition, the sensitivity or ferrod sensors 0 and 1 will be checked. Included in this test are:

(1) Continuity and initial coin deposit

(2) Coin collect and return

(3) Overtime coin deposit

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

1.06 The tests in this section are to be performed whenever a malfunction of one of the circuits is suspected.

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

1.08 All tests are to be performed from the trunk test panel (TTP). 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 type key shall be identified by the word "depress" in the ACTION column. For more detailed information about the TTP and its operation, refer to Section 232-130-301, TRUNK TEST PANEL—METHOD OF OPERATION.

Note: Nonlocking keys require a depression of at least one-half second to insure 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 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 The ferrod sensitivity tests require the use of a 35F current flow test set. For detailed information about the 35F current flow test set, refer to Section 100-101-101, 35-Type Test Sets

SD-96003-01 (J94714A) and SD-95470-01 (J94714B)—Description and Application.

2. APPARATUS

Note: Equivalent apparatus may be substituted.

2.01 A 35F current flow test set.

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

2.03 A test lead with alligator clips at both ends.

3. PREPARATION

3.01 Refer to the office records to obtain the member number (MEMN) and the directed scan point number (DSP) of the coin control circuit to be tested. The trunk group number (TGN) for this circuit is 011.

3.02 Verify the scan point number obtained from the office records as follows:

At maintenance TTY, type in:

A VY:SVC:aaa bbb!

aaa = 011

bbb = MEMN

The system response is as follows:

AR VY SVC aaa bbb

TEN nn gcsl

.

.

.

DSP ssrrbb

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 that circuit follow in consecutive order (0, 1, 2, etc). Refer to 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 coin control circuit traffic busy and to connect it to the TTP. Steps 7 and 8 are for the circuit state tests only.

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 test and control unit if using headset.	Access trunk 1 lamp lighted. Dial tone received. At ACCESS TRUNK 1 CONTROL— SUPV lamp lighted. TRFR lamp lighted if TRFR key is operated.
3	At TOUCH-TONE dial— Dial 1 + 011 + MEMN + ST.	At ACCESS TRUNK 1 CONTROL— EQPT ST lamp lighted: Steady—circuit idle. 60 ipm—circuit traffic busy. 120 ipm—circuit maintenance busy. At MISC TEST CONTROL— P & E lamp lighted if connection was successful.

STEP	ACTION	VERIFICATION
		Note: If the EQPT ST lamp is flashing at 60 ipm and the P & E lamp is not lighted, the TTP is not connected to the circuit to be tested. Perform Steps 4a and 5a.
4a	Operate RLS key.	
5a	Repeat Steps 2 and 3 until connection is successful.	
6	Place handset on-hook, or release TRFR key.	TRFR lamp extinguished.
Circuit State Operation Only		
7	Use the TTY printout from part 3.02 to determine the trunk scanner and the number of the scanner row associated with the scan points assigned to the circuit under test.	
8	At maintenance TTY— ▶For No. 2 ESS offices type in:◀ UBRL TS:RSN;ssrr! ss = Number of trunk scanner in decimal (0-11) from Step 7. rr = Number of scanner row in decimal (0-63) from Step 7. ▶For No. 2B ESS offices type in: MON:TSSN ssrr;RDT LAMPS! ss=Number of trunk scanner in decimal (0-11) from Step 7. rr=Number of scanner row in decimal (0-63) from Step 7. RDT LAMPS = Direct the result to the DISPLAY BUFFER.◀	At DISPLAY BUFFER— Scanner row containing specific scan points displayed on display buffer (DB). Lamps associated with ferrod sensors connected to circuit under test lighted.

4. METHOD

4.01 If the verification procedure fails or if a malfunctioning circuit is indicated during any part of these tests, 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 that failed. If verification is successful, continue the test.

