AUXILIARY LINE CIRCUITS
SERVING MORE THAN ONE OFFICE
IN THE SAME BUILDING
TESTS
NO. 5 CROSSBAR OFFICES

1. GENERAL

1.01 This section describes a method of testing auxiliary line circuits serving more than one office in the same building using the master test control circuit in No. 5 crossbar offices.

1.02 This section is reissued:

(a) To include extra theoretical offices.

(b) To revise Tests (A) through (C) and (F) through (N) to include circuits equipped with D-type terminal strips.

1.03 The tests and features tested are:

AUXILIARY LINE CIRCUITS SERVING TWO OR THREE MARKER GROUPS IN THE SAME BUILDING

(A) Seizure - Terminating Call: This test checks the seizure of the auxiliary line circuit from each of two or three marker groups, and the continuity of tip, ring and sleeve leads.

(B) Seizure - Originating Call - Auxiliary Line Circuit Arranged for 2-Way Operation: This test checks that calls may be originated through the auxiliary line circuit.

(C) Busy Indication: This test checks that the auxiliary line circuit gives a busy indication to all marker groups when seized on a call from one marker group.

(D) Simultaneous Seizure - Delayed Completion on Call from First Preferred No. 5 Crossbar Marker Group: This test checks that a call from the first preferred marker group is connected to the auxiliary line circuit under the following simultaneous seizure conditions. The call from the first preferred marker group seizes the auxiliary line circuit but immediate completion of the call is prevented because of a just prior seizure by a call from a less preferred marker group.

(E) Simultaneous Seizure - Denied Completion of Calls from Less Preferred Marker Groups: This test checks that a call from a more preferred marker group is completed and a call from a less preferred marker group is denied completion when a simultaneous seizure occurs in which the Crelays associated with the respective marker group are operated simultaneously.

(F) Busy - Called Party Fails to Disconnect - Auxiliary Line Circuit Arranged for Terminating Service Only: This test checks that an auxiliary line circuit, arranged for terminating service only, is held busy when the called party fails to disconnect.

(G) Incoming Busy - Incoming Busy Circuit Provided: This test checks that the auxiliary line circuit is made busy when the associated "BM" service assistant circuit is seized to originate a call.

AUXILIARY LINE CIRCUITS SERVING OFFICE A AND OFFICE B OF A SINGLE MARKER GROUP - TWO-WAY SERVICE

(H) Seizure - Terminating Call: This test checks the seizure of the auxiliary line circuit from office A and office B and checks the continuity of tip, ring and sleeve leads.

(I) Busy Indication: This test checks that the auxiliary line circuit, when seized, gives a busy indication to each office served.

(J) Seizure - Originating Call: This test checks that calls may be originated through the auxiliary line circuit.

AUXILIARY LINE CIRCUITS SERVING OFFICE A AND OFFICE B SINGLE MARKER GROUP - TERMINATING SERVICE ONLY

(K) Seizure: This test checks the seizure of the auxiliary line circuit from office A and office B and checks the continuity of tip, ring and sleeve leads.

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(L) Busy Indications: This test checks that the auxiliary line circuit, when seized, gives a busy indication to each office served.

(M) Busy - Called Party Fails to Disconnect: This test checks that the auxiliary line circuit is held busy when the called party fails to disconnect.

(N) Incoming Busy from "B" Service Assistant Circuit: This test checks that the auxiliary line circuit is made busy when the associated "B" service assistant circuit is seized to originate a call.

1.04 Tests (A), (D), (H) and (K) require action and verification at the master test frame and relay rack.

1.05 Tests should be completed as quickly as possible to avoid interference with service calls.

1.06 Lettered Steps: The letters a, b, c, etc. are added to a step number to indicate that the step covers an action which may or may not be required, depending on local conditions. The conditions under which the lettered step or series of steps should be made are given in the ACTION column, and all steps governed by the same condition are designated by the same letter. Where a condition does not apply the associated step should be omitted.

2. APPARATUS

2.01 The apparatus required for each test is shown in the following list. The details of each item are covered in the indicated paragraphs.

3. METHOD

AUXILIARY LINE CIRCUITS SERVING TWO OR THREE MARKER GROUPS IN THE SAME BUILDING

STEP ACTION VERIFICATION

(A) Seizure - Terminating Call

Call from First Preferred No. 5 Crossbar Marker Group

1 At master test frame of the first preferred No. 5 crossbar marker group - Restore all keys.

2 Operate RL key momentarily. All lamps extinguished.
3 Operate IC (OA or OAT), or IC (OAT) and E, MT- (to select a special marker), T, LT keys.

