

ROTARY OUT-TRUNK SWITCHES
OPERATION TESTS
USING TEST SET SD-31426-01 (J34714A)
STEP-BY-STEP OFFICES

1. GENERAL

1.01 This section describes a method of testing rotary out-trunk switch circuits using the outgoing trunk, outgoing repeater, and rotary out-trunk switch test set SD-31426-01. This section does not include a test of the C lead outgoing from the rotary out-trunk switch to an automatic ticketing trunk. Section 226-610-501, which is based on the use of the test set SD-90469-02, provides a means of making a marginal test of the rotary out-trunk switch SL relay when Q option is provided in the test set. Section 226-605-500 provides a method of testing 4-wire rotary out-trunk switch SD-32253-01, using the dial hand test set.

1.02 This section has been reissued to correct title, include reference to Section 226-605-500 for testing switches, and generally to bring the section up to date. Since this reissue covers a general revision, arrows ordinarily used to indicate changes have been omitted.

1.03 The tests covered are:

A. *SL Relay, Trunk Continuity, Polarity, and Stepping Tests:* This test checks the SL relay for speed of operation which verifies the continuity of the sleeve lead to the TK relay. This test also checks the ability of the switch to find an idle trunk when the trunk on which it is resting is seized, the continuity and polarity of the tip and ring, and the continuity of the sleeve.

B. *SL Relay, Trunk Continuity, Polarity, Stepping, and Alarm Tests:* Test B, in addition to making the same checks as Test A, also checks the alarm features. When Test B is

specified, it is not necessary to make Test A on the same testing cycle.

C. *All-Trunks-Busy Relay and Traffic Register Tests:* This test checks the C and SP relays for the 3-wire switch groups and the C and TB relays for the 4-wire switch groups. Test C also includes a test of the all-trunks-busy register operation. When making the traffic register test, an assistant is required at the traffic register rack. Precautions should be taken to perform Test C so as not to affect normal traffic.

D. *Test of A Lead (W Option):* This test checks the continuity of the A lead of 4-wire switches by using the test circuit for 4-wire switches as shown on SD-30868-011 and in conjunction with the trunk test set. This test cannot be made on rotary out-trunk switches associated with trunks in which the A lead is not connected to battery through a relay while the trunk is idle, such as circuit SD-31712-01.

1.04 Test C requires that all trunks in a group be made busy.

1.05 Test C requires action and verification at the rotary out-trunk switch bay and verification at the traffic register.

1.06 *Lettered Steps:* A letter a, b, c, etc, added to a step number in Part 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.

SECTION 226-610-500

1.07 During Test C, the all-trunks-busy register (ATB) will score. The reporting of this register operation should be in accordance with local instructions.

2. APPARATUS

All Tests

- 2.01** Test set J34714A (SD-31426-01).
- 2.02** Patching cord, P2J cord, 9 feet long, equipped with two 310 plugs (2P9A cord).
- 2.03** Patching cord, P3E cord, 6 feet long, equipped with two 310 plugs (3P7A).

Test B

2.04 Two 262A plugs, or equivalent, for use in offices not equipped to speed up the timing of alarms for test purposes.

Test C

2.05 Blocking tools as required. Apply tools as covered in Section 069-020-801.

Test D

- 2.06** Patching cord, two P3E cord, 10 feet long, equipped with two 310 plugs (3P6F cord).
- 2.07** Testing cord, W1B cord, 10 feet long, equipped with 310 plug (1W5A cord).

3. PREPARATION

STEP	ACTION	VERIFICATION
-------------	---------------	---------------------

All Tests

- 1** Using P2J cord, connect the BAT-G jack of test set to the 48-volt battery supply jack located on frame.

Note: To avoid possible grounding of battery supply lead, connect the cord to test set first and when disconnecting, remove the test set cord last.

4. METHOD

STEP	ACTION	VERIFICATION
-------------	---------------	---------------------

A. SL Relay, Trunk Continuity, Polarity, and Stepping Tests

- 2** Release any call indicator positions that may be busied out while making test.
- 3** Connect the ROT-OTS jack of the test set to test TST jack of the rotary out-trunk switch using a 6-foot P3E cord.
BY lamp lighted.
Note: If **BY** lamp lighted, remove plug from jack and select another switch.
- 4** Operate SLV key.
Observe that switch does not step.
- 5** Restore SLV key.

STEP	ACTION	VERIFICATION
6	Operate STEP key.	Switch steps to next terminal or trunk and continues to step. BY lamp may flash each time switch steps. Other idle switches in same group may step if resting on trunks that are busied by switch under test. Switch stepped over all terminals.
7a	If switch did not step — Restore the STEP key.	
8a	Operate SLV key.	This will hold switch used in test on trunk and step idle switches to next idle trunk.
9	Restore STEP key.	
10	Remove test cord from test jack.	
11	Repeat Steps 3 through 10 for all switches.	
12	Restore all call indicator positions released in Step 2.	

