

215-101-301
BY
LINE LOAD
CONTROL
PA 2

LINE LOAD CONTROL TESTS PANEL OFFICES

1. GENERAL

1.01 This section describes a method of testing line load control equipment in panel offices.

1.02 This section is reissued for the following reasons:

- (a) To remove former Test C which is now combined with Test A.
- (b) To change the title of Test B.
- (c) To add a new Test C to check the lamp circuits which indicate line group overload conditions.
- (d) To include a check of the control of line load from a shelter area.
- (e) To change the over-all test method and format of the section.

Since this reissue covers a general revision, the arrows ordinarily used to indicate changes have been omitted.

1.03 The tests covered are:

A. Common Control and Alarm Equipment:

This test checks the control of line load from the equipment room and from a shelter area, the ability of the line load control circuit to sound the major alarm and light the proper indicating lamps.

B. Individual Frame Check for Denial of Originating Service:

This test checks that the B and/or C class subscribers are denied originating service when the load control feature is made operative.

C. Line Group Overload Lamps: This test checks that a line group overload lamp lights while a dial tone delay condition exists in the associated line finder or line switch frame.

1.04 The lines of an office arranged for line load control are divided into three categories which are known as class A, class B, and class C. The A lines include all lines which are

considered essential to national defense and public welfare during an emergency. Where the number of essential lines is less than 10 per cent, some nonessential lines may be included with the A lines. Coin lines are usually included with class A lines, both because of the importance of having some telephone service available to the general public during emergencies and also because of the difficulty of properly disposing of coins in the hopper of the coin box at the time line load control is applied. Approximately 10 per cent of the lines associated with a given line finder or line switch district group are assigned to class A. The remaining 90 per cent are usually divided approximately equally between classes B and C. The B and C subdivisions are made only for control reasons and the designations do not have any significance in so far as the relative importance of the lines in these classifications is concerned. The tests covered herein do not in any way affect the service from class A lines.

1.05 The line load control equipment provides facilities for denying originating service to as much as 90 per cent of the lines in an office. It is therefore extremely important that every safeguard be employed to guard against operations resulting in denial of service during test. In some cases, the tests described herein deny service for a few seconds. In order to avoid denying service beyond this time the following should be observed:

- (a) Tests should be made only when specific authorization is obtained in accordance with local instructions.
- (b) Care must be taken that trouble clearing activities do not introduce hazards of denying service.
- (c) Alarm facilities are provided to detect cases where crossed or grounded leads result in denying service on a group of lines. If trouble of this nature develops, measures should be taken to restore the affected lines to service immediately.

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(d) If it is desired to discontinue testing at any time, even temporarily, restore all line load control equipment to normal and remove all relay blocking tools.

(e) The cautions which appear in the test procedures should be given special attention.

1.06 In performing these tests, action and/or verification is required at the following locations.

(a) Test A: Common control equipment in the equipment room and control cabinet at shelter area, where provided.

(b) Tests B and C: Common control equipment, line finder or line switch frame, district frame and link frame.

1.07 Office records should be consulted to determine the class B and class C trip circuits at the line finder frames or the class B and class C shelves at the line switch frames.

1.08 Lettered Steps: A letter a, b, c, etc, added to a step number in Part 3 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.

1.09 The performance of Test B in some ground cutoff relay offices, will operate the district selector peg count register. If a peg count battery key is provided, this key should be normal to avoid operating the register. The register is not operated in battery cutoff offices. The performance of Test C will operate the district group overflow register (all district circuits busy) and/or the subscriber's link overflow register. The reporting of these register operations should be in accordance with local instructions.

2. APPARATUS

Tests A, B, and C

2.01 Blocking tools as required. Use tools and apply, as covered in Section 069-020-801.

Tests B and C

2.02 No. 1011G dial hand test set (handset) equipped with a No. 2W37A cord assembly consisting of a No. 471A jack, a W2DB cord, two KS-6780 connecting clips and two No. 108 cord tips (rubber insulators).

