

LINE FINDER TESTS PANEL OFFICES

1. GENERAL

1.01 This section describes methods of applying an operation test to line finders and other originating equipment in either sender selector or link type central offices. The tests are as follows:

(A) Operation Test Exclusive of Sender Selectors

(B) Operation Test Including Sender Selectors, Link Type Offices

→ (C) Operation Test Including Sender Selectors, Sender Selector Type Offices

(D) Operation Test of Line Finder Trip Circuits

1.02 The section has been reissued to add test (D).

1.03 The tests are arranged to originate calls and to disconnect on these calls without dialing. In this manner, tests are made not only of line finders but also of trip and start circuits, district selector sequence switches, subscriber links (link type offices) and some portions of the subscriber senders.

1.04 These tests should not be made on any line finder group if the make-busy key of the associated link subgroup is operated.

1.05 Tests (B) and (C) should be made during periods of light traffic as they provide for making an abnormal number of senders busy. The number of senders which may be removed from service for a given traffic period, may be determined as follows: Make test (A) and, while the test is under way, insert No. 184 plugs into the make-busy jacks of subscriber senders until the all-senders-busy signals appear for all sender groups. Remove enough of these plugs from the senders in each group to retire the corresponding all-senders-busy signals and remove additional plugs, as required, if further signals are received. Record the number of senders that are made busy in each group at the completion of the test and use this data when making the operation test of sender selectors. The above test should be made as often as it is thought to be justified by changes in traffic load conditions. In case it appears, during a test, that traffic is being delayed as indicated by the link down-drive alarm operating or by an undue number of sender selectors spinning,

consider discontinuing the test until the normal light load again appears. In case of a link down-drive alarm, proceed according to local instructions.

Note: The Traffic Department should be advised that the link down-drive alarm may be operated due to the tests.

1.06 Occasionally the emergency start circuits and trip circuits should be placed in service for the period of the test.

1.07 As a considerable number of calls are originated in the performance of this routine, testing should not be done during periods of heavy traffic. In offices where the district peg-count registers are operated when the district selector is moved off normal, these tests should preferably not be made when a peg-count record of originating calls is being made. Where the peg-count register is not operated until district group selections have been made, this precaution need not be observed.

1.08 When test (D) is used for trouble locating purposes such as might be the case as a result of excessive trip circuit alarm registrations, a No. 102A gauge might be placed in the trip magnet as outlined in the Brush Continuity and Trip Magnet test covered in Section 215-201-501.

2. APPARATUS

Tests (A), (B) and (C)

2.01 Exercise Test Circuit for Line Finders and Associated Equipment (ES-21035-01 or SD-21360-01).

2.02 No. 184 Make-busy Plugs, as required.

Test (C)

2.03 No. 110 Plugs, as required. (Tip and ring of each plug should be short-circuited.)

Note: These plugs should have some distinguishing characteristic such as different colored shells, to avoid substitution for No. 184 plugs in regular service.

Test (D)

2.04 For link type equipment, one W2W cord with No. 110 plug and two No. 360 tools (J99212B-L18). For sender selector equipment one W3M cord with No. 110 plug

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and three No. 360 tools (J99213B-L4). The W3M cord may be used for either link type or sender selector equipment.

2.05 Two No. 365 Tools or one No. 365 Tool and a No. 419A Tool.

2.06 One No. 893 cord with two No. 360 tools (J99211B-L9) and two No. 365 tools. (As required to extend one conductor of the W2W or W3M cord to reach all trip circuits.)

3. METHOD

(A) Operation Test Exclusive of Sender Selectors

3.01 If emergency start or trip circuits are to be tested, substitute them for the corresponding regular circuits.

3.02 In link type offices, check the floor alarm board for any subgroup make-busy lamps that may be lighted and omit testing on any line group on which such a signal is received.

3.03 At the district selector test frame, insert a No. 184 plug into the exercise test circuit C jack of any line group on which testing is to be omitted.

3.04 Insert a No. 184 plug into jack A of the exercise test circuit. This will make the "B" subgroups busy on all line groups not plugged per 3.03, and will start the test on the line finders of the corresponding "A" subgroups. Calls will be originated repeatedly in each of these subgroups and will be disconnected, in each case, as a sender is reached.

3.05 Observe the lamps of the line groups under test for failures to flash and for flashing intervals of exceptional length. Troubles may be indicated by either of these conditions or by a start, trip, or link circuit time alarm. In such cases, refer to Part 4. Procedure in Case of Trouble.

3.06 Allow the test to progress until the number of test calls originated amounts to approximately twice the number of line finders under test. Then, if no troubles are awaiting attention, remove the No. 184 plug from the A jack. The removal of the plug from the A jack should stop the test and restore the "B" subgroups to service.

Note: When inspecting circuits in bank 0 for causes of excessive trip circuit alarm registrations, it may be advisable to allow the test to continue for a considerable time in order to detect random chance failures.

3.07 Insert the plug into the B jack to place the line finders of the "B" subgroups under test and proceed in accordance with 3.05.

3.08 Allow the test to progress until the number of test calls originated amounts to approximately twice the number of line finders under test. Then, if no troubles are awaiting attention, remove the No. 184 plug from the B jack. This should stop the test.

3.09 Remove any No. 184 plugs which may have been inserted into the line group test circuit jacks.

3.10 Substitute regular start or trip circuits for any emergency circuits which were placed in service for the test.

(B) Operation Test Including Sender Selectors, Link Type Offices

3.11 Notify the sender monitor that a test of sender selectors is to be made, and request that no stuck senders be primed for the period of the test.

