

SELECTOR-CONNECTORS
OPERATION TESTS
740E PBX

1. GENERAL

1.01 This section describes a method of testing the operating features of selector connectors in a No. 740E PBX. It also covers the purpose of each test.

1.02 The tests covered are:

- (A) Cut-in and release
- (B) Selector Operation
- (C) Selector Rotary Action
- (D) Connector Operation
- (E) Regular and Incoming Selector Connector Restricted Service

1.03 A different level should be used each time the tests are performed so that eventually every selector connector will have been tested on each working level.

1.04 When testing incoming selector connectors make the associated tie trunks busy in the approved manner for the duration of the test.

1.05 When tests (B) and (D) are scheduled, test (A) may be omitted.

1.06 An attendant is required at the switchboard when making test (E).

2. APPARATUS

Test (A), (B), (D) and (E)

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).

All Tests

2.02 No. 477A (or No. 375A) (make busy) tools, as required.

Tests (B) and (D)

2.03 Test set (PBX) J54701B (SD-66073-01).

2.04 Test telephone set (part of test set).

2.05 Testing cord—W2M cord, 9 feet long, equipped with one No. 310 plug (2W12A cord) (for use in establishing test circuit battery and ground connections).

2.06 Patching cord—P3C cord, 10 feet long, equipped with one No. 310 plug and one No. 240A plug (3P2A cord).

Test (C)

2.07 No. 40-C test set.

Tests (C) and (E)

2.08 Testing cord—W1U cord, 1 foot 8 inches long (for use in establishing a battery or ground connection).

3. PREPARATION

Tests (A), (B), (D) and (E)

3.01 Operate the switch of the cord assembly of the dial hand test set to the ON position.

Tests (B) and (D)

3.02 Locate the PBX test set at the selector connector side of the line frame. Operate the 740E key in the test set.

3.03 Connect the testing cord to the BAT jack of the test set. Then connect the No. 59 cord tip on the sleeve conductor (red) to ground and connect the No. 59 cord tip on the tip conductor (white) to the equipment end of a fuse on the fuse panel.

3.04 Connect the test telephone set to the TEL jacks of the PBX test set, or connect the dial hand test set to the HS jack of the PBX test set.

Note 1: When using a dial hand test set, operate the TRS (transmitter) key on the PBX test set, operate the switch of the dial hand set to the TALK position, and use the dial hand test set dial instead of the PBX test set dial in making tests.

Note 2: When using the test telephone set, leave the TRS key in the normal position except when found necessary to talk over the test line.

3.05 Connect the patching cord to the T jack of the PBX test set.

Test (C)

3.06 Modify the No. 40C test set by transferring the brown lead from the No. 4 to the No. 3 terminal of the No. 240H plug.

3.07 Connect the No. 360B tool associated with the black conductor of the test set cord to the W terminal of the 240H plug.

3.08 Using the testing cord connect the tip of the No. 336A plug to the 48V terminal of the 27A connecting block on the line frame.

4. METHOD

(A) Cut-in and Release

4.01 This test checks the cut-in and release features of the selector connector. It also checks for dial tone.

4.02 With the switch of the dial hand test set in the MON position connect to the test jack of an idle selector connector. Operate the switch of the dial hand test set to the TALK position and observe that dial tone is heard in the receiver, except in the case of incoming selector connectors where no dial tone is heard.

4.03 Dial the number of the selector level to be tested and immediately dial the digit one. Observe that dial tone is removed. Observe that the switch steps to the level dialed and rotates to the first idle trunk. Observe that dialing the digit one does not cause an extra vertical step or vertical kick of the shaft.

Note 1: An extra vertical step or a vertical kick of the shaft usually indicates that the C relay is too slow to release.

Note 2: In the case of an incoming selector connector with K, T, M, and J wiring, busy tone will be heard in the receiver as soon as the switch reaches the trunk or tie line level.

4.04 Operate the switch of the dial hand test set to the MON position. Observe that the selector connector releases.

4.05 Operate the switch of the dial hand set to the TALK position.

4.06 Dial the number of the connector level to be tested and immediately dial the digit one. Operate the switch of the dial hand test set to the MON position as soon as the digit one has been dialed to avoid ringing the station. Observe that the switch steps to the first contact of the level dialed and immediately releases. Observe that dialing the digit one does not cause an extra vertical step or vertical kick of the shaft.