Test C

2.03 No. 184B (make-busy) plugs, as required.

3. METHOD

STEP	ACTION	VERIFICATION
A. Common Control and Alarm Equipment		
1	At key and lamp equipment — Make sure all frame and common control keys are normal.	All lamps extinguished.
2	At relay equipment — Block nonoperated HB relay. <i>RR7</i>	
3	At key and lamp equipment — Operate CLB key.	CLB lamp lighted.
4	Restore CLB key.	CLB lamp extinguished.
5	At relay equipment — Block operated AB relay. <i>RR7</i>	At key and lamp equipment — CLB lamp lighted. Major alarm sounds. Associated aisle pilot lamp lighted.

STEP	ACTION	VERIFICATION
6	Remove blocking tool from AB relay.	CLB lamp extinguished. Major alarm silenced. Associated aisle pilot lamp extinguished.
7	Remove blocking tool from HB relay.	
8	Block operated HB relay.	CLB lamp lighted.
9	Remove blocking tool from HB relay.	CLB lamp extinguished.
10	Repeat Steps 2 through 9 using CLC key and HC and AC relays.	Verification same as Steps 2 through 9, substituting CLC for CLB lamp.
11	At key and lamp equipment — Operate CLB key.	CLB lamp lighted. Major alarm sounds. Aisle pilot lamp lighted.
12	Momentarily operate AR key.	Major alarm silenced. Aisle pilot lamp extinguished.
13	Restore CLB key.	CLB lamp extinguished.
14	Operate CLC key.	CLC lamp lighted. Major alarm sounds. Aisle pilot lamp lighted.
15	Momentarily operate AR key.	Major alarm silenced. Aisle pilot lamp extinguished.
16	Restore CLC key.	CLC lamp extinguished.
17a	If line load control from a shelter area is provided — At shelter area control cabinet — Operate CLB key.	At shelter area control cabinet — CLB lamp lighted. At key and lamp equipment in equipment room — CLB lamp lighted. Major alarm sounds. Aisle pilot lamp lighted.
18a	Momentarily operate AR key.	At key and lamp equipment in equipment room — Major alarm silenced. Aisle pilot lamp extinguished.
19a	Restore CLB key.	CLB lamp at each location extinguished.
20a	Repeat Steps 17a through 19a using CLC key.	Verification same as Steps 17a through 19a substituting CLC for CLB lamp.
21	At key and lamp equipment — Operate CLB key.	CLB lamp lighted. Major alarm sounds. Aisle pilot lamp lighted.
22	Momentarily operate AR key.	Major alarm silenced. Aisle pilot lamp extinguished.

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STEP	ACTION	VERIFICATION
	<i>Caution: Originating service will be denied on lines associated with an operated B or C (individual) frame key. For this reason, the action covered in Steps 23 through 44 should be completed as rapidly as possible (see 1.05).</i>	
23	Operate (pull out) one B key.	Associated B lamp lighted.
24	Restore CLB key.	CLB lamp remains lighted. B lamp of Step 23 remains lighted.
25	Restore (push in) B key.	Associated B lamp extinguished. CLB lamp extinguished.
26	Operate CLB key.	CLB lamp lighted. Major alarm sounds. Aisle pilot lamp lighted.
27	Momentarily operate AR key.	Major alarm silenced. Aisle pilot lamp extinguished.
28	Operate another B key.	Associated B lamp lighted.
29	Restore CLB key.	CLB lamp remains lighted. B lamp of Step 28 remains lighted.
30	Operate another B key and then restore previously operated B key.	Associated B lamp lighted. B lamp of previously operated B key extinguished.
31	Repeat Step 30 until all B keys and lamps have been checked.	
32	Restore last operated B key.	Associated B lamp extinguished. CLB lamp extinguished.
33	Operate CLC key.	CLC lamp lighted. Major alarm sounds. Aisle pilot lamp lighted.
34	Momentarily operate AR key.	Major alarm silenced. Aisle pilot lamp extinguished.
35	Operate one C key.	Associated C lamp lighted.
36	Restore CLC key.	CLC lamp remains lighted. C lamp of Step 35 remains lighted.
37	Restore C key.	Associated C lamp extinguished. CLC lamp extinguished.
38	Operate CLC key.	CLC lamp lighted. Major alarm sounds. Aisle pilot lamp lighted.
39	Momentarily operate AR key.	Major alarm silenced. Aisle pilot lamp extinguished.
40	Operate another C key.	Associated C lamp lighted.

