ALARMS - OPERATION TESTS
740A, 740B, 740C AND 740AX PBX

1. GENERAL

1.01 This section describes methods of testing alarms in No. 740-A, No. 740-B, No. 740-C and No. 740-AX P B X's.

1.02 This section is reissued to specify a W1AF cord for testing of fuse alarms, to amplify Test (A) and to change Test (B) to add Switchboard Fuse Alarm.

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) Fuse Alarm
(C) Permanent Signal Alarm
(D) Call Blocked Alarm
(E) Start Lead Ground Alarm
(F) Chain Circuit Trouble Alarm
(G) Release Magnet Alarm
(H) Power Alarm
(I) High-Low Voltage Alarm
(J) Ringing Voltage Alarm

1.04 Before starting these tests advise the P B X attendant that the alarms are to be tested, which will cause the various alarm lamps to light and the alarm buzzer (or bell) to sound.

1.05 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.

1.06 Tests (C) and (G) should be made on different switches each time the test is made.

1.07 The procedures outlined in each test are designed to bring in a visual and audible alarm indication, 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.

Tests (A) and (C)

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

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

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 (B), (E), (F), 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 (I)

2.05 No. 35F 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-connector. 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 fuse panel (or jack panel No. 740-C P B X) at the switch frame.

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 fuse panel or 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 the test jack of an idle selector-connector. After a period of approximately 30 to 60 seconds, the white PS lamp at the jack panel on the switch frame will light.

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 white class B (minor) lamp remains lighted and the alarm bell is silenced.

3.13 Repeat the operations outlined in 3.03 and 3.04 which bring in the 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 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.

3.16 Remove the battery from the alarm bar and observe that the red fuse alarm lamp on the fuse panel or jack panel 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: If the P B X 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.

3.18 Remove the make-busy tool from the test jack of the selector-connector. Observe that the white PS lamp at the jack panel on the switch frame 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 test jack of the selector-connector.

(B) Fuse Alarm

3.22 **Switch Frame Fuse Alarm:** At the fuse panel on the switch frame, connect battery to the alarm bus-bar.

3.23 Check that the red fuse alarm lamp on the fuse panel (or the red (FA) fuse alarm lamp on the jack panel, No. 740-C P B X) lights.

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3.24 Check that the red FR-AL lamp lights at the attendant's cabinet (or switchboard) and that the buzzer (or bell) sounds. Check that momentarily turning the FR-AL key to the OFF position silences the buzzer (or bell).

3.25 Remove the battery from the alarm bar and check that the red fuse alarm lamp and red FR-AL lamp are extinguished.

3.26 At the No. 62C protector block, connect ground to the alarm stud of the block.

3.27 Check that the red FR-AL lamp lights at the attendant's cabinet (or switchboard) and that the buzzer (or bell) sounds.

3.28 Remove the ground from the alarm stud and check that the red FR-AL lamp is extinguished and the buzzer (or bell) silenced.

No. 740-C P B X

3.29 When one attendant's cabinet is provided, check that the TROUBLE lamp lights at the cabinet and that the buzzer sounds. Check that momentarily operating the TROUBLE BUZZER key to the OFF position silences the buzzer. Then proceed to 3.32.

3.30 When two attendant's cabinets are provided, check that the TROUBLE lamp lights at Cabinet No. 1 and that the buzzer sounds. Check that momentarily operating the TROUBLE BUZZER to the OFF position silences the buzzer.

Note: For identification Cabinet No. 1 is considered to be the cabinet in which the SWITCHBOARD SERVICE key is employed as a transfer key to the second cabinet (Cabinet No. 2).

3.31 Operate the SWITCHBOARD SERVICE key at Cabinet No. 1 and note that the TROUBLE lamp is extinguished at Cabinet No. 1, but appears at Cabinet No. 2 with the SWITCHBOARD SERVICE key in the NORMAL position. Check that momentarily operating the TROUBLE BUZZER key to the OFF position silences the buzzer.

3.32 Remove the battery from the alarm bar and check that the red FA lamp on the jack panel and the TROUBLE lamp are extinguished.

3.33 At the No. 62C protector block, connect ground to the alarm stud of the block.

3.34 Check that the TROUBLE lamp lights at the attendant's cabinet and that the buzzer sounds.

3.35 Remove the ground from the alarm stud and check that the TROUBLE lamp is extinguished and the buzzer silenced.

3.36 **Switchboard Fuse Alarm (No. 740-AX P B X Only):** At the fuse panel in back of the switchboard position, connect battery to the alarm bus-bar.

3.37 Check that the red FR-AL lamp at the switchboard lights and that the bell rings.

3.38 Remove the battery from the alarm bar and check that the red FR-AL lamp is extinguished and the bell silenced.

(C) Permanent Signal Alarm

3.39 Place a make-busy tool between the tip and ring springs of the test jack of an idle selector-connector. After a period of approximately 30 to 60 seconds the white PS lamp at the jack panel on the switch frame will light.