4 Operate A-, B-, C-, D- keys for number assigned to auxiliary line circuit in office A.

5 Operate switch on handset to MON.

6 At relay rack frame -
Connect handset to -
227-type terminal strip where provided,
punchings 1 and 2.
D-type terminal strip where provided,
punchings 17 and 37.

7 At master test frame -
Operate ST key momentarily.

8 At relay rack frame -
Operate switch of handset to TALK.

9 Disconnect handset.

10 At master test frame -
Operate RL key momentarily.

11a If the auxiliary line circuit serves office B of the first No. 5 crossbar marker group -
Operate IC (OB or OBT) or IC (OBT) and E key.

12a Operate A-, B-, C-, D- keys for number assigned to auxiliary line circuit in office B.

13a Repeat Steps 5 to 10 inclusive.

Call from Second Preferred No. 5 Crossbar Marker Group

14 Using the master test frame of the second preferred No. 5 crossbar marker group -
Repeat Steps 1 to 10 inclusive.

15b If the auxiliary line circuit serves office B of the second preferred No. 5 crossbar marker group -
Operate IC (OB or OBT) or IC (OBT) and E key.

16b Operate A-, B-, C-, D- keys for number assigned to auxiliary line circuit in office B.

17b Repeat Steps 5 to 10 inclusive.
<table>
<thead>
<tr>
<th>STEP</th>
<th>ACTION</th>
<th>VERIFICATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>18</td>
<td>Using the master test frame of third preferred No. 5 crossbar marker group - Repeat Steps 1 to 10 inclusive.</td>
<td></td>
</tr>
<tr>
<td>39c</td>
<td>If the auxiliary line circuit serves office B of the third preferred No. 5 crossbar marker group - Operate IC (OB or OBT) or IC (OBT) and E key.</td>
<td></td>
</tr>
<tr>
<td>20c</td>
<td>Operate A-, B-, C-, D- keys for number assigned to auxiliary line circuit in office B.</td>
<td></td>
</tr>
<tr>
<td>21c</td>
<td>Repeat Steps 5 to 10 inclusive.</td>
<td></td>
</tr>
<tr>
<td>Call from Second Preferred No. 1 Crossbar Marker Group</td>
<td></td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>At relay rack frame - Operate switch on handset to MON.</td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>Connect handset to - 227-type terminal strip where provided, punchings 1 and 2. D-type terminal strip where provided, punchings 47 and 37.</td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>At outgoing trunk test frame in the second preferred No. 1 crossbar marker group - Make a line test call to the auxiliary line circuit being tested using the number assigned to this line in office A of this marker group.</td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>When it is determined that the circuit being tested has been seized by the call from the outgoing trunk test frame - At relay rack frame - Operate switch of handset to TALK.</td>
<td>Conversation is easily understood.</td>
</tr>
<tr>
<td>26d</td>
<td>If the auxiliary line circuit serves office B of the second preferred No. 1 crossbar marker group - At outgoing trunk test frame in the second preferred No. 1 crossbar marker group - Disconnect and make a line test call to the auxiliary line circuit being tested using the number assigned to this line in office B of this marker group.</td>
<td></td>
</tr>
<tr>
<td>27d</td>
<td>At relay rack frame - After test call from office A has been disconnected - Operate switch of handset to MON.</td>
<td></td>
</tr>
</tbody>
</table>
28d When it is determined that the circuit being tested has been seized by the call from the outgoing trunk test frame - At relay rack frame - Operate switch of handset to TALK.

29 At outgoing trunk test frame - Disconnect.

30 At relay rack frame - Disconnect handset from terminal strip on unit.

Call from Third Preferred No. 1 Crossbar Marker Group

31 At relay rack frame - Operate switch on handset to MON.

32 Connect handset to -
227-type terminal strip where provided, punchings 1 and 2.
D-type terminal strip where provided, punchings 17 and 37.

33 At outgoing trunk test frame in the third preferred No. 1 crossbar marker group - Make a line test call to the auxiliary line circuit being tested using the number assigned to this line in office A of this marker group.

34 When it is determined that the circuit being tested has been seized by the call from the outgoing trunk test frame - At relay rack frame - Operate switch of handset to TALK.

35e If the auxiliary line circuit serves office B of the third preferred No. 1 crossbar marker group - At outgoing trunk test frame in the third preferred No. 1 crossbar marker group - Disconnect and make a line test call to the auxiliary line circuit being tested using the number assigned to this line in office B of this marker group.

36e At relay rack frame - After test call from office A has been disconnected - Operate switch of handset to MON.

