CD-96370-01
Issue 5-D
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COMMON SYSTEMS
OUTGOING TRUNK TEST FRAME
TEST CIRCUIT
FOR TESTING OUTGOING TRUNKS
FOR CONTINUITY AND REVERSALS
FOR USE IN CROSSBAR NO. 1, PANEL, CROSSBAR TANDEM
TOLL SWITCHING SYSTEM NO. 4 OR 4A OR CROSSBAR NO. 5

CHANGES

B. CHANGES IN APPARATUS

B.1 Added

552A Key (TR), Option "N", Fig. 4

D. DESCRIPTION OF CIRCUIT CHANGES

D.1 Option "N" is added for use in Crossbar No. 1. Option "M" is designated.

D.2 Note 103 is modified to include Options "M" and "N".

D.3 The additional options are added to Note 102 and Options Used table.

D.4 Configuration of key 552A is added.

All other headings, no change.

BELL TELEPHONE LABORATORIES, INCORPORATED

DEPT. 2314-BSP-CGM-GH

COMMON SYSTEMS
OUTGOING TRUNK TEST FRAME
TEST CIRCUIT
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FOR CONTINUITY AND REVERSALS
FOR USE IN CROSSBAR NO. 1, PANEL, CROSSBAR TANDEM TOLL SWITCHING SYSTEM NO. 4 OR 4A OR CROSSBAR NO. 5

CHANGES

A. CHANGED OR ADDED FUNCTIONS

A.1 Provision is made on all systems except No. 5 Crossbar to supply an automatic make-busy ground on the sleeve of the trunk being tested if it is idle or becomes idle while being tested.

A.2 Provision is made to furnish an audible signal in addition to the visual signal to indicate a busy trunk encountered while testing.

B. CHANGES IN APPARATUS

B.1 Added

"CT-BY" Buzzer (KS-8110) -
"T" option of Fig. 1 or 7
"CT-BY" Buzzer (KS-8109) -
"S" option of Fig. 1
"BY" Resistance (18AK) -
"S" option of Fig. 1

D. DESCRIPTION OF CIRCUIT CHANGES

D.1 Option "Q" has been added to Fig. 1 to provide an automatic make-busy ground on the sleeve of the trunk under test. "R" option shows arrangement prior to the addition of "Q" option. Reference to options "Q" and "R" is added to circuit Notes 102 and 103, at "Options Used" table and in Fig. 1.

D.2 Options "S" and "T" have been added to Fig. 1 and option "T" has been added to Fig. 7 to provide an audible "busy trunk" signal in addition to the visual signal which is a lighted "CT-BY" lamp. Reference to "S" and "T" options is added to circuit Note 103 and to "Options Used" table.

D.3 Circuit Note 104 has been added.

All other headings under Changes, no change.

1. PURPOSE OF CIRCUIT

1.1 This circuit is used in crossbar, toll or panel office for making continuity and polarity tests of the tip and ring conductors of all classes of trunks connected to test jacks in an outgoing trunk test frame. An OK test is indicated by the operation of a low tone buzzer. A busy trunk is indicated by the lighting of busy lamp and sounding of a high tone buzzer.

2. WORKING LIMITS

2.1 Max. external circuit resistance 2,800 ohms for 20 to 28 volts and 10,000 ohms for 45 to 50 volts.

2.2 Min. Ins. Res. 30,000 ohms.

3. FUNCTIONS

3.1 This circuit provides means of making continuity and polarity tests of the tip and ring conductors of trunks connected to test jacks in the outgoing trunk test frame.

3.2 Jacks designated CT are provided for each circuit. The test circuit is associated with a trunk to be tested by means of a patching cord, one end of which is inserted into one of the CT jacks and the other end into the trunk test jack.

3.3 A high resistance designated A or E is connected in series with the polarized relay so that there will not be sufficient current flow over the tip and ring to operate the relay at the distant end of the trunk.

3.4 A busy test feature is provided. Red busy lamps designated CT-BY are provided for each circuit. If the trunk under test is found busy it is indicated by the lighting of the lamps. With "S" or "T" option a distinctive buzzer tone is provided to give an audible indication in addition to the lighted CT-BY lamp.

3.5 Provision is made for testing trunks from all systems, other than Crossbar No. 5, which have battery on the tip or ring as an off-hook signal, by operation of the RP key.

