CIRCUIT DESCRIPTION

CD-95524-01
ISSUE 5D
APPENDIX 2D
DWG ISSUE 7D

COMMON SYSTEMS
TELEPHONE, KEY AND LAMP CIRCUIT
FOR MANUAL OUTGOING, TRUNK TEST FRAME
SENDER MAKE BUSY FRAME OR
AUTOMATIC OUTGOING TOLL CONNECTING
TRUNK TEST FRAME
CROSSBAR NO. 1 OR 5, CROSSBAR TANDEM OR
TOLL SWITCHING SYSTEM NO. 4 OR 4A

CHANGES

D. Description of Changes

D.1 The circuit is changed to permit use of the dial for making Remote Office Test Line tests.

F. Changes in CD Sections

F.1 Under 4. CONNECTING CIRCUITS, add:

4.15 Test Termination Circuit, SD-96540-01

BELL TELEPHONE LABORATORIES, INCORPORATED

DEPT 2321-MEB-AOA-JC

COMMON SYSTEMS
TELEPHONE, KEY AND LAMP CIRCUIT
FOR MANUAL OUTGOING, TRUNK TEST FRAME
SENDER MAKE BUSY FRAME OR
AUTOMATIC OUTGOING TOLL CONNECTING
TRUNK TEST FRAME
CROSSBAR NO. 1 OR 5, CROSSBAR TANDEM OR
TOLL SWITCHING SYSTEM NO. 4 OR 4A

CHANGES

D. DESCRIPTION OF CIRCUIT CHANGES

D.1 As the T1, T2, T3, T4, R1 & R2 leads in Fig. 1 connect to the Manual Outgoing Trunk Test Ckt. SD-95476-01 only, they are put in a separate bracket and shown as such.

D.2 The Transmission Test Line Ckt. SD-98100-01 is now included in the group of ckts. connecting to the T, R, K & L or L1 leads in Fig. 2.

4. CONNECTING CIRCUITS

4.13 Transmission Test Line Ckt. - SD-98100-01.

4.14 Tie Line Circuit To Supv. - SD-21639-01.

All other headings, no change.

BELL TELEPHONE LABORATORIES, INCORPORATED

DEPT. 2324-JJC-AOA-UC

COMMON SYSTEMS
TELEPHONE, KEY AND LAMP CIRCUIT
FOR MANUAL OUTGOING, TRUNK TEST FRAME
SENDER MAKE BUSY FRAME OR
AUTOMATIC OUTGOING TOLL CONNECTING
TRUNK TEST FRAME
CROSSBAR NO. 1 OR 5, CROSSBAR TANDEM OR
TOLL SWITCHING SYSTEM NO. 4 OR 4A

CHANGES

B. CHANGES IN APPARATUS

B.1	Superseded	Superseded By
	5LB Dial	6E Dial

D. DESCRIPTION OF CIRCUIT CHANGES

D.1 The use of the 6E Dial is specified to replace the 5LB Dial which is rated Mfr. Disc.

D.2 The use of the C1LR key, option U is rated Mfr. Disc. since the C1KB key, option Q, should be furnished at all times.

D.3 Transmission Test Requirement Table has been changed to reflect limits when using the 181B coil.

All other headings under changes, no change.

1. PURPOSE OF CIRCUIT

1.1 This circuit provides a telephone, key and lamp circuit by means of which the test man at the manual outgoing trunk test frame, automatic outgoing toll connecting trunk test frame or at the sender make busy frame test circuit can communicate with various other points. It also enables the test man to talk or listen on connections set up through the outgoing trunk test frame to trunks or lines.

2. WORKING LIMITS

2.1 None.

3. FUNCTIONS

3.01 To provide means for connecting to various communicating circuits such as tie lines, trunks, local station lines, and local frame lines (Figs. 2 and 3), or by means of local cable to manual OGT test circuit, automatic OG toll connecting trunk test circuit, or sender make busy frame test circuit.

3.02 To provide for holding on trunk and tie lines, either on an individual key basis - Fig. 2 or on a common key basis Fig. 3.

3.03 To provide supervisory lamps associated with the above mentioned keys.

3.04 To provide means for manual ringing on the key connected circuits.

3.05 To provide means for dialing on key connected circuits and on the test trunk circuit.

3.06 To provide means by which the receiver in series with a blocking condenser can be bridged directly across the tip and ring in order to eliminate transmitter noise. (SCO key)