STEP	ACTION	VERIFICATION
A. Relay Operation		
7	At ACCESS TRUNK 1 CONTROL— Depress VM key.	VM lamp lighted. At VOLTMETER CONTROL— 100K lamp lighted.
8	At STATE CHANGE CONTROL— Set PD GROUP switch to 0-5 position.	
9	At PERIPHERAL DECODER POINTS— Operate 0 key.	PERIPHERAL DECODER POINTS 0 lamp lighted.
10	Depress AT 1 key.	At VOLTMETER— Meter indicates 0. At circuit under test— Relay A operated.
11	At VOLTMETER CONTROL— Operate TR REV key.	TR REV lamp lighted. At VOLTMETER— Meter indicates 50 $\pm$2 on 120V scale.
12	Release TR REV key.	TR REV lamp extinguished. At VOLTMETER— Meter indicates 0.
13	At PERIPHERAL DECODER POINTS— Release 0 key.	PERIPHERAL DECODER POINTS 0 lamp extinguished.
14	Depress AT 1 key.	At circuit under test— Relay A released.
15	Repeat Steps 9 through 14 for PERIPHERAL DECODER POINTS 1 key.	Same as Steps 9 through 14 except relay B will be operated and released.
16	At PERIPHERAL DECODER POINTS— Operate 2 key.	PERIPHERAL DECODER POINTS 2 lamp lighted.
17	Depress AT 1 key.	At VOLTMETER— Meter indicates 0. At circuit under test— Relay C operated.
18	At VOLTMETER CONTROL— Operate TR REV key.	TR REV lamp lighted. At VOLTMETER— Meter indicates 100 $\pm$1 on 120V scale.
19	Depress 1K key.	1K lamp lighted. 100K lamp extinguished. At VOLTMETER—

STEP	ACTION	VERIFICATION
		Meter indicates between 13.2 and 13.6 on 24V scale.
20	Depress 100K key.	1K lamp extinguished. 100K lamp lighted. At VOLTMETER— Meter indicates 100 $\pm$1 on 120V scale.
21	Release TR REV key.	TR REV lamp extinguished. At VOLTMETER— Meter indicates 0.
22	At PERIPHERAL DECODER POINTS— Release 2 key.	PERIPHERAL DECODER POINTS 2 lamp extinguished.
23	Depress AT 1 key.	At circuit under test— Relay C released.
24	At VOLTMETER CONTROL— Depress MET VM key.	MET VM lamp lighted. 100K lamp extinguished. At VOLTMETER— Meter indicates 0.
25	At PERIPHERAL DECODER POINTS— Operate 3 key.	PERIPHERAL DECODER POINTS 3 lamp lighted.
26	Depress AT 1 key.	At VOLTMETER— Meter indicates −42.75V to −52.5V on 120V scale. At circuit under test— Relay D operated.
27	Release 3 key.	PERIPHERAL DECODER POINTS 3 lamp extinguished.
28	Depress AT 1 key.	At VOLTMETER— Meter indicates 0. At circuit under test— Relay D released.
29	At VOLTMETER CONTROL— Depress 100K key.	MET VM lamp extinguished. 100K lamp lighted.
30	At ACCESS TRUNK 1 CONTROL— Depress RLS key.	VM lamp extinguished. SUPV lamp extinguished. At MISC TEST CONTROL— P & E lamp extinguished.

STEP	ACTION	VERIFICATION
B. Circuit State Operation		
Continuity and initial coin deposit		
9	At PERIPHERAL DECODER POINTS— Operate 3 key.	PERIPHERAL DECODER POINTS 3 lamp lighted.
10	Depress AT 1 key.	At circuit under test— Relay D operated.
11	At 35F test set— Connect the GRD terminal to system ground (frame) with the lead with alligator clips.	
12	~~Set the switches for negative battery on ring and ground on tip.~~ operate Batt + gnd CO Key B2 and GRD Key on 35F is not operated.	
13	Insert one 310 plug of 2P4A cord assembly into top T&R jack on front of 35F test set.	
14	At front of writing shelf on TTP— Insert other 310 plug of 2P4A cord assembly into ACCESS TRK 1 jack.	
15	At 35F test set— Move appropriate coarse (red) rheostat slider to left until meter indicates about 7.5 ma current flow.	
16	Move appropriate fine (black) rheostat slider to left until DB lamp associated with ferrod sensor 0 extinguishes.	At 35F test set— Meter indicates 10 ma current flow. Ferrod sensor 0 saturated. ***Note:*** The ferrod sensor may saturate at less than 10 ma. It should not require more than 10 ma to saturate.
17	Move appropriate fine (black) rheostat slider to right until DB lamp associated with ferrod sensor 0 lights.	Meter indicates 4.5 ma current flow. Ferrod sensor 0 unsaturated. ***Note:*** The ferrod sensor may be unsaturated at more than 4.5 ma. It should not require less than 4.5 ma to become unsaturated.
18	At PERIPHERAL DECODER POINTS— Operate 2 key.	PERIPHERAL DECODER POINTS 2 lamp lighted.
19	Depress AT 1 key.	At circuit under test— Relays C and D operated.