37e When it is determined that the circuit being tested has been seized by the call from the outgoing trunk test frame - At relay rack frame - Operate switch of handset to TALK.
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**STEP** | **ACTION** | **VERIFICATION**
---|---|---
38 | At outgoing trunk test frame - Disconnect. |  
39 | At relay rack frame - Disconnect handset from terminal strip on unit. |  

(B) Seizure - Originating Call - Auxiliary Line Circuit Arranged for 2-Way Operation

1 | Operate switch of handset to MON. |  
2 | At relay rack frame - Connect handset to - 227-type terminal strip where provided, punchings 1 and 2. D-type terminal strip where provided, punchings 27 and 37. | Dial tone heard. 

Cl, NBl, and, if provided, NB2 relays operated.  

3 | When line is idle - Operate switch of handset to TALK. |  
4 | Disconnect handset. | Cl, NBl, released, if provided, NB2 relay released.  

(C) Busy Indication

1 | At relay rack frame - When the circuit to be tested is normal - Block NBl, and, if provided NB2 relays operated. | 227-type terminal strip where provided, ground on punchings 8, 12, and, if NB2 relay is provided, 16.  
D-type terminal strip, where provided, ground on punchings 17, 46, and, if NB2 relay is provided, 45.  

2 | Remove the blocking tools from the NBl, and if provided, NB2 relays. |  

(D) Simultaneous Seizure - Delayed Completion on Call from First Preferred No. 5 Crossbar Marker Group

1 | At master test frame of the first preferred No. 5 crossbar marker group - Restore all keys. |  
2 | Operate RL key momentarily. | All lamps extinguished.  
3 | Operate IC (OA or OAT), or IC (OAT) and E, MT- (to select a special marker), G, VMT1, LT keys. |  
4 | Operate A-, B-, C-, D- keys for number assigned to auxiliary line in office A. |  
5 | At relay rack frame - When circuit to be tested is normal - Block NBl, and, if provided, NB2 relays operated. |  
6 | Block C2 relay operated and Cl relay nonoperated. |
**STEP** | **ACTION** | **VERIFICATION**
--- | --- | ---
7 | At master test frame - Operate ST key momentarily. | LT, MRL lamps lighted. BY lamp not lighted. 5 lamp lighted at voltmeter test panel. Momentary voltmeter reading of at least 10 volts.
8 | Operate T1 REV key. | Momentary voltmeter reading of at least 10 volts.
9 | Restore T1 REV key. | All lamps extinguished.
10 | Operate RL key momentarily. | 
11 | At relay rack frame - Remove blocking tool from C2 relay. | 
12a | If the C3 relay is provided - Block C3 relay operated. | LT, MRL lamps lighted. BY lamp not lighted. 5 lamp lighted at voltmeter test panel. Momentary voltmeter reading of at least 10 volts.
13a | At master test frame - Operate ST key momentarily. | Momentary voltmeter reading of at least 10 volts.
14a | Operate T1 REV key. | All lamps extinguished.
15a | Restore T1 REV key. | 
16a | Operate RL key momentarily. | 
17a | At relay rack frame - Remove blocking tool from C3 relay. | 
18 | Remove blocking tool from C1 relay. | 
19 | Remove blocking tools from NB1, and if provided, NB2 relays. | 
20 | At master test frame - Restore C, VMT1 keys. | (E) Simultaneous Seizure - Denied Completion of Calls from Less Preferred Marker Groups

1 | At relay rack frame - When circuit to be tested is normal - Block NB1 and, if provided, NB2 relay operated. | No ground on 7T of C2 relay.
2 | Connect ground to 3B of C2 relay. | Ground on 7T of C2 relay.
3 | Block C2 relay operated. | 
4 | Block C1 relay operated. | 
5 | Remove ground from C2 relay. | 
6 | Remove blocking tools from C1 and C2 relays. | 
7a | If C3 relay is provided - Connect ground to 3B of C3 relay. |
<table>
<thead>
<tr>
<th>STEP</th>
<th>ACTION</th>
<th>VERIFICATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>8a</td>
<td>Block C3 relay operated.</td>
<td>No ground on 7T of C3 relay.</td>
</tr>
<tr>
<td>9a</td>
<td>Block C1 relay operated.</td>
<td>Ground on 7T of C3 relay.</td>
</tr>
<tr>
<td>10a</td>
<td>Remove blocking tool from C1 relay.</td>
<td></td>
</tr>
<tr>
<td>11a</td>
<td>Block C2 relay operated.</td>
<td>Ground on 7T of C3 relay.</td>
</tr>
<tr>
<td>12a</td>
<td>Remove blocking tools from C2 and C3 relays.</td>
<td></td>
</tr>
<tr>
<td>13a</td>
<td>Remove ground from C3 relay.</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Remove blocking tools from NB1 and, if provided, NB2 relays.</td>
<td></td>
</tr>
</tbody>
</table>

