

STEP BY STEP SYSTEMS
NO. 1, 350A, 355A, 360A OR 35-E-97
LINE OR TRUNK FINDER CIRCUIT
22 POINT

CHANGES

D. DESCRIPTION OF CIRCUIT CHANGES

D.1 Lead "R" in Fig. 4 rated Mfr. Disc.
and Lead "W" added.

All other headings under Changes, no change.

BELL TELEPHONE LABORATORIES, INCORPORATED

DEPT. 2336-AH-RCD

CIRCUIT DESCRIPTION

CD-31793-01
Issue 7-D
Appendix 3-D
Dwg. Issue 15-D

STEP BY STEP SYSTEMS
NO. 1, 350A, 355A, 360A OR 35-E-97
LINE OR TRUNK FINDER CIRCUIT
22 POINT

CHANGES

B. CHANGES IN APPARATUS

B.1	Superseded	Superseded By
	R453 Relay (J)	U696 Relay
	R1851 Relay (K)	U544 Relay
	"E" option	"D" option

D. DESCRIPTION OF CIRCUIT CHANGES

D.1 Added Note 105 to reflect above changes
in apparatus.

All other headings, no change.

BELL TELEPHONE LABORATORIES, INCORPORATED

DEPT. 2315-AH-RCD-PA

STEP BY STEP SYSTEMS
NO. 1, 350A, 355A, 360A OR 35-E-97
LINE OR TRUNK FINDER CIRCUIT
22 POINT

CHANGES

D. DESCRIPTION OF CIRCUIT CHANGES

D.1 Equipment Note 208 added.

D.2 On Figs. 2 and 4 references to Note 208 were added.

D.3 The connecting information to the "Switch Trouble Alarm Circuit" and the "Miscellaneous Alarm Circuit" were rated "Mfr. Disc." and "A&M Only" (for 360A) respectively for the "CB" lead in Fig. 1.

D.4 Cross connection Figs. 55, 56 and 57 were revised.

All other headings, no Change.

BELL TELEPHONE LABORATORIES, INCORPORATED

DEPT. 2315-AH-RCD-NP

CIRCUIT DESCRIPTION
SWITCHING SYSTEMS DEVELOPMENT DEPARTMENT

GD-31793-01
Issue 7-D
Appendix 1-B
Dwg. Issue 13-B

STEP BY STEP SYSTEMS
NO. 1, 350A, 355A, 360A OR 35-E-97
LINE OR TRUNK FINDER CIRCUIT
22 POINT

CHANGES

D. DESCRIPTION OF CIRCUIT CHANGES

- D.1 Lead designation D changed to B on Fig. 4.
D.2 CAD Fig. 5A rated Mfr. Disc.

D.3 Multiplying information on CB lead of Fig. 1 and Figs. 55, 56, 57, 58, and 61 have been revised and note 207 added.

D.4 Figs. 2 and A changed to read "one per unit" instead of "one per bay."

All other headings, no change.

BELL TELEPHONE LABORATORIES, INCORPORATED

DEPT. 2315-AH-RCD-JE

STEP BY STEP SYSTEMS
NO. 1, 350A, 355A, 360A OR 35-E-97
LINE OR TRUNK FINDER CIRCUIT
22 POINT

CHANGES

A. CHANGED AND ADDED FUNCTIONS

A.1 This circuit is changed to provide a two alarm arrangement so that calls blocked due to equipment failure will operate a major alarm and calls blocked due to all finders busy will operate a minor alarm.

B. CHANGES IN APPARATUS

B.1 Added

W-1068 (FB) in Fig. 4
Y-260 (OB) in Fig. 4
2Y - lamp (AFB) in Fig. 4
2Y - lamp (CBLK) in Fig. 2
18AC - resistance (AFB) in Fig. 4
18AC - resistance (CB) in Fig. 2

D. DESCRIPTION OF CIRCUIT CHANGES

D.1 Fig. 2 is changed to add or designate G, H, J, and F options to provide a major alarm for calls blocked due to equipment failure.

D.2 Fig. 4 is added to provide a minor alarm for calls blocked due to all finders busy.

All other headings under Changes, no change.

1. PURPOSE OF CIRCUIT

1.1 This circuit is for use in connecting any one of 22 trunks or lines through which calls have been originated to an associated trunk or selector circuit.

2. WORKING LIMITS

2.1 None.

3. FUNCTIONS

3.1 To search for a battery condition on the sleeve lead when ground is received on the "G" lead.

3.2 To cut through the calling line or trunk circuit to the associated selector or trunk circuit when the battery condition on the sleeve is found.

3.3 To hold from ground on the sleeve lead until disconnect.

3.4 To advance the "G" lead to a succeeding finder when this finder is in use or when the associated selector or trunk circuit is made busy.

3.5 To operate a traffic register when the "G" lead is grounded with all finders busy.

3.6 To give a major alarm if a finder has not found the calling terminal within a predetermined time except when all finders are busy.

3.7 To give a minor alarm if a finder has not found the calling terminal within a predetermined time when all finders are busy.

3.8 To cause the associated prepay coin trunk to cancel the "coin test" when the line found is equipped with a dial long line circuit.

