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STEP-BY-STEP SYSTEMS
NO.1, 350A, 355A OR 35E97
SWITCH TROUBLE ALARM CIRCUIT
FOR LINE FINDERS, TRUNK FINDERS
OR PERMANENT SIGNAL FINDERS

CHANGES

B. Changes In Apparatus

B.01	Superseded	Superseded By
	5-Amp Fuse, Option R, App Fig. 1, 2, 3, and 4 or 5	3-Amp Fuse, Option Q, App Fig. 1, 2, 3, and 4 or 5

D. Description of Changes

D.01 Because defective coils in line finder or trunk finder switches could result in damage to relay R in this circuit, the 5-ampere fuse serving the finder release magnets is replaced by a 3-ampere fuse to eliminate the hazard. Circuit Notes 101 and 105 are changed and Note 107 is added to cover this improvement.

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DEPT 55212-NAR

WE DEPT 62810-WCR-JCR-LEV

STEP-BY-STEP SYSTEMS
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SWITCH TROUBLE ALARM CIRCUIT
FOR LINE FINDERS, TRUNK FINDERS
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CHANGES

D. Description of Changes

D.01 Reference to CSACS interconnect circuit for common systems is changed in Fig. 1 to E2A SAC remote application schematic or to E2A CDO satellite circuit and in Fig. 3 to E2A SAC remote application schematic.

D.02 In Note 106, reference to CSACS is changed to ASC systems.

D.03 Diodes 446F are changed to 533K on a line-out basis.

F. Changes in CD Sections

F.01 In SECTION II, change all references of CSACS to ASC systems.

F.02 In SECTION III, under 3. FUNCTIONS, add the following:

3.06 To send indications to ASC systems for call blocked and release alarm in No. 1 or 350A offices where a similar connection is not obtained from the pilot lamp circuit, option S.

F.03 In SECTION III, under 4. CONNECTING CIRCUITS, change (p) of appendix 2B to read as follows:

(p) E2A SAC Remote Application Schematic - SD-1C543-01.

F.04 In SECTION III, under 4. CONNECTING CIRCUITS, add the following:

(q) E2A CDO Satellite Circuit - SD-2P050-01.

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STEP-BY-STEP SYSTEMS NO. 1, 350A, 355A OR 35E97 SWITCH TROUBLE ALARM CIRCUIT FOR LINE FINDERS OR TRUNK FINDERS OR PERMANENT SIGNAL FINDERS

CHANGES

A. Changed and Added Functions

A.1 This circuit has been modified to send CSACS indications when used in an office containing Audible and Visual Alarm Circuit.

B. Changes in Apparatus

B.1 Added

1 - 446F diode (CB) - Fig. 1, Option S
1 - 446F diode (RM) - Fig. 3, Option S

D. Description of Changes

D.1 Option S is added and rated A&M only in Figs. 1 and 3. This option allows connection to the CSAC System in offices equipped with the Audible and Visual Alarm Circuit.

D.2 References to option S are added to Note 105 and the Options Used Index. New note 106 is added.

D.3 Changed CADS 1 & 2 to reflect the above changes.

F. Changes in CD Sections

F.1 Add the following to Section II, paragraph 1.01:

... CB operated also sends a CSACS indication (Option S) when the C BLK lamp operates.

F.2 Add the following to Section II, paragraph 1.02:

... Ground from the R relay also sends a CSACS indication (Option S).

F.3 Add to Connecting Circuits:

(P) - CSACS interconnect Circuit for Common Systems - SD-1P031-01.

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DEPT 5245-LCB
WECO DEPT 5152-JMS-WEA

STEP-BY-STEP-SYSTEMS
NO. 1, 350A, 355A OR 35E97
SWITCH TROUBLE ALARM CIRCUIT
FOR LINE FINDERS, TRUNK FINDERS
OR PERMANENT SIGNAL FINDERS

CHANGES

D. Description of Changes

D.1 Change circuit note 102 to remove reference to Figs. 1, 2, 3, 4, 5, 6 and 7.

D.2 Change circuit note 103 to remove reference to Figs. 1, 2, 3, 4, 5, 6 and 7.

D.3 Rerate Figs. 1, 2, 3, 4, 5, 6 and 7 to Mfr. Disc.

D.4 Change 2Y Lamps in Figs. 2, 4, 6 and 7 to M1 Lamps on a Line-Out basis.

D.5 Add circuit notes 104 and 105.

D.6 Change Figure 8, "FA" lead, to show reference to Switch Trouble Alarm Circuit.

F. Changes in Description of Operation

F.1 Under 4. CONNECTING CIRCUITS, add:

(p) Switch Trouble Alarm Circuit - SD-32239-02.