3.40 Check that when the PS lamp at the jack panel lights, the PS-AL lamp or TROUBLE lamp (No. 740-C P.B.X.) lights at the attendant's cabinet (or switchboard) and the buzzer (or bell) sounds. Check that turning the PS-AL or TROUBLE BUZZER key to the OFF position silences the the buzzer (or bell).

3.41 Remove the make-busy tool from the selector-connector test jack and check that the PS lamp and the PS-AL or TROUBLE lamp are extinguished immediately.

3.42 When there is more than one shelf of selector-connectors repeat the operations described in 3.39, 3.40 and 3.41 on a selector-connector of each shelf.

(D) Call Blocked Alarm

3.43 Block the A relay of an idle line finder in the first group in the non-operated position. Then operate the TST key located on the jack panel. Check that the red C BLK lamp on the jack panel lights in approximately 15 to 30 seconds.

3.44 When the C BLK lamp lights the FR-AL or TROUBLE lamp at the attendant's cabinet (or switchboard) will also light and the buzzer (or bell) sound. This lamp will be extinguished and the buzzer (or bell) silenced when the C BLK lamp is extinguished.

3.45 Remove the block from the A relay and release the TST key. Note that the C BLK lamp is extinguished.

(E) Start Lead Ground Alarm

3.46 Connect ground to the No. 1 T of the G relay in the last subgroup. See that each idle line finder hunts for a line and releases. The red S lamp on the jack panel will then light.

3.47 When the S lamp lights the FR-AL or TROUBLE lamp at the attendant's cabinet (or switchboard) will also light and the buzzer (or bell) sounds. This lamp will be extinguished and the buzzer (or bell) silenced when the S lamp is extinguished.

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

3.49 Momentarily operate the AR key at the jack panel and check that the S lamp is extinguished.

(F) Chain Circuit Trouble Alarm

3.50 Connect ground to the No. 4 B spring of the E relay of an idle line finder. Check that the white C lamp at the jack panel lights.

3.51 When the C lamp lights the FR-AL or TROUBLE lamp at the attendant's cabinet (or switchboard) will also light and the buzzer (or bell) sounds. This lamp will be extinguished and the buzzer (or bell) silenced when the C lamp is extinguished.

3.52 Remove the ground and check that the C lamp is extinguished.

3.53 Connect battery to the No. 4 B spring of the E relay.

3.54 Check that the white C lamp at the jack panel lights.

3.55 Remove the battery and check that the C lamp is extinguished.

(G) Release Magnet Alarm

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

3.57 Check that the green RLS lamp in the jack panel lights in approximately 15 to 30 seconds.

3.58 When the RLS lamp lights the FR-AL or TROUBLE lamp at the attendant's cabinet (or switchboard) will also light and the buzzer (or bell) sounds. This lamp will be extinguished and the buzzer (or bell) silenced when the RLS lamp is extinguished.

3.59 Release the line finder or selector-connector and check that the green RLS lamp is extinguished.

(H) Power Alarm

3.60 Turn the snap switch on the a-c supply to OFF or, if the supply is d-c, open the tumbler switch of the motor generator set.

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3.61 Check that the GFA alarm lamp on the power board (if provided) lights and that the red PWR-AL lamp at the attendant's cabinet (or switchboard) lights and that the buzzer (or bell) sounds. Check that turning the PWR-AL key momentarily to the OFF position silences the buzzer (or bell).

3.62 Turn the snap switch on the a-c supply to ON or close the motor tumbler switch. Note that all signals are retired.

3.63 At the cabinet containing the power fuses and relays, connect battery to the alarm stud.

3.64 Check that the FA alarm lamp on the power board (if provided) lights and that the red PWR-AL lamp at the attendant's cabinet (or switchboard) lights, and that both lamps are extinguished when the battery is removed.

No. 740-C P B X's

3.65 Check that the red PWR-ALM lamp at the jack panel and the GFA alarm lamp at the power board (if provided) light. Also that the TROUBLE lamp lights at the attendant's cabinet and that the buzzer sounds. Check that momentarily operating the TROUBLE BUZZER key to the OFF position silences the buzzer.

