

SWITCHING SYSTEM NO. 400
LINE, LINK, AND MARKER CIRCUITS
OPERATION TESTS

1.00 GENERAL

1.01 This section covers the following tests:

- A. Register Allotter Test: Checks function of marker RA0 and RA1 relays in allotting calls to registers and that alternate register will be seized if preferred register is in trouble.
- B. Ability to Seize All Junctors Test: Checks that all junctors can be seized, and checks marker action when all junctors are busy.
- C. Ability to Seize All Links Test
- D. All Links Busy and Link Shifting Feature Test
- E. Units Sequence Test
- F. Second Trial and No-Connection Features Test
- G. Trouble Release Feature Test
- H. Time-Out Check Feature Test

1.02 Test B requires verifications from a nearby station to answer necessary test calls.

1.03 During part of Test B, all junctors are made busy.

1.04 Number enclosed in parentheses, following the apparatus designation, designates the mounting plate location of the apparatus; ie, ON (8) relay is located on mounting plate 8.

2.00 APPARATUS REQUIRED

Tests A Through H

Dial hand set, 1011 type or equivalent.

Test A

1 - 258C plug (dummy for use in making equipment busy).

Tests B, C, D, and G

Blocking and insulating tools as required. See Section 069-020-801.

3.00 METHOD

STEP	ACTION	VERIFICATION
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A. Register Allotter Test

1 Operate hand test set key to MON.

2 In slide 2:
Connect hand test set to test line.

3 Operate hand test set key to TALK.

In slide 2:
Off-normal relay operates in register seized.
Dial tone heard.

Note: Off-normal relay:
Register 0, ON (8)
Register 1, ON (12)

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STEP	ACTION	VERIFICATION
4	Operate hand test set key to MON.	<u>ON</u> relay releases in register seized. <u>Dial</u> tone removed.
5	Operate hand test set key to TALK.	<u>ON</u> relay operates in alternate register. <u>Dial</u> tone heard.
6	Operate hand test set key to MON.	<u>ON</u> relay releases in alternate register. <u>Dial</u> tone removed.
7	Repeat Steps 5, 6, as required, to observe marker's alternate seizure of register 0, 1.	
8	When register 0 is idle, <u>ON</u> (8) relay normal, insert dummy plug into TST (9) jack.	In register 0: <u>RT</u> (9) lamp lights.
9	Block <u>SR</u> (8) relay nonoperated.	
10	Operate hand test set key to TALK.	In register 1: <u>ON</u> (12) relay operates. <u>Dial</u> tone heard.
11	In register 0: Remove dummy plug from TST (9) jack.	In register 0: RT (9) lamp extinguished.
12	Operate hand test set key to MON.	In register 1: <u>ON</u> (12) relay releases. <u>Dial</u> tone removed.
13	Operate hand test set key to TALK.	Marker attempts to seize register 0, finally seizes register 1, <u>ON</u> (12) relay operates. <u>Dial</u> tone heard.
14	Operate hand test set key to MON.	<u>ON</u> (12) relay releases. <u>Dial</u> tone removed.
15	In register 0: Remove blocking tool from <u>SR</u> (8) relay.	
16	When register 1 is idle, <u>ON</u> (12) relay normal, insert dummy plug into <u>TST</u> (13) jack.	In register 1: RT (13) lamp lights.
17	Block <u>SR</u> (12) relay nonoperated.	
18	Operate hand test set key to TALK.	In register 0: <u>ON</u> (8) relay operates. <u>Dial</u> tone heard.
19	In register 1: Remove dummy plug from TST (13) jack.	In register 1: RT (13) lamp extinguished.
20	Operate hand test set key to MON.	In register 0: <u>ON</u> (8) relay releases. <u>Dial</u> tone removed.

STEP	ACTION	VERIFICATION
21	Operate hand test set key to TALK.	Marker attempts to seize register 1, finally seizes register 0, and <u>ON</u> (8) relay operates. Dial tone heard.
22	Operate hand test set key to MON.	<u>ON</u> (8) relay releases. Dial tone removed.
23	In register 1: Remove blocking tool from <u>SR</u> (12) relay.	
24	Disconnect hand test set.	

B. Ability to Seize All Junctors Test

1	Operate hand test set key to MON.	
2	In slide 2: Connect hand test set to test line.	
3	Close slide 2, open slide 3.	
4	Operate hand test set key to TALK.	Dial tone heard.
5	Dial number of nearby station, note which junctor is seized.	Audible ringing heard. When nearby station answers, conversation satisfactory.
<p><u>Note:</u> To determine junctor seized, trace link used in connecting vertical of test line to originating vertical of juncture (see Table A).</p>		
6	Request called station to disconnect, operate hand test set key to MON.	Connection released.
7	Block <u>D</u> relay operated of junctor seized in Step 5.	
8	Repeat Steps 4 through 7 until all junctors (0-5) are tested and made busy.	
9	Operate hand test set key to TALK.	Dial tone heard.
10	Dial number of nearby station.	Busy tone heard.
11	Operate hand test set key to MON.	
12	Remove blocking tools from all junctor <u>D</u> relays.	
13	In slide 2: Disconnect hand test set from test line.	

