

TOLL SWITCHING TRUNKS
TO PANEL AND CROSSBAR OFFICES

NO. 1 TOLL SWITCHBOARD

1. GENERAL

1.01 This section describes methods of testing toll switching trunks to panel and No. 1 and No. 5 type crossbar offices from the No. 1 toll switchboard.

1.02 This section is reissued to include tests of toll switching trunks to No. 1 and No. 5 type crossbar offices formerly covered in Section A225.246, Issue 1, which is replaced. It also adds Tests D, E, I, J, K, L and M and revises the method of ringing on trunks to panel offices that are arranged for controlled ringing. As this is a general revision the use of arrows has been omitted.

1.03 The tests and features tested are:

(A) Operation Test - Using Final Multiple Test Line or Incoming Trunk Test Line: This test checks the continuity, ringing, tripping and supervision features of the trunk.

(B) Operation Test - With an Assistant: This test provides for checking the continuity, ringing, tripping, supervision and making a talking test with the aid of an assistant at the local office.

(C) Coin Control Test - Local Operator Control: This test checks the collect, return and the tone features of straightforward trunks with the aid of the local operator and an assistant in the local office.

(D) Coin Control Test - Trunk Control: This test checks the collect and return features of key pulsing trunks using the position coin control and testing with an assistant in the local office.

(E) Coin Control Test - Associated Jack: This test checks the collect and return features of the straightforward trunks, equipped with an associated jack, by using a position coin control cord and testing with an assistant in the local office.

~~(F) Polarity and Current Flow: This test checks the polarity and loop resistance of straightforward toll switching trunks associated with a B switchboard.~~

(G) Cutoff Relay Test: This test checks for the removal of battery and ground of straightforward toll switching trunks associated with a B switchboard.

(H) Reorder Test: This test provides a rapid check of the supervision features of the trunk.

(I) Toll Identification Tone: This test checks the identification tone feature of the trunk when call is answered by an intercepting operator.

(J) Group Busy: This test verifies the operation of the group busy lamp or group busy tone feature of a group of trunks.

(K) All Trunk Busy Register: This test checks the operation of the all trunk busy register associated with a group of trunks.

(L) Busy Lamps: This test verifies the operation of the busy lamp associated with a toll switching trunk.

(M) Idle Indicating Lamps: This test verifies the operation of the idle indicating lamps associated with a group of toll switching trunks.

1.04 An assistant is required at the local office for Tests B, C, D and E.

1.05 Tests F and G do not apply to trunks that are connected through an outgoing trunk circuit in the toll office.

1.06 All tests covered in this section should preferably be made during periods of light traffic to avoid service calls interfering with the test observations. Testing should be avoided during regular peg count intervals.

1.07 Local instructions should be followed with reference to recording and reporting any register operations caused by performing these tests.

1.08 When testing controlled ringing trunks operate the position key to cancel the automatic feature if such a key is provided at the position used to make the tests.

2. APPARATUS

All Tests

2.01 Operator's Telephone Set.

Tests B, C, D, and E

2.02 These tests are based on the assumption that a regular station is available at the local office for answering test calls. A coin station is required for Tests C, D and E and may also be used for Test B.

Tests F and G

2.03 35-type Test Set.

2.04 P3E Cord equipped with No. 310 Plug at each end (3P7A).

3. PREPARATION

PREPARATION FOR ALL TESTS

<u>STEP</u>	<u>ACTION</u>	<u>VERIFICATION</u>
1	Connect operator's telephone set to switchboard position jack.	