STEP	ACTION	VERIFICATION
41	Restore CLC key.	CLC lamp remains lighted. C lamp of Step 40 remains lighted.
42	Operate another C key and then restore previously operated C key.	Associated C lamp lighted. C lamp of previously operated C key extinguished.
43	Repeat Step 42 until all C keys and lamps have been checked.	
44	Restore last operated C key.	Associated C lamp extinguished. CLC lamp extinguished.

B. Individual Frame Check for Denial of Originating Service

- 1 Obtain a list of trip circuits and/or line switch shelves controlled by respective LB- and LC- relays for each line finder and/or line switch frame.

Caution: Originating service will be denied on lines associated with an operated LB- or LC- relay. The steps which follow should be made as rapidly as possible. (See 1.05.)

~~400 Point Link Type Line Finders~~

Class B Lines

2	At line finder frame — Block nonoperated LB-2 relay.	
3	Connect handset, with key operated to MON position, to an idle line in a trip circuit controlled by LB-1 relay.	
4	Block operated LB-1 relay.	Major alarm sounds.
5	Operate key on handset to TALK position.	Dial tone not heard.
6	Remove blocking tool from LB-1 relay.	Dial tone heard. Major alarm silenced.
7	Disconnect handset.	
8	Repeat Steps 3 through 7 for any other trip circuit controlled by LB-1 relay.	
9	Remove blocking tool from LB-2 relay.	
10	Connect handset, with key operated to MON position, to an idle line in a trip circuit controlled by LB-2 relay.	
11	Block operated LB-2 relay.	Major alarm sounds.
12	Operate key on handset to TALK position.	Dial tone not heard.
13	Remove blocking tool from LB-2 relay.	Dial tone heard. Major alarm silenced.

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STEP	ACTION	VERIFICATION
14	Disconnect handset.	
15	Repeat Steps 10 through 14 for all other trip circuits controlled by LB-2 relay.	

Class C Lines

- 16 Proceed as in Steps 2 through 15 substituting LC- relays for LB- relays in trip circuits controlled by LC- relays.
- 17 Repeat Steps 2 through 16, as required, on all other line finder frames to be tested.

400 Point Sender Selector Type Line Finders ✓

Class B Lines

- 18 At line finder frame —
Connect handset, with key operated to MON position, to an idle line in a trip circuit controlled by LB relay.
- 19 Block operated LB relay. Major alarm sounds.
- 20 Operate key on handset to TALK position. Dial tone not heard.
- 21 Remove blocking tool from LB relay. Dial tone heard.
Major alarm silenced.
- 22 Disconnect handset.
- 23 Repeat Steps 18 through 22 for all other trip circuits controlled by LB relay.

Class C Lines

- 24 Proceed as in Steps 18 through 23 substituting LC relay for LB relay in trip circuits controlled by LC relay.
- 25 Repeat Steps 18 through 24, as required, on all other line finder frames to be tested.

300 Point Line Finders

Class B Lines

- 26 At line finder frame —
Block nonoperated LB-2 and LB-3 relays.
- 27 Connect handset, with key operated to MON position, to an idle line in a trip circuit, subgroup A or B, controlled by LB-1 relay.
- 28 Block operated LB-1 relay.
- 29 Operate key on handset to TALK position. Dial tone not heard.
- 30 Remove blocking tool from LB-1 relay. Dial tone heard.