STEP	ACTION	VERIFICATION
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TABLE A

JUNCTOR AND TEST LINE LOCATIONS
IN SLIDE 3

Junctor		Switch No.	Vert No.	Hold Magnet Desig	D Relay Mtg Plt
0	Orig Term.	0	0	HM00	1
			1	HM01	
1	Orig Term.		2	HM02	
			3	HM03	
2	Orig Term.		4	HM04	2
			5	HM05	
3	Orig Term.		6	HM06	
		7	HM07		
4	Orig Term.	1	1	HM11	8
			2	HM12	
5	Orig Term.		3	HM13	
			4	HM14	
Test Line			3	9	

C. Ability to Seize All Links Test

- | | |
|---|---|
| 1 Operate hand test set key to MON. | |
| 2 In slide 2:
Connect hand test set to test line. | |
| 3 Block <u>WL</u> , <u>ZL</u> , <u>WIL</u> , <u>ZIL</u> (14) relays operated in marker. | |
| 4 Block <u>WLG</u> , <u>ZLG</u> (14) relays nonoperated in marker. | |
| 5 Operate hand test set key to TALK. | Dial tone heard.
<u>LT</u> -(15) relays in marker operate. |
| 6 Block lowest numbered <u>LT</u> - relay nonoperated that operated in Step 5. | |
| 7 Operate hand test set key to MON. | Dial tone removed. |
| 8 Repeat Steps 5 through 7 until all <u>LT</u> -relays have been blocked nonoperated. | |
| 9 Remove blocking tools from all <u>LT</u> -relays. | |

STEP	ACTION	VERIFICATION
10	Remove blocking tools from <u>WLG</u> , <u>ZLG</u> relays.	
11	Block <u>WLG</u> , <u>ZLG</u> relays operated.	
12	Repeat Steps 5 through 7 until all <u>LT</u> -relays are again blocked nonoperated.	
13	Remove blocking tools from <u>WLG</u> , <u>ZLG</u> , <u>WL</u> , <u>ZL</u> , <u>WIL</u> , <u>ZIL</u> , <u>LT</u> -relays.	
14	Operate hand test set key from MON to TALK several times.	Each time hand test set key is operated, <u>WL</u> , <u>ZL</u> , <u>WIL</u> , <u>ZIL</u> , <u>WLG</u> , <u>ZLG</u> relays operate, release.
15	Disconnect hand test set from test line.	

D. All Links Busy and Link Shifting Feature Test

1	Operate hand test set key to MON.	
2	In slide 2: Connect hand test set to test line.	
3	Block <u>LTC</u> (15) relay nonoperated.	
4	Operate hand test set key to TALK.	TRL (14) relay pulses.
5	Remove blocking tool from <u>LTC</u> (15) relay.	Dial tone heard.
6	Operate hand test set key to MON.	Dial tone removed.
7	Disconnect hand test set from testline.	

E. Units Sequence Test

1	Operate hand test set key to MON.	
2	In slide 2: Connect hand test set to test line.	
3	Perform Steps 4 through 7 as conditions apply:	
	If <u>WU</u> (19), <u>ZU</u> (19) relays are released	
4	Operate hand test set key to TALK.	<u>WU</u> (19), <u>ZU</u> (19) relays operate.
5	Operate hand test set key to MON.	<u>WU</u> (19), <u>ZU</u> (19) relays remain operated.
6	Operate hand test set key to TALK.	<u>WU</u> (19), <u>ZU</u> (19) relays released.
7	Operate hand test set key to MON.	<u>WU</u> (19), <u>ZU</u> (19) relays remain released.

OR

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STEP	ACTION	VERIFICATION
	If <u>WU</u> (19), <u>ZU</u> (19) relays are operated	
4	Operate hand test set key to TALK.	<u>WU</u> (19), <u>ZU</u> (19) relays released.
5	Operate hand test set key to MON.	<u>WU</u> (19), <u>ZU</u> (19) relays remain released.
6	Operate hand test set key to TALK.	<u>WU</u> (19), <u>ZU</u> (19) relays operate.
7	Operate hand test set key to MON.	<u>WU</u> (19), <u>ZU</u> (19) relays remain operated.
8	Disconnect hand test set from test line.	

F. Second Trial and No-Connection Features Test

1	In slide 1 or 3: Select unassigned station line, open associated <u>S1</u> to <u>G</u> strap.	
	OR	
	If all stations are assigned, open strap between S to S1 terminal on selected station.	
2	Operate hand test set key to MON.	
3	In slide 2: Connect hand test set to test line.	
4	Operate hand test set to TALK.	Dial tone heard.
5	Dial station number selected in Step 1.	Busy tone heard.
6	Operate hand test set key to MON.	Connection released.
7	Replace strap opened in Step 1.	
8	Disconnect hand test set from test line.	

G. Trouble Release Feature Test

1	In slide 3: Block <u>RA</u> (8) relay of busy-tone trunk nonoperated.	
2	Operate hand test set key to MON.	
3	In slide 2: Connect hand test set to test line.	
4	Operate hand test set key to TALK.	Dial tone heard.
5	Dial 39.	In slide 2: <u>RLS</u> (22), <u>RLSA</u> (22) relays operate, after which dial tone is heard.

STEP	ACTION	VERIFICATION
6	Operate hand test set key to MON.	Connection released.
7	Disconnect hand test set from test line.	
8	In slide 3: Remove blocking tool from <u>RA</u> (8) relay of busy-tone trunk.	

H. Time-Out Check Feature Test

1	Operate hand test set key to MON.	
2	In slide 2: Connect hand test set to test line.	
3	Operate hand test set key to TALK.	Dial tone heard.
4	Dial 39.	Busy tone heard. In slide 3: <u>ST</u> (21), <u>NC</u> (21), <u>TR</u> (21) relays oper- in this order only once, release upon release of <u>MTA</u> (21), <u>MTB</u> (21).
5	Operate hand test set key to MON.	Busy-tone connection released.
6	In slide 2: Disconnect hand test set from test line.	