

5

STEP-BY-STEP SYSTEMS
NO. 1 OR 350A
SWITCH TROUBLE ALARM CIRCUIT
SELECTOR SHELF CIRCUITS
NO. 355A
MISCELLANEOUS ALARM CIRCUIT
SELECTOR SHELF CIRCUITS

CHANGES

D. Description of Changes

- D.1 Precise tone designations are added to circuit notes 101, 103 and 108.
- D.2 Fig. 22 is rated MFR. DISC.
- D.3 Maintenance BSP's are added to the Supporting Information Table.
- D.4 Information is added to Note 104 to rate Fig. 22 MFR. DISC.
- D.5 Add note 110, M.D. Feature and Option table. Remove reference to fig. 22 from note 102 and add it to note 110.

F. Changes in CD Sections

F.1 Add to 4. Connecting Circuits

- (n) Receiver Off Hook Tone Connecting Circuit - SD-33034-01.

BELL TELEPHONE LABORATORIES, INCORPORATED

DEPT 5225-LCB
WECO DEPT 5152-RTO-WEA

CIRCUIT DESCRIPTION

CD-32043-01
ISSUE 10D
APPENDIX 1D
DWG ISSUE 28D

STEP BY STEP SYSTEMS
NO. 1 OR 350A
SWITCH TROUBLE ALARM CIRCUIT
SELECTOR SHELF CIRCUITS
NO. 355A
MISCELLANEOUS ALARM CIRCUIT
SELECTOR SHELF CIRCUIT

CHANGES

D. Description of Changes

D.1 In Note 102 the information, applying to the prevention of talk over busy feature in Fig. 22, option G, is revised to specify its use in No. 1 and 350A offices only.

BELL TELEPHONE LABORATORIES, INCORPORATED

DEPT 5641-WCB-RMW

STEP BY STEP SYSTEMS
NO. 1 OR 350A
SWITCH TROUBLE ALARM CIRCUIT
SELECTOR SHELF CIRCUITS
NO. 355A
MISCELLANEOUS ALARM CIRCUIT
SELECTOR SHELF CIRCUITS

