

ALARMS OPERATION TESTS 701A AND 711A PBX

1. GENERAL

- 1.01 This section describes methods of testing the alarms in No. 701-A and No. 711-A P B X 's.
- 1.02 This section is reissued to specify a W1AF cord for the testing of fuse alarms; to revise test (A), and under test (J) to add Charge and Discharge Battery Fuse Alarm, Distributing Panel Fuse Alarm, High Low Voltage Alarm, Rectifier Failure Alarm and Ring 2 Pickup Alarm. This reissue is a general revision and therefore arrows ordinarily used to indicate changes have been omitted.
- 1.03 The tests cover the operation and release of the various alarms provided in these P.B.X.'s as listed below:
 - (A) Central Office Alarm
 - (B) Switch Frame Fuse Alarm
 - (C) Relay Rack Fuse Alarm
 - (D) Switchboard Fuse Alarm (No. 701-A P.B.X. Only)
 - (E) Permanent Signal Alarm
 - (F) Call Blocked Alarm
 - (G) Start Lead Ground Alarm
 - (H) Chain Circuit Trouble Alarm
 - (I) Release Magnet Alarm
 - (J) Power Alarms
- 1.04 Test (A) is performed when the P B X alarm is extended to the central office. In this case, the central office should be notified before and after any tests are made.
- 1.05 Tests (E) and (I) should be made on different switches each time the test is made.
- 1.06 The procedures outlined in each test are designed to bring in a visual and audible alarm indication, with the audible alarm control keys normal.
- 1.07 When making tests which require the use of a test receiver, keep the receiver slightly away from the ear so that clicks which occur during testing will not act directly on the ear.
- 1.08 Care for any defects found or refer them to others for handling as covered by local routines.

2. APPARATUS

Test (A)

- 2.01 No. 1011G dial hand test set equipped with a 2W39A cord assembly consisting of a W2CL cord, a No. 471A jack and a No. 240A plug (or equivalent).

Tests (A) and (E)

- 2.02 No. 477A (or No. 375A) Tool (Make-Busy).

Tests (A), (B), (C), (D), (H) and (J)

- 2.03 Testing Cord—W1AF Cord, 8 feet, 6 inches long, equipped with one KS-6278 Clip and one No. 411A Tool (for use in connecting battery to alarm bars and relay contacts).

Tests (D), (G), (H) and (J)

- 2.04 Testing Cord—W1U (or No. 760) Cord, 1 foot, 8 inches long. (For use in connecting ground to alarm bars and relay contacts.)

Test (J)

- 2.05 No. 35-F Test Set, or equivalent.

- 2.06 Testing Cord—W2W Cord, 6 feet long, equipped with one No. 110 Plug, one No. 360C (Tip) Tool, one No. 360B (Ring) Tool and two No. 365 Tools, each equipped with No. 90 Cord Tips (for use in connecting test set to power board).
- 2.07 One dry battery per KS-6571 or KS-6573 (22-1/2 volts).

3. METHOD

(A) Central Office Alarm

- 3.01 Before starting this test, observe that no alarm lamps are lighted:
- 3.02 Connect the dial hand test set to the test jack of an idle selector. Call the proper person at the central office and arrange to have the class A (major) and B (minor) alarms observed at the central office.
- 3.03 Connect battery to the alarm bus-bar on the fuse panel.
- 3.04 Observe the lighting of the red fuse alarm lamp on the jack panel on the relay rack.
- 3.05 Have the central office attendant check that the red class A (major) lamp is lighted at the central office and that the alarm bell rings.
- 3.06 Have the central office attendant operate the associated PBX-A or DA key and check that the red class A (major) lamp remains lighted and the alarm bell is silenced.
- 3.07 Remove the battery from the alarm bar and observe that the red alarm lamp on the jack panel is extinguished.
- 3.08 Have the central office attendant check that the red class A (major) lamp is extinguished, the white supervisory lamp is lighted and the alarm bell rings.
- 3.09 Have the central office attendant reoperate the PBX-A or DA key and check that the white supervisory lamp is extinguished and the alarm bell is silenced.

Note: If the P.B.X. is connected to a central office using alarm circuit SD-21482-01 the PBX-A or DA key will have to be restored to extinguish the supervisory lamp and silence the bell.

- 3.10 Place a make-busy tool between the tip and ring springs of a selector or selector-connector test jack. After a period of 30 to 60 seconds, the associated white PS lamp at the relay racks will light and the alarm bell will ring.