STEP	ACTION	VERIFICATION
31	Disconnect handset.	
32	Repeat Steps 27 through 31 for any other trip circuit, subgroup A or B, controlled by LB-1 relay.	
33	Remove blocking tool from LB-2 relay.	
34	Connect handset, with key operated to MON position, to an idle line in a trip circuit, subgroup A or B, controlled by LB-2 relay.	
35	Block operated LB-2 relay.	
36	Operate key on handset to TALK position.	Dial tone not heard.
37	Remove blocking tool from LB-2 relay.	Dial tone heard.
38	Disconnect handset.	
39	Repeat Steps 34 through 38 for all other trip circuits, subgroup A or B, controlled by LB-2 relay.	
40	Remove blocking tool from LB-3 relay.	
41	Connect handset, with key operated to MON position, to an idle line in a trip circuit, subgroup A or B, controlled by LB-3 relay.	
42	Block operated LB-3 relay.	Major alarm sounds.
43	Operate key on handset to TALK position.	Dial tone not heard.
44	Remove blocking tool from LB-3 relay.	Dial tone heard.
45	Disconnect handset.	Major alarm silenced.
46	Repeat Steps 41 through 45 for all other trip circuits, subgroup A or B, controlled by LB-3 relay.	

Class C Lines

- 47 Proceed as in Steps 26 through 46 substituting LC- relays for LB- relays in trip circuits controlled by LC- relays.
- 48 Repeat Steps 26 through 47, as required, on all other line finder frames to be tested.

Line Switch Frames

Class B Lines

- 49 At line switch frame —
If more than one LB relay is provided for district group, block nonoperated all but one.

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STEP	ACTION	VERIFICATION
50	Connect handset, with key operated to MON position, to an idle line in a shelf controlled by selected LB relay.	
51	Block operated selected LB relay.	
52	Operate key on handset to TALK position.	Dial tone not heard.
53	Remove blocking tool from selected LB relay.	Dial tone heard.
54	Disconnect handset.	
55	Repeat Steps 50 through 54 for all shelves controlled by selected LB relay.	
56	Repeat Steps 49 through 55 for all LB relays in district group.	

Class C Lines

- 57 Proceed as in Steps 49 through 56 substituting LC relays for LB relays in shelves controlled by LC relays.
- 58 Repeat Steps 49 through 57, as required, on all other line switch frames to be tested.

C. Line Group Overload Lamps

Caution: Originating service will be denied on lines associated with line groups being tested. For this reason these tests should be completed as rapidly as possible.

400 Point Link Type Line Finders

- 1 At link frame —
Make busy all link circuits in both subgroups of line group to be tested.
 - 2 At line finder frame —
Operate A or B relay of a trip circuit of line group being tested.
 - 3 At link frame —
Restore to service all link circuits made busy in Step 1.
 - 4a If line finder start circuit is arranged to indicate an all district circuits busy condition (BA, BB, DB, and LB relays provided in start circuit —
At district frame —
Make busy all district circuits associated with line group to be tested.
- A or B relay locks operated.
At line load control cabinet —
Associated G lamp lighted.
- Associated G lamp extinguished.
- At start circuit —
BA and BB relays unoperated.
DB relay operated.

STEP	ACTION	VERIFICATION
5a	At line finder frame — Operate A or B relay in a trip circuit of line group to be tested.	A or B relay locks operated. At line load control cabinet — Associated G lamp lights.
6a	At district frame — Restore to service all district circuits made busy in Step 4a.	Associated G lamp extinguished.
Sender Selector Type Line Finders ✓		
7	At line finder frame — Make busy all district circuits associated with line group to be tested.	
8	Block operated BA or BA-1 relay.	At line load control cabinet — Associated G lamp lighted.
9	Remove blocking tool from BA or BA-1 relay.	Associated G lamp extinguished.
10	Restore to service all district circuits made busy in Step 7.	
Line Switch Frames		
11	At district frame — Make busy all district circuits associated with line group to be tested.	At line load control cabinet — Associated G lamp lighted.
12	Restore to service all district circuits made busy in Step 11.	Associated G lamp extinguished.