| TABLE OF CONTENTS | PAGE | |
|---|------|--|
| <u>SECTION I - GENERAL DESCRIPTION</u> | 1 | |
| 1. <u>PURPOSE OF CIRCUIT</u> | 1 | circuit of the dial tone transformer (Fig. 2 when provided), (b) completes the circuit for lamp PS, and (c) connects ground to lead M1 or PA. In the No. 355 office, the PS lamp will light at once (except when lead PS connects to Fig. 3 or 14): |
| <u>SECTION II - DETAILED DESCRIPTION</u> | 1 | |
| 1. <u>PERMANENT SIGNALS</u> | 1 | 1.02 In the No. 1 and 350A office, ground connected to lead PA will cause the associated alarm relays in the connecting circuit to function after a definite time interval in order to sound the audible alarm and light the pilot lamps or aisle pilot lamps, and to return ground over lead PL to light the PS lamp. |
| 2. <u>RELEASE ALARMS</u> | 1 | |
| 3. <u>FUSE ALARMS</u> | 1 | |
| 4. <u>PERMANENT SIGNAL KEY</u> | 2 | |
| 5. <u>SECTIONALIZING KEYS</u> | 2 | 1.03 In the 355 office, ground connected to lead M1 with Fig. A or lead PS with Fig. E will also cause the alarms to be sounded and the pilot lamps or aisle pilots to be lighted after a definite time interval. When associated with intertoll through selectors, PS connects lead A to lead B and grounds lead D to start the 30-1pm interrupter of the Relay Interrupter Circuit. |
| 6. <u>NO SUCH NUMBER TONE - FIG. 16 (MFR DISC.)</u> | 2 | |
| 7. <u>120-IPM TONE TO BLOCKED CALLS - FIG. 22 (OPTIONS F AND G)</u> | 2 | |
| <u>SECTION III - REFERENCE DATA</u> | 2 | |
| 1. <u>WORKING LIMITS</u> | 2 | 2. <u>RELEASE ALARMS</u> |
| 2. <u>FUNCTIONAL DESIGNATIONS</u> | 2 | 2.01 When the release magnet of a selector is operated, ground is connected through the release magnet to lead RLS of Fig. 4 operating relay RLS. Where traffic registers other than the 14E are provided, this relay locks over its secondary winding until the traffic register has operated. It also connects ground through the RLS lamp in the 355 office to the RLS lead to the miscellaneous alarm circuit causing the latter to sound an audible alarm and light the aisle pilot lamps when provided after a predetermined interval. The RLS lamp will light at once except in offices without aisle pilots, in which case, it will light after a delay interval. In the No. 1 and 350 offices, the operation of relay RLS connects ground over lead RA to the alarm frame circuit relay which, after a predetermined interval, will operate to sound the audible alarms and light the pilot lamps or aisle pilots and return ground over lead RL to light the RLS lamp. |
| 3. <u>FUNCTIONS</u> | 2 | |
| 4. <u>CONNECTING CIRCUITS</u> | 2 | |
| <u>SECTION IV - REASONS FOR REISSUE</u> | 3 | |
| <u>SECTION I - GENERAL DESCRIPTION</u> | | |
| 1. <u>PURPOSE OF CIRCUIT</u> | | |
| 1.01 This circuit is used to indicate alarms on selector shelves and to provide ringing and tone supply. | | |
| <u>SECTION II - DETAILED DESCRIPTION</u> | | |
| 1. <u>PERMANENT SIGNALS</u> | | |
| 1.01 When a selector circuit is connected to a calling subscriber line, ground through the winding of the B relay of the selector is connected to the PERM SIG lead of Fig. 1 and operates relay PS. When a trunk associated with a toll or intertoll selector is seized, lead PS of Fig. 7 is grounded which also operates PS of Fig. 1. PS operated (a) completes the primary | | 3. <u>FUSE ALARMS</u> |
| | | 3.01 When a battery fuse blows, battery is connected through lamp FA to the associated relay circuit which will sound |

the audible alarm and light the pilot lamps or aisle pilots immediately.

3.02 When a ringing fuse blows, the associated 0.180-amp battery fuse also blows and thus gives an alarm as described in 3.01.

4. PERMANENT SIGNAL KEY

4.01 In 355A offices where some of the lines are equipped with lockout relays, the PS leads of Fig. 1 are connected to Fig. 3 or 14. In this case the shelf PS lamps do not light except when the key of Fig. 3 or 14 is operated, although the other alarm features function in the usual manner.

5. SECTIONALIZING KEYS

5.01 The keys in Fig. 8 to 13, 15, and 17 are provided to assist in locating trouble grounds on the busy-tone, busy-flash, and ringing leads. When trouble is indicated, the keys in these leads on the various shelves are operated one at a time until the trouble indication disappears. This indicates the shelf on which the trouble exists; whenever one of these keys is operated, the guard lamp of Fig. 20 will light.

5.02 Fig. 17 provides 30 ipm for inter-toll through selectors as a NC (no circuit) indication.

6. NO SUCH NUMBER TONE - FIG. 16 (MFR DISC.)

6.01 When ground through a 4000-ohm resistor is applied to the no such number tone lead by a selector, relay T operates. The operation of relay T grounds the A lead to the no such number tone generator and connects leads C and D from that generator to winding 1-2 of inductor T. No such number tone is supplied to the selector over the no such number tone lead from the 3-4 winding of inductor T. Network T provides a low-impedance path to ground for the tone.

7. 120-IPM TONE TO BLOCKED CALLS - FIG. 22 (OPTIONS F AND G)

7.01 When ground through a 4000-ohm resistance is applied to the LT1 lead by the selector, relay T operates. The operation of T (with F option) connects 120-ipm tone over the LT1 lead to the selector.