4. CONNECTING CIRCUITS

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

4.1 Subscribers Line Circuit - SD-32133-01*

4.2 Trunk Circuit - SD-31592-02*

4.3 Selector Circuit - SD-30200-01*

4.4 Traffic Register Circuit - SD-30896-01, SD-31265-01, SD-31976-01

4.5 Switch Trouble Alarm Circuit - SD-31514-01, SD-32239-01

4.6 Miscellaneous Alarm Circuit - SD-31980-01, SD-32192-01 or SD-31209-01

4.7 Miscellaneous Alarm Circuit Registers - SD-31976-01

4.8 Aisle Pilot Circuit - SD-31970-01

4.9 Power Shelf Term Block - H-62709

*Typical Circuit

DESCRIPTION OF OPERATION

5. SEIZURE AND CUT THROUGH

When ground is received on the "G" lead the (A) relay operates connecting ground through the (C) relay winding to the sleeve brush, connecting ground to the sleeve of the associated selector or trunk circuit, disconnecting the (D) relay from this sleeve, connecting ground to the (A) selector and connecting ground to the "CB" lead to the switch trouble alarm circuit, to the miscellaneous alarm circuit or to Fig. 2. The ground supplied to the (A) selector causes it to step the brushes under self-interruption. When the brushes have been advanced to the sleeve to which battery is connected in the line or trunk circuit, the (C) relay operates, removing the ground to prevent further advancing of the brushes and supplying ground through the (P) winding of the (F) relay causing it to operate in parallel with the (C) relay. The (F) relay operated locks on its secondary winding to ground on the sleeve lead from the associated selector or connector circuit, closes through the "T", "R" and "A" leads and operates the (D) relay. The (D) relay operated closes through the sleeve lead and opens the circuit to the slow-release (A) relay. The (A) relay released connects the "G" lead through the succeeding finder circuit or if this is the last finder circuit to the traffic register circuit or to Fig. 4. Before the (A) relay releases ground will be supplied on the sleeve lead either from the associated selector circuit or trunk circuit or from the trunk circuit through which this call was originated. This ground short-circuits the (C) relay and the primary winding of the (F) relay. The (F) relay, however, remains operated on its secondary winding to this ground. The (C) relay releases but performs no useful function at this time. The (A) relay released also disconnects the (C) relay from the sleeve and removes ground from the "CB" lead. The circuit is now in the cut-through condition. When the brushes stop on terminals connected to a coin line with dial long line circuit, arc No. 1 opens the circuit between leads "E" and "F" and closes lead "F" to arc No. 2. Operation of (F) relay closes lead "F" to lead "A".

6. DISCONNECT

Upon disconnect ground is removed from the sleeve lead releasing the (D) and (F) relays restoring the circuit to normal.

7. ASSOCIATED SELECTOR OR TRUNK CIRCUIT BUSY

If the associated selector or trunk circuit is busy ground is received on the sleeve lead operating the (D) relay which causes the "G" lead to be connected through

to the next finder circuit and the (A) relay to be disconnected from the "G" lead in this circuit. Thus, when a call is originated this finder will not be used.

8. ALL TRUNKS BUSY

If a call is originated by a line or trunk circuit during the time that all finders are busy, ground on the "G" lead passes through the front contact of all operated (D) relays to Fig. 4 or to a traffic register in the traffic register circuit thus recording an overflow condition.

9. CALL BLOCKED ALARM

9.1 Figs. 2 and 3

If when ground is received on the "G" lead a finder continues to hunt for the sleeve terminal with battery connected to it but fails to find it or to cut in on that terminal, ground will be continued on the "CB" lead and after a delayed interval an alarm will be given directing the attention of a maintenance man to this condition. Relay (CB) will operate when the "CB" lead is grounded lighting the lamp (CB) in No. 355A and 35-E-97 offices, grounding lead "SL" to the alarm Control Circuit in 355A, which after a short interval will cause an alarm and connect ground to lead "PL" to light the aisle pilot lamp when provided. In the No. 1 or 350A office, with Fig. 3, ground on lead "B" closes a circuit to operate relay (J) from battery at the common timing circuit over lead PUL. After an interval, the common timing circuit applies ground to lead "A1" which operates relay (K). Relay (K) operated, locks to ground on lead "B", operates audio and visual alarms as well as aisle and pilot lamps, and connects ground to lead "A" at the end of the delay period to light lamp (CB). In the 360 offices ground over lead "CB" operates a relay in the Misc. Alarm Circuit to give a delayed alarm. In the 35-E-97 office, ground over lead "Emergency Alarm" causes a delayed alarm in the 35-E-97 Alarm circuit.

9.2 Fig. 4 No. 1 or 350A C.D.O. ("G" Option)

Ground applied to lead "G" operates the overflow busy relay (OB). (OB) relay operated, applies ground to the "OF" lead to operate a traffic register and connects ground to the secondary winding of relay (FB). When battery is applied to lead "PUL" by the common timing circuit relay (FB) operates to its first step, that is, it operates far enough to close only contacts 6 and 7 top and 4 and 5 bottom. Battery through 4 and 5 bottom holds the (FB) relay operated on its first step until ground is applied to lead "A1" which fully

operates the relay. Relay (FB) fully operated, operates the audio and visual alarms, lights lamp (AFB), and locks operated to ground from relay (OB) until a finder becomes available removing ground from lead "G", thereby releasing relay (OB). If a finder becomes available before ground is applied to lead "A1" by the common timing circuit, relay (OB) releases, releasing relay (FB) and no alarm is operated.

9.3 Fig. 4 No. 355A C.D.O. ("J" Option)
or 35-E-97 ("H" Option)

Relay (OB) operating, lights lamp (AFB), applies ground to the "OF" lead to

operate a traffic register, and to connect lead "PL" to lead "PL1" or "PL" and applies ground through resistance (AFB) to operate a minor alarm.

10. USE AS LINE FINDER IN NO. 355A OFFICE

When used as a line finder in a No. 355A office, the same line circuit is used as for No. 1 or 350A offices. This circuit does not provide for line lock-out on permanent signals.

BELL TELEPHONE LABORATORIES, INCORPORATED

DEPT. 2315-ASD-RCQ-D3