

CIRCUIT TESTS

505B, 505C, 506A AND 506B PBX

1. GENERAL:

1.1 This section describes a method of testing the operating features of the 505-B, 505-C, 506-A and 506-B PBX switchboards. The tests covered are:

- (a) **Generator Feeder.**
- (b) **Battery Feeder.**
- (c) **Operation Test of the Supervisory Signal in Connection with Each Extension Connecting Key.**
- (d) **Test of Extension Line Signal and the Continuity of the Circuit Through the Extension Connecting Keys.**
- (e) **Test of Extension Ringing Keys.**
- (f) **Test of Break Contacts of Extension and Trunk Keys.**
- (g) **Supervisory Relay Test.**
- (h) **Attendant's Telephone Set and Dial Circuit.**
- (i) **Test of Trunk Drop and Trunk Drop Buzzer Contacts.**
- (j) **Trunk Polarity Test.**
- (k) **Trunk Holding and Talking Test.**
- (l) **Battery Cut-off and Auxiliary Signal Circuit.**

2. APPARATUS:

2.1 Hand Test Set or Test Receiver (No. 528 or equivalent) equipped with Cords and Clips.

3. METHOD:

(a) Generator Feeder:

3.1 **Test for Presence of Ringing Current** by ringing the bell of a nearby extension.

3.2 **Test for Proper Operation of Hand Generator and Hand Generator Key.** Push in the G key or operate the RINGING key to the HAND position. Operate the ringing key associated with the nearby extension and operate the hand generator. The bell at the extension should ring. Pull out the G key or restore the RINGING key to the KEY position.

3.3 **Test for Reversed Generator Feeder.** Connect one clip of the test receiver to the ground terminal of the battery feeder and the other clip to the terminal connected to the PBX side of the generator resistance lamp. This terminal is located on the terminal strip and is designated \pm under RING. If the generator feeder is correctly connected, ringing current will be heard in the receiver and the resistance lamp will light.

(b) Battery Feeder:

3.4 **Test for the Presence of Battery.** With the NIGHT SERVICE KEY or N key in the normal position, momentarily operate an idle or spare extension key to an idle position. Observe that the supervisory signal operates.

3.5 **Test for Reversed Battery Feeder.** First determine that the generator feeder is properly connected. With all the extension connecting keys normal connect one clip of the test receiver to the ground terminal of the generator feeder and touch the other test clip to the ring terminal of an extension

line. The extension line signal will operate if the battery feeder is properly connected.

Note: If no generator feeder is provided, use a local ground in place of the generator feeder ground in making the test.

(c) Operation Test of the Supervisory Signal in Connection with Each Extension Connecting Key:

3.6 Operate the extension connecting keys of the extension line under test to each position. The supervisory signal associated with each position should operate when the key is operated and should restore when the key is restored.

(d) Test of Extension Line Signal and the Continuity of the Circuit Through the Extension Connecting Keys:

3.7 Connect the test receiver across the extension line terminals at the terminal strip. The line signal should operate. Operate the extension connecting keys of the extension line to each position. The line signal should restore when each key is operated and the associated supervisory signal should not operate.

(e) Test of Extension Ringing Keys:

3.8 With the test receiver still connected across the extension line terminals, operate the extension ringing key. Note that ringing current is heard in the test receiver. Disconnect the test receiver.

Note: When making the above test, the bell at the extension may ring. If the subscriber answers, advise him that the line is being tested and request him to disconnect.

(f) Test of Break Contacts of Extension and Trunk Keys

3.9 Operate the lowest lever of the attendant's telephone key upward and remove the attendant's receiver from the switch hook. Connect one clip of the test receiver to the Y cord fastener of the attendant's telephone set. Tap the other clip of the test receiver to the ring terminal of the extension line under test while slowly operating the top lever of the extension connecting key to its upward position. As the key is slowly operated, a point should be reached where the ring terminal will test clear as indicated by no clicks in the test receiver. Repeat the test on the tip terminal of the extension line under test. This indicates that battery and ground from the extension line circuit are disconnected from the extension line as the key is operated.