7.02 In cases where it is necessary to prevent talk over busy tone (un-authorized conference calls), special tone is provided from a coordinating circuit, and option G is used. The operation is the same as in 7.01.

SECTION III - REFERENCE DATA

1. WORKING LIMITS

None.

2. FUNCTIONAL DESIGNATIONS

2.01 Functional designations are as described in Section II.

3. FUNCTIONS

3.01 To provide means of supplying dial tone and 60 and 120 ipm to selectors.

3.02 To provide means of supplying 30 ipm to through selectors.

3.03 To provide for giving an audible and visual alarm in case of a permanent signal condition on any of the selectors.

3.04 To provide for giving an audible and visual alarm in case of a stuck release magnet on any of the selectors.

3.05 To provide for the operation of traffic registers whenever a release magnet operates.

3.06 To provide for giving an alarm whenever a fuse blows.

3.07 In 355 offices where some subscriber lines are arranged for lockout, to provide for extinguishing the shelf lamps associated with the permanent signal alarm.

3.08 To provide for lighting a guard lamp on the shelf whenever a sectionalizing key is operated.

3.09 To provide 120-ipm tone for blocked calls on digit absorbing selectors that block without rotary hunting.

3.10 To provide a means of preventing unauthorized conference calls (talk over busy) on blocked calls.

4. CONNECTING CIRCUITS

(a) Local, Digit Absorbing, Toll, Toll Transmission, and Intertoll Selectors, Intertoll Through Selectors, and Operators Incoming and Intermediate Selectors - SD-30200-01, SD-32183-01, SD-31744-01, SD-31522-01, SD-64470-01, SD-55242-01, and SD-30972-01 (typical).

(b) Switch Trouble Alarm Circuit for Selectors - SD-32044-01.

(c) Miscellaneous Alarm Circuit - aisle pilots - SD-31970-01.

(d) Miscellaneous Alarm Circuit - Alarm Control - SD-32192-01 (typical).

(e) Power Ringing Circuit - SD-80885-01 (typical).

(f) Switch Trouble Alarm Circuit for Connectors - SD-32046-01.

- (g) Switch Trouble Alarm Circuit for Selectors - SD-31515-01 (typical).
- (h) 60- and 120-IPM Interrupter Circuit - SD-31606-01 (typical).
- (i) Miscellaneous Alarm Circuit (Registers) - SD-31976-01.
- (j) 30-, 60-, and 120-IPM Interrupter Transfer and Distributing Circuit - SD-95078-01 (typical).
- (k) Relay Interrupter Circuit - SD-31868-01.
- (l) Miscellaneous and Tone Alarm Circuit - SD-31521-01.
- (m) Power Systems - Signaling Circuit - Dial Tone Supply for TOUCH-TONE - 807D Tone Power Plant - SD-81681-01.

SECTION IV - REASONS FOR REISSUE

B. Changes in Apparatus

B.1 ADDED

- 1 - 4 mf (A)
Capacitor (G Option) Fig. 22

D. Description of Changes

- D.1 Options G and F are added in Fig. 22. Prior to issue 27D, option F was part of the circuit.
- D.2 Reference to options G and F is added to the Options Used Table and Notes 102 and 104.
- D.3 Options J and H inadvertently left off on previous issue are added to Options Used Table.
- D.4 Fig. 16 is rated Mfr Disc. on this issue.
- D.5 Note 210 is rated Mfr Disc. and Note 215 is added to conform to D.4.
- D.6 Note 211 rated Mfr Disc. to conform to rating of Fig. 23 and 24 rated Mfr Disc. on previous issue.
- D.7 Fig. 59 and 60 rated Mfr Disc. to agree with rating of Fig. 23 and 24.
- D.8 Fig. 51, 52, and 53 wiring and cabling for No Such Number Tone rated Mfr Disc. to agree with rating of Fig. 16.

BELL TELEPHONE LABORATORIES, INCORPORATED

DEPT 5641-WCB-RMW