3.07 To provide for acoustic shock reduction by means of a varistor.

3.08 To provide for the multipling of keys and lamps to maintenance desks or frames.

3.09 Provides a hand set for test communications.

3.10 Provides jacks for the alternate use of an operator's telephone set.

3.11 Provides for control of TL lamp circuit Fig. 3, from the Transfer and Make Busy Circuit.

4. CONNECTING CIRCUITS

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

4.01 Tie Line Circuit - SD-95406-01

4.02 Local Station Line Circuit - SD-95409-01

4.03 Trunk Circuit - SD-95405-01

4.04 Trunk to Line Circuit - SD-96221-01

4.05 Key and Lamp Circuits at Other Desks or Frames - SD-95404-01

4.06 Manual Outgoing Trunk Test Circuit - SD-95476-01

4.07 Sender Make Busy Frame Test Circuit - SD-21697-01

4.08 Toll Test Board 18B Test Trunk Circuit - SD-56045-01

4.09 Transfer and Make Busy Circuit - SD-64817-01

4.10 Automatic OG Toll Connecting Trunk Test Circuit - SD-68373-01

4.11 Outgoing Trunk Circuit Dial Pulsing, SD-95617-01 (Used with Fig. 2, "R" option)

4.12 Incoming Automatic Trunk Ckt (with Electrical Hold) SD-95615-01 used with "Q" option

DESCRIPTION OF OPERATION

5. INCOMING CALL (Figs. 1,A,2, or 3 with "R" or "S", "T" or "V" Option)

On an incoming call the associated trunk, tie line, or station line circuit connects battery to lead L to light lamp TRK or TL. This battery may either be steady or flashing. In general, if any of the talk keys are multipled to other points, the lamp will be flashing so that the test man can distinguish between an incoming call and a busy condition which involved a steady lamp. If the keys are not multipled, the answering signal may be a steady one.

The call is answered by operating the key of Fig. 2 or 3 to the talk position. This connects a bridge consisting of retardation coil A in parallel with induction coil A across the tip and ring to trip ringing (if present) and to give supervision.

The key also grounds lead K to the trunk circuit. This causes a steady lamp if the lamp has been flashing or a dark lamp if the lamp has been steady.

The hand set using "T" option or an operator's telephone set plugged into jack TEL may be used for communications. When the telephone set is used the hand set is cut off.

6. OUTGOING CALLS (Figs. 1,A,2, and 3)

An outgoing call is originated by operating the key of Fig. 2 or 3 to the talk position. The key grounds lead K to the trunk circuit which generally causes the lamp to light steady as a busy signal if any of the keys of Figs. 2 or 3 are multipled to other points or to remain dark otherwise when "S" option is provided.

When "R" option is provided the K and L or L1 leads of Fig. 2 are not multipled to other points. Each K and L or L1 lead goes to an associated relay in the outgoing trunk circuit. When the key of Fig. 2 is operated to the talk position the ground on lead K operates its associated relay in the outgoing trunk circuit. The (TRK) lamp of Fig. 2 does not light at this time but the (TRK) lamps at other locations light indicating a busy condition. When a sender is attached the (TRK) lamp lights as a "start dial" signal and remains lighted until the called party answers.

If this circuit is associated with any automatic trunk or tie line, the operation of the key is sufficient. However, if the associated circuit is of the outgoing ringdown type, the RING key must be operated to signal the distant end. If a trunk to a line circuit is involved, the dial must be used to set up the call. After the dial is moved off-normal, retardation coil A is short-circuited to cause a zero impedance pulsing loop within this circuit until the dial returns to normal. As the dial returns to normal the pulsing contacts, protected by resistance A and condenser C, send the dial pulses.

7. OPERATION WITH THE MANUAL OUTGOING TRUNK TEST CIRCUIT (Figs. 1,A and "V" option)

When the (TTLK) key of the manual OGT test circuit is operated, ground is connected to the "G" lead of Fig. 1 to supply the talking ground. The manual OGT test circuit is arranged to automatically send out dial, MF or revertive pulses in accordance with the class key operated and the number recorded on the keysheet.

8. OPERATION WITH SENDER MAKE BUSY FRAME TEST CIRCUIT (Figs. 1,4,A and "T" Option)

When the T key of the sender make busy frame test circuit is operated, the test circuit T relay operates grounding the "ST" lead to Fig. 1 to supply talking ground. The T and R leads of Fig. 1 are also closed through when the test circuit T relay operates.

9. OPERATION WITH AUTOMATIC OG TOLL CONNECTING TRUNK TEST CIRCUIT (Figs. 1,B,2 or 3 and "T" Option)

When the test circuit is associated with a loop dial or "CX" signaling trunk and a manual test is to be made of a particular line, the dial of this circuit is used. Operate the DT key of Fig. B to associate the dial with the test circuit.

10. TRANSMISSION FEATURES

10.1 Blocking Condensers and Retard Coil

Condenser B prevents direct current from flowing through the receiver.

Condenser A prevents direct current from flowing through the A induction coil.

The B retard coil is provided to filter the noise from the transmitter battery supply.

10.2 KEY SCO

When the secondary cut-off SCO key is operated, the receiver in series with condenser B is bridged directly across the tip and ring an induction coil A is disconnected from the transmission circuit. This prevents transmitter noise from interfering while monitoring.

10.3 Varistor A

The varistor is a non-linear resistance which reduces peak voltages across the receiver in order to reduce clicks. These peak voltages occur when ringing is tripped, the dial is moved off-normal, or the keys of Figs. 2 or 3 are operated or released, etc.

11. HOLDING FEATURE

11.1 Figure 2

If the test man wishes to hold a call the TRK key is operated to the HOLD position. In this position the key places a short circuit on the tip and ring of the trunk circuit but opens the tip and ring of the telephone circuit. When the key is restored the holding circuit is removed.

11.2 Figure 3 With Q Option

To hold a call the HOLD key of Fig. 1 is operated while the TALK key of the associated trunk is operated. This operates a relay in the trunk which places a hold condition on the trunk and holds the TL lamp of Fig. 3 lighted. The holding condition is removed by the operation of the TALK key at this or any other appearance of the trunk or tie line. If for any reason the (HOLD) key is operated during talking it is necessary to momentarily release the (TALK) key to re-establish the talk connection.

BELL TELEPHONE LABORATORIES, INC.

DEPT. 2322-ASM-REC-RK