3.12 Make busy as many subscriber senders as may be spared from service, on the sender groups serving the sender selectors under test, using No. 184 plugs for this purpose.

3.13 Have an assistant, stationed near the sender make-busy frame, remove No. 184 plugs, if required, to relieve any all-senders-busy conditions which may occur during the test. When such action is necessary, the data described in 1.05 should be changed accordingly.

Note: The above reference to an assistant at the sender make-busy frame does not apply when the sender monitor position is located in the switch room. In such cases, the sender monitor should be requested to render the necessary assistance.

3.14 Apply test (A).

3.15 Remove all of the No. 184 plugs used for the test, from the sender make-busy jacks and notify the sender monitor that the test is completed.

(C) Operation Test Including Sender Selectors, Sender Selector Type Offices

3.16 Notify the sender monitor that a test of sender selectors is to be made and request that no stuck senders be primed for the period of the test.

3.17 Make busy as many subscriber senders as may be spared from service on the sender groups serving the sender selectors under test, (see 1.05) by inserting into the sender make-busy jacks at random, an approximately equal number of No. 184 plugs

and the special No. 110 plugs on each sender group.

Caution: The special No. 110 plugs should not be inserted into the make-busy jacks of senders which are busy on service calls. Therefore, their use should always be preceded by a test of the make-busy jack sleeves for battery, the presence of battery being an indication that the sender is idle.

Note: The special No. 110 plugs produce a condition on the test leads similar to that of senders returning to normal.

3.18 Arrange with the sender monitor to remove No. 184 or special No. 110 plugs from the sender make-busy jacks, if required, to relieve any all-senders-busy conditions which may occur during the test. When such action is necessary, the data described in 1.05 should be changed accordingly.

Note: The above reference to the sender monitor does not apply when a sender make-busy frame is provided. In such cases, a switchman stationed near the sender make-busy frame should render the necessary assistance.

3.19 Apply test (A).

3.20 Remove all of the No. 184 plugs and the special No. 110 plugs used for the test, from the sender make-busy jacks and notify the sender monitor that the test has been completed.

(D) Operation Test of Line Finder Trip Circuits

Link Type Equipment

3.21 At the line finder frame, insert the plug of the W2W (or W3M) cord into the L jack. Connect the black (ring) conductor to ground and the white (tip) conductor to the A lead from the A or B subgroup of lines. Connection to the lead may be made by means of a No. 365 tool to the terminal on the emergency transfer plug, if provided, or by means of a No. 419A tool to the spring of the trip circuit transfer switch, if provided.

3.22 Observe that the line finders associated with the subgroup are started in succession at regular intervals and that they go to the overflow (41st) terminal (unless a regular call is served), remain a few seconds and return to normal. In case a finder goes to telltale due to a brush trip failure or open H lead, it will return to normal but the next finder will be delayed in starting for several (7 to 14) seconds. Just before the next finder starts, the A lamp of the trip circuit may or may not flash momentarily. The last

finder used before the delay interval is the one in trouble. One method of checking the sequence is to hold a finger on the trip magnet armature to detect any irregularity in its operations.

Sender Selector Equipment

Note: This test does not apply to line finders associated with trip circuits that have been modified for automatic release as no indication of trouble will be obtained.

3.23 At the line finder frame, insert the plug of the W3M cord into the G jack. Connect the black (ring) conductor to ground and the red (sleeve) conductor to the proper winding terminal of the BA (or BA-1) relay so as to cause the relay to operate from ground.

3.24 Observe that the line finders associated with the subgroup are started in succession at regular intervals and that they go to the overflow terminal then return to normal. In case of brush failure or an open hunt-lead, the finder with which the trouble is associated will remain up and the trip circuit alarm will be operated. In this case, trip the brush or manually operate the O relay to release the alarm and the line finders.

4. PROCEDURE IN CASE OF TROUBLE

4.01 On the receipt of a start, trip, or link circuit time alarm follow the regular procedure for service failures of this character.

Tests (A), (B) and (C)

4.02 When a start circuit time alarm is brought in during a test of "A" subgroup line finders, it should be recognized that traffic may be completely blocked on the line group affected, due to the fact that the "B" subgroup was made busy. (See 3.04.) In such cases, it may be necessary to promptly stop the test by removing the No. 184 plug from the A jack or to stop testing on the group affected by inserting a No. 184 plug into the corresponding line group test circuit jack C. Either of these operations should release the line group for service calls.

4.03 When trouble conditions are awaiting attention after the specified number of tests on a subgroup have been made, stop the test on the line groups which are not affected, by inserting No. 184 plugs into the test circuit C jacks of these groups.

4.04 A steadily lighted line group lamp indicates that the corresponding test line has not been selected by a line finder. In such cases, trace the connection through the line, trip, start, link (link type offices), and line finder equipment involved, to determine the nature of the trouble.

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4.05 A line group lamp which fails to light, indicates that the line finder attached to the corresponding test line has failed to release. In such cases, trace the connection through the line, link (link type offices), line finder district selector, sender selector, and sender equipment involved, to determine the nature of the trouble.

4.06 A line group lamp which remains lighted for an exceptionally long period, indicates that some portion of the train of equipment mentioned in 4.04, is slow in operation.

4.07 A line group lamp which is extinguished for an exceptionally long period, indicates that some portion of the

train of equipment mentioned in 4.05, is slow in operation.

Note: In general, such signals should be disregarded on tests (B) and (C), as the length of flash will be affected by sender selector hunting time, which may vary considerably.

4.08 Remove any No. 184 plugs which were placed in line group test circuit C jacks.

5. REPORTS

5.01 The required record of these tests should be entered on the proper form.