- 3.11 Have the central office attendant check that the white class B (minor) lamp at the central office is lighted and that the alarm bell rings.

- 3.12 Have the central office attendant operate the associated PBX-A or DA key at the central office and check that the class B (minor) lamp remains lighted and that the alarm bell is silenced.

- 3.13 Repeat the operations outlined in 3.03 and 3.04 which bring in the red class A (major) alarm.

- 3.14 Have the central office attendant check that the white class B (minor) lamp is extinguished, the red class A (major) lamp is lighted and the alarm bell rings.

- 3.15 Have the central office attendant reoperate the PBX-A or DA key and check that the red class A (major) lamp remains lighted and that the alarm bell is silenced.

Note: If the P.B.X. is connected to a central office using alarm circuit SD-21482-01 it will be necessary to restore and reoperate the PBX-A or DA key in order to silence the alarm bell.

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3.16 Remove the battery from the alarm bar and observe that the red fuse alarm lamp on the relay rack is extinguished.

3.17 Have the central office attendant check that the red class A (major) lamp is extinguished, the white class B (minor) lamp is lighted and the alarm bell rings.

Note 1: If the P B X is connected to a central office using Fig. 1-B of alarm circuit SD-21482-01, the extension alarm circuit may or may not function so as to change the lamp indications at the central office from a class A to class B lamp when the major trouble is retired at the P B X in which case the alarm bell will not ring.

Note 2: When alarm circuit SD-21482-01 is used at the central office the alarm bell will not ring when the lamp indication does change from a major to a minor alarm lamp.

3.18 Remove the make-busy tool from the test jack of the selector or selector-connector. Observe that the white PS lamp is extinguished immediately.

3.19 Have the central office attendant check that both the major and minor alarm lamps are extinguished, the white supervisory lamp is lighted and the alarm bell rings.

3.20 Have the central office attendant reoperate the PBX-A or DA key and check that the white supervisory lamp is extinguished and the alarm bell is silenced.

Note: If the P B X is connected to a central office using alarm circuit SD-21482-01 the PBX-A or DA key will have to be restored to extinguish the supervisory lamp and silence the bell.

3.21 Disconnect from the central office by removing the plug of the dial hand test set from the jack of the selector or selector-connector.

(B) Switch Frame Fuse Alarm

3.22 At the fuse panel on a switch frame, connect battery to the alarm bus-bar.

3.23 Check that the associated red SW FA lamp on the relay rack lights and that the bell rings. Momentarily operate the C-AL or COM key and note that the bell is silent while the key is operated.

3.24 Check that the red SW FA lamp lights at the switchboard on the No. 701-A P B X and on the cabinet when provided.

3.25 Remove the battery from the alarm bar and check that the alarm is retired.

3.26 Repeat the operations covered in 3.22, 3.23 and 3.25 on the front and rear of each frame.

3.27 At the No. 62C protector block associated with the switch frame fuse alarm, connect ground to the alarm stud of the block and check that the alarm bell rings.

3.28 Remove the ground from the alarm stud, and check that the alarm is retired.

(C) Relay Rack Fuse Alarm

3.29 At the fuse panel on a relay rack, connect battery to the alarm bus-bar.

3.30 Check that the associated red fuse alarm lamp on the relay rack lights and that the bell rings.

3.31 Check that the red RR FA lamp lights at the switchboard on the No. 701-A P B X and on the cabinet when provided.

3.32 Remove the battery from the alarm bar and check that the alarm is retired.

3.33 Repeat the operations covered in 3.29, 3.30 and 3.32 on each relay rack fuse panel.

(D) Switchboard Fuse Alarm (No. 701-A P B X Only)

3.34 At the fuse panel in back of one of the positions of the switchboard, connect battery to the alarm bus-bar.

3.35 Check that the associated red FA (or SWBD) lamp at the switchboard lights and that the bell rings.

3.36 Remove the battery from the alarm bar and check that the red FA (or SWBD) lamp is extinguished.

3.37 Repeat the above test by connecting ground to the alarm bus-bar of the ground fuses.

3.38 Repeat the operations described in 3.34 to 3.37 on all switchboard positions.

(E) Permanent Signal Alarm

3.39 Place a make-busy tool between the tip and ring springs of a selector or selector-connector test jack. After a period of approximately 30 to 60 seconds, the associated white PS lamp at the relay rack should light.

