

STEP BY STEP SYSTEMS  
 NO. 1, 350A, 355A OR 35E97  
 OUTGOING TRUNK CIRCUIT  
 FROM SELECTOR MULTIPLE  
 FOR INFORMATION, REPAIR, OFFICIAL PBX  
 OR INTERCEPTING SERVICE  
 E AND M LEAD SUPERVISION

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1.03 The transmission path to the called office is completed on seizure (Option A).

## 2. CALLED END ANSWER

2.01 When the Called End answers the signalling circuit furnishes ground over lead E to operate relay E.

2.02 Relay E operated:

- A. Removes ground from the ringing machine start lead.
- B. Removes the audible ringing tone from the Ring Conductor (Option B).
- C. Provides an additional ground on lead S (Option C).
- D. Provides a holding ground for relay B (Option C & E).
- E. Operates relay OA (Option C or J).
- F. Operates relay C (Option J).
- G. Prepares path to lead MB (Option D).
- H. Prepares path to lead TT1 (Option R).

2.03 Relay C operated (Option J):

- A. Prepares two paths to ground leads S.
- B. Locks operated under control of relay E (Option F).
- C. Grounds LB lead (Option N).
- D. Further grounds lead TT2 to the transfer and make busy circuit (Option Q).
- E. Opens path to lead TT1 (Option R).

2.04 Relay OA operated (Option J or C):

- A. Removes idle circuit termination.
- B. Closes holding path to relay B.
- C. Further opens ring tone lead.
- D. Closes R side of transmission path (Option B).
- E. Closes T side of transmission path (Option B).
- F. Grounds lead S (Option C).
- G. Opens A control path to lead S (Option J).
- H. Holds relay C (Option J).

2.05 The circuit is now in a talking position.

## 3. RECALL Option C

3.01 The calling subscriber can recall the called operator by flashing the Telephone Switch Hook.

3.02 Relay A releasing and reoperating will connect ground and battery to the signalling equipment to signal the called operator.

3.03 Relay B is held operated by the operated relay E and (Option E).

## Option J

3.04 If the calling subscriber attempts to recall the operator the connection may be broken as relay B (slow to release) is not held operated by relay E.

## 4. DISCONNECT Calling End Disconnects First (Option C)

4.01 When the calling party disconnects, relay A releases and places a ground on lead M as a disconnect signal to the called end.

4.02 When the called end releases Relay E releases and:

- A. Releases relay B (Option E).
- B. Partially opens holding path to relay OA.
- C. Prepares path for ring tone (for next call).
- D. Opens path to lead TT1 (Option R).

4.03 Relay B released:

- A. Opens ring tone path.
- B. Removes A ground from lead S.
- C. Releases relay OA.

4.04 Relay OA released:

- A. Applies idle circuit termination to transmission facilities.
- B. Removes ground from lead S to release associated switching equipment.
- C. Opens transmission path (Option B).

4.05 The trunk circuit is ready for the next seizure.

Calling End Disconnects First (Option J)

4.06 When the calling party disconnects relay A releases and:

- A. Places ground on lead M as a disconnect signal to the called end.
- B. Releases relay B.

4.07 Relay B released:

- A. Removes ground from lead S.
- B. Releases relay OA.

4.08 Relay OA is slow to release and when released:

- A. Connects ground to lead S to make the circuit busy.
- B. Applies idle circuit termination to the transmission facilities.
- C. Opens the transmission path (Option B).

4.09 When the called end disconnects relay E releases and releases relay C (Option F).

4.10 Relay C released removes ground from lead S.

4.11 The trunk circuit is ready for the next seizure.

Called End Disconnects First

4.12 If the called end disconnects first the connection is held by the calling party. The release of the called end will release Relay E which will:

- A. Open the operating path to relay OA.
- B. Open the hold path to relay B (Option C & E).
- C. Open the hold path to relay C (Option J & F).

4.13 When the calling party disconnects the release of this circuit is the same as described in 4.06, 4.07, 4.08, 4.10 and 4.11.

- A. Note: The C relay is now released by the release of relay OA.

5. ABANDONED CALL

5.01 The calling end can abandon the call and release the circuit at any time before the called end answers.

5.02 If the calling end disconnects before the called end answers Relay A releases and:

- A. Places ground on lead M as a disconnect signal to the called end.
- B. Releases relay B.

5.03 Relay B released:

- A. Removes ground from S lead which restores circuit to normal.

6. TEST JACK

6.01 Jack T is furnished to provide a means for testing this trunk.

6.02 When a plug is inserted in this jack, ground is connected to the sleeve to make this circuit test busy and the T & R leads are extended to the test equipment.

7. FUSE FAILURE MAKE BUSY FEATURE

7.01 Relay (MB) and Options M and Z are provided when the fuse failure make busy feature is required. Relay (MB) is normally operated. If, for any reason, the battery supply to this circuit is interrupted, (MB) releases placing ground on the sleeve lead to make the trunk test busy.