(F) Busy - Called Party Fails to Disconnect - Auxiliary Line Circuit Arranged for Terminating Service Only

1 Operate switch of handset to MON.

→ 2 At relay rack frame -
   Connect handset to -
   227-type terminal strip where provided,
   punchings 1 and 2.
   D-type terminal strip where provided,
   punchings 47 and 37.

3 When line is idle -
   Operate switch of handset to TALK.

4 Disconnect handset.

(G) Incoming Busy - Incoming Busy Circuit Provided

1 At relay rack frame -
   Where circuit to be tested is normal -
   Block IB relay nonoperated.

→ 2 Connect ground to -
   227-type terminal strip where provided,
   punching 3.
   D-type terminal strip where provided,
   punching 27.

3 Manually operate NB1 relay.
   NB1 relay holds.
   NB2 relay, if provided, operated.

→ 4 Momentarily remove ground from punching 3 or 27.
   NB1, and if provided, NB2 relays released.

5 Remove blocking tool from IB relay.
   IB, NB1, and if provided, NB2 relays operated.

→ 6 Remove ground from punching 3 or 27.
   IB, NB1, and if provided, NB2 relays released.
AUXILIARY LINE CIRCUITS SERVING OFFICE A AND OFFICE B OF A SINGLE MARKER GROUP - 2-WAY SERVICE

(H) Seizure - Terminating Call

1. At master test frame -
   Restore all keys.

2. Operate RL key momentarily.
   All lamps extinguished.

3. Operate IC (OA or OAT), or IC (OAT) and
   E, MT- (to select a special marker),
   T, LT keys.

4. Operate A-, B-, C-, D- keys for number
   assigned to auxiliary line circuit in
   office A.

5. At relay rack frame -
   Operate switch of handset to MON.

6. Connect handset to punchings of the
   2-circuit terminal strip on unit as
   follows:
   227-type terminal strip where provided,
   if testing circuit 1 - punchings 5 and 6.
   if testing circuit 2 - punchings 13 and 14.
   D-type terminal strip where provided,
   if testing circuit 1 - punchings 17 and 37.
   if testing circuit 2 - punchings 45 and 35.

7. At master test frame -
   Operate ST key momentarily.
   LT, MRL lamps lighted.
   S lamp lighted at voltmeter test panel.

8. At relay rack frame -
   Operate switch of handset to TALK.
   S lamp extinguished.
   At relay rack frame -
   CT relay operated.

9. Operate switch of handset to MON.
   S lamp lighted.

10. At master test frame -
    Operate RL key momentarily.
    All lamps extinguished.

11. Operate IC (OB or OBT) or IC (OBT) and
    E key.
    LT, MRL lamps lighted.
    S lamp lighted at voltmeter test panel.

12. Operate A-, B-, C-, D- keys for number
    assigned to auxiliary line circuit in
    office B.
    S lamp extinguished.
    At relay rack frame -
    CT relay operated.

13. Operate ST key momentarily.
    S lamp lighted.

14. At relay rack frame -
    Operate switch of handset to TALK.
    S lamp lighted.

15. Disconnect handset.

16. At master test frame -
    Operate RL key momentarily.
    All lamps extinguished.
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STEP ACTION VERIFICATION

(I) Busy Indication

1 At relay rack frame -
When circuit under test is normal
Block CT relay operated.

Ground on punching of the 2-circuit terminal
strip on unit as follows:
227-type terminal strip where provided,
if testing circuit 1 - punching 4.
if testing circuit 2 - punching 12.
D-type terminal strip where provided,
if testing circuit 1 - punching 17.
if testing circuit 2 - punching 15.

2 Insulate LB of LA relay.

3 Block LA relay operated.

4 Remove blocking tool from CT relay

CT relay releases.
Ground on punching of the 2-circuit termi-
nal strip on unit as follows:
227-type terminal strip where provided,
if testing circuit 1 - punching 4.
if testing circuit 2 - punching 12.
D-type terminal strip where provided,
if testing circuit 1 - punching 17.
if testing circuit 2 - punching 15.

