OUTGOING TRUNKS FROM STEP-BY-STEP "A" SWITCHBOARDS TO CENTRAL OFFICE SWITCHBOARDS

1. GENERAL

1.01 This section covers the detailed methods to be followed in making transmission tests on trunks outgoing from a Step-by-Step "A" Switchboard to Central Office Switchboards.

1.02 Information covered in this section is outlined in the following table:

1.03 Reference should be made to Section K20.01 for general testing methods and to Section K20.11 for general testing apparatus requirements.

2. OUTGOING TRUNKS TO MANUAL COMMON BATTERY SWITCHBOARDS

(a) Arranged for Straightforward Operation

2.01 These circuits are tested at the incoming manual office switchboard by the loop method and the loops are established at the outgoing "A" switchboard by means of a special service switchboard cord circuit.

2.02 Figure 1 shows schematically the connections for the test.

Preliminary Connections

2.03 Provide two switchboard cords equipped with plugs of the type used at the manual switchboard and connect the sleeves of each of these cords respectively to the S_1 and S_2 terminals of the transmission measuring set and insert the plugs in switchboard jacks having the proper sleeve condition.

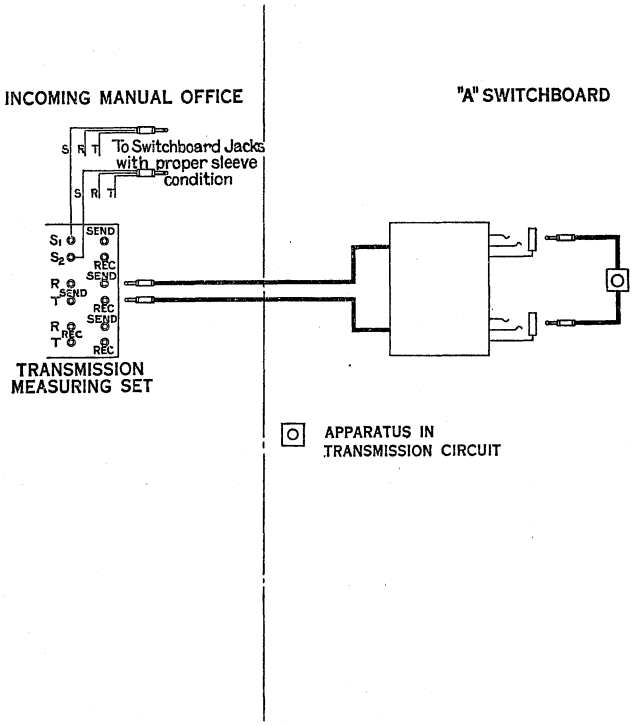

Figure 1

2.04 Establish a talking circuit with an assistant tester at the "A" switchboard.

Testing Procedure

2.05 Advise the assistant tester at the "A" switchboard of one of the trunks chosen for test and instruct him to insert the answering cord of a special service cord circuit in the associated outgoing trunk jack.

2.06 At the manual office switchboard insert the plug of the incoming trunk cord in the sending jack of the transmission measuring set.

2.07 Advise the assistant tester at the "A" switchboard of another trunk chosen for test and instruct him to insert the calling cord of the special service cord circuit used in paragraph 2.05 in the associated outgoing trunk jack.

2.08 At the manual office switchboard insert the plug of the incoming trunk cord in the receiving jack of the transmission measuring set.

Note: In testing automatic listening straightforward trunks, the cords at the outgoing office should be connected to the trunk circuits before the trunk cords at the incoming office are connected to the transmission measuring set. Failure to do this will cause the operator's telephone circuit at the manual office to be connected to the trunk. Should this occur, the operator's circuit may be disconnected by withdrawing the trunk cord from the transmission measuring set and then reinserting it.

2.09 Where trunk circuits are equipped for machine ringing, trip the ringing before proceeding with the tests.

2.10 With the transmission measuring set in the measuring condition, perform the operations outlined in paragraphs 2.11 to 2.13, inclusive.

2.11 Rotate the plugs of the trunk cords slowly in the test jacks to detect cutouts due to defective or dirty plugs.

2.12 Test the trunk cords for cutouts by holding the plugs firmly in the jacks and rotating the cords slowly with a cranking motion.

2.13 Test all keys associated with the trunk circuit for cutouts in the normal and operated positions (except ringing keys in the operated position) by tapping the key tops lightly.