BELL TELEPHONE LABORATORIES, INCORPORATED

DEPT. 5245 - LCB
WECO DEPT. 5152-SJL-RAF-WEA

STEP BY STEP SYSTEMS NO. 1, 350A, 355A OR 35E97 SWITCH TROUBLE ALARM CIRCUIT FOR LINE FINDERS OR TRUNK FINDERS OR PERMANENT SIGNAL FINDERS

SECTION I - GENERAL DESCRIPTION

1. PURPOSE OF CIRCUIT

1.01 This circuit is used to indicate the alarms for line finders and trunk finders.

SECTION II - DETAILED DESCRIPTION

1. CALL BLOCKED ALARM CIRCUIT NO. 1 OR 350A OFFICES - FIG. 1, 2 AND 9

CALL BLOCKED WITH IDLE FINDERS, MAJOR ALARM

1.01 When the start lead of a finder is grounded, with idle finders in the group, ground is applied to lead CB operating relay CB. As soon as a finder finds the calling line, ground is removed from lead CB releasing relay CB and the circuit restores to normal. If the calling line is not found due to a trouble condition, relay CB remains operated connecting ground to the primary winding of the J relay and connecting the C BLK lamp in Fig. 2 to the contacts of the K relay. If the ground on the primary winding of the J relay continues until the common timing circuit connects battery to the PU1 lead, the J relay will operate. Relay J operated locks through its secondary winding to the CB relay and connects the winding of the K relay to the A1 lead of the timing circuit. If the J relay remains operated for a predetermined time, ground will be connected to the A1 lead by the common timing circuit operating the K relay. The K relay operated locks to the CB relay, releases the J relay, lights the C BLK lamp, lights the aisle pilot lamp associated with this particular aisle of frames and lights the alarm lamp in the floor alarm cabinet. It connects to the audible alarm through relays in series with the lamps in the pilot lamp circuit. This operates the major alarm. When the trouble is cleared, the CB relay releases in turn releasing the K relay which extinguishes the aisle pilot alarm lamps and retires the alarm. The CB relay is slow to release to prevent its release in case the subscriber dials before the trouble is cleared.

CALL BLOCKED DUE TO ALL FINDERS BUSY, MINOR ALARM

1.02 When the start lead of a finder is grounded and all finders in the group are busy, the ground is applied to the AFB lead causing the 2-step relay FB to operate to its first step when the common timing circuit applies battery to the PU1 lead. Relay FB operating to its first step locks on its secondary winding to ground on the AFB lead independent of the battery on the PU1 lead and connects battery through its primary winding to the common timing circuit on lead A1. If the call blocked condition persists after a definite interval, the common timing circuit will apply ground to lead A1 fully operating relay FB. Relay FB fully operated remains operated on its secondary winding independent of the ground on lead A1, lights the AFB lamp in Fig. 2, and causes the audible and visual alarm in pilot lamp circuits to function as a minor alarm.

2. CALL BLOCKED AND RELEASE ALARM CIRCUITS 355A or 35E97 OFFICE - Fig. 5 and 6

CALLS BLOCKED WITH IDLE FINDERS, MAJOR ALARM

2.01 When the start lead of a finder is grounded with idle finders in the group, ground is applied to lead CB operating relay CB which is slow to release to hold operated over pulsing if the subscriber dials. The operation of relay CB applies ground through the C BLK lamp in parallel with resistor CB to the CB lead in the 355A dial office or to the emergency alarm lead in the 35E97 office alarm circuit to bring in a major alarm indication in the associated office alarm circuit.

CALL BLOCKED WITH ALL FINDERS BUSY, MINOR ALARM

2.02 When the start lead of a finder is grounded and all finders are busy, ground is furnished from the finder circuit over lead AFB through lamp AFB in parallel with resistor AFB to the RLS lead in the 355A office or to the no danger alarm lead in the 35E97 office to provide a minor alarm indication in the associated office alarm circuits.

RELEASE ALARM, MINOR ALARM

2.03 When the release magnet of any finder in the group is energized, relay R operates connecting ground to lead R to score a register when required. Relay R operates on its primary winding, the secondary and tertiary windings connected in parallel pro-

vide a slow release feature which allows sufficient time to satisfactorily operate the register. Relay R operating also connects ground through RLS lamp in parallel with resistor RLS to the RLS lead in the 355A office or to the no danger alarm lead in the 35E97 office to provide a minor alarm indication in the associated office alarm circuits.

