

CORD AND POSITION CIRCUITS  
TELETYPEWRITER SWITCHBOARD No. 5

1. GENERAL

1.01 This section describes tests of the cord and the position circuits associated with the teletypewriter switchboard No. 5. The tests are as follows:

- (A) Cord Circuit Bias Test
- (B) Cord Circuit Operation Test
- (C) Test of Splitting Feature of Operator's Position Circuit
- (D) Test of Operator's Teletypewriter

1.02 Test (D) requires two persons, one located at the testboard, and the other at the switchboard.

2. APPARATUS

Tests (A), (B) and (C)

2.01 Cord Test Circuit SD-70103-01.

Test (D)

2.02 Teletypewriter Trunk SD-70107-01.

3. METHOD

(A) Cord Circuit Bias Test

3.01 Operate the BIAS key associated with the cord test circuit.

3.02 With the typing key in its normal position, insert the answering and calling plugs of the cord circuit to be tested into the SUB and TOLL jacks of the cord test circuit, respectively.

3.03 The bias of signals sent from the calling cord to the answering cord of the circuit under test is indicated by the meter of the test circuit. The reading should be within  $\pm 5$  per cent., that is 5 scale divisions either side of zero. A deflection of the needle of the meter to the left or right of zero indicates spacing or marking bias, respectively. Failure to meet this requirement is probably caused by the RC relay in the calling cord circuit being out of adjustment.

3.04 Interchange the answering and calling plugs in the SUB and TOLL jacks of the cord test circuit. The direction of the signals is reversed to send from the answering to the calling end of the cord circuit under test.

3.05 The bias should be within the requirement covered in 3.03. Failure to meet this requirement is probably caused by the RA relay in the answering cord circuit being out of adjustment.

3.06 Remove the answering and calling plugs from the SUB and TOLL jack of the cord test circuit and restore the BIAS key to normal.

(B) Cord Circuit Operation Test

3.07 The following procedures, if made with the answering cord connected to the SUB jack and the calling cord connected to the TOLL jack, check the local supervisory features on the answering cord and the toll supervisory features on the calling cord. The tests should be repeated with the calling cord connected to the SUB jack and the answering cord connected to the TOLL jack, in order to check the local supervisory features on the calling cord and the toll supervisory features on the answering cord.

3.08 Idle Subscriber Line Test: Insert either the answering or calling plug of the cord circuit to be tested into the SUB jack of the cord test circuit. The associated cord supervisory lamp should light.

3.09 Insert the other plug of the cord circuit under test into the TOLL jack of the cord test circuit. The needle of the meter associated with the cord test circuit should deflect 18 or more scale division to the right of zero.

3.10 Subscriber Line Ringing: If an answering plug of a cord circuit is inserted in the SUB jack, operate the typing key of the cord circuit under test to the home position and operate the SUB RING ANS key of the position circuit to the rear position. If a calling plug of a cord circuit is inserted in the SUB jack, operate the RING RECALL key associated with the cord under test to the front position.

3.11 The lamp associated with the cord test circuit should light, indicating that the ringing circuit has operated satisfactorily. Any deflections of the needle of the meter indicates poor continuity at the SUB RING ANS or RING RECALL key contact springs. Release the SUB RING ANS or RING RECALL key. The lamp associated with the cord test circuit should be extinguished. Restore the typing key to normal, if operated.

3.12 Subscriber Line Answer: Insert the plug of an idle adjacent cord circuit into the RCL ANS jack of the cord test circuit. The lamp associated with the cord connected to the SUB jack should be extinguished and the lamp associated with the cord test circuit should light. The needle of the meter may show a momentary deflection toward zero.

3.13 Subscriber Line Recall: Withdraw and reinsert the plug of the cord circuit in the RCL ANS jack of the cord test circuit. The lamp associated with cord inserted in the SUB jack should flash and the lamp associated with the cord test circuit should be extinguished during the period the plug is out of the RCL ANS jack.

3.14 Operate the typing key associated with the cord circuit under test to the home position. The associated supervisory lamp should be extinguished.

3.15 Subscriber Line Disconnect: Restore the typing key to normal and remove the plug of the cord circuit from the RCL ANS jack of the cord test circuit. The lamp associated with cord connected to in the SUB jack should light and the lamp associated with the cord test circuit should be extinguished. Restore the typing key to normal.

3.16 Intertoll Trunk Calling: If a calling plug of a cord circuit is inserted in the TOLL jack, operate the associated RING RECALL key to the front position for about 2 seconds. If an answering plug of a cord circuit is inserted in the TOLL jack, operate the typing key of the cord circuit under test to the home position and operate the TOLL RING key of the position circuit to the front position for about 2 seconds. The needle of the meter associated with the cord test circuit should restore to zero while the TOLL RING or RING RECALL key is operated.

3.17 Receiving an Intertoll Trunk Recall: Insert the calling plug of the next adjacent cord circuit into the RCL ANS jack of the cord test circuit. The lamp associated with the cord connected to the SUB jack should be extinguished and the lamp associated with the cord test circuit should light. Operate the RING RECALL key associated with the cord circuit connected to the RCL ANS jack to the front position until the associated cord supervisory lamp flashes, after which the RING RECALL key should be restored to normal. While the RING RECALL key is operated, the needle of the meter associated with the cord test circuit should restore to zero, and the lamp associated with the cord test circuit should be extinguished.