B. SL Relay, Trunk Continuity, Polarity, Stepping, and Alarm Tests

2	In offices where equipment has been provided to speed up the common timing circuit for testing purposes, operate key which will provide short timing interval.	
3	Perform Steps 2 through 5 in Test A.	
4	Operate STEP key.	Switch steps to next terminal and continues to step.
5	As switch approaches terminal 21, momentarily operate and restore STEP key until the switch rests on terminal 21.	Switch rests on terminal 21.
6	Operate SLV key.	
	<i>Note:</i> If terminal 21 is busy as indicated by the switch failing to stop on it, it will be necessary to delay the test until it is idle.	All idle switches resting on this terminal will step.

Alarm on ST Relay Only

Alarms Speeded Up

7	Restore SLV key.	Observe that switch does not step.
8	Remove test cord from TST jack.	Observe that switch does not step.

SECTION 226-610-500

STEP	ACTION	VERIFICATION
9	Insert 262B plug into TST jack.	Switch steps to terminal 22. Associated alarm sounds, aisle pilot lamp lighted.
10	Remove 262B plug from the TST jack.	Switch steps to terminal 1 or beyond. Lamp extinguished. Alarm silenced.
11	Repeat Steps 3 through 10 on all switches.	

Alarms Not Speeded Up

12	Repeat Steps 3 through 8.	Switch rests on terminal 21.
13	Insert a 262B plug into TST jack.	Switch steps to terminal 22. After usual timing interval, associated alarm sounds, aisle lamp lighted.
14	Leave plug in switch tested in Steps 12 and 13.	Alarm holds.
15	Repeat Steps 3 through 8 on the next idle switch.	Switch rests on terminal 21.
16	Insert a 262B plug into TST jack.	Switch steps to terminal 22.
17	Remove plug from switch tested in Step 13.	Switch steps to terminal 1 or beyond. Lamp remains lighted. Alarm continues to sound.
18	Repeat above test on all idle switches holding one switch on terminal 22 while testing next one. <i>Note:</i> This avoids necessity of waiting each time for the common timing circuit to function.	
19	When all switches in group have been tested — Remove 262B plug from TST jack.	Switch steps to terminal 1 or beyond. Lamp extinguished. Alarm silenced.

Alarm on SL and ST Relays

Alarms Speeded Up — Key A Equipped

SL and ST Relays Alarm Test

20	Manually step switch to terminal 22.	
21	Remove test cord from TST jack.	Observe that switch does not step. Associated alarm sounds, aisle pilot lamp lighted.

STEP	ACTION	VERIFICATION
22	Insert 262B plug into TST jack.	ST relay operated.
23	Momentarily depress key A.	SL relay released. Lamp remains lighted. Alarm continues to sound.
24	Remove 262B plug from TST jack.	Switch steps to terminal 1 or beyond. Lamp extinguished. Alarm silenced.
25	Repeat Steps 20 through 24 on all idle switches.	

Alarms Speeded Up — Key A Not Equipped

SL Relay Alarm Test

26	Manually step switch to terminal 22.	
27	Restore SLV key.	Associated alarm sounds, aisle pilot lamp lighted.
28	Manually step switch to terminal 1.	Lamp extinguished. Alarm silenced.
29a	If terminal 1 is busy — Switch will stop on it.	BY lamp lighted.
30a	Manually step switch until an idle trunk has been reached.	BY lamp extinguished.

ST Relay Alarm Test

31	Manually step switch to terminal 21.	
32	Remove the cord from TST jack and insert 262B plug.	Switch steps to terminal 22. Associated alarm sounds, aisle pilot lamp lighted.
33	Remove 262B plug.	Switch steps to terminal 1 or beyond. Lamp extinguished. Alarm silenced.
34	Repeat Steps 31 through 33 on all idle switches.	

Alarms Not Speeded Up — Key A Equipped

SL and ST Relays Alarm Test

35	Manually step switch to terminal 22.	
----	--------------------------------------	--

SECTION 226-610-500

STEP	ACTION	VERIFICATION
36	Restore SLV key.	After usual timing interval — Associated alarm sounds, aisle pilot lamp lighted.
37	Remove test cord from TST jack, insert 262B plug.	ST relay operated. Observe that switch does not step.
38	Momentarily depress key A.	SL relay released. Lamp remains lighted. Alarm continues to sound.
39	Leave 262B plug in switch tested in Steps 37 and 38.	Alarm holds.
40	Repeat Steps 35 through 39 on next idle switch.	
41	Remove 262B plug holding the alarm.	Switch steps to terminal 1 or beyond. Lamp remains lighted. Alarm continues to sound.
42	Repeat above test on all idle switches holding last switch on terminal 22 while testing next one.	
43	When all switches have been tested — Remove 262B plug from TST jack.	Switch steps to terminal 1 or beyond. Lamp extinguished. Alarm silenced.