8. TRANSFER AND MAKE BUSY CONTROL CIRCUIT

8.01 When this circuit is used as the control circuit, of a group of circuits to be transferred or made busy.

8.02 Ground received on the E lead from the distant circuit when this circuit is idle, operates relay E.

8.03 Relay E operated:

- A. Grounds the S lead to make this circuit busy.
- B. Places ground on lead TT1 to the transfer and/or make busy circuit (Option R).

Transferred Circuit

8.06 When this circuit is in a group of circuits to be transferred and is other than the control circuit, ground is held on lead TT2 (Option Q) as long as this circuit is busy - to prevent the associated transfer relay from functioning.

8.07 When ground is removed from lead TT2 (by the release of the established connection) the transfer and make busy circuit will function, to complete the transfer of this circuit.

8.08 When this circuit is in a group of circuits to which traffic has been transferred, ground on lead TT2 prevents the transfer circuit from restoring to normal while this circuit is busy.

Circuit Make Busy

8.09 If this circuit is not busy, when it is to be made busy, the transfer and/or make busy circuit will make this circuit busy immediately.

8.10 If this circuit is busy, when it is to be made busy, ground on lead TT2 (Option Q) will prevent the transfer and/or make busy circuit from functioning, until the call in progress has been completed and ground is removed from lead TT2 (Option Q).

8.11 The transfer and/or make busy circuit will perform a "wink-off function" and reground lead TT2 (Option Q) to make this circuit busy.

Option H (MFR Disc.)

8.12 Option H is added to prevent relay C from buzzing, when trunk is made busy by grounding lead E.

SECTION III - REFERENCE DATA

1. WORKING LIMITS

- 1.01 Relay (A)
- 1.02 Maximum external circuit loop - 1500 ohms.
- 1.03 Minimum insulation resistance - 15,000 ohms.

2. FUNCTIONAL DESIGNATIONS

2.01 Relays

Designation    Meaning

A	Battery Feed Relay
B	Hold Over Relay
C	Aux Operator Answer
E	Pulse Repeating Relay
MB	Make Busy Relay
OA	Operator Answer Relay

3. FUNCTIONS

- 3.01 To signal the called end when this circuit is seized.
- 3.02 To hold operated the switches ahead and to guard against intrusion from other circuits.
- 3.03 To return audible ringing to the subscriber until the called end answers.
- 3.04 To furnish ground to the motor start lead when required.
- 3.05 To give supervision to the called end when the subscriber disconnects or flashes.
- 3.06 To hold busy until both the called end and the calling end disconnect or to release the selectors when the originating end disconnects on calls terminating in other than call distributing type desks and to make the trunk busy until the terminating end disconnects.
- 3.07 To ground the sleeve in case the battery supply to this circuit fails.
- 3.08 To provide an idle line termination required when the associated trunk connects to a telephone repeater or carrier telephone circuit.
- 3.09 To provide means for making this circuit busy from the distant end.
- 3.10 To remove idle line termination when the called end answers.
- 3.11 To prevent the transfer circuit from restoring to normal while this circuit is busy when this circuit is in a group to which traffic has been transferred.
- 3.12 To provide for transferring traffic when this circuit is used as the control circuit.
- 3.13 To complete the transmission path when the called party answers.
- 3.14 To complete the transmission path upon seizure.

4. CONNECTING CIRCUITS

When this circuit is listed on a key-sheet, the connecting information thereon is to be followed.

- 4.01 Local Selectors - SD-30200-01\*
- 4.02 CX Signaling Circuit - Type B - SD-95048-01.\*
- 4.03 Simplex Signaling Circuit - SD-95051-01.\*
- 4.04 Line and Balancing Composite Sets and Repeating Coils - SD-95004-01.\*
- 4.05 Emergency Line Circuit - SD-32313-01.
- 4.06 Transfer and Make Busy Circuit - SD-32314-01.
- 4.07 Traffic Register Circuit - SD-31976-01 - 355A.
- 4.08 Traffic Register Circuit - SD-30896-01 - No. 1 and 350A.
- 4.09 Common Systems - Park-on Circuit - SD-99374-01.

\* Typical Circuit

SECTION IV - REASONS FOR REISSUE

A. Changed and Added Functions

- A.1 To complete the transmission path when the called party answers.

BELL TELEPHONE LABORATORIES, INCORPORATED

DEPT 5225-LCB  
WECO DEPT 5152-FLS-WEA

- A.2 To complete the transmission path upon seizure.

B. Changes in Apparatus

- B.1 Added  
185-A Network, App. Fig. 1, Option ZA

D. Description of Changes

- D.1 Option K is rerated Mfr. Disc., Option C and D are added and rated Std. These changes are made to bring the SD into agreement with manufacturing information.

- D.2 Option B is designated and rated standard. Option A is added and rated standard. Circuit Note 102 is changed to reflect the application of Options A and B.

- D.3 CAD.1 is changed to reflect the preceding changes.

- D.4 A 185A network (Option ZA) is added to the E lead (FS1) to protect the contacts of the relay in the signaling circuit.

F. Changes in Description of Operation or Changes in CD-Section

- F.1 This CD is reissued in its entirety to incorporate all changes covered by affected appendices and changes made on this issue.