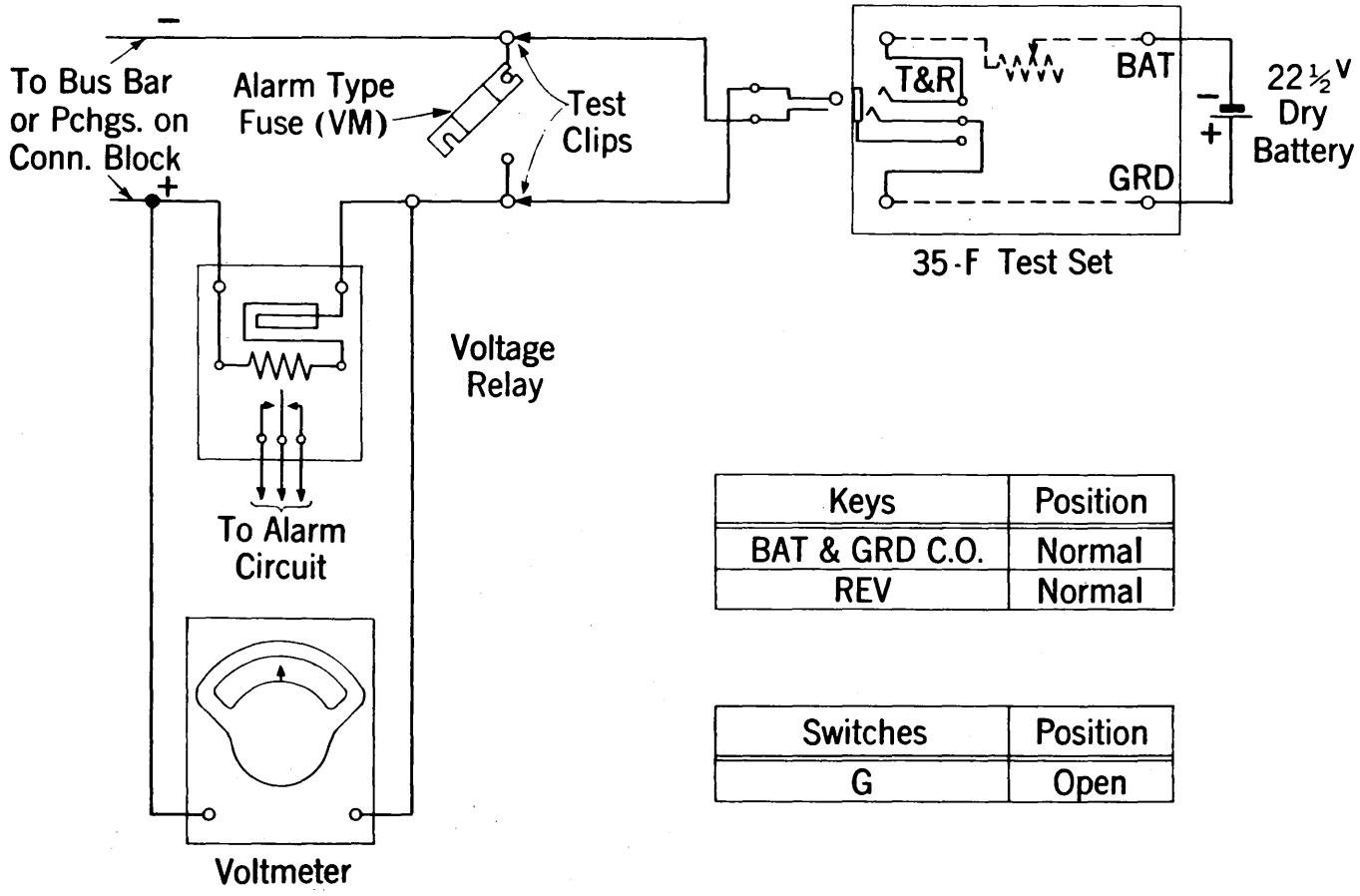
3.66 Turn the snap switch on the a-c supply to ON or close the motor tumbler switch. Observe that all signals are retired.

3.67 At the cabinet containing the power fuses and relays connect battery to the alarm stud.

3.68 Check that the red PWR-ALM lamp at the jack panel and FA alarm lamp at the power board (if provided) light and are extinguished when the battery is removed.

(I) High-Low Voltage Alarm

3.69 Connect the No. 35F test set and dry battery as shown in Fig. 1 to the circuit to be tested. Using the testing cord between the T & R jack in the test set and the YM fuse on the power board, operate the knife switches associated with the No. 3 telegraph key of the No. 35F test set to the position marked O. See that the GRD key is open and that the REV and BATT & GRD C.O. 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 one-half of the resistance will be removed (one-half 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.



Keys	Position
BAT & GRD C.O.	Normal
REV	Normal

Switches	Position
G	Open

Fig. 1

3.70 Check to see if either of the CEMF cell switches are operated and if so adjust the No. 3 resistance slider of the No. 35F 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 P B X 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 Make 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 audible and visual alarm signals operate at the attendant's cabinet (or switchboard) and power board (if provided). Note that all signals are retired when the voltage is brought again approximately within the allowable limit by readjusting the No. 3 resistance slider of the test set to the right.

3.74 Readjust the No. 3 resistance slider to the right, noting that the second CEMF cell switch 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.

3.75 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.

3.76 If the equipment is arranged to give a low voltage alarm make a further readjustment of the No. 3 resistance slider to the right, noting that when the voltage again drops below the low limit, the audible and visual alarm signals operate at the attendant's cabinet (or switchboard) and power board (if provided). Note that all signals are retired when the voltage is brought again approximately within the allowable limit by readjusting the No. 3 resistance slider of the test set to the left.

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

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

(J) Ringing Voltage Alarm

3.79 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.

3.80 Block the alternating current relay in the ringing circuit in a non-operated position.

3.81 Check that the RM alarm lamp on the power board (if provided) lights and that the PWR-AL or TROUBLE lamp at the attendant's cabinet (or switchboard) lights. (On No. 740-C P.B.X.'s the PWR-ALM lamp at the jack panel will also light.) Remove the block from the relay; the return of the relay to its operated position will retire the alarm.

3.82 At the completion of the test remove the ground from the generator start lead.

4. REPORTS

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