

LINE LINK CIRCUITS

TESTS USING OFFICE TEST FRAME TEST CIRCUIT SD-27633-01 (J23260)

NO. 5 CROSSBAR OFFICES

1. GENERAL

PAGE

1.01 This section describes methods for testing line link circuits utilizing regular size crossbar switches (SD-26030-01) and small size crossbar switches (SD-27943-01) using office test frame test circuit SD-27633-01 (J23260) in small No. 5 crossbar offices.

1.02 This section is reissued to revise Tests C and D to include methods for testing small size crossbar switches. Revision arrows have been used to emphasize significant changes. This reissue does not affect Equipment Test Lists.

1.03 The tests covered are:

PAGE

A. Junctor Switch Make-Busy Feature and Line Link Availability: This test checks that a make-busy plug inserted into a JS_ jack makes the correspondingly numbered junctor switch busy. It also checks that all line links are available for setting up a connection.

4

B. False Ground or Crosses on Adjacent Sleeve Leads—Line Switch End of Line Link: This test checks for a false ground or for a cross between adjacent sleeve (LL_) leads.

6

C. False Ground or Crosses on Adjacent Sleeve Leads—Junctor Switch End of Line Link: This test checks for a false ground or for a cross between adjacent sleeve (LB_) leads.

7

D. Crosses on Junctor Sleeve Leads: This test checks for a cross between two or more junctor sleeve leads.

9

E. Junctor Availability: This test checks that all the equipped junctors are available for setting up the connection.

10

1.04 All tests in this section should be performed during periods of light traffic.

1.05 Test A and C are made in part with all junctor switches made busy.

1.06 Tests B, D, and E are made having as many as 5, 6, 7, 8, or 9 junctor switches made busy.

1.07 During Test A the failure-to-match register will score. The reporting of this register operation should be in accordance with local instructions.

2. APPARATUS

All Tests

2.01 349A make-busy plugs as required.

Tests A, B, C, E

2.02 32A test set.

2.03 Office test frame test circuit (OTF), SD-27633-01 (J23260).

2.04 Patching cord, P3K cord, 6 feet long, equipped with two 310 plugs (3P15A cord).

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2.05 ♦Patching cord, P3U cord, 7 feet long, equipped with one 310 plug and one 351A plug (3P27B cord) for regular size crossbar switches, or patching cord, P3BE, 7 feet long, equipped with one 310 plug and one 459A plug for small size crossbar switches.♦

Test B

2.06 Five testing cords, 893 cord, 3 feet long, equipped with two 360A tools (1W13A cord), one 624B (terminal connector) tool, and one KS-6278 connecting clip.

Tests C, D

2.07 ♦351C make-busy plugs as required for regular size crossbar switches, or 459E make-busy plugs as required for small size crossbar switches.♦

Tests D, E

2.08 Blocking tools as required. Use tools and appy as covered in Section 069-020-801.

Test E

2.09 322A make-busy plugs as required.

3. PREPARATION

3.01 From office records determine an idle line link vertical assignment in each horizontal group of line link frame to be tested.

3.02 From office records and Tables A and B determine the following information:

- (a) The number of trunk link frames associated with line link verticals on line link frame junctor switches
- (b) The channel numbers available between selected trunk link frames.

3. PREPARATION (Cont)

STEP	ACTION	VERIFICATION
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♦**Note:** Refer to paragraphs 1.04 through 1.07.♦

All Tests Except D

- | | | |
|---|--|--|
| 1 | At OTF—
Restore all keys. | |
| 2 | Operate DIAL, OTLP keys. | |
| 3 | At line link frame—
Insert plug of 32A test set into RC jack. | |
| 4 | At OTF—
Patch P3K cord from OTL jack to SP jack. | |

Tests A, B, E

- | | | |
|----|--|--|
| 5a | ♦If office is equipped with regular size crossbar switches—
At line link frame—
Patch P3U cord from SP jack to line link appearance selected in paragraph 3.01 for horizontal group 0. | |
|----|--|--|

STEP

ACTION

VERIFICATION

TABLE A

JUNCTOR SUBGROUP SELECTION

OFFICE SIZE LL-TL	JG0	JG1	JG2	JG3	JG4
4-2	JSQ0 & STP1	JSQ1 & STP1	JSQ2 & STP1	JSQ0 & STP2	JSQ1 & STP2
6-3	JSQ0 & STP1	JSQ1 & STP1	JSQ2 & STP1	JSQ0 & STP2	
8-4	JSQ0 & STP1	JSQ1 & STP1	JSQ2 & STP2		
10-5	JSQ0 & STP1	JSQ1 & STP1			