For lever type keys move the lever slightly forward and backward while exerting a reasonable pressure to the left and right to take up any play or side lash.

For plunger type keys directly connected in the transmission circuit, move the plunger with a circular motion and test for plunger-spring clearance by depressing the plungers slightly.

2.14 Measure the transmission loss.

Note: This is the combined loss of two trunk circuits and the looping cord circuit.

2.15 Measure the current supply of each trunk that provides talking battery.

2.16 Disconnect one trunk by removing the plug of the trunk cord from the transmission measuring set and the looping cord circuit at the "A" switchboard.

2.17 Repeat the above testing procedure to determine the transmission loss of a trunk to be used as a standard and set it up as outlined in paragraphs 2.05 and 2.06.

2.18 Proceed with the tests as outlined in paragraphs 2.08 to 2.17 inclusive for the remaining trunks of the group.

2.19 When all of the trunks in the group have been tested, disconnect the standard trunk by removing the plug of the trunk cord from the transmission measuring set and the looping cord at the "A" switchboard.

(b) Arranged for Ringdown Operation

2.20 These circuits are tested at the "A" switchboard by the loop method and the loops are established at the manual office switchboard by means of one of the regular switchboard cord circuits or the looping circuit shown in figure 2.

2.21 At the "A" switchboard the circuits are completed to the transmission measuring set by means of special service switchboard cord circuits.

2.22 Figure 2 shows schematically the connections for the test.

Preliminary Connections

2.23 Provide two regular double-ended patching cords equipped with 110 type plugs and one regular double-ended patching cord equipped with 109 type plugs.

2.24 Connect the TMS and TMR jacks of the auxiliary test unit, respectively, to the sending and receiving jacks of the transmission measuring set, using the patching cords equipped with 110 type plugs.

2.25 Connect the B-GRD (24V) jack of the auxiliary test unit to 24 volt battery and ground (battery on tip and ground on sleeve), using the patching cord equipped with the 109 type plugs.

2.26 Insert the plugs of the answering cords of two special service switchboard cord circuits in the LS and LR jacks of the auxiliary test unit.

2.27 Establish a talking circuit with an assistant tester at the manual office switchboard.

Testing Procedure

2.28 Operate the following keys of the auxiliary test unit to the positions specified. Keys not mentioned should remain in the normal position:

Key 1 to HOLD	Key 3 to MET
Key 2 to HOLD	Key 4 to MET

2.29 Insert the calling cord of the cord circuit connected to the LS jack of the auxiliary test unit into the outgoing jack associated with a trunk to be tested.