STEP	ACTION	VERIFICATION
20	At 35F test set— Set switches for negative battery on tip and ground from frame.	
21	Move appropriate coarse (red) rheostat slider to left until DB lamp associated with ferrod sensor 2 extinguishes.	At circuit under test— Relay LT operated at 9.1 to 9.6 ma current flow after soak of 27 ma.
22	Move appropriate coarse (red) rheostat slider to right until DB lamp associated with ferrod sensor 2 lights.	Relay LT nonoperated at 7.1 to 7.5 ma current flow. Relay LT released at 4.2 to 4.4 ma current flow.
23	At PERIPHERAL DECODER POINTS— Release 2 and 3 keys.	PERIPHERAL DECODER POINTS 2 and 3 lamps extinguished.
24	Depress AT 1 key.	At circuit under test— Relays C and D released.
25	At front of writing shelf on TTP— Remove 310 plug on 2P4A cord assembly from ACCESS TRK 1 jack.	
Coin collect and return test		
26	At ACCESS TRUNK 1 CONTROL— Depress VM key.	VM lamp lighted. At VOLTMETER CONTROL— 100K lamp lighted.
27	At VOLTMETER CONTROL— Depress FEMF key.	100K lamp extinguished. FEMF lamp lighted.
28	Operate TR REV key.	TR REV lamp lighted.
29	Operate VM REV key.	VM REV lamp lighted.
30	At PERIPHERAL DECODER POINTS— Operate 0 and 3 keys.	PERIPHERAL DECODER POINTS 0 and 3 lamps lighted.
31	Depress AT 1 key.	At circuit under test— Relays A and D operated. At VOLTMETER— Meter indicates full scale deflection on 120V scale. ***Note:*** The voltage applied to the meter is +130V. Meter will not be damaged by this potential.
32	At 35F test set— Connect BAT terminal on front of meter case to ground (frame) through lead with alligator	

STEP	ACTION	VERIFICATION
	clips. Set switches for positive battery on tip and ground on BAT terminal. all keys normal	
33	At front of writing shelf on TTP— Insert 310 plug on 2P4A cord assembly into ACCESS TRK 1 jack.	At VOLTMETER— Meter indicates 0.
34	At 35F test set— Move appropriate coarse (red) rheostat slider to left until meter indicates about 14 ma current flow.	
35	Move appropriate fine (black) rheostat slider to left until DB lamp associated with ferrod sensor 1 extinguishes.	Meter indicates 17 ma current flow. Ferrod sensor 1 saturated. ***Note:*** The ferrod sensor may saturate at less than 17 ma. It should not require more than 17 ma to saturate.
36	Move appropriate fine (black) rheostat slider to right until DB lamp associated with ferrod sensor 1 lights.	Meter indicates 8 ma current flow. Ferrod sensor 1 unsaturated. ***Note:*** The ferrod sensor may unsaturate at more than 8 ma. It should not require less than 8 ma to ~~saturate~~. unsaturate
37	At front of writing shelf on TTP— Remove 310 plug on 2P4A cord assembly from ACCESS TRK 1 jack.	At VOLTMETER— Meter indicates full scale deflection on 120V scale.
38	At PERIPHERAL DECODER POINTS— Release 0 and 3 keys.	PERIPHERAL DECODER POINTS 0 and 3 lamps extinguished.
39	Depress AT 1 key.	At circuit under test— Relays A and D released. At VOLTMETER— Meter indicates 0.
40	At VOLTMETER CONTROL— Release VM REV key.	VM REV lamp extinguished.
41	At PERIPHERAL DECODER POINTS— Operate 1 and 3 keys.	PERIPHERAL DECODER POINTS 1 and 3 lamps lighted.
42	Depress AT 1 key.	At circuit under test— Relays B and D operated. At VOLTMETER— Meter indicates full scale deflection on 120V scale.

