

CIRCUIT TESTS
507A AND 507B PBX

1. GENERAL

1.01 This section describes a method of testing the operating features of the No. 507A and No. 507B PBX switchboards.

1.02 This section is reissued to include testing information for attendants telephone set with buzzer cutoff and automatic restoration, operators head telephone set, and 2-way automatic tie trunk. Testing information for external trunk holding circuits formerly covered in this section has been deleted. Since this is a general revision arrows used to indicate changes have been omitted.

1.03 To avoid the effects of clicks when performing tests, the test receiver should be kept away from the ear.

1.04 The tests covered are:

(A) Ringing Supply

The features tested are:

- (1) Presence of ringing supply.
- (2) Ringing supply properly connected.
- (3) Hand generator, when provided, delivers ringing current.

(B) Battery Supply

The features tested are:

- (1) Presence of battery.
- (2) Battery supply properly connected.

(C) C.O. Trunks

The features tested are:

- (1) Tip and ring of trunks correctly terminated in the PBX.
- (2) Holding on central office trunk connections.
- (3) Talking against the hold bridge on trunk-station connections.
- (4) Operation of the visual and audible signals on incoming trunk calls.
- (5) Rering on the trunk against the hold bridge.

(D) Station Line Circuit

The features tested are:

- (1) Operating circuit of the station line lamp.
- (2) Contacts of the station key in the A, B, C, D, E and Ring positions.

(E) Supervisory Circuit

The features tested are:

- (1) Supervisory relay.
- (2) Supervisory lamp.

(F) Station Keys and Trunk Keys—Break Contacts

This test checks that the normally closed plunger spring contacts, of the station and trunk keys, break before the plunger spring makes with the normally open spring contacts.

(G) Attendants Telephone Equipment

The features tested are the operating circuits of the transmitter, receiver and dial, when the telephone set furnished, is a:

- (1) Telephone set without pickup keys.
- (2) Telephone set with pickup keys in the base.
- (3) Telephone set with buzzer cutoff and automatic restoration.
- (4) Operators head telephone set.

(H) Night Service Key, Buzzer Cutoff and Auxiliary Signal

The features tested are the operation of the:

- (1) Night service key.
- (2) Buzzer cutoff key.
- (3) Auxiliary signal.

(I) Tie Trunks

The features tested are the signaling, talking and supervisory circuits of the:

- (1) Ringdown tie trunks.
- (2) Automatic tie trunks.

(J) Ground Connection to PBX Framework

This test checks that the framework and metal case of the PBX are grounded.

1.05 In making Tests (A), (B), (C), (D), (F), (G), (H), (I) and (J), it will be necessary to remove the cover of the PBX.

1.06 **Lettered Steps:** A letter a, b, c, etc, added to a step number in Part 3 of this section, indicates an action which may or may not be required depending on local conditions. The condition under which a lettered step or a series of lettered steps should be made is given in the ACTION column, and all steps governed by the same condition are designated by the same letter within a test. Where a condition does not apply, all steps designated by that letter should be omitted.

2. APPARATUS

Tests (A), (B), (C), (D), (F), (G), (H), (I) and (J).

2.01 No. 1011G Handset, equipped with a 2W37A Cord Assembly, consisting of a W2DB Cord, a No. 471A Jack and two KS-6780 Connecting Clips, or equivalent.

3. METHOD

STEP	ACTION	VERIFICATION
(A) Ringing Supply		
1	Connect one clip of handset to terminal 6 of M terminal strip.	
2	Connect other clip of handset to terminal 2 of M terminal strip. Note: Steps 1 and 2 verify the presence of ringing supply and that resistance lamp is not shunted.	Ringing induction heard. Resistance lamp lights.
3	Disconnect clip from terminal 6, and connect to local ground. Note: Step 3 verifies that ringing supply is correctly connected to PBX.	Same as Step 2.
4	Disconnect handset.	

