

ALARMS OPERATION TESTS 702A PBX

1. GENERAL

- 1.01 This section describes a method of testing the alarms in a 702A PBX.
- 1.02 This section has been reissued to change the title for clarification purposes and convert it to letter size.
- 1.03 The tests cover the operation and release of the various alarms provided in the PBX as listed below:
- (A) Central Office Alarms
 - (B) Fuse Alarms
 - (C) Call Blocked Alarm
 - (D) Permanent Signal Alarm
 - (E) Start Lead Ground Alarm
 - (F) Chain Circuit Trouble Alarm
 - (G) Release Magnet Alarm
 - (H) Common Timing Circuit Alarm
 - (I) Power Alarms
- 1.04 Test (A) is performed when the PBX 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 (D) and (G) should be made on different switches each time the test is made.
- 1.06 Tests (H) and (I) should preferably be made during periods of light traffic to avoid interference with service.
- 1.07 The procedure outlined in each test is designed to bring in a visual and audible alarm indication including the aisle pilot lamps with the audible alarm control keys normal.

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).

Test (D)

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

Tests (A), (B), (F) and (I)

- 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 (A), (E), (F) and (I)

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

Test (I)

- 2.05 No. 35F test set (or equivalent).
- 2.06 **Testing Cord**—W2W Cord, 6 feet long, equipped with one No. 310 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 Weston Model No. 280 Voltmeter equipped with cords and clips having voltage ranges of 150, 75 and 3 volts or 150, 60 and 3 volts.
- 2.08 One 22-1/2 or 24 volt Dry Battery (such as KS-6571).

3. METHOD

(A) Central Office Alarms

- 3.01 Before starting this test, observe that no alarm lamps are lighted and that the AUD ALM key, where provided, of the audible alarm circuit is operated.

3.02 Connect the dial hand test set to the test jack of an idle first 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 ringing voltage to the ringing failure alarm bar on the ringing power board.

3.04 Observe the lighting of the associated lamp in the power alarm cabinet and that the class A alarm bell rings.

3.05 Have the central office assistant 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 assistant 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 Operate the MAJ key, where provided, of the fuse and power alarm circuit to its OFF position and check that the class A alarm bell at the PBX is silenced.

3.08 Restore the MAJ key, where provided, to its ON position.

3.09 Remove the ringing voltage from the alarm bar and observe that the associated lamp in the power alarm cabinet is extinguished and that the class A alarm bell is silenced.

3.10 Have the central office assistant check that the red class A (major) lamp is extinguished, the white supervisory lamp is lighted and the alarm bell rings.

3.11 Have the central office assistant 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 PBX 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.

3.12 Connect battery to the alarm bus-bar on the relay rack fuse panel.

3.13 Observe the lighting of the red fuse alarm lamp on the relay rack fuse panel, the red RRFA lamp on the alarm frame where provided, and that the class B alarm bell rings.

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

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

3.16 Operate the MIN key, where provided, of the fuse and power alarm circuit to its OFF position and check that the class B alarm bell at the PBX is silenced.

3.17 Restore the MIN key, where provided, to its ON position.

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

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

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

Note: If the PBX 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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3.21 Remove the ringing voltage from the alarm bar of the power ringing failure alarm and observe that the associated lamp in the power alarm cabinet is extinguished and the class A alarm bell is silenced.

3.22 Have the central office assistant 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 PBX is connected to a central office using alarm circuit SD-21482-01, the alarm bell will not ring. If Fig. 1-B of this circuit is used, the central office alarm indication may not change from a major to a minor alarm.

3.23 Remove the battery from the alarm bar of the relay rack fuse panel and observe that the red fuse alarm lamp on the relay rack fuse panel, the red RRFA lamp on the alarm frame where provided, are extinguished and the class B alarm is silenced.

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

3.25 Have the central office assistant 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 PBX 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.

3.26 Disconnect from the central office by removing the plug of the dial hand test set from the test jack of the first selector.

(B) Fuse Alarms

3.27 At the fuse panel on a switch frame, relay rack office alarm frame, traffic register bay, etc., connect battery to the alarm bus-bar.

3.28 Check that the associated red (FA) lamp on the alarm shelf or fuse panel or fuse and jack panel of the frame under test lights and that the audible alarm operates.

3.29 Check that the proper pilot FA lamp lights on the office alarm frame for the associated frame fuse alarm circuit under test.

3.30 Remove the battery from the alarm bus-bar and check that the fuse alarm and pilot lamps are extinguished and the audible alarm is silenced.

(C) Call Blocked Alarm

3.31 Block the A relay of the first line finder in the first subgroup in the non-operated position. Then operate the TST key associated with the group of line relays located on the fuse and jack panel. (This simulates a calling line that is not picked up by a line finder.)

3.32 Check that within the specified time, the associated red CBLK lamp on the fuse and jack panel lights and the audible alarm operates.

