JAN 20 1959

PRINTED IN U.S.A.

AMERICAN TELEPHONE AND TELEGRAPH COMPANY

195 BROADWAY, NEW YORK 7

SD-31952-011-012 ISSUE 5D
CD 1 APP. 4D
RATING Mfr. Disc.
SYSTEM Step-By-Step
DATE September 30, 1958

DRAWING NOTICE

TITLE

Step-By-Step Systems - No. 1 Or 350A -
Selector Circuit - Arranged to Absorb First Digits - On Specified Levels And To Connect - To One Of Two Trunk Groups On A Level

DESCRIPTION

6.1 This circuit is being rated "Mfr. Disc." since it is expected that there will be no further demand for this Selector Circuit.

6.2 Current Drains are not affected.

6.3 Equipment information is covered by ED-31952-01, Iss. 6D.

6.4 Equipment Design Requirements are not affected.

No engineering letter will be issued.

STEP BY STEP SYSTEMS
NO. 1 OR 350A
SELECTOR CIRCUIT
ARRANGED TO ABSORB FIRST DIGITS ON SPECIFIED LEVELS AND TO CONNECT TO ONE OF TWO TRUNK GROUPS ON A LEVEL

CHANGES

D. DESCRIPTION OF CIRCUIT CHANGES

D.1 This drawing is being rated Mfr. Disc. since it is expleted that there will be no future demand for this circuit.

All other headings, no change.

BELL TELEPHONE LABORATORIES, INCORPORATED

DEPT. 2336-JPD-RCD-GF

STEP-BY-STEP SYSTEMS
NO. 1 OR 350A
SELECTOR CIRCUIT
ARRANGED TO ABSORB FIRST DIGITS ON SPECIFIED LEVELS AND TO CONNECT TO ONE OF TWO TRUNK GROUPS ON A LEVEL

CHANGES

C. CHANGES IN CIRCUIT REQUIREMENTS OTHER THAN THOSE APPLYING TO ADDED OR REMOVED APPARATUS

C.1 A non-operate requirement on which no contacts may break was added for relay (D) and the former non-operate requirement on which contacts 1-2 and 4-5 may break was changed to permit only springs 1-2 to break.

C.2 Test notes 9, pages 1, and 5, 6 and 7, page 2, were added.

D. DESCRIPTION OF CIRCUIT CHANGES

D.1 "N" wiring was added to interchange the leads to springs 1-2-3, 4-5-6 and 10-11-12 of relay (D). The original wiring arrangement for these springs was on this issue designated "Q".

D.2 Note 105 and the last line of note 104 were added.

D.3 The relay adjustment and wiring change are to reduce the unguarded interval of selected trunks by reducing the transfer time of the relay spring carrying the circuit of the sleeve wiper. The adjustment change alone may be made, or the adjustment change and the wiring change, but not the wiring change alone.

D.4 The Switch Trouble Alarm Circuit was added as a connecting circuit for the low tone 1 (busy) lead to permit use of this switch with the new universal selector shelf.

D.5 The Table of options used was added.

All other headings, No change.

BELL TELEPHONE LABORATORIES, INC.

DEPT. 3350 OCH-RSW

STEP BY STEP SYSTEMS
NO. 1 OR 350A
SELECTOR CIRCUIT
ARRANGED TO ABSORB FIRST DIGITS ON SPECIFIED LEVELS AND TO CONNECT TO ONE OF TWO TRUNK GROUPS ON A LEVEL

CHANGES

B. CHANGES IN APPARATUS

B.1	Superseded	Superseded by
	Two 1 M.F. Cond. (C) & (C1) & 81B Res. "S" Option	Network (C) "R" Option

D. DESCRIPTION OF CIRCUIT CHANGES

D.1 Separate condensers and resistors formerly used were superseded by the condenser-resistor networks indicated in B above to provide a cheaper and more convenient apparatus unit.

All other headings, No change.

BELL TELEPHONE LABORATORIES, INC.

DEPT. 3350

OCH)
RSW)GG

STEP-BY-STEP SYSTEM
NO. 1 OR 350A
SELECTOR CIRCUIT
ARRANGED TO ABSORB FIRST DIGITS
ON SPECIFIED LEVELS AND TO CONNECT
TO ONE OF TWO TRUNK GROUPS ON A LEVEL

1. PURPOSE OF CIRCUIT

1.1 This circuit is for use as a local or incoming selector were initial digit absorbing is required on any specified levels and two trunk groups are located on a level, the trunk group selected depending upon whether or not the initial digit is absorbed.

2. WORKING LIMITS

2.1

	Subscriber Pulsing
Max. Ext. Ckt. Loop	1,000 ohms
Min. Ins. Res.	15,000 ohms

3. FUNCTIONS

3.01 To ground the sleeve lead to the preceding circuit when the selector is seized.

3.02 To supply dial tone to the calling party when required.

3.03 To step the switch vertically under control of the dial pulses.

3.04 To release from any level arranged for absorbing on the initial digit.

3.05 To cut in and trunk hunt over one group of trunks on the first digit on any level not arranged for absorbing the initial digit.

3.06 To cut in and trunk hunt over a second group of trunks on all levels when the second digit is dialed after the initial digit has been absorbed.

