

STEP BY STEP SYSTEMS
NO. 1, 350A, 355A OR 35-E-97
OUTGOING TRUNK CIRCUIT
TO CROSSBAR TANDEM OFFICE
FOR CAMA CALLS

CHANGES

- C. CHANGES IN CIRCUIT REQUIREMENTS OTHER THAN THOSE APPLYING TO ADDED, SUPERSEDED OR REMOVED APPARATUS
- C.1 Added "FS" for After Soak value for (A) relay.
- D. DESCRIPTION OF CIRCUIT CHANGES
- D.1 CAD1 has been revised to allow direct connection of T, R & S leads to Aux. Trk. Ckt. to Restrict Serv.
- D.2 CAD5 has been revised to show T, R & S leads routing to Sel. Bank Mult. or to ROT. Sw. Banks.
- D.3 Changed rating of 35-E-97 to A&M only.
- All other headings, no change.

BELL TELEPHONE LABORATORIES, INCORPORATED

DEPT. 2315-AH-RCD-BA

STEP BY STEP SYSTEMS
NO. 1, 350A, 355A OR 35-E-97
OUTGOING TRUNK CIRCUIT
TO CROSSBAR TANDEM OFFICE
FOR CAMA CALLS

CHANGES

A. CHANGED AND ADDED FUNCTIONS

A.1 Provision is made to connect battery to the sleeve bank as an idle indication for a 35-E-97 selector.

B. CHANGES IN APPARATUS

B.1 Added

Resistor C
Option "R" 18AC Type

D. DESCRIPTION OF CIRCUIT CHANGES

D.1 Resistor C, Option "R", is added to make this circuit adaptable for use in a 35-E-97 office.

D.2 Note 103 is changed in accordance with D.1.

D.3 Line 3 of Circuit Note 103 is changed to read "Over 14 miles - etc." instead of "14-32 miles - etc."

D.4 Referring to D.3, line 3 was changed to avoid the necessity of reissuing this circuit each time the cabling limits shown on the connecting circuits are changed.

D.5 Circuit Note 106 is added.

D.6 Prior to Issue 4-D the title of this circuit was:

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2. WORKING LIMITS

2.1 Prior to Issue 4-D the working limits were:

	Trunk Supv.	
	(A) Relay	(P) Relay (45-50V)

Max. Ext.		
Ckt. Loop	2,375Ω	7,500Ω
Min. Ins.		
Res.	30,000Ω	30,000Ω

4. CONNECTING CIRCUITS

4.5 Local Selector, 35-E-97 SD-30902-01.*

*Typical Circuit

All other headings, no change.

BELL TELEPHONE LABORATORIES, INCORPORATED

DEPT. 2315-WF-RCD-B9

STEP BY STEP SYSTEMS
NO. 1, 350A OR 355A
OUTGOING TRUNK CIRCUIT
TO CROSSBAR TANDEM OFFICE
FOR CAMA CALLS

CHANGES

B. CHANGES IN APPARATUS

B.1 Added

Network A 179A Type
Option "S"

D. DESCRIPTION OF CIRCUIT CHANGES

D.1 Network A is added.

D.2 Note 103 is changed in accordance with
D.1.

D.3 Circuit Note 107 is added.

All other headings, no change.

BELL TELEPHONE LABORATORIES, INCORPORATED

DEPT. 2315-WF-RCD-SH

STEP-BY-STEP SYSTEMS
NO. 1, 350A OR 355A
OUTGOING TRUNK CIRCUIT
TO CROSSBAR TANDEM OFFICE
FOR CAMA CALLS

CHANGES

D. DESCRIPTION OF CIRCUIT CHANGES

D.1 The second line of the title is changed to delete the reference to the 356A office.

D.2 Connecting information, "to Rotary Out Trunk Switch Circuit," is added.

D.3 CAD4 and information in CAD1 pertaining to 356A offices are deleted, replaced by present CAD4, previously CAD5. Present CAD5 and CAD6 are added. CAD6 was previously part of CAD5.

D.4 Reference to "S" option (traffic usage recorder) is removed. The connection to the traffic register circuit (formerly "R" option) is now part of Fig. 1. The connection to the Traffic Usage Recorder Circuit will be made through the sleeve and connecting information is shown on the Traffic Usage Recorder Circuit.

D.5 Note 102 is revised to change the cable lengths to which the compensating resistances apply in order to better the use of the E23 Repeaters and pulse relays.

All other headings, under Changes no change.