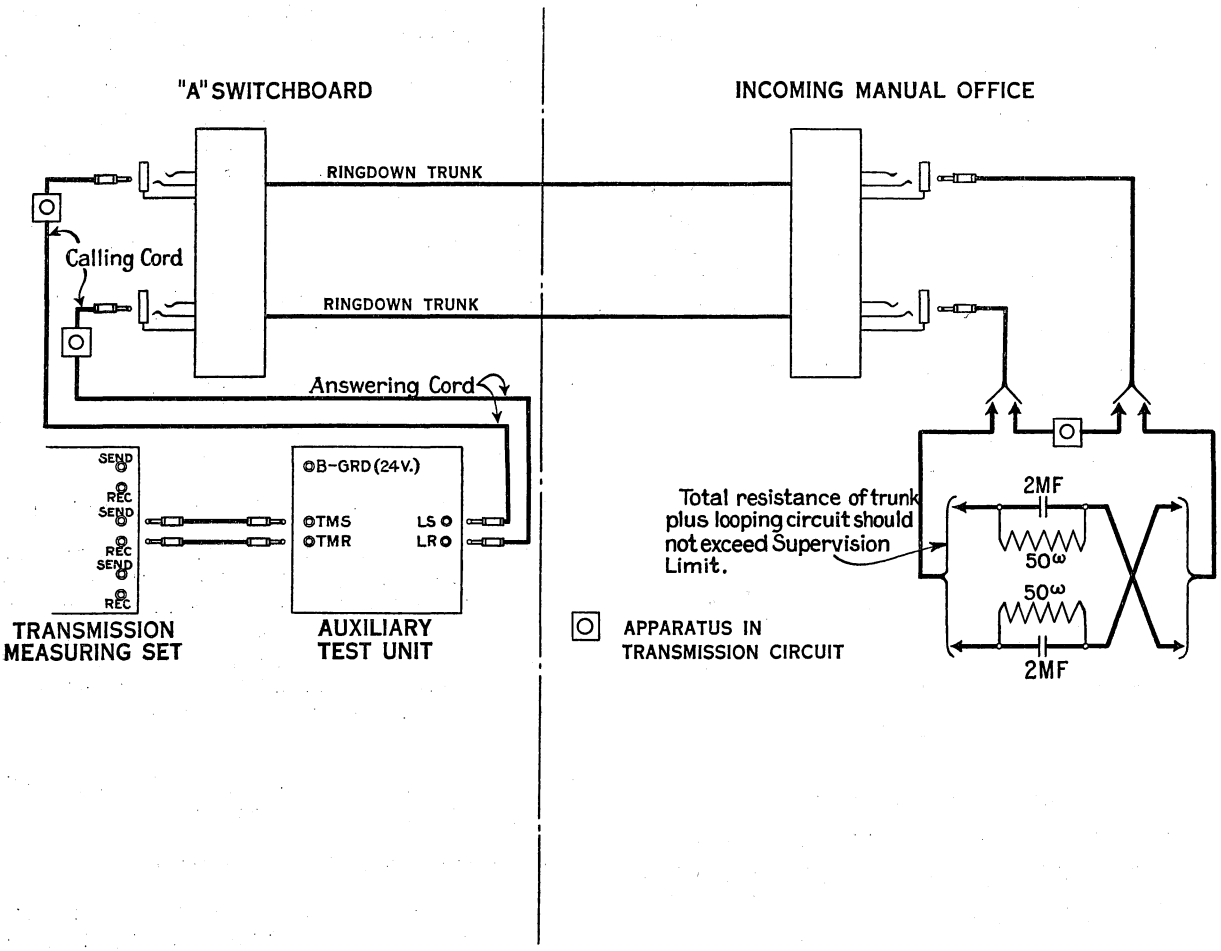

Figure 2

2.30 Insert the calling cord of the cord circuit connected to the LR jack of the auxiliary test unit into the outgoing jack associated with another trunk to be tested.

2.31 Advise the assistant tester of the two trunks being held for test and instruct him to loop them with one of the regular switchboard cord circuits or the looping circuit as the case may be.

Note: Where the cord circuits at the manual office switchboard are equipped with non-interfering answering and busy test features, the answering cord should always be inserted in a trunk jack before the calling cord. The trunk TRK key of the position should be operated to trip the ringing.

2.32 Measure the transmission loss.

Note: This is the combined loss of two trunk circuits, the looping cord circuit and the connecting cord circuits.

2.33 Disconnect one trunk by removing the plug of the calling cord at the "A" switchboard and the looping cord circuit at the manual office switchboard.

2.34 Repeat the above testing procedure to determine the transmission loss of a trunk to be used as a standard or test trunk and set it up as outlined in paragraphs 2.28 and 2.29.

2.35 Proceed with the tests as outlined in paragraphs 2.30 to 2.33 inclusive, for the remaining trunks of the group.

2.36 When all of the trunks in the group have been tested, disconnect the standard trunk by removing the plug of the calling cord from the jack at the "A" switchboard and the looping cord circuit at the manual office switchboard.

3. OUTGOING TRUNKS TO STEP-BY-STEP "A" SWITCHBOARDS

(Arranged for Ringdown Operation)

3.01 These circuits are tested in the same manner as "Outgoing Trunks to Manual Com-

mon Battery Switchboards (Arranged for Ringdown Operation)" as outlined in paragraphs 2.20 to 2.36, inclusive.

4. INTERPOSITION TRUNKS TO RURAL OPERATOR

4.01 These circuits terminate in jacks at both ends and should be tested from the originating end and completed to the transmission measuring set from the jack associated with the trunk at the rural operator's position.

4.02 Figure 3 shows schematically the connections for the test.

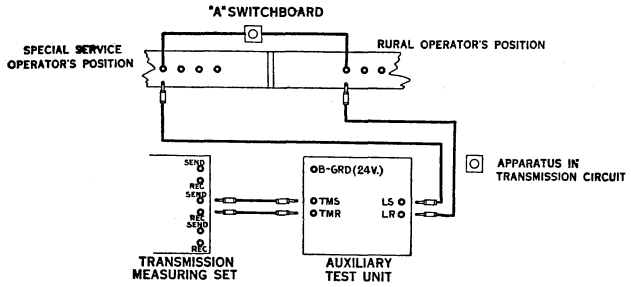

Figure 3

Preliminary Connections

4.03 Provide two regular double ended patching cords equipped with 110 type plugs and three regular double ended patching cords equipped with 109 type plugs.

