STEP BY STEP SYSTEMS NO. 1, 350A, 355A OR 356A TONE INTERRUPTER CIRCUIT FOR CLASS OF SERVICE TONE

CHANGES

D. DESCRIPTION OF CIRCUIT CHANGES

D.1 In Fig. 54, 48V. bat. lead on terminal strip punching 10T was formerly shown on punching 8T. The grd. lead on punching 10B was formerly shown on punching 10T. Punchings 8T and 10T are strapped together and shown as "W" option. Punchings 8T and 10B are strapped together and shown as "X" option. The B and G leads to punchings 10T and 10B were formerly run to punchings 8T and 10T. Leads from punchings 8T and 10T now shown connecting to the (B) relay were formerly shown connecting to the (L) resistance and (B) condenser respectively. The Note "Swbd. CA. or 20AM wire" was formerly tied to 1T, 2T, 3T, 4T and 8T.

D.2 Note 202 is added and referred to in Fig. 51.

D.3 Figs. 52 and 53 are rated "Mfr. Disc."

D.4 Figs. 55 and 56 are added.

All other headings, no change.

BELL TELEPHONE LABORATORIES, INC.

DEPT. 3310-MCK-RLL-VA

STEP BY STEP SYSTEMS NO. 1, 350A, 355A OR 356A TONE INTERRUPTER CIRCUIT FOR CLASS OF SERVICE TONE

CHANGES

D. DESCRIPTION OF CIRCUIT CHANGES

D.1 Reference to ED-31038-01 is added.

D.2 Prior to this issue terminal strips K2 and K3 were not shown in figure 54.

All other headings, no change.

BELL TELEPHONE LABORATORIES, INC.

DEPT. 3310-MHK-RLL-YP

STEP-BY-STEP SYSTEMS NO. 1, 350A, 355A OR 356A TONE INTERRUPTER CIRCUIT FOR CLASS OF SERVICE TONE

CHANGES

A. CHANGED AND ADDED FUNCTIONS

A.1 None.

B. CHANGES IN APPARATUS

B.1

Superseded	Superseded By
239GR Rel. "V" Option	280A Rel. "U" Option

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

C.1 None.

D. DESCRIPTION OF CIRCUIT CHANGES

D.1 Connecting information on "LT" lead is changed to read "To Misc. Alm. Ckt. (Alm. Control) in 355A Off. or to Alm. Ckt. in 356A Office".

D.2 Connecting information on "IT" lead is changed to read "To Trunk Ckts. in No. 1, 350A or 356A Off."

D.3 Title and note 103 are changed to add 356A.

D.4 Options used table is added.

D.5 "V" option Mfr. Disc. is added to (C) 239GR rel. and "U" option, 280A rel. is added.

D.6 "U" and "V" options added in note 102.

D.7 Battery symbol previously read 45-50 V.

D.8 Fig. 54 is added and note 201 is changed to add 356A.

E. CHANGES IN TRANSMISSION REQUIREMENTS

E.1 None.

4. CONNECTING CIRCUITS

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

4.1 Trunk Circuits - SD-31747-01* SD-32144-01

4.2 Miscellaneous Alarm Circuit (Key) - SD-31974-01.

4.3 Miscellaneous Alarm Circuit (Alm. Control) SD-31980-01

4.4 Alarm Circuit - SD-32145-01

4.5 Power Ringing Circuit - SD-80594-01*

4.6 Tone Supply - SD-80886-01

*Typical Circuits

All other headings, no change.

BELL TELEPHONE LABORATORIES, INC.

DEPT. 3320-LAH-RCD-XS

STEP-BY-STEP SYSTEMS
NO. 1, 350A OR 355A
TONE INTERRUPTER CIRCUIT
FOR CLASS OF SERVICE TONE

CHANGES

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

C.1 Test Note 3 formerly read "A negative sign (-) preceding a current value indicates that this current shall flow in a direction opposite to the direction of the circuit operating current."

C.2 "After Soak" column changed to "FS" (Full Soak) from the following values.

(A) 221GT from 18MA
"Z" (B) 221GN from 200MA
"Y" (B) 221EB from 200MA

D. DESCRIPTION OF CIRCUIT CHANGES

D.1 The title formerly was:-

STEP-BY-STEP SYSTEMS
NO. 350A OR 355A
TONE INTERRUPTER CIRCUIT
FOR CLASS OF SERVICE TONE

D.2 Notes 103 and 201 are revised to include the No. 1 office.