3.40 Check that when the lamp at the relay rack lights, the white PS lamp lights at the switchboard on the No. 701-A P B X and on the alarm cabinet when provided and that the bell rings. Momentarily operate the PS key and note that the bell is silenced while the key is operated.

3.41 Remove the make-busy tool from the selector or selector-connector test jack and check that the alarm is retired immediately.

3.42 Repeat the operations described in 3.39 and 3.41 on a selector or selector-connector on the front and rear of each switch frame.

(F) Call Blocked Alarm

3.43 Block the A relay of the first line finder in the first subgroup in the non-operated position. Then operate the group TST key located on the line relay fuse panel. (This simulates a calling line that is not picked up by a line finder.) Check that the associated red CB lamp on the relay rack lights in approximately 15 to 30 seconds and that the bell rings.

3.44 Check that the red CB lamp lights at the switchboard on the No. 701-A P B X and on the alarm cabinet when provided.

3.45 Remove the block from the A relay and check that the alarm is retired when the TST key is restored.

3.46 Repeat the operations covered in 3.43 and 3.45 for each line group.

(G) Start Lead Ground Alarm

3.47 Connect ground to No. 1 ST lead punching on the No. 157B terminal block on the line relay rack. See that each idle line finder in the groups steps to the 10th level, rotates to the 10th position and releases. The red S lamp on the relay rack will then light.

3.48 Remove the ground from the ST punching and observe that the line finders stop hunting. The red S lamp will remain lighted.

3.49 Check that the red LF GRD lamp is lighted at the switchboard on the No. 701-A P B X and on the alarm cabinet when provided and that the bell rings.

3.50 Momentarily operate the associated AR key on the relay rack and check that the S alarm is retired.

3.51 Repeat the operations covered in 3.47 to 3.50 on each ST lead.

(H) Chain Circuit Trouble Alarm

3.52 Connect ground to the S or CH punching on the terminal strip on the line relay rack, and observe that the associated white C lamp on the relay rack lights.

3.53 Check that the red LF GRD lamp is lighted at the switchboard on the No. 701-A P.B.X. and on the alarm cabinet when provided and that the bell rings.

3.54 Remove the ground and check that the alarm is retired.

3.55 Connect battery to the S or CH punching referred to in 3.52.

3.56 Check that the associated white C lamp lights, and that the bell rings.

3.57 Remove the battery and check that the C alarm is retired.

3.58 Repeat the operations covered in 3.52 and 3.54 to 3.57, inclusive, on each line group.

(I) Release Magnet Alarm

3.59 Manually raise and hold the shaft of a line finder, selector, selector-connector or connector far enough to allow the off-normal springs to close.

3.60 Check that the associated green R MAG REG (or RLS MAG) lamp on the relay rack lights in approximately 15 to 30 seconds.

3.61 Check that the green R MAG REG (or RLS MAG) lamp lights at the switchboard on the No. 701-A P.B.X. and on the alarm cabinet when provided and that the bell rings.

3.62 Release the line finder, selector, selector-connector or connector and note that the alarm is retired.

3.63 Repeat the operations covered in 3.59, 3.60 and 3.62, inclusive, on one of the first five switches and on one of the second five switches in each group of ten, in order to test both release battery leads.

(J) Power Alarms

3.64 **Charge or Discharge Battery Fuse Alarm:** Remove the alarm fuse associated with the charge or discharge fuse under test. Connect the battery to the fuse alarm stud or bar, first from one then the other fuse terminal.

3.65 Check that the red PWR-BD lamp on the relay rack lights and that the bell rings.

3.66 Check that the red PWR-BD lamp lights at the switchboard on the No. 701-A P B X and on the cabinet when provided.

3.67 Remove the battery; momentarily operate the rectifier (ON-OFF) key (to release the (IF) relay) and check that the alarms are retired.

3.68 **Distributing Panel Fuse Alarm:** To test the alarm circuit of the distributing panel fuse alarm, follow the procedure described in 3.64 to 3.67.