3.33 Check that the pilot CBLK lamp lights on the office alarm frame for the line finder alarm circuit under test.

3.34 Remove the block from the A relay and restore the TST key to normal. Check that the alarm pilot lamps are extinguished and the audible alarm is silenced.

(D) Permanent Signal Alarm

3.35 Place a make-busy tool between the tip (No. 2) and ring (No. 1) springs of the test jack of a selector or No. 3 and No. 4 springs of the test jack of a connector and also block operated the F relay of this connector. Check that within the specified time the associated white PERM lamp on the selector or connector frame lights and the audible alarm operates.

3.36 Check that the proper white pilot PERM lamp lights on the office alarm frame for the associated selector or connector alarm circuit under test.

3.37 Remove the make-busy tool from the selector or connector test jack and remove the block from the F relay of the connector. Check that the alarm and pilot lamps are extinguished and the audible alarm is silenced.

3.38 Repeat the operations described in 3.35 to 3.37 on each succeeding shelf, but in order to avoid the necessity of waiting each time for the common timing circuit to function, the selector or connector should not be restored until the operation covered in 3.35 is made on the second and each succeeding shelf.

(E) Start Lead Ground Alarm

3.39 Connect ground to the No. 1T spring of the G relay in the last subgroup. Each idle line finder in the line finder group will in turn, hunt for a line and release. When the last idle line finder has operated and released, the red S lamp associated with the line finder group will light and the audible alarm will operate.

3.40 Remove the ground from the G relay and observe that the line finders stop hunting. The red S lamp will remain lighted.

3.41 Momentarily operate the associated AR key and check that the red S lamp is extinguished and the audible alarm is silenced.

3.42 Repeat the operations covered in 3.39 to 3.41 on each line finder group.

(F) Chain Circuit Trouble Alarm

3.43 Connect ground to the No. 4 spring of the D relay of an idle line finder and observe that the white C lamp associated with the line finder group lights and the audible alarm operates.

3.44 Remove the ground from the D relay and check that the white C lamp is extinguished and the audible alarm is silenced.

3.45 Connect battery to the No. 4 spring of the D relay and observe that the white C lamp associated with the line finder group lights and the audible alarm operates.

3.46 Remove the battery from the D relay and check that the white C lamp is extinguished and the audible alarm is silenced.

3.47 Repeat the operations covered in 3.43 to 3.46 on each line finder group.

(G) Release Magnet Alarm

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

3.49 Check that within the specified time, the associated green RLS lamp on the switch frame lights and the audible alarm operates.

3.50 Check that the proper green RLS pilot lamp is lighted on the office alarm frame for the associated switch frame alarm circuit under test.

3.51 Release the line finder, selector or connector and check that the alarm and pilot lamps are extinguished and the audible alarm is silenced.

3.52 Repeat the operations covered in 3.48 to 3.51 on each succeeding shelf, but in order to avoid the necessity of waiting each time for the common timing circuit to function, hold the switch on the shelf last tested in the off-normal position until the shaft of the switch on the next shelf has been raised.

(H) Common Timing Circuit Alarm

3.53 With selector switch A in one of the odd positions (1, 3, 5, etc.), block the B relay of the common timing circuit in the non-operated position. Observe after the second application of ringing current to the AC relay of the common timing circuit that the OACT pilot lamp on the office alarm frame lights and the audible alarm operates.

3.54 Remove the block from the B relay and allow the selector to advance to one of the even positions (2, 4, 6, etc.), and again block the B relay non-operated. Observe after the second application of ringing current to the AC relay of the common timing circuit, that the OACT pilot lamp on the office alarm frame again lights and the audible alarm operates.

- 3.55 Remove the block from the B relay and check that the OACT pilot lamp is extinguished and the audible alarm is silenced.
- 3.56 To check the release of the C relay, should any of the leads to the pickup relay become open, block the K relay non-operated. Check that as selector switch A passes off positions 1, 5, 10, etc., that the OACT pilot lamp on the office alarm frame lights and the audible alarm operates.
- 3.57 Remove the block from the K relay and check that the OACT pilot lamp is extinguished and the audible alarm is silenced.
- 3.58 The operations covered in 3.53 to 3.57 should be made on the duplicate or emergency set of common timing equipment at alternate routine periods by operating the TRANS key.

(I) Power Alarms

3.59 **High, Low and Floating Alarms:** Connect the No. 35-F test set, voltmeter 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 VM, REV and BATT & 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 half of the resistance will be removed (half of the distance from left to right). Close the No. 3 telegraph key of the test set.