5 Remove blocking tool and then insulator
from LA relay.

(J) Seizure - Originating Call

1 Operate switch of handset to MON.

2 At relay rack frame -
Connect handset to punchings of the
2-circuit terminal strip on unit as
follows:
227-type terminal strip where provided,
if testing circuit 1 - punchings 5 and 6.
if testing circuit 2 - punchings 13 and 14.
D-type terminal strip where provided,
if testing circuit 1 - punchings 27 and 37.
if testing circuit 2 - punchings 45 and 35.

3 When line is idle -
Operate switch of handset to TALK.

4 Disconnect handset.

AUXILIARY LINE CIRCUITS SERVING OFFICE A AND OFFICE B OF A SINGLE MARKER GROUP - TERMINATING
SERVICE ONLY

(K) Seizure

1 At master test frame -
Restore all keys.

2 Operate RL key momentarily.

All lamps extinguished.
3 Operate IC (OA or OAT), or IC (OAT) and E, MT- (to select a special marker) T, LT keys.

4 Operate A-, B-, C-, D- keys for number assigned to auxiliary line circuit in office A.

5 At relay rack frame -
   Operate switch of handset to MON.

6 Connect handset to punchings of the 2-circuit terminal strip on unit as follows:
   227-type terminal strip where provided,
   if testing circuit 1 - punchings 1 and 2,
   if testing circuit 2 - punchings 9 and 10.
   D-type terminal strip where provided,
   if testing circuit 1 - punchings 38 and 28,
   if testing circuit 2 - punchings 36 and 26.

7 At master test frame -
   Operate ST key momentarily.

   LT, MRL lamp lighted.
   S lamp lighted at voltmeter test panel.
   At relay rack frame -
   CO and, if provided, D relays operated.

8 At relay rack frame -
   Operate switch of handset to TALK.

   S lamp extinguished.

9 Operate switch of handset to MON.

10 At master test frame -
    Operate RL key momentarily.

11 Operate IC (OB or OBT) or IC (OST) and E key.

12 Operate A-, B-, C-, D- keys for number assigned to auxiliary line circuit in office B.

13 Operate ST key momentarily.

   LT, MRL lamp lighted.
   S lamp lighted at voltmeter test panel.
   At relay rack frame -
   CO, and, if provided, D relays operated.

14 At relay rack frame -
   Operate switch of handset to TALK.

   S lamp extinguished.

15 Disconnect handset.

16 Operate RL key momentarily.

   S lamp lighted.

   All lamps extinguished.
### (L) Busy Indications

<table>
<thead>
<tr>
<th>STEP</th>
<th>ACTION</th>
<th>VERIFICATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>At relay rack frame - When circuit under test is normal - Block A relay operated.</td>
<td>Ground on punching of the 2-circuit terminal strip on unit as follows: 227-type terminal strip where provided, if testing circuit 1 - punching 4; if testing circuit 2 - punching 12. D-type terminal strip where provided, if testing circuit 1 - punching 17; if testing circuit 2 - punching 15.</td>
</tr>
<tr>
<td>2</td>
<td>Block operated CO relay.</td>
<td>A relay released. Ground on punching of the 2-circuit terminal strip on unit as follows: 227-type terminal strip where provided, if testing circuit 1 - punching 4; if testing circuit 2 - punching 12. D-type terminal strip where provided, if testing circuit 1 - punching 17; if testing circuit 2 - punching 15.</td>
</tr>
<tr>
<td>3</td>
<td>Remove blocking tool from A relay.</td>
<td>A relay released.</td>
</tr>
<tr>
<td>4</td>
<td>Remove blocking tool from CO relay.</td>
<td>A relay released.</td>
</tr>
</tbody>
</table>

### (M) Busy - Called Party Fails to Disconnect

1. Operate switch of handset to **M.O.N.**
2. At relay rack frame - Connect handset to punchings of the 2-circuit terminal strip on unit as follows: 227-type terminal strip where provided, if testing circuit 1 - punchings 1 and 2; if testing circuit 2 - punchings 9 and 10. D-type terminal strip where provided, if testing circuit 1 - punchings 38 and 28; if testing circuit 2 - punchings 36 and 26.
3. When line is idle - Operate switch of handset to **T.A.I.L.**
4. Disconnect handset. 

### (N) Incoming Busy from "B" Service Assistant Circuit

1. At relay rack frame - When circuit to be tested is normal Ground the punching of 2-circuit terminal strip as follows: 227-type terminal strip where provided, if testing circuit 1 - punching 5; if testing circuit 2 - punching 13. D-type terminal strip where provided, if testing circuit 1 - punching 27; if testing circuit 2 - punching 17.
2. Remove ground from terminal strip. 

B and D relays operated.

B and D relays released.