3.69 **High, Low Voltage Alarm:** Connect the No. 35-F (or equivalent) test set and dry battery as shown in Fig. 1 to the circuit to be tested. Operate the knife switches associated with the No. 3 telegraph key of the No. 35-F test set to the position marked 0. See that the GRD key is open and that the REV and BATT and GRD CO keys are normal. Place the red resistance slider associated with the No. 3 key in its minimum resistance position (to the left). Place the corresponding black resistance slider in a position where approximately 1/2 of the resistance will be removed (1/2 of the distance from left to right). Close the No. 3 telegraph key of the test set and then remove the fuse (VM) in series with the voltmeter relay.

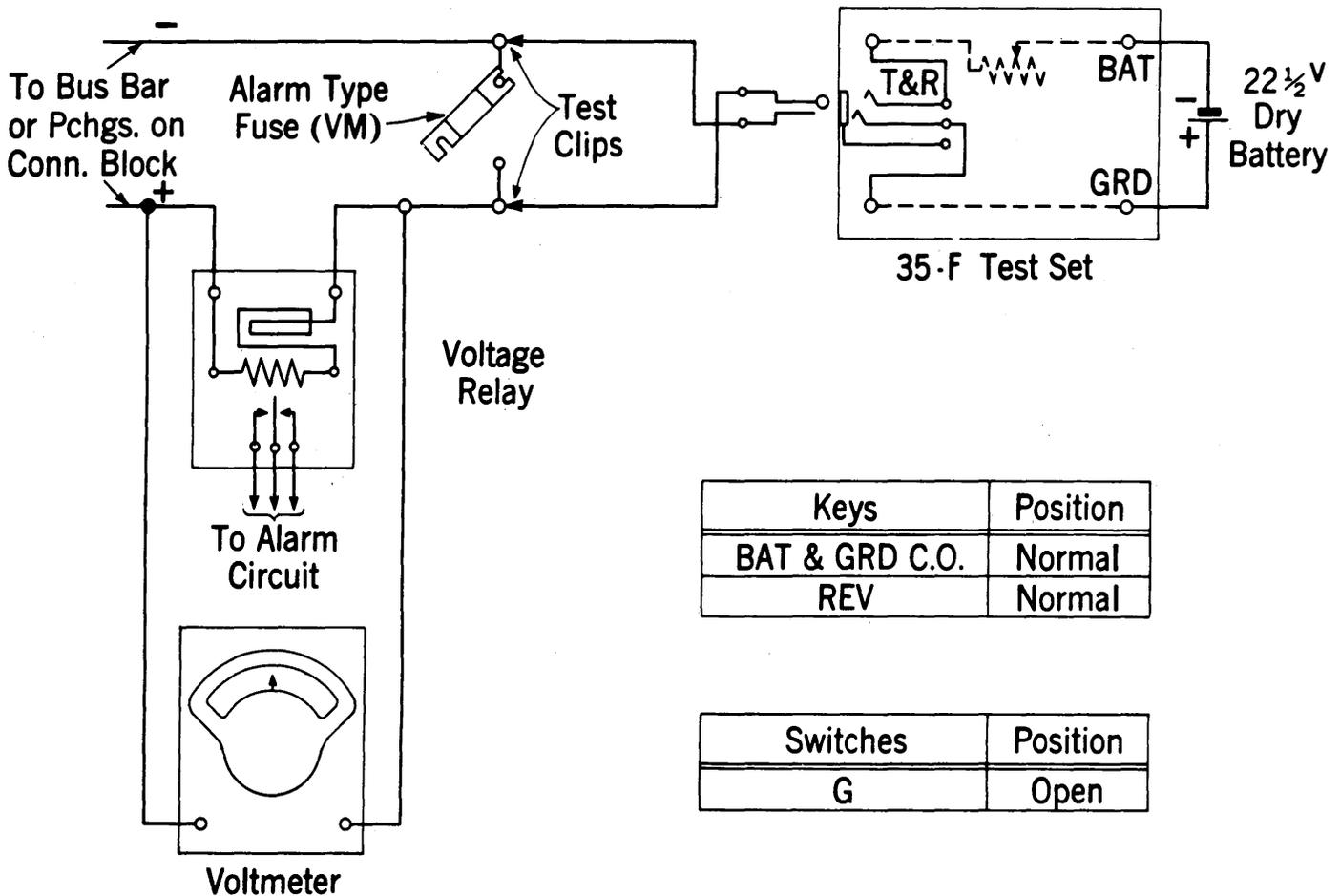


Fig. 1

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3.70 Check to see if either of the CEMF cell switches is operated and if so adjust the No. 3 resistance slider of the No. 35-F test set to the right until the switches release.