3.18 The lamp associated with the cord connected to the TOLL jack should flash and the needle of the meter associated with the cord test circuit should return to its former reading. Operate the

typing key associated with the cord circuit under test to the home position. The cord supervisory lamp should be extinguished. Restore the typing key to normal.

3.19 Sending an Intertoll Trunk Recall: If a calling plug of a cord circuit is inserted in the TOLL jack, operate the associated RING RECALL key until the associated cord supervisory lamp flashes. If an answering plug of a cord circuit is inserted in the TOLL jack, operate the typing key of the cord circuit under test to the home position and operate the TOLL RING key of the position circuit to the front position until the associated cord supervisory lamp flashes after which the typing and TOLL RING keys should be restored to normal. The lamp associated with the cord test circuit should remain lighted without flashing to indicate that the cord circuit is properly terminated and the needle of the meter associated with the cord test circuit should restore to zero during the recall.

3.20 At the termination of the recall period the needle of the meter associated with the cord test circuit should return to its former reading. If a calling cord is connected to the TOLL jack operate the typing key associated with the cord circuit under test to the home position. If an answering cord is connected to the TOLL jack restore the typing key associated with the cord circuit. The lamp associated with the cord circuit in the TOLL jack should be extinguished. Restore the typing key to normal if operated.

3.21 Receiving an Intertoll Trunk Disconnect: Operate the TOLL DISC key associated with the cord connected to the RCL ANS jack to the rear position until the associated cord supervisory lamp lights, after which the TOLL DISC key should be restored to normal. While the TOLL DISC key is operated, the needle of the meter associated with the cord test circuit should restore to zero and the lamp associated with the cord test circuit should be extinguished.

3.22 The lamp associated with the cord connected to the TOLL jack should light and the needle of the meter associated with the cord test circuit should return to its former reading. Operate the typing key associated with the cord circuit under test to the home position. The cord supervisory lamp should be extinguished. Restore the typing key to normal.

3.23 Sending an Intertoll Trunk Disconnect (Calling Cord Only): When a calling plug of a cord circuit is inserted in the TOLL jack, operate the associated TOLL DISC key to the rear position until the associated cord supervisory lamp lights, after which the TOLL DISC key should be restored to normal. The needle of the meter associated with the cord test circuit should restore to zero while the TOLL DISC key is operated.

3.24 The lamp associated with the cord connected to the TOLL jack should light and the needle of the meter associated with the cord test circuit should return to its former reading. Remove the cords from the RCL ANS, SUB and TOLL jacks of the cord test circuit. The lamps associated with the cord circuit and cord test circuit should be extinguished and the needle of the meter should restore to zero.

(C) Test of Splitting Feature of Operator's Position Circuit

3.25 Insert the answering plug of an idle cord circuit into the TOLL jack of the cord test circuit. The needle of the meter associated with the cord test circuit should deflect 18 or more scale divisions to the right of zero.

3.26 Operate the associated typing key slowly and again rapidly to the home and team positions. Any deflections of the needle of the meter indicates poor continuity at the home or team relay contact springs.

3.27 With the typing key operated to the home position, operate the splitting key of the position circuit slowly and again rapidly to the rear and to the front. Any deflections of the needle of the meter indicates poor continuity at the splitting key.

3.28 Remove the answering plug of the cord circuit from the TOLL jack. Insert the calling plug of the cord circuit into the TOLL jack of the cord test circuit.

3.29 With the typing key operated to the home position, slowly operate the splitting key of the position circuit and again rapidly to the front and rear. Any deflections of the needle of the meter indicates poor continuity at the splitting key.

3.30 Remove the calling plug of the cord circuit from the TOLL jack of the cord test circuit and restore all keys to normal.

(D) Test of Operator's Teletypewriter

3.31 At the Switchboard: Operate the typing key of an idle cord circuit to the home position and insert the calling

plug of the cord circuit into the jack associated with the two-way teletypewriter trunk circuit to the testboard. The cord supervisory lamp should light. Operate the RING RECALL key to the front position.

3.32 At the Testboard: The TTY ANS lamp associated with the two-way trunk circuit should light. Connect the testboard teletypewriter to the TTY TRK jack of the trunk. The TTY ANS lamp associated with the trunk should be extinguished.

3.33 At the Switchboard: The cord supervisory lamp should be extinguished.

Orientation Test

3.34 At the Testboard: Send test signals to the operator's teletypewriter under test.

3.35 At the Switchboard: Measure and record the orientation range of the operator's teletypewriter under this circuit condition. If the orientation range is less than 70 points the typing unit of the operator's teletypewriter should be checked separately in accordance with the established requirements for the equipment.

Keyboard Test

3.36 At the Switchboard: Signals should be sent from the operator's teletypewriter to the testboard teletypewriter.

3.37 At the Testboard: Measure and record the distortion caused by the operator's teletypewriter under this circuit condition. If the distortion is greater than 5 per cent., the keyboard should be checked separately in accordance with the established requirements for the equipment. Remove the plug of the test cord from the TTY TRK jack of the two-way trunk circuit.

3.38 At the Switchboard: The cord supervisory lamp should light. Remove the plug of the cord from the two-way trunk circuit upon the completion of this test and restore all keys to normal. The cord supervisory lamp should be extinguished.

4. REPORTS

4.01 The required record of these tests should be entered on the proper form.