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STEP	ACTION	VERIFICATION
5a	If hand generator is provided— Connect handset to terminals 3 and 7 of M terminal strip.	
6a	Momentarily hold ringing key operated while turning handle of hand generator.	Ring current heard.
7a	Disconnect handset.	
(B) Battery Supply		
1	Determine that ringing supply is properly connected.	
2	Connect one clip of handset to terminal 10 of M terminal strip.	
3	Momentarily touch other clip of handset to terminal 11 of M terminal strip. Note: Step 3 verifies the presence of battery.	Click heard in receiver.
4	Momentarily touch other clip of handset to terminal 6 of M terminal strip. Note: Step 4 verifies that battery supply is properly connected.	Same as Step 3.
5	Disconnect handset.	
(C) C.O. Trunks		
1	Determine that battery supply is properly connected.	
2	Connect one clip of handset to terminal 11 of M terminal strip.	
3	Touch other clip of handset alternately to tip and ring terminal of trunk under test.	Louder click heard on ring terminal.
4	Repeat Step 2 for all trunks to be tested.	Same as Step 3.
5	Disconnect handset.	
6	Connect handset to terminals of idle station line.	Station line lamp lights.
7	Operate station key to idle position.	Station line lamp extinguished.
8	Operate idle trunk key to same position.	
9	Originate a call to local test desk.	
10	When testman answers— Advise that a talking and holding test is to be made on trunk under test.	Conversation is satisfactory.
11	Operate hold key of trunk under test.	Conversation is still satisfactory.
12	Operate handset key to monitor.	At PBX— Supervisory lamp lights. At test desk— No disconnect signal received. Supervisory lamp extinguished.
13	Operate handset key to talk.	
14	Request testman for successive ringbacks. Note: That night service key is normal and buzzer key is in the ON position.	
15	Restore trunk key and station key.	
16	Operate handset key to monitor.	When ringing current is applied— Trunk lamp lights. Audible signal sounds. Note: Signals lock in.
17	Restore hold key.	
18	Operate night service key.	Trunk lamp extinguished. Audible signal silenced.
19	Restore night service key.	
20	Operate trunk key to idle position.	When ringing current is again applied— Trunk lamp lights and signal sounds during ringing interval. Note: Signals do not lock in.
21	Restore trunk key to normal.	
22	Repeat Steps 8 through 21 for all trunks to be tested.	
23	Upon completion of test, release testman and restore equipment to normal.	

STEP	ACTION	VERIFICATION
(D) Station Line Circuit		
1	Connect handset to terminals of idle station line.	Station line lamp lights.
2	Operate station key to position A.	Station line lamp extinguished. Supervisory lamp does not light. Note: Disregard momentary flicker of supervisory lamp.
3	Operate ringing key of station under test.	Ring induction heard in receiver. Note: If subscriber should answer, advise him that line is being tested, and to disregard the ring.
4	Repeat Steps 2 and 3 for positions B, C, D and E of station keys under test.	Same as Steps 2 and 3.
5	Disconnect handset.	
6	Restore all keys to normal.	
(E) Supervisory Circuit		
1	Operate idle station key to position A.	Supervisory lamp lights.
2	Restore station key.	Supervisory lamp extinguished.
3	Repeat Steps 1 and 2 for positions B, C, D and E.	Same as Steps 1 and 2.
(F) Station Keys and Trunk Keys—Break Contacts		
1	Connect one clip of handset to terminal 11 of M terminal strip (ground).	
2	While tapping other clip of handset to ring terminal of idle station line—slowly operate station key toward position A.	Clicks heard in receiver. Note: A point will be reached where no clicks are heard in receiver.
3	Fully operate station key to position A.	Clicks heard in receiver.
4	Slowly operate trunk key toward position A.	Same as Step 2.
5	Fully operate trunk key to position A.	Same as Step 3.
6	Restore all keys.	
7	Repeat Steps 2 to 6 for positions B, C, D and E.	Same as Step 2.
8	Repeat Steps 2 to 7 for all station and trunk keys to be tested.	
9	Disconnect handset clip from terminal 11 and connect to terminal 10 (battery).	
10	Repeat Steps 2 to 7 testing tip terminal of idle station line.	Same as Steps 2 to 7.
11	Disconnect handset.	
(G) Attendants Telephone Equipment		
1	Remove handset from switchhook.	
2	Operate attendant key to an idle position.	Sidetone heard in receiver.
3	Shake and gently twist cords.	No clicks or scratchy noise in receiver.
4a	If attendants set is an operators head telephone set— Repeat Steps 2 and 3.	Same as Steps 2 and 3.
5b	If attendants set is a telephone set with pickup keys in base— Depress last key on right.	
6b	Repeat Steps 1, 2 and 3.	Same as Steps 1, 2 and 3.
7c	If attendants set is equipped with dial— Operate key of idle trunk to same position as attendants key.	
8c	Dial test number.	Trunk lamp does not flash while dialing. No loud clicks heard while dialing.
9c	Restore trunk key to normal.	
10	Restore attendants key to normal.	
11d	If attendants set is equipped with buzzer cutoff and automatic restoration— Operate station key of idle line to idle position.	Audible signal sounds.
12d	Operate exclusion key in switchhook.	Audible signal silenced.
13d	Return handset to switchhook.	Audible signal sounds.

