

MANUAL PBX ACCESS LINE CIRCUIT SD-66918-01
FOR 507A AND 507B PBX SYSTEMS —
IN-SERVICE TESTS

1. GENERAL

1.01 This section provides in-service test procedures for the access line circuit (line circuit) used at a 507A or 507B manual PBX when the PBX operates with a 4-wire switching center as used initially in AUTOVON. These tests enable a confidence check to be made of the line circuit by establishing voice connections with appropriate test equipment at the switching center. Proper operation of the line circuit is verified by observing lamps at the PBX and *principal* relay operation at the line circuit. Additional verification is obtained by satisfactory transmission between the line circuit under test and the 4-wire switching center.

Note: The relays which are observed in these tests are not the only relays which may operate or release for a given functional operation. They are termed *principal* relays in these tests because their operation or release indicates receipt or transmission of principal signals by the equipment under test.

1.02 The tests provided in this section are as follows:

A. *Outgoing Call (TOUCH-TONE Dial):*

This test checks the ability of the line circuit to function when a ROUTINE, TOUCH-TONE call is made toward the switching center.

B. *Outgoing Call (Rotary Dial):*

This test checks the ability of the line circuit to function when a ROUTINE, rotary dial call is made toward the switching center.

C. *ROUTINE Incoming Call:* This test checks the ability of the line circuit to respond to steady off-hook signals from a switching center.

D. *Precedence Incoming Call:* This test checks the ability of the line circuit to respond to the special signaling used in Precedence calls.

E. *Preemption of Existing Connection:* This test checks the ability of the line circuit to receive a preempt on-hook signal and a distinctive disconnect tone.

F. *Night and Through-Dial Operation:* This test checks the operation of the line circuit when it is used for night and through-dial operation.

G. *Connection of Central Office Trunk to 4-Wire Switching Center:* This test checks the operation of the line circuit when the PBX is required to connect a central office trunk to an access line trunk.

1.03 These tests assume that the PBX and associated circuits, and the switching center are all operating properly. Obvious station defects such as broken wires, loose connections, etc. should be corrected prior to performing these tests. Tests of TOUCH-TONE keying, including precedence keying, may be performed by dialing a preselected number which connects the line circuit to a TOUCH-TONE and ringing test circuit at the 4-wire switching center.

2. METHOD

| STEP | ACTION | VERIFICATION |
|---|--|--|
| A. Outgoing Call (TOUCH-TONE Dial) | | |
| 1 | At PBX — Take attendant telephone or extension telephone (whichever is equipped with TOUCH-TONE dial) off-hook and operate access line trunk key. | At PBX — Trunk lamp lights. At line circuit — D2, DP relays operate. |
| 2 | Dial 4-wire testboard using TOUCH-TONE dial. | At PBX — When testboard answers, trunk lamp extinguishes. At line circuit — When testboard answers, E relay operates. |
| 3 | Conduct talking test with 4-wire testboard. | At PBX — Conversation satisfactory. |
| 4 | Terminate call; restore PBX to normal. | Trunk lamp lights until testboard disconnects. At line circuit — D2, DP relays release; E relay releases when testboard disconnects. |
| B. Outgoing Call (Rotary Dial) | | |
| 1 | At PBX — Take attendant telephone or extension telephone (whichever is equipped with rotary dial) off-hook and operate access line trunk key. | At PBX — Trunk lamp lights. At line circuit — D2, DP relays operate. |
| 2 | Dial 4-wire testboard using rotary dial. | DP relay follows dial pulses. When testboard answers, E relay operates. At PBX — When testboard answers, trunk lamp extinguishes. |
| 3 | Conduct talking test. | Conversation satisfactory. |
| 4 | Terminate call; restore PBX to normal. | Trunk lamp lights until testboard disconnects. At line circuit — D2, DP relays release; E relay releases when testboard disconnects. |
| C. ROUTINE Incoming Call | | |
| 1 | At PBX — Contact 4-wire testboard and request that a ROUTINE call be placed to line circuit under test. | |

| STEP | ACTION | VERIFICATION |
|------|---|---|
| 2 | Ensure PBX is on-hook; await incoming call. | At line circuit — When ringing signal is received from testboard, E relay operates causing R relay to operate and release repeatedly at regular intervals. R relay operated provides ringing current to PBX and return of audible signaling to calling party. At PBX — When ringing signal is received, trunk lamp lights. |
| 3 | Operate access line trunk key and answer incoming call. | DP, D2 relays operate. At PBX — Trunk lamp extinguishes. |
| 4 | Conduct talking test. | Conversation satisfactory. |
| 5 | Terminate call; restore PBX to normal. | Trunk lamp lights until testboard disconnects. At line circuit — DP, D2 relays release; E relay releases when testboard disconnects. |

D. Precedence Incoming Call

| | | |
|--|---|--|
| 1 | At PBX — Contact 4-wire testboard and request that a Precedence call be placed to line circuit under test. | |
| 2 | Ensure PBX is on-hook and await incoming call. | At PBX — When precedence signaling is applied, trunk lamp flashes. At line circuit — When precedence signaling is applied, E relay operates and releases repeatedly until call is answered. |
| <i>Note:</i> For a Precedence call, E relay is operated for approximately 1.6 seconds and released for 0.345-second. | | |
| 3 | Operate access line trunk key and answer incoming call. | DP, D2 relays operate. At PBX — Trunk lamp extinguishes. |
| 4 | Terminate call; restore PBX to normal. | Trunk lamp lights until testboard disconnects. At line circuit — DP, D2 relays release; E relay releases when testboard disconnects. |

| STEP | ACTION | VERIFICATION |
|---|--|---|
| E. Preemption of Existing Connection | | |
| 1 | At PBX — Contact 4-wire testboard and request that preemption signal be applied toward line circuit under test. | At PBX — When preemption signal is applied: single flash of trunk lamp occurs, distinctive tone is audible in head/handset, 4-wire switching center disconnects. At line circuit — E relay releases for approximately 0.345 second, reoperates, then finally releases as switching center disconnects. |
| 2 | Restore PBX to normal. | |
| F. Night and Through-Dial Operation | | |
| 1 | At PBX — Operate night key, the access line trunk key, and a desired extension key. | |
| 2 | At desired extension — Go off-hook. | At line circuit — DP, D2 relays operate. |
| 3 | Go on-hook. | DP, D2 relays release. |
| 4 | At PBX — Contact 4-wire testboard and request that routine call be placed to line circuit under test. | At extension — When ringing current is applied, audible signaling occurs. |
| 5 | At extension — Answer call; conduct talking test. | Conversation satisfactory. |
| 6 | At extension — Go on-hook. | |
| 7 | At PBX — Restore PBX to normal. | |
| G. Connection of Central Office Trunk to 4-Wire Switching Center | | |
| 1 | At PBX — Operate central office trunk key and when dial tone is received, establish connection with central office testboard. | At PBX — Associated trunk lamp lights. |
| 2 | Place central office trunk on hold. | Trunk lamp extinguishes. |
| 3 | Operate access line trunk key and dial 4-wire testboard. | Access line trunk lamp lights. |
| 4 | Operate extension key and release central office trunk hold key and access line trunk key. | At line circuit — Relays A, A1 operate; relay E operates when 4-wire testboard answers. |

| STEP | ACTION | VERIFICATION |
|------|--|--|
| 5 | At PBX — Break into connection and verify proper operation. | At PBX — Conversation between 4-wire testboard and central office satisfactory. |
| 6 | Restore PBX to normal when test is complete. | |

