

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

**1. GENERAL**

**1.01** This section describes a method of testing 3- and 4-wire rotary out-trunk switch circuits arranged for preselection 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 and update Test B to cover the multiple cutoff (MC) relay.

**1.03** The tests covered are:

**A. SL Relay, Trunk Continuity, Polarity, and Stepping Test:** 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 Test:** 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 Test:** 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** A timed delay interval, between application of the test condition and receipt of audible and visual alarm indications, will be encountered in a majority of the tests covered in this section. Reference to a specified time interval in receiving these individual alarm indications is omitted, as the intervals will vary depending on circuit options used, alarm speed-up features, etc. Accordingly, it will be necessary for the tester to be familiar with the particular time intervals applicable in his office on the various tests, and enter this information in the space provided in the test methods.

**1.07 Lettered Steps:** A letter a, b, c, etc, added to a step number in Parts 3 and 4 of this section indicates an action which may or may not be required depending on local conditions.

**SECTION 226-610-500**

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.

**1.08** 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).

**3. PREPARATION**

<b>STEP</b>	<b>ACTION</b>	<b>VERIFICATION</b>
-------------	---------------	---------------------

**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.

- 2a If circuit is equipped with MB jack—  
Insert dummy plug into MB jack prior to making test to prevent seizure key service call. Remove all dummy plugs when tests are concluded.

**4. METHOD**

<b>STEP</b>	<b>ACTION</b>	<b>VERIFICATION</b>
-------------	---------------	---------------------

**A. SL Relay, Trunk Continuity, Polarity, and Stepping Test**

- 3 Release any call indicator positions that may be busied out while making test.

**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).

STEP	ACTION	VERIFICATION
4	Using a 6-foot P3E cord, connect the ROT-OTS jack of test test set to test TST jack of the rotary out-trunk switch.	BY lamp lighted.  <i>Note:</i> If BY lamp lighted, remove plug from jack and select another switch.
5	Operate SLV key.	Switch does not step.
6	Restore SLV key.	
7	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.
8b	If switch did not step— Restore the STEP key.	
9b	Operate SLV key.	This will hold switch used in test on trunk and step idle switches to next idle trunk.
10	Restore STEP key.	
11	Remove test cord from test jack.	
12	Repeat Steps 4 through 11 for all switches.	
13	Restore all call indicator positions released in Step 3.	
<b>B. SL Relay, Trunk Continuity, Polarity, Stepping, and Alarm Test</b>		
3	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.	
4	Perform Steps 3 through 6 in Test A.	
5	Operate STEP key.	Switch steps to next terminal and continues to step.
6	As switch approaches terminal 21— Momentarily operate and restore STEP key until the switch rests on terminal 21.	Switch rests on terminal 21.
7	Operate SLV key.	All idle switches resting on this terminal will step.

**SECTION 226-610-500**

<b>STEP</b>	<b>ACTION</b>	<b>VERIFICATION</b>
	<p><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.</p>	
<b>Alarm on ST Relay Only</b>		
<b>Alarms Speeded Up</b>		
8	Restore SLV key.	Switch does not step.
9	Remove test cord from TST jack.	Switch does not step.
10	Insert 262B plug into TST jack.	<p>◆After short delay—                      Associated alarm sounds, aisle pilot lamp lighted.                      If MC relay is provided—                      Switch did not step.                      If MC relay is not provided—                      Switch stepped to terminal 22.◆</p>
11	Remove 262B plug from the TST jack.	<p>Switch steps to terminal 1 or beyond.                      Lamp extinguished.                      Alarm silenced.</p>
12	Repeat Steps 4 through 11 on all switches.	
<b>Alarms Not Speeded up</b>		
13	Repeat Steps 4 through 9.	Switch rests on terminal 21.
14	Insert 262B plug into TST jack.	<p>◆After timing interval ( )—                      Associated alarm sounds, aisle lamp lighted.                      If MC relay is provided—                      Switch did not step.                      If MC relay is not provided—                      Switch stepped to terminal 22.◆</p>
15	Leave plug in switch tested in Steps 13 and 14.	Alarm holds.
16	Repeat Steps 4 through 9 on the next idle switch.	Switch rests on terminal 21.
17	Insert a 262B plug into TST jack.	<p>◆If MC relay is provided—                      Switch does not step.                      If MC relay is not provided—                      Switch steps to terminal 22.◆</p>
18	Remove plug from switch tested in Step 14.	<p>Switch steps to terminal 1 or beyond.                      Lamp remains lighted.                      Alarm continues to sound.</p>

STEP	ACTION	VERIFICATION
19	Repeat Steps 13 through 18 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.	
20	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—A Key Equipped*

###### *SL and ST Relays Alarm Test*

21	Manually step switch to terminal 22.	
22	Remove test cord from TST jack.	Switch does not step. ◆After short delay—◆ Associated alarm sounds, aisle pilot lamp lighted.
23	Insert 262B plug into TST jack.	ST relay operated. ◆Lamp remains lighted. Alarm continues to sound.◆
24	Momentarily depress A key.	SL relay released. Lamp remains lighted. Alarm continues to sound.
25	Remove 262B plug from TST jack.	Switch steps to terminal 1 or beyond. Lamp extinguished. Alarm silenced.
26	Repeat Steps 21 through 25 on all idle switches.	