3.07 To remove dial tone after the switch releases when the initial digit is absorbed.

3.08 To select an idle trunk in one of two groups on a level automatically.

3.09 To connect an "all trunks busy" tone to the calling party when all the trunks in the group dialed are busy.

3.10 To extend the tip, ring and sleeve leads to the idle trunk selected.

3.11 To restore to normal upon disconnection by the calling party.

3.12 To operate a peg count register whenever an idle trunk is selected.

4. CONNECTING CIRCUITS

4.01 Selector circuit.

4.02 Line finder circuit.

4.03 Connector circuit.

4.04 Trunk circuit.

4.05 Repeater circuit.

4.06 Miscellaneous alarm circuit.

4.07 Switch trouble alarm circuit.

4.08 Miscellaneous tone and tone alarm circuit.

4.09 Tone supply circuit.

4.10 Traffic register circuit.

DESCRIPTION OF OPERATION

5. SEIZURE

When this circuit is seized relay (A) operates over the line or trunk loop operating relay (B). Relay (B) connects ground to lead "S" to hold the preceding circuits, closes a path for operating relay (C) and the vertical magnet and prepares a circuit for operating relay (F).

6. VERTICAL STEPPING

Relay (A) will release and reoperate in unison with the dial pulses but the slow releasing relay (B) will remain operated. Each time relay (A) releases, ground from its back contact through a front contact of relay (B) operates the vertical magnet in series with relay (C) causing the switch to step in a vertical direction to the level dialed. Relay (C) operates relay (E) through the vertical off-normal springs which operate as soon as the switch takes the first vertical step. Relay (C) being slow to release remains operated during dialing.

7. DIGIT ABSORBING

At all levels on which it is required to absorb the initial digit the "L" normal post springs are adjusted to operate.

When the switch reaches the level dialed and the (C) relay releases, ground is connected by the (C) relay contacts through the "L" normal post springs and V.O.N. springs to the release magnet. The release magnet operates, locks through its own and V.O.N. contacts. The operation of the release magnet restores the switch shaft to normal and the release magnet contact springs open the rotary magnet operating circuit and close a circuit which operates relay (F). When the switch shaft has restored to normal the operation of the V.O.N. spring allows the release of the release magnet and relay (E). Relay (F) operated locks under the joint control of relay (B) operated and the "R" normal post springs, prepares the operating circuit for the rotary magnet, substitutes ground for dial tone and transfers the rotary hunting path from sleeve wiper "S1" to sleeve wiper "S". When the next digit is dialed the switch steps vertically as previously described. When the level dialed is reached the switch cuts in and trunk hunts since the rotary circuit is completed through contacts on relay (F) when relay (C) releases regardless of the position of the "L" normal post springs.

8. TRUNK HUNTING WHEN FIRST DIGIT IS DIALED

On levels requiring trunk hunting on the first digit the "L" normal post springs shall not be operated. When the (C) relay releases the rotary magnet is operated from a circuit through the "L" normal post springs and steps the wipers to the first bank terminals. The operation of the rotary magnet allows relay (E) to release which in turn allows the release of the rotary magnet. The "S1" wiper is now in contact with the first multiple bank terminal and if this is grounded because of a busy condition or because "Y" wiring is used relay (E) reoperates causing the rotary magnet to operate and step the wipers to the next terminal. This automatic stepping or trunk hunting will continue until an idle or nongrounded terminal is found.

9. TRUNK HUNTING ON SECOND DIGIT WHEN FIRST DIGIT HAS BEEN ABSORBED

When the (C) relay releases after the dialing of the second digit the trunk hunting operation is the same as that described under paragraph 8 except that the rotary magnet circuit is completed through the contacts of relay (F) and wiper "S" is used for hunting an idle trunk. The switch will trunk hunt on all levels regardless of the adjustment on the "L" normal post springs.

10. SEIZING IDLE TRUNK

When an idle terminal is found, relay (D) operates in series with relay (E) when the rotary magnet releases, since it is no longer short circuited by the ground through the "S" or "S1" wiper. Relay (E) does not operate due to the high resistance in series with it. Relay (D) disconnects the tip and ring leads from relay (A), cuts the tip, ring and sleeve through to the trunk beyond, opens the release magnet circuit and grounds the "M" lead to operate a peg count register. The release of relay (A) allows relay (B) to release. Relay (B) on releasing removes the ground from the "M" lead and prepares the release magnet circuit. Relay (D) is held by ground from the succeeding circuit and relay (F) is held from ground through the "R" normal post springs operated.

11. ALL TRUNKS BUSY CONDITION AND RELEASE PRIOR TO CUT THROUGH

When all of the trunks in a group are busy the switch wipers will pass off the bank terminals and operate the 11th rotary step springs. These springs will connect "all trunks busy" tone to the calling station and prevent the operation of relay (D) thus causing this circuit to remain held under control of relay (A). When the calling station disconnects, relay (A) releases releasing relay (B) and in turn energizing the release magnet and restoring the switch to normal. The switch will release in this manner on a disconnection at any time prior to the seizure of an idle trunk.

12. RELEASE AFTER CUT THROUGH

As mentioned in paragraph 10, relay (D) is held from the succeeding trunk after an idle trunk is seized. When the calling station disconnects under this condition ground is removed from the (D) relay winding by the trunk beyond, allowing it to release. The release of relay (D) energizes the release magnet and restores the switch to normal. When the switch reaches its normal rotary position the "R" normal post springs release permitting relay (F) if operated to release.

13. TEST JACK

By means of the test jack this switch can be made busy for test purposes or in case it is out of order. By plugging a test set into jack springs 1 and 2 the switch can be operated locally in the manner described above.

14. CONTACT PROTECTION

Condensers (C) and (C1) and the associated 200 ohm resistance are used to protect relay contacts against inductive surges from the windings of the vertical and rotary magnets.

BELL TELEPHONE LABORATORIES, INC.

DEPT. 3350

PWW)
RSW) EN