PREPARATION FOR TESTS A, B, C, D, E, H AND I

Straightforward Trunks

2	Insert trunk cord, with talk key operated, into jack of trunk being tested.	Cord supervisory lamp lights and order tone is heard.
---	---	---

Key Pulsing Trunks

3	Insert trunk cord, with talk key operated, into jack of trunk being tested. <u>Note:</u> On positions equipped with other than type A cords operate splitting key.	<u>Note:</u> On switchboard positions not equipped with S lamp the cord supervisory lamp lights when sender is attached to trunk.
---	---	---

4	Momentarily operate KP key.	Lights KF or KR lamp, depending upon whether the front or back cord was used. Cord supervisory lamp lights. S lamp, when provided, lights. <u>Note:</u> On switchboards not equipped with S lamps, only KP lamp lights.
---	-----------------------------	--

PREPARATION FOR TESTS F AND G

2 On 35-type test set move the resistance sliders to extreme left and set keys and switches as follows: open keys 1, 2 and 4; close key 3; operate battery and ground CO key; open G switch; close L switch to 10; set RES switches to 0. Reverse key normal for trunks arranged for wet-dry supervision and operated for trunks arranged for reversed battery supervision.

<u>STEP</u>	<u>ACTION</u>	<u>VERIFICATION</u>
3	Connect, with wire, the S and Ll binding post.	
4	Connect a toll cord, with talk key operated to EXT KEY-3R jack of test set.	
5	Using P3E cord, connect TEST - T & R jack of test set to trunk jack.	Cord supervisory lamp lights and order tone received.

4. METHOD

<u>STEP</u>	<u>ACTION</u>	<u>VERIFICATION</u>
<u>(A) Operation Test - Using Final Multiple Test Line or Incoming Trunk Test Line</u>		
<u>Straightforward Trunks</u>		
5	Give operator final multiple test line or incoming trunk test line number and operate ringing key if required.	Audible ringing tone. Ringing trips within 2 ringing cycles. Removes audible ringing tone and extinguishes cord supervisory lamp. Cord supervisory lamp flashes and test tone is heard. Note: The rate of flashing depends on the test line circuit.
6	Disconnect cord and restore key to normal.	

Key Pulsing Trunks

7	Key final multiple test line or incoming trunk test line number.	
8	Operate ST key and ringing key if required.	S lamp, when provided, is extinguished. KP, KF or KR lamp extinguished. Audible ringing tone, etc., as described in Step 5.
9	Disconnect cord and restore key to normal.	

(B) Operation Test - With an AssistantStraightforward Trunks

5	Give operator final multiple number of local office test station and operate ringing key if required.	Audible ringing tone. Assistant answers, removes audible ringing tone. Cord supervisory lamp extinguished.
---	---	--

<u>STEP</u>	<u>ACTION</u>	<u>VERIFICATION</u>
<u>Key Pulsing Trunks</u>		
6	Key final multiple number of local office test station.	
7	Operate ST key and ringing key if required.	S lamp, when provided, is extinguished. KP, KF or KR lamp extinguished. Audible ringing tone. Assistant answers, removes audible ringing tone. Cord supervisory lamp extinguished.

Straightforward and Key Pulsing Trunks

8	Talk with assistant.	Satisfactory conversation.
9	Request assistant to flash switchhook several times.	Cord supervisory lamp flashes with each operation of switchhook.
10	Request assistant to replace receiver on switchhook.	Cord supervisory lamp lights.
11	Disconnect cord and restore key to normal.	

(C) Coin Control Test - Local Operator Control

5	Give operator the telephone number of local office coin test station and operate ringing key if required.	Audible ringing tone. Assistant answers, removes audible ringing tone. Cord supervisory lamp extinguished.
6	Request assistant to deposit coin and replace receiver on switchhook.	Audible coin deposit signal.
7	Call operator at local board over call circuit or another trunk and request her to collect coin on trunk under test.	Low tone heard on trunk.
8	Operate ringing key.	Assistant answers, verifies coin was collected. Cord supervisory lamp extinguished.
9	Request assistant to deposit coin and leave receiver off hook.	Audible coin deposit signal.
10	Call operator at local board over call circuit or another trunk and request her to return coin on trunk under test.	High tone heard on trunk. Coin returned.
11	Request assistant to replace receiver on switchhook.	Cord supervisory lamp extinguished.
12	Disconnect cord and restore key to normal.	