Note: An extra vertical step or a vertical kick of the shaft usually indicates that the C relay is too slow to release.

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4.07 Disconnect the dial hand test set from the test jack of the selector connector.

(B) Selector Operation

4.08 This test checks the operating features of the selector connector on the selector levels.

4.09 Using the patching cord connect the P B X test set to the test jack of an idle selector connector. Observe that the BSY (busy) lamp on the test set is not lighted.

4.10 Operate the LK (leak) key of the test set. Observe that the BSY lamp lights and that dial tone is heard in the receiver, except in the case of incoming selector connectors where no dial tone is heard.

4.11 Dial the number of the selector level to be tested. Observe that dial tone is removed. Observe that the switch steps to the level dialed and rotates to an idle terminal.

Note 1: When the switch is arranged for 2 digit hunting, dial the digit one after dialing the number of the level.

Note 2: When a switch is dialed to a central office trunk or tie trunk level where the trunks terminate before an operator or attendant, an incoming call is indicated at the distant end. In such cases, if a test telephone set is used for testing, operate the TRS key, and when the operator or attendant answers advise that the line is being tested.

4.12 Restore the LK key. Observe that the switch releases and that the BSY lamp is extinguished.

4.13 Proceed as outlined in 4.10 to 4.12 inclusive using the LP (loop) key instead of the LK key.

4.14 Disconnect the patching cord from the test jack of the selector connector.

4.15 When testing is completed, disconnect all testing apparatus.

(C) Selector Rotary Action

4.16 This test checks the rotary action of the selector connector when the switch is wired for one digit operation on trunk levels. It also checks for the ability of the selector connector to pass a busy trunk and to stop on an idle trunk.

4.17 Connect the No. 40-C test set to the test jack of an idle selector connector. Adjust the auxiliary spring, associated with the W terminal of the No. 240H plug, to make firm contact with the sleeve wiper cord terminal. Monitor on the circuit to insure that the switch has not been seized.

4.18 Operate key 1 of the test set and dial the number of the level to be used for the test. Observe that the selector connector steps to the level dialed and rotates with positive and smooth action at uniform speed to the 11th rotary position. Observe that busy tone is heard in the receiver.

4.19 Release key 1 and observe that the switch releases.

4.20 Operate key 1 of the test set and dial the number of the level to be used for the test. While the selector connector is rotary hunting and before the switch has reached the 8th rotary position, operate key 2. Observe that the selector connector stops on an idle trunk.

4.21 Release key 1 and observe that the selector connector releases.

4.22 Disconnect the No. 40-C test set from the test jack of the selector connector.

4.23 When testing is completed disconnect battery from the tip of the No. 336A plug.

(D) Connector Operation

4.24 This test checks the operating features of the selector connector on the connector levels. It also checks for busy tone, hunting, ringing, tripping and reverse battery.

4.25 Using the patching cord connect the P B X test set to the test jack of an idle selector connector. Observe that the BSY lamp on the test set is not lighted.

4.26 Operate the LK key and observe that the BSY lamp lights and that dial tone is heard in the receiver.

4.27 Make the test line busy by inserting a make busy tool between the number 3 and 4 springs of the TST jack of the test line.

4.28 Dial the number () of the test line. Observe that the selector connector steps to the proper level and rotates to the test line terminal. Observe that busy tone is heard in the receiver and that the test line bell does not ring.

4.29 Release the LK key. Observe that the selector connector releases and that the BSY lamp is extinguished. Remove the make busy tool from the TST jack.

4.30 Operate the LP key. Observe that the BSY lamp lights and that dial tone is heard in the receiver.

4.31 Dial the number () of the test terminal preceding the test line terminal. Observe that the selector connector hunts over the terminal dialed and stops on the next terminal which is the test line terminal. Check that the test line bell rings and that audible ringing is heard in the receiver at regular intervals.

4.32 Insert a make busy tool between springs 5 and 6 of the TST jack of the test line momentarily during a ringing interval. Observe that the bell continues to ring indicating that the tripping relay of the selector connector has not operated.

4.33 Insert a make busy tool between springs 1 and 2 of the TST jack of the test line momentarily during a silent interval. Observe that the bell no longer rings indicating that the tripping relay has operated.

4.34 Insert the make busy tool between springs 1 and 2 of the TST jack. Operate the REV (reverse) key of the P B X test set. Observe that the REV lamp lights indicating a reversal of battery and ground from the switch. Restore the RV key.