3. RELEASE MAGNET ALARM NO. 1 OR 350A OFFICE - FIG. 3, 4 AND 9

3.01 If the release magnet of any finder remains energized, relay R, which operates in series with the release magnet, will remain operated connecting ground to the primary winding of the J relay and connecting the RLS lamp in Fig. 4 to contacts of the K relay. If the ground on the primary winding of relay J continues until the common timing circuit connects battery to the PU1 lead, the J relay will operate. Relay J operated locks through its secondary winding of the R relay and connects the winding of the K relay to the A1 lead of the common timing circuit. If the J relay remains operated for a predetermined time, ground will be connected to the A1 lead by the common timing circuit operating the K relay. The K relay operated locks to the R relay, releases the J relay, lights the RLS lamp, lights the aisle pilot lamp associated with this particular aisle of frames and lights the alarm lamp in the floor alarm cabinet. It connects to the audible alarm through relays in series with the lamps in the pilot lamp circuit. This operates the major alarm. When the trouble is cleared, the R relay releases, in turn releasing the K relay which extinguishes the aisle pilot alarm lamps, and retires the alarm.

4. TROUBLE GROUND ON START OR CHAIN CIRCUIT - FIG. 9

4.01 Whenever there is a trouble ground on the start or chain circuit of the finder, the L1 relay operates in series with a frame lamp. The L1 relay operated lights the aisle pilot lamp associated with this particular aisle of frames and lights an alarm lamp in the floor alarm cabinet. When the trouble ground is removed, the L1 relay releases extinguishing the aisle pilot and alarm lamps.

5. FUSE ALARM - FIG. 7 AND 8

5.01 When a fuse on any of the fuse panels associated with the finder frames operates, battery is connected to the alarm bar of the fuse panel, lighting the FA lamp. The A resistor is connected in parallel with the FA lamp to insure an operating path for relays in associated figures or circuits in case the FA lamp is burned out. This applies battery to the alarm lead and operates an alarm in associated circuits if Fig. 8 is not furnished. If Fig. 8 is furnished the L relay operates, lights the aisle pilot lamp associated with this particular aisle of frames, and lights an alarm lamp in the floor alarm cabinet. When the operated fuse is replaced, the L relay releases extinguishing the aisle pilot and alarm lamps. Arrangement is provided so that a fuse alarm for other equipment in the same aisle will energize only one L relay to operate the alarm and light the aisle pilot lamp associated with that aisle.

SECTION III - REFERENCE DATA

1. WORKING LIMITS

1.01 The working limits are 45-52 volts.

2. FUNCTIONAL DESIGNATIONS

None.

3. FUNCTIONS

3.01 To provide a means for operating a traffic register when the release magnet of a line or trunk finder operates.

3.02 To send a major audible alarm and light the aisle pilot lamp, switch frame and alarm lamps after a predetermined time in case a finder fails to function when other finders in the same group are idle.

3.03 To send minor audible alarm and light the aisle pilot lamp, switch frame and alarm lamps after a predetermined time in case a finder fails to function when all finders in the same group are busy.

3.04 To sound an alarm and light the aisle pilot lamp, switch frame and alarm lamps in case the release magnet of a finder fails to release after a predetermined time.

3.05 To sound an audible alarm and light the aisle pilot lamp, switch frame and alarm lamps immediately in case of a trouble ground on a finder start lead.

4. CONNECTING CIRCUITS

(a) Finder Circuit - SD-33012-01, SD-33013-01, SD-33014-01 and SD-33015-01.

(b) Traffic Register Circuit - SD-30896-01.

(c) Common Timing Circuit - SD-31558-01.

(d) Audible and Visual Alarm Circuit - SD-96188-01.

(e) Switch Trouble Alarm Circuit for Connectors on PBX Trunk Shelves - SD-32046-01.

(f) 355A Dial Office Miscellaneous Alarm (Registers) - SD-31976-01.

(g) 355A Dial Office Miscellaneous Alarm (Alarm Control) - SD-32192-01.

(h) 35E97 Dial Office (Emergency Alarm).

(i) 35E97 Dial Office (No Danger Alarm).

(j) Switch Trouble Alarm Circuit for Selectors and Miscellaneous Frames - SD-32044-01.

(k) Switch Trouble Alarm Circuit for Repeaters - SD-32103-01.

(l) Permanent Signal Master Timing and Control Circuit - SD-33036-01.

(m) No. 355A Miscellaneous Alarm Circuit (Alarm Control) - SD-31980-01.

(n) No. 355A Miscellaneous Alarm Circuit (Aisle Pilots) - SD-31970-01.

(o) Group and Alarm Relay Circuit - SD-32194-01.

SECTION IV - REASONS FOR REISSUE

D. Description of Changes

D.1 A minor wiring modification was made in CAD5, TSA terminal 51 to eliminate a manufacturing problem.

D.2 The designation of a relay at terminals 51 and 11 on TSA was changed from CB to FB.

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DEPT 5823-WCB-MR