<u>STEP</u>	<u>ACTION</u>	<u>VERIFICATION</u>
<u>(D) Coin Control Test - Trunk Control</u>		
5	Key telephone number of the local office coin test station.	
6	Operate ST key and ringing key if required.	S lamp, when provided, is extinguished. KP, KF or KR lamp extinguished.
7	Request assistant to deposit coin and replace receiver.	Audible coin deposit signal. Cord supervisory lamp lights.
8	Momentarily operate position C (coin collect) key.	Position CC pilot lamp lights.
9	Operate ringing key associated with cord in trunk being tested.	Position CP pilot lamp lights.
10	Restore ringing key to normal position.	Position CC and CP pilot lamps extinguished.
11	Operate ringing key.	Audible ringing tone. Assistant answers, removes audible ringing tone. Cord supervisory lamp extinguished.
12	Verify with assistant that coin was collected. Request assistant to replace receiver on hook.	Cord supervisory lamp lights.
13	Momentarily operate C (coin collect) key.	Position CC pilot lamp lights.
14	Momentarily operate ringing key associated with cord in trunk being tested.	
15	Momentarily operate position RLS key.	Position CC pilot lamp extinguished.
16	Operate ringing key.	Same as Step 11.
17	Request assistant to deposit coin and leave receiver off hook.	Audible coin deposit signal.
18	Momentarily operate position R (coin return) key.	Position CC pilot lamp lights.
19	Operate ringing key associated with cord in trunk being tested.	Position CP pilot lamp lights.
20	Restore ringing key to normal position.	Position CC and CP pilot lamps extinguished.
21	Verify with assistant that coin was returned and have him replace receiver on switchhook.	Supervisory cord lamp lights.
22	Momentarily operate R (coin return) key.	Position CC pilot lamp lights.
23	Momentarily operate ringing key associated with cord in trunk being tested.	

<u>STEP</u>	<u>ACTION</u>	<u>VERIFICATION</u>
24	Momentarily operate position RLS key.	Position CC pilot lamp extinguished.
25	Disconnect cord from trunk and restore talk key.	
<u>(E) Coin Control Test - Associated Jack</u>		
5	Give operator telephone number of local office coin test station and operate ringing key if required.	Audible ringing tone. Assistant answers, and audible ringing tone is removed.
6	Request assistant to deposit coin and replace receiver on switchhook.	Audible coin deposit signal. Cord supervisory lamp lights.
7	Connect coin control cord to the cord control jack associated with trunk under test.	
8	Momentarily operate coin collect key.	C pilot lamp lights while key is depressed.
9	Operate ringing key.	Assistant answers, verify coin was collected. Cord supervisory lamp extinguished.
10	Request assistant to deposit coin and leave receiver off hook.	Audible coin deposit signal.
11	Momentarily operate coin return key.	R pilot lamp lights while key is depressed. Coin returned.
12	Request assistant to replace receiver on hook.	Cord supervisory lamp lights.
13	Disconnect cord and restore keys to normal.	

(F) Polarity and Current Flow

6	Give operator final multiple test line or incoming trunk test line number. Note: Testing automatic ringing trunks instruct operator, "Testing, please hold this trunk for a moment."	
7	Close locking lever of key 1.	Positive reading on test set meter. Trunks to a panel office the current value should be between .0108 and .0132 ampere for 24V battery and between .0120 and .0155 ampere for 48V battery. Trunks to a crossbar office the value should be between .0116 and .0148 ampere for trunks arranged for reverse battery signaling and between .0120 and .0155 ampere for trunks arranged for wet-dry supervision.
8	Disconnect cords and restore keys to normal.	

<u>STEP</u>	<u>ACTION</u>	<u>VERIFICATION</u>
<u>(G) Cutoff Relay Test</u>		
6	Request operator to "please hold this trunk for a moment for test."	
7	Restore battery and ground CO key.	
8	Momentarily operate the reverse key.	A reading obtained before or after operating reverse key indicates tip or ring was not opened at cutoff relay.
9	Disconnect cords and restore keys to normal.	