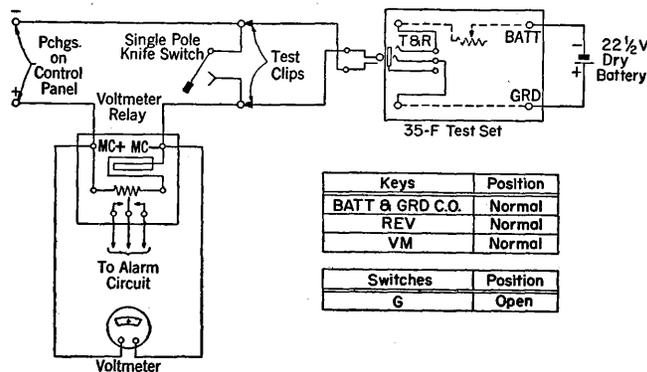


Fig. 1

- 3.60 Cut the test set into the circuit by removing the VM fuse, test link, or opening the switch in series with the voltage relay, which has been shorting the test set. (Care should be taken so as not to open the circuit.)
- 3.61 Adjust the No. 3 slider and the resistance switches of the test set until the high and low voltages have been obtained across the voltmeter relay and check that the red HLV lamp on the power board and red PWR-BD lamp on the relay rack or alarm cabinet lights and the alarm bell rings, when either the high or low voltage limit has been exceeded. Momentarily operate the guard key, when provided, and check that the audible alarm is silenced.
- 3.62 Bring the voltage within the allowable limits and check that all signals are retired.
- 3.63 When a key is provided to change the range of the voltmeter relay, operate this key and repeat the operations described in 3.59 to 3.62.
- 3.64 Replace the VM fuse, test link or close the switch in series with the voltage relay and then disconnect the testing apparatus.
- 3.65 **Charge or Discharge Battery Fuse Alarm:** Remove the alarm fuse associated with the charge or discharge fuse under test. Connect battery to the fuse alarm stud or bar, first from one then the other fuse terminal.
- 3.66 Check that the red PWR-BD lamp on the relay rack or power alarm cabinet lights and the audible alarm operates.

- 3.67 Remove the battery and check that the alarms are retired.
- 3.68 **Distributing Panel Fuse Alarm:** To test the alarm circuits of the distributing panel fuse alarm, follow the procedure described in 3.65 to 3.67.
- 3.69 **Ringling Generator Alarm:** Remove the individual alarm fuse associated with the ringling generator alarm circuit (when used in connection with 16-2/3 and 20-cycle ringling machines).
- 3.70 Check that the alarm bell rings and the MAN GEN lamp in the power alarm cabinet lights.
- 3.71 Replace the alarm fuse and check that the MAN GEN lamp is extinguished and the audible alarm is silenced.
- 3.72 **Machine Ringling Alarm:** Remove the 1-1/3 ampere fuse which is associated with the R-1 ringling alarm circuit.
- 3.73 Check that the alarm bell rings and the R-1 lamp in the power alarm cabinet lights.
- 3.74 Replace the alarm fuse and check that the R-1 lamp is extinguished and the audible alarm is silenced.
- 3.75 **Ringling Motor Transfer Alarm:** With the regular ringling machine operating in the usual manner, open the a-c motor switch. Check that the alarm bell rings and the RP TRNS lamp in the power alarm cabinet lights.
- 3.76 Operate the guard key, where provided, and check that the RP TRNS lamp is extinguished and the audible alarm is silenced; and the RP GD lamp lights.
- 3.77 Restore the guard key to normal and check that the RP GD and RP TRNS lamp are both extinguished.
- 3.78 **Ampere Hour Meter Alarm:** Ground the ampere hour meter alarm lead at the connecting block at the power board.
- 3.79 Check that the red AHM lamp lights in the power alarm cabinet and the audible alarm operates.
- 3.80 Operate the AHM GD key, where provided, check that the AHM lamp is extinguished, the guard lamp lights, and the audible alarm is silenced.
- 3.81 Remove the ground from the alarm lead, restore the AHM GD key to normal and check that the guard lamp is extinguished.
- 3.82 **Busy or Dial Tone Alarm:** Operate the BT or DT key, where provided, of the miscellaneous tone alarm circuit at the power alarm cabinet.
- 3.83 Check that within the specified time, the associated white BT or DT lamp in the power alarm cabinet lights and the audible alarm operates.
- 3.84 Restore the BT or DT key and check that the BT or DT lamp is extinguished and the audible alarm is silenced.
- 3.85 **60 and 120 IPM Interrupter Circuit Alarm:** Operate the TST key of the 60 IPM interrupter circuit.
- 3.86 Check that the 60 IPM BRUSH pilot lamp on the office alarm frame lights and the audible alarm operates.
- 3.87 Restore the TST key and check that the 60 IPM BRUSH pilot lamp is extinguished and the audible alarm is silenced.
- 3.88 Connect ground to the individual lead terminal of one of the resistance lamps of the 60 IPM interrupter circuit.
- 3.89 Check that the 60 IPM BUSY FLASH pilot lamp on the office alarm frame flashes and the audible alarm operates.
- 3.90 Remove the ground and check that the 60 IPM BUSY FLASH pilot lamp is extinguished and the audible alarm is silenced.
- 3.91 The 120 IPM interrupter circuit shall be tested in a similar manner as covered in 3.85 to 3.90.

4. REPORTS

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