STEP	ACTION	VERIFICATION
14d	Restore station key to normal.	
15	Return handset to switchhook.	
(H) Night Service Key, Buzzer Cutoff and Auxiliary Signal		
1	With buzzer key at ON, and night service key normal— Manually operate an L1 relay.	L1 relay locks operated. Trunk lamp lights. Audible signal sounds.
2	Operate buzzer key to OFF.	Audible signal silenced.
3	Operate buzzer key to ON.	Audible signal sounds.
4	Operate night service key.	L1 relay releases. Trunk lamp extinguished. Audible signal silenced.
5	Restore night key.	No visual or audible signal.
(I) Tie Trunks		
1	Connect handset to terminals of idle station line.	
2	Operate station key of line selected in Step 1 to an idle position.	
3a	If tie trunk is ringdown type— Operate tie trunk key to same position as station key.	
4a	Momentarily operate tie trunk ringing key.	When distant PBX answers— Transmission is satisfactory.
5a	Request distant PBX to ringback on tie trunk.	
6a	Restore tie trunk key to normal.	When distant PBX rings on tie trunk— When nonlocked-in signals are provided— Tie trunk lamp lights and audible signal sounds during ringing interval. When locked-in signals are provided— Tie trunk lamp lights and audible signal sounds. Signals lock-in.
7a	Repeat Step 3a.	When locked-in signals are provided— Signals are retired.
8a	Repeat Step 5a.	When distant PBX rings on tie trunk— Tie trunk lamp lights and audible signal sounds during ringing interval.
9a	Restore tie trunk key to normal.	
10b	If tie trunk is automatic type— Operate tie trunk key to same position as station key.	Tie trunk lamp lights and audible signal sounds.
11b	When distant end answers— Request distant end to disconnect and originate a call on trunk under test.	Signals are retired. Transmission is satisfactory.
12b	Distant end disconnects from trunk.	Same as Step 10b.
13b	Restore trunk key to normal.	Signals are retired.
14b	Distant end originates call on trunk.	Same as Step 10b.
15b	Repeat Step 10b.	Signals are retired.
16b	Restore tie trunk key to normal.	
17	Restore station key to normal.	
18	Disconnect handset.	
(J) Ground Connection to PBX Framework		
1	Connect one clip of handset to terminal 10 of M terminal strip (battery).	
2	Alternately touch other clip of handset to terminal 11 of M terminal strip (ground) and metal chassis of PBX.	Click heard in receiver is same.