4.35 Release the LP key. Observe that the selector connector releases and that the BSY lamp is extinguished. Remove the make busy tool from the TST jack.

4.36 Disconnect the patching cord from the test jack of the selector connector.

4.37 When testing is completed, disconnect all testing apparatus.

(E) Regular and Incoming Selector Connector Restricted Service

4.38 This test checks the restriction features of regular and incoming selector connectors.

Regular Selector Connector

4.39 With the switch of the dial hand test set in the MON position connect to the test jack of an idle regular selector connector. Operate the switch of the dial hand test set to the TALK position and observe that dial tone is heard in the receiver.

4.40 Remove the switch cover. Using the testing cord, connect ground to the No. 3R contact of the normal post spring.

4.41 Dial the number of the central office trunk level. Observe that dial tone is removed and that the switch steps to the level dialed and rotates to the 11th rotary position. Observe that busy tone is heard in the receiver.

Note: When the trunk level is arranged for 2 digit operation, dial the digit one in addition to the number of the trunk level or dial the first terminal of each group of trunks if there is more than one group on the level.

4.42 Operate the switch of the dial hand test set to the MON position and observe that the switch releases.

4.43 Disconnect the dial hand test set from the test jack of the selector connector. Remove the testing cord. Replace the switch cover.

Incoming Selector Connector

4.44 With the switch of the dial hand test set in the MON position connect to the test jack of an idle incoming selector connector.

4.45 Operate the switch of the dial hand test set to the TALK position. Remove the switch cover. Using the testing cord, connect ground to the No. 3R contact of the normal post spring.

4.46 Proceed to test the incoming selector connector in accordance with Table A. Use the method specified for the wiring provided in the switch.

TABLE A

<u>Step</u>	<u>Action</u>	<u>Verification</u>
J, K, M & T Wiring		
1	Dial central office or tie trunk level.	Switch steps to level dialed. Busy tone obtained.
2	Operate MON switch.	Switch releases.
3	Operate TALK switch.	
4	Dial zero.	Switch steps to zero level. Attendant answers tie trunk signal.
5	Operate MON switch.	Switch releases.
N, R, S & Z Wiring		
1	Dial central office or zero level.	Switch steps to level dialed. Attendant answers tie trunk signal.
2	Operate MON switch.	Switch releases.
3	Operate TALK switch.	
4	Dial tie trunk level.	Switch steps to level dialed and rotates to first idle trunk.
5	Operate MON switch	Switch releases.
K, N, R & S Wiring		
1	Dial central office or zero level.	Switch steps to level dialed. Attendant answers tie trunk signal.
2	Operate MON switch.	Switch releases.
3	Operate TALK switch.	
4	Dial tie trunk level and then dial number of first terminal in first group of trunks.	Switch steps to level dialed and rotates to first idle trunk in group.
5	Operate MON switch.	Switch releases.
6	Operate TALK switch.	

<u>Step</u>	<u>Action</u>	<u>Verification</u>
7	Dial tie trunk level and then dial first terminal in each of the successive groups of trunks.	Switch steps to level dialed and rotates to first idle trunk in group under test.
8	Operate MON switch.	Switch releases.
J, Q, S, & Z Wiring		
1	Dial central office trunk level.	Switch steps to level dialed and rotates to 11th rotary position. Busy tone obtained.
2	Operate MON switch.	Switch releases.
3	Dial tie trunk level.	Switch steps to level dialed and rotates to first idle trunk.
4	Operate MON switch.	Switch releases.
J, K, Q & S Wiring		
1	Dial central office trunk level and then dial digit one.	Switch steps to level dialed and rotates to last terminal of trunk group. Busy tone obtained.
2	Operate MON switch.	Switch releases.
3	Operate TALK switch.	
4	Dial tie trunk level and then dial number of the first terminal in first group of trunks.	Switch steps to level dialed and rotates to first idle trunk in group.
5	Operate MON switch.	Switch releases.
6	Operate TALK switch.	
7	Dial tie trunk level and then dial first terminal in each of the successive groups of trunks.	Switch steps to level dialed and rotates to first idle trunk in group under test.
8	Operate MON switch.	Switch releases.
4.47	When testing is completed, disconnect the dial hand test set from the test jack of the selector connector. Remove the testing cord. Replace the switch cover.	

5. REPORTS

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