Caution: When it is necessary to release the CEMF cell switches in the above manner, proceed immediately with the test so that the PBX will be operating a minimum length of time on high voltage.

3.71 With the CEMF cell switches cut out of the circuit adjust the No. 3 resistance slider to the left, noting that the first CEMF cell switch operates at approximately the point where the high voltage (50 volts) is exceeded. This should cause the first group of CEMF cells to be cut into the circuit and the voltmeter should show a drop in voltage to approximately 46 volts.

3.72 If there is a second automatically controlled CEMF switch make a further adjustment of the No. 3 resistance slider to the left, noting that the second CEMF cell switch operates at approximately the point where the high voltage is again exceeded. This should cause the second group of CEMF cells to be cut into the circuit and the voltmeter should again show a drop in voltage to approximately 46 volts.

3.73 Make a further adjustment of the No. 3 resistance slider to the left, noting that when the high voltage is again exceeded, the red PWR-BD lamp on the relay rack lights and that the bell rings.

Note: When a 110A Power Plant is used the red HLV lamp on the power board will also light.

3.74 Bring the voltage within the allowable limit by readjusting the No. 3 resistance slider to the right and check that all signals are retired.

3.75 Readjust the No. 3 resistance slider to the right, noting that the second CEMF cell switch, when provided, releases at approximately the point where the voltage drops below the low limit (44 volts). This should cause the second group of CEMF cells to cut out of the circuit and the voltmeter should show an increase in voltage to approximately 48 volts.

3.76 Make a further readjustment of the No. 3 resistance slider to the right, noting that the first CEMF cell switch releases at approximately the point where the voltage again drops below the low limit. This should cause the first group of CEMF cells to cut out of the circuit and the voltmeter should show an increase in voltage to approximately 48 volts.

3.77 Make a further readjustment of the No. 3 resistance slider to the right, noting that the voltage again drops below the low limit the red PWR-BD lamp on the relay rack lights and that the bell rings.

Note: When a 110A Power Plant is used the red HLV lamp on the power board will also light.

3.78 Bring the voltage within the allowable limit by readjusting the No. 3 resistance slider to the left and check that all signals are retired.

3.79 This tests the continuity of the operation and release of the relays in the voltage regulation circuit cutting in and out the CEMF cells as well as checking the high and low voltage alarms.

3.80 Replace the fuse (VM) and then disconnect the testing apparatus.

3.81 **Ampere Hour Meter Alarm:** Ground the ampere hour meter alarm lead at the connecting block at the power board.

3.82 Check that the red AHM lamp lights at the relay rack and note that the alarm bell rings.

3.83 Check that the red AHM lamp lights at the switchboard or the alarm cabinet and that the bell rings with the AHM key normal. Check that operating the AHM key silences the bell.

3.84 Remove the ground from the alarm lead and note that the bell resumes ringing and that the red AHM lamps are extinguished.

3.85 Restore the AHM key and note that the bell is silenced.

3.86 **Rectifier Failure Alarm:** Remove the alarm fuse associated with the charge fuse of the rectifier under test. Connect battery to the fuse alarm stud or bar first from one then the other alarm fuse terminals.

3.87 Check that the red RFA lamp on the power board and the red PWR-BD lamp on the relay rack light and that the bell rings.

3.88 Remove the battery and check that the alarms are retired.

3.89 **Ring Voltage Alarm:** The ringing machine must be running when this test is made. When it is necessary to insure the continuous operation of the ringing machine during the test, ground the generator start lead.

3.90 Block the alternating current relay in the ringing circuit in a non-operate position.

3.91 Check that the red RING FAIL lamp on the power board (if provided) lights and that the red PWR-BD lamp on the relay rack lights and that the bell rings.

3.92 Remove the block from the relay; the return of the relay to its operated position will retire the alarm.

3.93 Remove the ground from the generator start lead.

3.94 **Ring 2 Pickup Alarm:** (When provided) the ringing machine must be running when this test is made. When it is necessary to insure the continuous operation of the ringing machine during the test ground the generator start lead.

3.95 Ground PUA lead at the terminal strip on rear of ringing panel.

3.96 Check that the red PKU lamp lights at the switchboard and cabinet when provided and the alarm bell rings.

3.97 Remove the ground from the PUA lead and observe that the alarms are retired.

4. REPORTS

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