4. CONNECTING CIRCUITS

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

4.1 Panel Incoming Selector Circuit such as SD-21115-01.

4.2 Crossbar No. 1 Incoming Trunk Circuit such as SD-25875-01.

4.3 Distant Office Selector Circuit - SD-21733-01.

4.4 Direct P.C.I. Trunk Circuit - ES-239472.

4.5 Tandem P.C.I. Trunk Circuit - ES-11573-01.

4.6 Tandem District Selector Circuit - SD-21143-01.

4.7 Crossbar Tandem Office Tandem Trunk Circuit such as SD-25887-01.

4.8 Toll Switching System No. 4 or 4A Trunk Circuit such as SD-68011-01, SD-68239-01, SD-68240-01, SD-68242-01, SD-68325-01, SD-68326-01 and SD-68366-01.

4.9 Crossbar No. 5 Incoming Trunk Circuits such as SD-25582-01.

DESCRIPTION OF OPERATION

5. GENERAL

This circuit is used for making rapid continuity and polarity tests of outgoing trunks appearing on the test and make-busy jack bays of the outgoing trunk test frame. These trunks are tested for opens and reversals to their normal polarity. When testing from some offices a reversal of polarity is encountered from trunk to trunk. In this case Fig. 4 is used which provides means of reversing the tip and ring to the (L) relay to insure a satisfactory test.

6. TESTING TRUNKS WITH BATTERY ON THE TIP AND GROUND ON THE RING (FIGS. 1, 2 & 3 OR 5)

6.1 "R" Wiring in Fig. 1

To test a trunk with battery on the tip and ground on the ring when normal, one end of the patching cord is inserted into one of the CT jacks, the other end of the cord is inserted into the trunk test jack. If the trunk under test is idle and clear of trouble, polarized relay L will operate from battery on the tip and ground on the ring received from the distant end of the trunk. Relay L operated, operates relay L1 which operates buzzer CT, indicating an OK test. If a tip or ring conductor is opened or if the conductors are reversed, the relays and buzzer will not operate.

6.2 With "Q" wiring the circuit will operate as described above. In addition the L-1 relay in operating supplies a ground to the sleeve of the trunk under test making it busy.

7. TESTING TRUNKS WITH GROUND ON THE TIP AND BATTERY ON THE RING (FIGS. 1, 2, 4 AND 3 OR 5)

7.1 When a trunk to be tested has ground on the tip and battery on the ring when normal, the reverse polarity key TR should be operated. One end of the patching cord is inserted into one of the CT jacks, the other end of the cord is inserted into the trunk test jack. If the trunk under test is idle and clear of trouble, polarized relay L will operate from battery on the ring and ground on the tip received from the distant end of the trunk. Relay L operated, operates relay L1 which operates buzzer CT, indicating an OK test. If a tip or ring conductor is opened or if the conductors are reversed, the relays and buzzer will not operate.

7.2 With "Q" wiring the circuit will operate as described above. In addition the L-1 relay in operating supplies a ground to the sleeve of the trunk under test making it busy.

8. TESTING TRUNK WITH GROUND ON THE TIP AND BATTERY ON THE RING (FIGS. 5, 6 AND 7)

To test a trunk with battery on the ring and ground on the tip when normal, one end of the patching cord is inserted into one of the CT jacks, the other end of the cord is inserted into the trunk test jack. If the trunk under test is idle and free of trouble the CO relay will operate, to ground on the sleeve, and close the circuit to permit the L relay to operate from the battery and ground received from the distant end of the trunk. Relay L operated, operates buzzer CT indicating an OK test. If a tip or ring conductor is opened or if the conductors are reversed, the relays and buzzer will not operate.

9. TRUNK BUSY

When Fig. 1 is provided and the trunk to be tested is busy, relay CO will operate from a busy ground received over the sleeve from a connecting circuit. Relay CO operated, opens the tip and ring circuit preventing relay L from operating and closes a circuit for lighting busy lamps CT-BY and sounding buzzer CT-BY if option "S" or "T" is used.

When Fig. 7 is provided and the trunk to be tested is busy or becomes busy while the plug of the cord is in the test jack, relay CO will not operate or will release from the absence of ground on the sleeve. Relay CO released opens the tip and ring circuit preventing relay L from operating and closes a circuit for lighting busy lamp CT-BY and sounding buzzer CT-BY if option "S" or "T" is used.

The non-inductive shunt on the CO relay winding prevents the maintenance man from receiving shocks when withdrawing the cord plug from a grounded sleeve.

10. DISCONNECT

If an OK test is indicated the removal of the cord plug from the jack will open the circuit to relay L, and relay CO in the case of Fig. 7, and silence the buzzer.

If the trunk is busy, the removal of the cord plug will cause the CO relay to release, in the case of Fig. 1 and extinguish the CT-BY lamp and silence buzzer CT-BY. In the case of Fig. 7, the removal of the cord plug from the CT jack extinguishes the CT-BY lamp and silences buzzer CT-BY.

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DEPT. 3040-EWV-CGM-R2