4.04 Connect the TMS and TMR jacks of the auxiliary test unit respectively to the sending and receiving jacks of the transmission measuring set using the patching cords equipped with 110 type plugs.

4.05 Connect the B-GRD jack (24V) of the auxiliary test unit to 24 volt battery and ground (battery on tip and ground on sleeve) using one of the patching cords equipped with 109 type plugs.

4.06 Insert the 109 type plugs of two of the patching cords in the LS and LR jacks of the auxiliary test unit.

Testing Procedure

4.07 Operate the following keys of the auxiliary test unit to the positions specified. Keys not mentioned should remain in the normal position.

Key 1 to HOLD	Key 5 to BATT
Key 2 to HOLD	Key 6 to BATT
Key 3 to MET	Key 7 to BATT
Key 4 to MET	Key 8 to BATT

4.08 Insert the 109 type plug of the patching cord connected to the LS jack of the auxiliary test unit into the outgoing jack associated with a trunk to be tested.

4.09 At the rural operator's position insert the 109 type plug of the patching cord connected to the LR jack of the auxiliary test unit into the jack associated with the trunk of paragraph 4.08.

4.10 Measure the transmission loss.

4.11 Repeat the above testing procedure for the remaining trunks to be tested.

5. OUTGOING TRUNKS TO LOCAL AND TOLL MANUAL TANDEM SWITCHBOARDS

(Arranged for Straightforward Operation)

5.01 These circuits are tested at the manual tandem switchboard and the procedure to be followed is the same as "Outgoing Trunks to Manual Common Battery Switchboards (Arranged for Straightforward Operation)" as outlined in paragraphs 2.01 to 2.19, inclusive.

6. OUTGOING AUTOMATIC TRUNKS TO TOLL SWITCHBOARDS

(Operator Recording-Completing)

6.01 These circuits are tested at the step-by-step "A" switchboard by the loop method and the loops are established at the toll switchboard by means of a toll cord circuit.

6.02 At the "A" switchboard the circuits are completed to the transmission measuring set by means of operator recording-completing cord circuits.

6.03 Figure 4 shows schematically the connections for the test.

Preliminary Connections

6.04 Provide two regular double ended patching cords equipped with 110 type plugs and one regular double ended patching cord equipped with 109 type plugs.

6.05 Connect the TMS and TMR jacks of the auxiliary test unit, respectively, to the sending and receiving jacks of the transmission measuring set using the patching cords equipped with 110 type plugs.

6.06 Connect the B-GRD (24V) jack of the auxiliary test unit to 24 volt battery and ground (battery on tip and ground on sleeve) using the patching cord equipped with the 109 type plugs.