STEP	ACTION	VERIFICATION
		Note: The voltage applied to the meter is −130V. The meter will not be damaged by this potential.
43	At 35F test set— Connect GRD terminal on front of set to ground (frame) through lead with alligator clips. Set switches for negative battery on tip and ground on GRD terminal. Batt + gnd cutoff + G key operated + REV.	
44	Repeat Steps 33 to 37.	
45	At PERIPHERAL DECODER POINTS— Release 1 and 3 keys.	PERIPHERAL DECODER POINTS 1 and 3 lamps extinguished.
46	Depress AT 1 key.	At circuit under test— Relays B and D released. At VOLTMETER— Meter indicates 0.
Overtime coin deposit test		
47	At VOLTMETER CONTROL— Release TR REV key.	TR REV lamp extinguished.
48	Operate VM REV key.	VM REV lamp lighted.
49	At PERIPHERAL DECODER POINTS— Operate 0, 1, and 3 keys.	PERIPHERAL DECODER POINTS 0, 1, and 3 lamps lighted.
50	Depress AT 1 key.	At circuit under test— Relays A, B, and D operated. At VOLTMETER— Meter indicates 65V ±5V on 120V scale.
51	At 35F test set— Set switches for positive voltage on ring and ground on tip. G open, Batt + gnd C O, REV. operated.	
52	At front of writing shelf on TTP— Insert 310 plug on 2P4A cord assembly into ACCESS TRK 1 jack.	At VOLTMETER— Meter indicates 0.
53	At 35F test set— Move appropriate coarse (red) rheostat slider to left until DB lamp associated with ferrod sensor 0 extinguishes.	At DISPLAY BUFFER— Ferrod sensor 0 saturated. Meter indicates 10 ma. See note, Part B(1), Step 16.
54	Move appropriate coarse (red) slider to right until DB lamp associated with ferrod sensor	At DISPLAY BUFFER— Ferrod sensor 0 unsaturated.

STEP	ACTION	VERIFICATION
	0 lights.	Meter indicates 4.5 ma. See note, Part B(1), Step 17.
55	At front of writing shelf on TTP— Remove 310 plug on 2P4A cord assembly from ACCESS TRK 1 jack.	At VOLTMETER— Meter indicates 65V $\pm$5V on 120V scale.
56	At PERIPHERAL DECODER POINTS— Release 0, 1, and 3 keys.	PERIPHERAL DECODER POINTS 0, 1, and 3 extinguished.
57	Depress AT 1 key.	At VOLTMETER— Meter indicates 0. At circuit under test— Relays A, B, and D released.
58	At VOLTMETER CONTROL— Operate TR REV key.	TR REV lamp lighted.
59	At PERIPHERAL DECODER POINTS— Operate 0, 1, 2, and 3 keys.	PERIPHERAL DECODER POINTS 0, 1, 2, and 3 lamps lighted.
60	Depress AT 1 key.	At circuit under test— Relays A, B, C, and D operated. At VOLTMETER— Meter indicates 48V on 120V scale.
61	At 35F test set— Connect BAT terminal on front of set to ground (frame) through lead with alligator clips. Set switches for positive voltage on tip and ground on BAT terminal. all keys normal	
62	At front of writing shelf on TTP— Insert 310 plug on 2P4A cord assembly into ACCESS TRK 1 jack.	At VOLTMETER— Meter indicates 0.
63	Move appropriate coarse (red) rheostat slider to left until DB lamp associated with ferrod sensor 2 extinguishes.	Ferrod sensor 2 saturated. 9.5 mills
64	Move appropriate coarse (red) rheostat slider to right until DB lamp associated with ferrod sensor 2 lights.	Ferrod sensor 2 unsaturated. 6 mills
65	Remove 310 plug on 2P4A cord assembly from ACCESS TRK 1 jack.	At VOLTMETER— Meter indicates 42.75V to 52.5V on 120V scale.
66	At PERIPHERAL DECODER POINTS— Release 0, 1, 2, and 3 keys.	PERIPHERAL DECODER POINTS 0, 1, 2, and 3 lamps extinguished.

STEP	ACTION	VERIFICATION
67	Depress AT 1 key.	At circuit under test— Relays A, B, C, and D released. At VOLTMETER— Meter indicates 0.
68	At VOLTMETER CONTROL— Release TR REV key.	TR REV lamp extinguished.
69	Release VM REV key.	VM REV lamp extinguished.
70	At ACCESS TRUNK 1 CONTROL— Depress RLS key.	VM lamp extinguished. EQPT ST lamp extinguished. SUPV lamp extinguished. At MISC TEST CONTROL— P & E lamp extinguished.
71	At telephone set on TTP— Operate green release key.	
72	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 BUFFER.