Alarms Not Speeded Up — Key A Not Equipped

SL Relay Alarm Test

44	Manually step switch to terminal 22.	
45	Restore SLV key.	After usual time interval — Associated alarm sounds, aisle pilot lamp lighted.
46	Remove test cord from TST jack.	Observe that switch does not step.
47	Insert test cord into TST jack of next idle switch, manually step switch to terminal 22.	
48	Restore SLV key.	Lamp remains lighted. Alarm continues to sound.
49	Remove test cord, insert it into TST jack of switch tested in Steps 44 and 45.	
50	Manually step switch to terminal 1.	Lamp remains lighted. Alarm continues to sound.

STEP	ACTION	VERIFICATION
51b	If terminal 1 is busy — Switch will stop on it.	BY lamp lighted.
52b	Manually step switch to next idle trunk.	BY lamp extinguished.
53	Repeat above tests on all idle switches in group leaving last switch on terminal 22 to hold alarm ready for ST relay test below.	
<i>ST Relay Alarm Test</i>		
54	Select another idle switch and manually step it to terminal 21.	
55	Remove test plug from TST jack.	Observe that switch does not step.
56	Insert a 262B plug into TST jack.	Switch stepped to terminal 22.
57	Restore SLV key and insert test cord into TST jack.	
58	Manually step switch to terminal 1.	Lamp remains lighted. Alarm continues to sound.
59c	If terminal 1 is busy — Switch will stop on it.	BY lamp lighted.
60c	Manually step switch to next idle trunk.	BY lamp extinguished.
61	Remove test cord and insert it into TST jack of the next idle switch.	
62	Manually step switch to terminal 21.	
63	Remove test cord.	Observe that switch does not step.
64	Insert 262B plug into TST jack.	Switch stepped to terminal 22.
65	Remove 262 B plug from jack of switch holding alarm.	Switch steps to terminal 1 or beyond. Lamp remains lighted. Alarm continues to sound.
66	Repeat above test on all idle switches.	
67	Remove 262B plug from TST jack of last switch tested.	Switch stepped to terminal 1. Lamp extinguished. Alarm silenced.
68	Restore all call indicators released to make-busy rotary out-trunk switches during test.	

STEP	ACTION	VERIFICATION
C. All Trunks Busy Relay and Traffic Register Tests		
3-Wire Switch Group		
2	Block operated all TK relays associated with switches in trunk group under test.	At rotary out-trunk switch bay — C relay on each switch released. SP relay operated. At traffic register — ATB register scored one time.
3	Using a P3E cord, 6 feet long, connect the T jack of the test set to the TST jack of a rotary out-trunk switch associated with the trunk group under test.	BY lamp lighted. <i>Note:</i> If BY lamp lighted, remove plug from jack and select another switch.
4	Operate STEP switch.	Observe that switch does not step.
5	Remove the blocking tool from one TK relay at a time until a relay associated with an idle trunk is found.	At rotary out-trunk switch bay — TK relay released. Switch stepped. Other switches in same group may step if resting on trunks that are busied by switch under test. At traffic register — ATB register scored one time.
6	Block TK relay operated again.	At rotary out-trunk switch bay — Switch does not step. At traffic register — ATB register scored one time.
7	Repeat Steps 5 and 6 for each TK relay in turn.	
4-Wire Switch Groups		
8	Block operated all TK relays associated with switches in trunk group under test.	C relay on each switch released. TB relay, if provided, operates. When TK relay of last idle trunks is blocked — All idle switches step to terminal 22.
9	Remove blocking tool from one TK relay at a time until a relay associated with an idle trunk is found.	At rotary out-trunk switch bay — Relay released. All idle switches step to terminal associated with this relay. At traffic register — ATB register scored one time.
10	Block TK relay operated again.	At rotary out-trunk switch bay — All idle switches stepped to terminal 22. At traffic register — ATB register scored one time.

STEP	ACTION	VERIFICATION
11	Repeat Steps 9 and 10 for each TK relay in turn.	
12	Remove blocking tool from TK relay.	
13	Remove P3E cord from TST jack.	
D. Test of A Lead (W Option)		
2	Using P3E cord, 10 feet long, connect TST jack of test set to IN jack of test circuit.	
3	Insert plug of W1B cord into A jack of test circuit, connect clip of cord to incoming A lead terminal at unit terminal strip.	
4	Using P3E cord, 10 feet long, connect out jack of test circuit to TST jack of rotary out-trunk switch.	BY lamp lighted. <i>Note:</i> If BY lamp lighted, remove plug, select another switch.
5	Operate SLV key.	Observe that switch does not step.
6	Restore SLV key.	
7	Operate STEP key.	Switch steps to next terminal or trunk, continues to step. Other idle switches in same group may step if resting on trunks that are busied by switch under test.
8	After switch has stepped over all terminals — Restore STEP key, remove the test cord from test jack.	
9	Repeat Steps 5 through 8 on all idle switches.	
10	Restore all switches and keys, remove all test cords.	