3.10 Fully operate the top lever of the extension connecting key to its upward position and in continuation of the preceding test, slowly operate in succession the top lever of each trunk key to its upward position while tapping the terminals of the extension line under test. As each trunk key is slowly operated, a point should be reached where the tip and ring terminals will again test clear as indicated by no clicks in the test receiver. This indicates that local battery and ground are disconnected as the trunk key is operated. Similarly test the other positions of the trunk and extension connecting keys.

Note: When testing the upward position of the lower key levers, the attendant's telephone key associated with this position should be restored and another lever of the attendant's telephone key operated.

SECTION 536-050-511

3.11 The test of the trunk keys, paragraph 3.10, need only be conducted from the terminals of one extension line and need not be repeated while testing the extension connecting keys associated with other extension lines.

(g) Supervisory Relay Test:

3.12 Operate an extension connecting key of a spare or idle extension line to the position associated with the supervisory relay under test. The supervisory signal should operate. Operate the attendant's telephone key to the same position as the operated extension connecting key and remove the receiver from the switch hook at the attendant's telephone set. Operate the switch hook several times and observe that the supervisory signal flashes. Restore all keys to normal.

(h) Attendant's Telephone Set and Dial Circuit:

3.13 Operate an attendant's telephone key and remove the attendant's receiver from the switch hook. Note the side tone in the receiver. Shake and slightly twist the desk stand and receiver cords to test for cut-out or noise.

3.14 If the attendant's telephone set is equipped with a dial, make the following tests:

Connect the attendant's telephone set to a trunk and operate the dial to call the central office operator or a test number. Note that the trunk drop does not operate and that excessive clicks are not heard in the receiver while dialing. If it is observed that the dial does not operate properly, the dial should be tested in the regular manner.

(i) Test of Trunk Drop and Trunk Drop Buzzer Contacts:

3.15 Obtain a ring on the trunk from the central office. The trunk drop should operate on the incoming call. Push in the line buzzer LB key or operate the BUZZER key to the ON position and note that the buzzer operates. Restore the drop shutter. The buzzer should stop.

(j) Trunk Polarity Test:

3.16 Connect one clip of the test receiver to the ground terminal of the battery feeder and touch the other clip alternately to the line terminals of each working trunk. If a louder click is received on the ring terminal of the trunk than on the tip terminal, the trunk is properly connected.

(k) Trunk Holding and Talking Test:

3.17 With one clip of the test receiver still connected to ground, connect the other clip to the tip terminal of the

trunk under test. Operate and release the trunk holding key and note that a click is heard in the test receiver. Restore the equipment to normal and make a talking test with the central office operator or test desk from each position of the trunk key.

Note: Care should be exercised in placing calls over trunks in dial system message rate areas to see that only non-registering code numbers are called.

(l) Battery Cut-off and Auxiliary Signal Circuit:

3.18 Push in the line buzzer LB key or operate the BUZZER key to the ON position. With the NIGHT SERVICE KEY or N key in its normal position, operate a trunk drop manually. The buzzer should operate. Operate the NIGHT SERVICE KEY or N key to its "down" position. The buzzer should stop. Restore the NIGHT SERVICE KEY or N key. The buzzer should operate. Operate an attendant's telephone key and remove the attendant's receiver from the switch hook. The buzzer should stop. Replace the receiver and restore the attendant's telephone key. The buzzer should operate. Pull out the line buzzer LB key or operate the BUZZER key to the OFF position. The buzzer should stop. Restore the trunk drop.

3.19 With all the extension connecting keys normal and the line buzzer LB key pushed in or the BUZZER key operated to the ON position, connect the test receiver across the terminals of an extension line. The buzzer should operate. Pull out the line buzzer LB key or operate the BUZZER key to the OFF position. The buzzer should stop.

3.20 Push in the supervisory buzzer SB key or operate the BUZZER key to the ON position. With the NIGHT SERVICE KEY or N key in its normal position, operate an extension connecting key. The supervisory signal and the buzzer should operate. Operate the NIGHT SERVICE KEY or N key to its "down" position. The buzzer should stop and the supervisory signal should restore. Restore the NIGHT SERVICE KEY or N key to normal. The buzzer and signal should operate. Pull out the supervisory buzzer SB key or operate the BUZZER key to the OFF position. The buzzer should stop. Restore the extension connecting key to normal.

4. REPORTS:

4.1 The required record of this routine should be entered on the proper form.