TABLE B

JUNCTOR SUBGROUP PATTERN

OFFICE SIZE LL-TL	JUNCTOR SUBGROUP NUMBERS FOR LINE LINK VERTICALS									
	0	1	2	3	4	5	6	7	8	9
4-2	0	0	3	3	2	2	4	4	1	1
6-3	0	0	0	3	2	2	2	1	1	1
8-4	0	0	0	0	2	2	1	1	1	1
10-5	0	0	0	0	0	1	1	1	1	1

STEP	ACTION	VERIFICATION
6b	If office is equipped with small size crossbar switches— At line link frame— Patch P3BE cord from SP jack to line link appearance selected in paragraph 3.01 for horizontal group 0.4	

Test E

- | | | |
|---|---|--|
| 7 | At jack, lamp, and key circuit—
Insert 322A make-busy plug into M_D_MB jack of dial tone marker 0. | |
| 8 | At OTF—
Operate MKR2 key. | |
| 9 | Select a particular originating register for test as follows:
(a) Set RSG switch to OR group.
(b) Set RSS switch to particular OR.
(c) At OTF—
Operate FS_ key associated with trunk link frame of selected originating register. | |

4. METHOD

STEP	ACTION	VERIFICATION
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A. Junctor Switch Make-Busy Feature and Line Link Availability

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|----|---|---|
| 7 | At line link frame—
Insert 349A make-busy plugs into JS0 through JS4 jacks and wait until all holding magnets on junctor half of the associated switches are released. | |
| 8 | Remove 349A make-busy plug from JS0 jack. | |
| 9 | Momentarily operate white (ST) button on 32A test set. | Dial tone connection established using channel 0. |
| 10 | Momentarily operate red (RL) button on 32A test set. | Dial tone connection released. |
| 11 | Insert 349A make-busy plug into JS0 jack. | |
- Note:** Generally, channel preference is in numerical sequence 0 through 9. However, if marker cross-connections are changed to distribute wear, channel preference is in sequence 5 through 9 and then 0 through 4.

STEP	ACTION	VERIFICATION
12	Repeat Steps 8 through 11 using JS1 through JS4 jacks for testing the respective junctor switches.	Dial tone connection established using channels 1 through 4.
13	Remove 349A make-busy plugs from JS0 through JS4 jacks.	
14	Insert 349A make-busy plugs into JS5 through JS9 jacks and wait until all holding magnets on junctor half of the associated switches are released.	
15	Insert 349A make-busy plugs into JS0 through JS4 jacks.	
16	Remove 349A make-busy plug from JS5 jack and repeat Steps 9 and 10.	Dial tone connection established using channel 5.
17	Replace 349A make-busy plug in JS5 jack.	
18	Repeat Steps 16 and 17 using JS6 through JS9 jacks for testing the respective junctor switches.	Dial tone connection established using channels 6 through 9.
Caution: Perform Steps 19, 20, and 21 as quickly as possible since the line link is excluded from service.		
19	With 349A make-busy plugs in JS0 through JS9 jacks, momentarily operate white (ST) button on 32A test set.	No dial tone connection established.
20	Momentarily operate red (RL) button on 32A test set.	
21	Remove 349A make-busy plugs from JS5 through JS9 jacks.	
22	Move P3U or P3BE cord placed in Step 5A or 6b to an idle line vertical in horizontal group 1.	
23	Repeat Steps 8 through 21 to test links associated with horizontal group 1.	Dial tone connection established using channels 0 through 9 for horizontal group 1.
24	Repeat Steps 22 and 23 for horizontal groups 2 through 9 for testing the associated linkage.	Dial tone connection established using channels 0 through 9 for the associated horizontal groups 2 through 9.
25	Remove 349A make-busy plugs from JS0 through JS9 jacks.	

STEP	ACTION	VERIFICATION
26	Remove P3U or P3BE cord from SP jack and line vertical.	
27	Remove 32A test set from RC jack.	
28	At jack, lamp, and key circuit— Remove P3K cord from SP and OTL jacks.	
29	At OTF— Restore all keys and switches not required in next test.	
B. False Ground or Crosses on Adjacent Sleeve Leads—Line Switch End of Line Link		
7	At line link frame— Insert 349A make-busy plugs into JS0, JS2, JS4, JS6, JS8 jacks.	
8a	If office is equipped with regular size crossbar switches— Using 893 cord, connect ground to 00, 02, 04, 11, 13 terminal of terminal strip A (LLC-A2) when all holding magnets release on junctor switches 0, 2, 4, 6, 8.	
9b	If office is equipped with small size crossbar switches— Using 893 cord, connect ground to 20, 22, 24, 31, 33 terminal of terminal strip (HGBL) when all holding magnets release on junctor switches 0, 2, 4, 6, 8.	
10	Remove 349A make-busy plugs from all JS_ jacks.	
11	Insert 349A make-busy plug into JS1 jack and wait for all holding magnets to release on junctor switch 1.	
12	At line link frame— Remove 349A make-busy plug from JS1 jack.	
13	Momentarily operate white (ST) button on 32A test set.	Dial tone connection established on channel 1.
14	Momentarily operate red (RL) button on 32A test set.	Dial tone connection released.
15	Repeat Step 11 using JS3 jack.	
16	Insert 349A make-busy plug into JS1 jack.	