D.3 Leads "IT" and "LT" were formerly bracketed together and designated "To Misc. Alm. and Reg. Ckt. (Alm Control) in 355A office", the multipled "IT" lead was formerly designated "To Trunk Ckts. in 350A Off.", and the "LT2" lead was formerly designated "To Tone Supply in 350A Off."

D.4 Reference to Y option removed from Note 103.

D.5 Figs. 51 and 52 were changed and Fig. 53 was added.

4. CONNECTING CIRCUITS

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

4.1 Trunk Circuits - SD-31747-01*.

4.2 Miscellaneous Alarm Circuit (Key)- SD-31974-01.

4.3 Miscellaneous Alarm Circuit (Alm. Control) - SD-31980-01.

4.4 Power Ringing Circuit - SD-80594-03*.

4.5 Tone Supply - SD-80886-01.

*Typical Circuits

All other headings, no change.

BELL TELEPHONE LABORATORIES, INC.

DEPT. 3320-WHN-RCD-SP

STEP-BY-STEP SYSTEMS
NO. 350A OR 355A
TONE INTERRUPTER CIRCUIT
FOR CLASS OF SERVICE TONE

CHANGES

B. CHANGES IN APPARATUS

	Superseded	Superseded by
B.1	221GN (B) Relay	221EB (B) Relay

D. DESCRIPTION OF CIRCUIT CHANGES

D.1 "Y" and "Z" apparatus are shown.

D.2 Connections for use in 350A offices are added.

D.3 Fusing for "LT2" lead is shown in Note 101 and Note 101 is changed to tabular form.

D.4 Notes 102 and 103 are added.

D.5 "W" and "X" wiring are added.

D.6 The title was formerly:

STEP-BY-STEP SYSTEM
NO. 355A DIAL OFFICE
TONE INTERRUPTER CIRCUIT
FOR CLASS OF SERVICE TONE.

All other headings under "Changes", No Change.

1. PURPOSE OF CIRCUIT

1.1 This circuit is used to convert steady low tone into low tone interrupted approximately 10 times per second for use as a class of service signal on trunk circuits.

2. WORKING LIMITS

2.1 None.

3. FUNCTIONS

3.1 To provide interrupted low tone to the trunk circuits as long as a start signal is received from those trunks.

3.2 To connect ground to lead "MS" to the power ringing circuit to operate the ringing machine.

4. CONNECTING CIRCUITS

4.1 Trunk Circuits.

4.2 Miscellaneous Alarm Circuit.

4.3 Power Ringing Circuit.

4.4 Tone Supply.

DESCRIPTION OF OPERATION

5. When ground is connected to lead "IS" in an associated trunk circuit, relay (A) operates. Relay (A) operated, connects ground to lead "MS" to the power ringing circuit to operate the ringing machine, and causes the (C) relay to function as follows. The current through the primary winding of relay (C) tends to operate this relay. However, condenser (A) charges in series with the secondary winding, and since the currents in the two windings are opposing relay (C) is prevented from operating. When condenser (A) is almost fully charged the current flow in the secondary winding becomes small and the relay operates on its primary winding, operating relay (B).

Relay (B) operated, closes low tone from lead "LT" or "LT2" to lead "IT", this tone eventually reaching the trunk circuits, and reverses the potential on both windings of relay (C) and on condenser (A). Under this condition the current through the primary winding of relay (C) tends to release this relay. However, at the same time condenser (A) reverses its charge in series with the secondary winding and since the currents in the two windings are again opposing the (C) relay is prevented from moving to its back contact. When the charge on condenser (A) is almost fully reversed the flow of current in the secondary winding will be small and the (C) relay will move to its back contact under the influence of its primary winding.

This releases relay (B) which disconnects the low tone from lead "IT" and restores the original circuit condition to relay (C) and condenser (A). The cycle then repeats as long as relay (A) remains operated. Each closure of relay (B) sends an impulse of low tone to lead "IT". The constants of the circuit have been established so that the tone and open intervals are approximately .050 second

each. During the open interval the "IT" lead is connected to ground or battery potential so that no audible disturbances will pass back and forth between trunks using the tone on the "IT" lead.

When ground is removed from lead "IS" relay (A) releases, removing ground from the "MS" lead to the power ringing circuit and discontinuing the cycle of operations of relays (B) and (C).

BELL TELEPHONE LABORATORIES, INC.

DEPT. 3350
TLD
RSW } SZ

PM