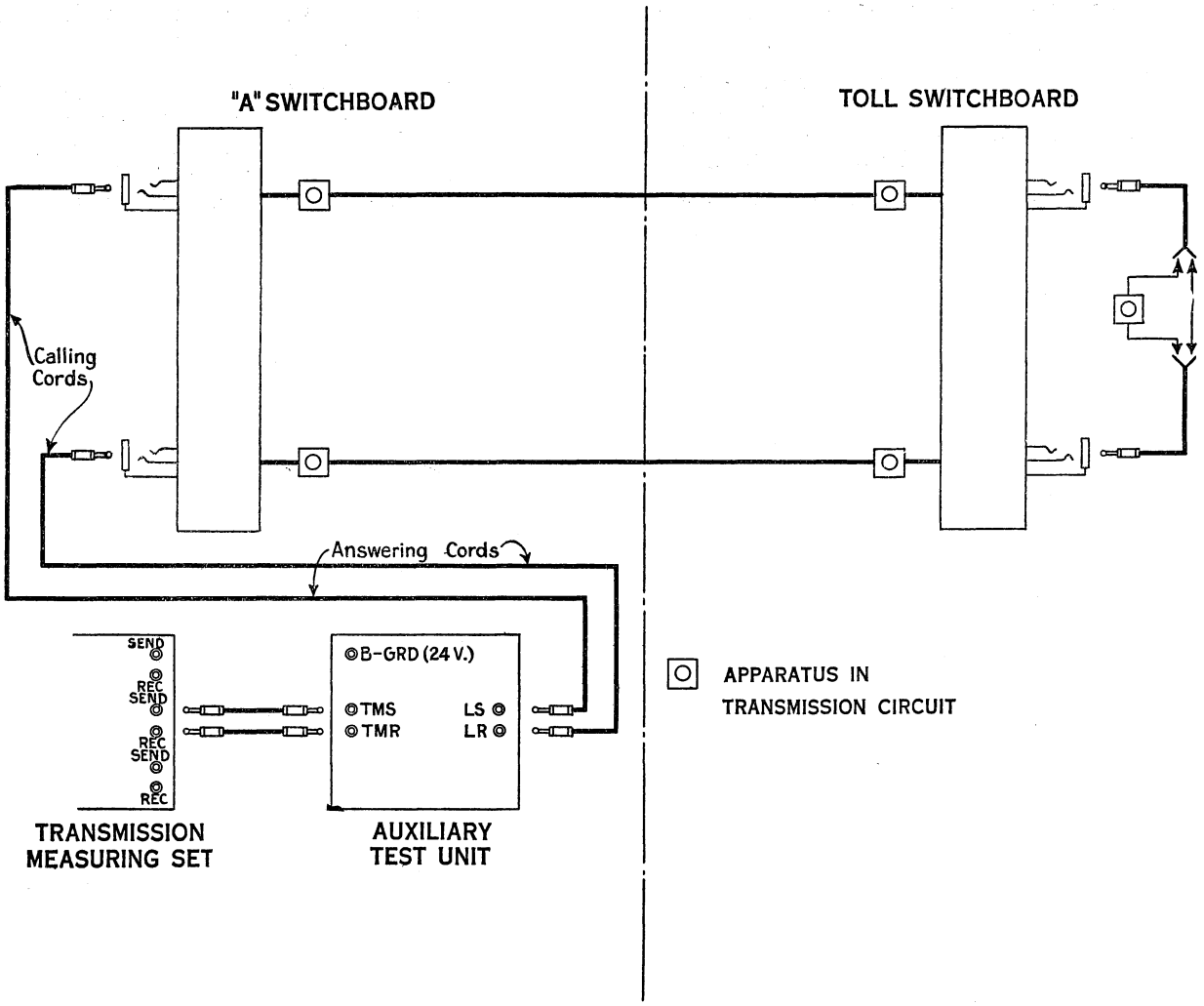

Figure 4

6.07 Insert the plugs of the answering cords of two recording-completing cord circuits in the LS and LR jacks of the auxiliary test unit.

6.08 Establish a talking circuit with an assistant tester at the toll switchboard.

Testing Procedure

6.09 Operate the following keys of the auxiliary test unit to the positions specified. Keys not mentioned should remain in the normal position.

Key 1 to HOLD	Key 3 to MET
Key 2 to HOLD	Key 4 to MET

6.10 Insert the calling cord of the cord circuit connected to the LS jack of the auxiliary test unit into the outgoing jack associated with a trunk to be tested.

6.11 Insert the calling cord of the cord circuit connected to the LR jack of the auxiliary test unit into the outgoing jack associated with another trunk to be tested.

6.12 Advise the assistant tester at the toll switchboard of the two trunks being held for test and instruct him to loop them with one of the regular switchboard cord circuits.

6.13 Measure the transmission loss.

Note: This is the combined loss of two trunks circuits, the looping cord circuit and the connecting cord circuits.

6.14 Measure the current supply from the trunk connected to the LR jack of the auxiliary test unit while depressing key 10 to remove the holding bridge from the circuit.

6.15 Measure the current supply from the trunk connected to the LS jack of the auxiliary test unit while depressing key 9 to remove the holding bridge from the circuit.

6.16 Disconnect one trunk by removing the plug of the calling cord at the "A" switchboard

and by having the looping cord circuit removed at the toll switchboard.

6.17 Repeat the above testing procedure to determine the transmission loss of a trunk to be used as a standard and set it up as outlined in paragraphs 6.09 and 6.10.

6.18 Proceed with the tests as outlined in paragraphs 6.11 to 6.16, inclusive for the remaining trunks of the group omitting paragraph 6.15.

6.19 When all of the trunks in the group have been tested disconnect the standard trunk by removing the plug of the calling cord from the jack at the "A" switchboard and the looping cord circuit at the toll switchboard.