STEP	ACTION	VERIFICATION
17	Repeat Steps 11 through 14 for testing junctor switch 3.	Dial tone connection established on channel 3.
18	Repeat Steps 10 through 14 until junctor switches 5, 7, 9 are tested.	Dial tone connections established using channels 5, 7, 9.
19	Remove 349A make-busy plugs from all JS_ jacks.	
20	Move P3U or P3BE cord placed in Step 5a or 6b to an idle line vertical in horizontal group 1.	
21	Repeat Steps 10 through 20 until all horizontal groups 2 through 9 have been tested.	
22	Remove test connections from terminal strip A (LLC-A2) or (HGBL).	
23	Remove P3U or P3BE cord from SP jack and line vertical.	
24	Remove 32A test set from RC jack.	
25	At jack, lamp, and key circuit— Remove P3K cord from SP and OTL jacks.	
26	At OTF— Restore all keys and switches not required in next test.	

C. False Ground or Crosses on Adjacent Sleeve Leads—Junctor Switch End of Line Link

5	At line link frame— Insert 349A make-busy plugs into JS0 through JS4 jacks and wait until all holding magnets on junctor switches 0 through 4 release.	
6a	<p>♦If office is equipped with regular size crossbar switches— Manually operate LJ0 select magnet of junctor switch 0 and insert a 351C make-busy plug into sleeve holding jack associated with the J0 junctor hold magnet.</p>	J0 junctor hold magnet operated. Associated crosspoints closed.
7a	<p>If office is equipped with small size crossbar switches— Manually operate LJA and LJ0 select magnets of junctor switch 0 and insert a 459E make-busy plug into sleeve holding jack associated with J0 junctor hold magnet.</p>	J0 junctor hold magnet operated. Associated crosspoints closed.♦

STEP	ACTION	VERIFICATION
	<p>Caution: <i>Inserting a make-busy plug into a JS_ jack does not make the line switch half of the switch busy. When manually operating the selecting magnets, inspect the line switch part to ensure that double crosspoints are not engaged if a service call is in progress.</i></p>	
8	<p>◆Repeat Step 6a or 7b as applicable for LJ2, LJ4, LJ6, and LJ8 selecting magnets of junctor switch 0, except each time insert a 351C or 459E make-busy plug into associated sleeve holding jack for junctor holding magnets 1, 2, 3, 4.</p>	
9	<p>Repeat Steps 6a or 7b and 8 for junctor switches 1, 2, 3, 4.</p>	
10a	<p>If office is equipped with regular size crossbar switches— Patch P3U cord from SP jack to an idle line vertical in horizontal group 1.</p>	
11b	<p>If office is equipped with small size crossbar switches— Patch P3BE cord from SP jack to an idle line vertical in horizontal group 1.◆</p>	
12	<p>Remove 349A make-busy plug from JS0 jack.</p>	
13	<p>Momentarily operate white (ST) button on 32A test set.</p>	Dial tone connection established in channel 0.
14	<p>Momentarily operate red (RL) button on 32A test set.</p>	Dial tone connection released.
15	<p>Insert 349A make-busy plug into JS0 jack.</p>	
16	<p>Repeat Steps 12 through 15 using 349A make-busy plugs in JS1 through JS4 jacks to test the associated junctor switches.</p>	Dial tone connection established using channels 1 through 4.
17	<p>Repeat Steps 10a or 11b through 15 for horizontal groups 3, 5, 7, 9.</p>	
18	<p>Remove ◆351C or 459E◆ make-busy plugs from sleeve holding jacks.</p>	
19	<p>Remove 349A make-busy plugs from JS0 through JS4 jacks.</p>	