(H) Reorder Test

Straightforward Trunks

5	Request operator for "reorder."	Cord supervisory lamp flashes at the rate of 120 times per minute.
---	---------------------------------	--

Key Pulsing Trunks

6	Key multiple number connected to reorder and operate ST key.	Same as Step 5.
---	--	-----------------

(I) Toll Identification Tone

Straightforward Trunks

5	Give operator intercepted multiple number.	Intercepting operator answers. Verify operator received toll identification tone.
---	--	--

Key Pulsing Trunks

6	Key multiple number connected to intercepting trunk; operate ST key.	Same as Step 5.
---	--	-----------------

(J) Group Busy

2	Operate talk key and connect trunk cord to first trunk in group being tested.	
---	---	--

Straightforward Trunks

3	Give operator permanently made busy number. Note: Testing trunks to cordless B boards instruct operator, "Group busy test. Do not connect to any line number."	
---	---	--

Key Pulsing Trunks

4	Key permanently made busy number.	
---	-----------------------------------	--

<u>STEP</u>	<u>ACTION</u>	<u>VERIFICATION</u>
<u>Straightforward and Key Pulsing Trunks</u>		
5	Repeat Steps 2 and 3 or 4 until a cord has been connected to each idle trunk associated with the group.	Group busy lamp lights or tone is heard on sleeve of first trunk of group when group busy tone is provided.
6	Remove and quickly reinsert each trunk cord.	Group busy lamp extinguished or tone removed from sleeve of first jack when each trunk cord is removed from trunk jack.
7	Remove the cords one at a time and restore keys to normal.	Group busy lamp extinguished or tone removed from sleeve of trunk jack.

(K) All Trunk Busy Register

- 2 Read all trunk busy register.
- 3 Operate talk key and connect trunk cord to the first trunk in the group.

Straightforward Trunks

- 4 Give operator permanently made busy number.
- Note: Trunks to cordless B board instruct operator, "Group busy test. Please do not connect to any line number."

Key Pulsing Trunks

- 5 Key permanently made busy number.

Straightforward and Key Pulsing Trunks

- | | | |
|---|---|---|
| 6 | Repeat Steps 3 and 4 or 5 until a cord has been connected to each idle trunk associated with register. | All trunk busy register operated once. |
| 7 | Remove and quickly reinsert one trunk cord in each of the group busy lamp groups associated with the register under test. | All trunk busy register operates once for each cord reinserted. |
| 8 | Remove trunk cords one at a time and restore keys to normal. | Verify register did not falsely operate. |
- Note: Report all registrations to the Traffic department in accordance with local instruction.

(L) Busy Lamps

- | | | |
|---|---|-------------------------------|
| 2 | Operate talk key and connect trunk cord to trunk jack. If operator answers, request the permanent made busy number. | Trunk busy lamp lights. |
| 3 | Remove cord and restore key to normal. | Trunk busy lamp extinguished. |

<u>STEP</u>	<u>ACTION</u>	<u>VERIFICATION</u>
<u>(M) Idle Indicating Lamps</u>		
2	Operate talk key and connect trunk cord to the first idle trunk in the group being tested.	Associated idle indicating lamp extinguished and idle indicating lamp associated with next idle trunk lights.
3	Give operator, or key pulse, permanently made busy number. <u>Note:</u> Trunks to cordless B board instruct operator, "Group busy test. Please do not connect this trunk to any line number."	
4	Repeat Steps 2 and 3 until a cord has been connected to each idle trunk in the group.	Idle indicating lamps continue to move to next highest numbered idle trunk as each trunk is made busy until last trunk is made busy and idle indicating lamp is extinguished.
5	Remove cords one at a time and restore keys to normal.	Lights idle indicating lamp on lowest numbered idle trunk.