1. PURPOSE OF CIRCUIT

1.1 This circuit provides an outgoing trunk from a step-by-step office to a Crossbar Tandem office arranged to receive CAMA calls. It is arranged to test busy after the calling party disconnects until the CAMA equipment has recorded the charge for the call. It is also arranged to release the switch train when the called subscriber disconnects, in case the calling subscriber fails to disconnect.

2. WORKING LIMITS

2.1 For working limits, see drawing.

3. FUNCTIONS

3.1 To ground the sleeve lead to the preceding circuits when this circuit is seized.

3.2 To close the loop to the Crossbar office when this circuit is seized.

3.3 To repeat pulses.

3.4 To release the switch train when the calling party disconnects first, and then test busy until the circuit at the crossbar office restores to normal.

3.5 To release the switch train when the called party disconnects first, in case the calling party fails to disconnect.

3.6 To test busy in case the battery supply to this circuit fails.

3.7 To test busy when battery and ground are reversed at the crossbar office.

4. CONNECTING CIRCUITS

When this circuit is listed on a keysheet the connecting information thereon is to be followed.

4.1 Traffic Register Circuit SD-30896-01.*

4.2 Rotary Out Trunk Switch Circuit SD-30868-01.

4.3 Selector Bank Multiple Circuit SD-32123-01.

4.4 Incoming Trunk at Crossbar Tandem Office SD-27010-01.

*Typical Circuit

DESCRIPTION OF OPERATION

5. SEIZURE

5.1 When seized by a selector, relay A operates over the subscriber loop, operating B and in turn W. A closes the outgoing loop thru the winding of P to seize the circuit at the X-bar office, which reverses battery and ground operating P, P1 and in turn P2 which latter relay locks to B and W in parallel. B closes a circuit for later operation of C during pulsing, and grounds the incoming sleeve to hold the preceding circuits. B and P2 opens a lead to the Traffic Register Circuit. W opens the circuit to the secondary winding of P.

6. PULSING

A follows the subscriber pulsing operating C on the first open. C holds

over pulsing, opening the repeating coil windings, and connecting battery to the ring and ground to the tip, to meet ground and battery, respectively at the distant office. C also holds P1 operated. A opens and closes the loop for pulsing. C releases shortly after the last pulse.

If the call is abandoned at this stage, or before dialing, A releases, releasing P and opening the circuit to the X-bar office. A also operates C, and releases B, which is slow to release. C holds P1. When B releases, it removes ground from the sleeve, and releases C and W, but usually W releases before C. W released again connects ground to the sleeve. With B and W released, P reoperates over the loop, unless the X-bar circuit has reversed battery and ground. P holds or reoperates P1. (P2 will not release if P1 should release momentarily in those cases where C might release before W.) When the X-bar circuit restores to normal it reverses battery and ground, releasing P, and in turn P1 and P2. P2 removes ground from the sleeve.

7. DISCONNECT

7.1 Calling Subscriber Disconnects First

The action is as described for an abandoned call, except that reversal from the X-bar office is delayed until the equipment in the X-bar office has completed charging for the call.

7.2 X-bar Subscriber Disconnects First

If the calling subscriber disconnects before charging is completed, the action is as in 7.1. If charging is completed before the calling subscriber disconnects, battery and ground from the X-bar office are re-

versed, releasing P, and in turn P1, but P2 remains locked to B and W in parallel. P1 released releases B which opens the sleeve, releasing the switch train, and also releasing slow to release relay W.

W and B released, unlock P2, restoring this circuit to normal, thus this action described prevents a calling subscriber from holding this circuit out of service after the called subscriber disconnects.

8. FUSE FAILURE MADE BUSY RELAY

When Fig. 2 is provided failure of the battery supply to this circuit releases relay MB, grounding the sleeve, thus making the circuit busy, and removing ground from lead "BR" to the all trunks busy traffic register.

9. TAKING EQUIPMENT OUT OF SERVICE

This circuit may be made busy (a) by inserting a plug in jack T, or (b) from the X-bar office, by reversing battery and ground thus operating P, and in turn P1 and P2. P2 operated grounds the sleeve.

10. TEST JACKS

Test Jack T, provides for making operating tests of this circuit with a hand test set or the trunk test circuit. When a plug is inserted in this jack, lead "BR" to the all trunks busy register circuit is opened.

Jack TT provides for testing relay P, and for opening the circuit to the X-bar office to prevent calling in an operator when testing or readjusting the A relay.

BELL TELEPHONE LABORATORIES, INC.

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