STEP	ACTION	VERIFICATION
20	Repeat Steps 6a or 7b and 8 for junctor switches 5 through 9.	
	⚠Caution: Perform Steps 21 through 29 as quickly as possible since the line link is excluded from service.	
21	Insert 349a make-busy plugs into JS5 through JS9 jacks and wait until all holding magnets on junctor half of the associated switches are released.⚡	
22	Insert 349A make-busy plugs into JS0 through JS4 jacks.	
23	Remove 349A make-busy plug from JS5 jack.	
24	Momentarily operate white (ST) button on 32A test set.	Dial tone connection established using channel 5.
25	Momentarily operate red (RL) button on 32A test set.	Dial tone connection released.
26	Insert 349A make-busy plug into JS5 jack.	
27	Repeat Steps 24 and 25 using 349A make-busy plugs in JS6 through JS9 jacks to test the associated junctor switches.	Dial tone connections established using channels 6 through 9.
28	Remove ⚡351C or 459E⚡ make-busy plugs from sleeve holding jacks.	
29	Remove make-busy plugs from JS_ jacks.	
30	Remove ⚡P3U or P3BE cord⚡ from SP jack and line vertical.	
31	Remove 32A test set from RC jack.	
32	At jack, lamp, and key circuit— Remove P3K cord from SP and OTL jacks.	
33	At OTF— Restore all keys and switches not required in next test.	
D. Crosses on Junctor Sleeve Leads		
1	At line link frame— Insert 349A make-busy plugs into JS0 through JS4 jacks and wait until holding magnets release the associated junctor switches.	

STEP	ACTION	VERIFICATION
2	Block nonoperated J0 holding magnet on junctor switch 4.	
3a	◆If office is equipped with regular size crossbar switches— Insert 351C make-busy plug into sleeve holding jack of J0 holding magnet.	
4b	If office is equipped with small crossbar switches— Insert 459E make-busy plug into sleeve holding jack of J0 holding magnet.◆	No junctor holding magnet operated. ◆ Caution: <i>A service call may operate a holding magnet at the time this step is performed. If this occurs, remove the make-busy plug and repeat Step 3a or 4b.◆</i>
5	Remove ◆351C or 459E◆ make-busy plug from sleeve holding jack.	
6	Remove blocking tool from holding magnet.	
7	Repeat Steps 2 through 6 on J1 through J9 holding magnets for junctor switch 4.	No junctor holding magnet operated.
8	Remove 349A make-busy plug from JS4 jack.	
9	Repeat Steps 2 through 8 for junctor switches 3, 2, 1, 0.	No junctor holding magnet operated.
10	Repeat Steps 1 through 9 for junctor switches 5 through 9.	No junctor holding magnet operated.
E. Junctor Availability		
10	At dial tone marker 0— Block nonoperated SQA relay.	
11	At line link frame— Insert 349A make-busy plugs into JS0 through JS4 jacks and wait until all holding magnets release on the associated junctor switches.	
12	Remove 349A make-busy plug from JS0 jack.	
13	Momentarily operate white (ST) button on 32A test set.	At line link frame— Dial tone connection established using junctor switch 0 and proper vertical is used for junctor subgroup 0 (see paragraph 3.02).
14	Momentarily operate red (RL) button on 32A test set.	Dial tone connection released.

STEP	ACTION	VERIFICATION
15	Insert 349A make-busy plug into JS0 jack.	
16	Repeat Steps 12 through 15 using JS1 through JS4 jacks.	Proper junctor switches 1 through 4 used on dial tone connection and correct vertical for junctor subgroup 0 is used (see paragraph 3.02).
17	Repeat Steps 11 through 16 using JS5 through JS9 jacks.	Proper junctor switches 5 through 9 used on dial tone connection and correct vertical for junctor subgroup 0 is used (see paragraph 3.02).
18	Remove 349A make-busy plugs from JS_ jacks.	
19	Repeat Step 9 to select originating register located on a different trunk link frame.	
20	Repeat Steps 11 through 19 for each trunk link frame.	

For Line Link Junctor Verticals Other Than Junctor Subgroup 0

21	Refer to Table B and determine junctor subgroup number from line link vertical number of junctor switch.
22	Refer to Table A to determine the JSQ_ and STP_ relays required for selection of junctor subgroup determined in Step 23.
23	Repeat Step 10 to select proper JSQ_ relays. When STP2 is required, operate STP2 key.
24	Repeat Steps 11 through 23 selecting channels between line link frame and selected trunk link frames.
25	Remove P3U or P3BE cord from SP jack and line vertical.
26	Remove 32A test set from RC jack.
27	At dial tone marker 0— Remove blocking tool from SQA relay.
28	At OTF— Remove P3K cord from SP and OTL jacks.
29	Remove 322A make-busy plug from M_D_MB jack.

STEP	ACTION	VERIFICATION
30	At OTF— Restore all keys and switches.	