##### *Alarms Speeded Up—A Key Not Equipped*

###### *SL Relay Alarm Test*

27	Manually step switch to terminal 22.	
28	Restore SLV key.	◆Switch does not step. After short delay—◆ Associated alarm sounds, aisle pilot lamp lighted.
29	Manually step switch to terminal 1.	Lamp extinguished. Alarm silenced.

**SECTION 226-610-500**

<b>STEP</b>	<b>ACTION</b>	<b>VERIFICATION</b>
30b	If terminal 1 is busy— Switch will stop on it.	BY lamp lighted.
31b	Manually step switch until an idle trunk has been reached.	BY lamp extinguished.
<i>ST Relay Alarm Test</i>		
32	Manually step switch to terminal 21.	
33	Remove the cord from TST jack and insert 262B plug.	◆After short delay— Associated alarm sounds, aisle pilot lamp lighted. If MC relay is provided— Switch did not step. If MC relay is not provided— Switch stepped to terminal 22.◆
34	Remove 262B plug.	Switch steps to terminal 1 or beyond. Lamp extinguished. Alarm silenced.
35	Repeat Steps 32 through 34 on all idle switches.	

***Alarms Not Speeded Up—A Key Equipped***

*SL and ST relays Alarm Test*

36	Manually step switch to terminal 22.	
37	Restore SLV key.	◆After timing interval ( )— Associated alarm sounds, aisle lamp lighted. If MC relay is provided— Switch did not step. If MC relay is not provided— Switch stepped to terminal 22.◆
38	Remove test cord from TST jack, insert 262B plug.	ST relay operated. Switch does not step.
39	Momentarily depress A key.	SL relay released. Lamp remains lighted. Alarm continues to sound.
40	Leave 262B plug in switch tested in Steps 38 and 39.	Alarm holds.
41	Repeat Steps ◆4 through 7 and◆ 36 through 37 on next idle switch.	

STEP	ACTION	VERIFICATION
42	Remove 262B plug holding the alarm from switch tested in Steps 38 and 39.	Switch steps to terminal 1 or beyond. Lamp remains lighted. Alarm continues to sound.
43	Repeat Steps 36 through 42 on all idle switches holding last switch on terminal 22 while testing next one.	
44	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—A Key Not Equipped***

*SL Relay Alarm Test*

45	Manually step switch to terminal 22.	
46	Restore SLV key.	After timing interval ( )— Associated alarm sounds, aisle lamp lighted. If MC relay is provided— Switch did not step. If MC relay is not provided— Switch stepped to terminal 22.
47	Remove test cord from TST jack and operate SLV key.	Switch does not step.
48	Insert test cord into TST jack of next idle switch, manually step switch to terminal 22.	
49	Restore SLV key.	Lamp remains lighted. Alarm continues to sound.
50	Remove test cord, insert it into TST jack of switch tested in Steps 45 and 46.	
51	Manually step switch to terminal 1.	Lamp remains lighted. Alarm continues to sound.
52c	If terminal 1 is busy— Switch will stop on it.	BY lamp lighted.
53c	Manually step switch to next idle trunk.	BY lamp extinguished.
54	Repeat Steps 45 through 53c on all idle switches in group leaving last switch on terminal 22 to hold alarm ready for the following ST relay test.	

**SECTION 226-610-500**

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

STEP	ACTION	VERIFICATION
<b>C. All Trunks Busy Relay and Traffic Register Tests</b>		
<b>3-Wire Switch Group</b>		
3	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, if provided, operated. At traffic register— ATB register scored one time.
4	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.
5	Operate STEP switch.	Switch does not step.
6	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.
7	Block TK relay operated again.	At rotary out-trunk switch bay— Switch does not step. At traffic register— ATB register scored one time.
8	Repeat Steps 6 and 7 for each TK relay in turn.	
<b>4-Wire Switch Groups</b>		
9	Block operated all TK relays associated with switches in trunk group under test.	C relay on each switch released. TB relay, if provided, operated. When TK relay of last idle trunks is blocked— All idle switches step to terminal 22.
10	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.
11	Block TK relay operated again.	At rotary out-trunk switch bay— All idle switches step to terminal associated with this relay.

**SECTION 226-610-500**

<b>STEP</b>	<b>ACTION</b>	<b>VERIFICATION</b>
		At traffic register— ATB register scored one time.
12	Repeat Steps 10 and 11 for each TK relay in turn.	
13	Remove blocking tool from TK relay.	
14	Remove P3E cord from TST jack.	
<b>D. Test of A Lead (W Option)</b>		
3	Using P3E cord, 10 feet long, connect TST jack of test set to IN jack of test circuit.	
4	Insert plug of W1B cord into A jack of test circuit, connect clip of cord to incoming A lead terminal at unit terminal strip.	
5	Using P3E cord, 10 feet long, connect jack of test circuit to TST jack of rotary out-trunk switch.	BY lamp lighted. <b>Note:</b> If BY lamp lighted, remove plug, select another switch.
6	Operate SLV key.	Switch does not step.
7	Restore SLV key.	
8	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.
9	After switch has stepped over all terminals— Restore STEP key, remove the test cord from test jack.	
10	Repeat Steps 6 through 9 for all idle switches.	
11	Restore all switches and keys,remove all test cords.	