18B TESTBOARD LOWER UNIT
TESTING METHODS FOR MESSAGE TRUNKS
SERVING CONNECTING COMPANY OFFICES

CONTENTS

1. GENERAL

1.01 This section describes the operating and testing procedures for the 18B toll testboard lower unit and its directly associated equipment as adapted for making operational and transmission tests on the following types of intertoll trunks serving a connecting company office.

Ringdown Intertoll Trunks - 20-Cycle Signaling toward the Switchboard (see Fig. 1)

Ringdown Intertoll Trunks - DC Signaling toward the Switchboard (see Fig. 2)

Dial Type Intertoll Trunks - (see Fig. 3)

1.02 The operating and testing procedures for intertoll trunks serving the various types of Bell System toll offices will be found in other sections of the 664-600 series.

1.03 The over-all control of the intertoll trunk functions and the direct test multiple are, in most cases, not available to the testboard forces as normally provided at the 18B toll testboard installations.

1.04 This section covers only those cases where the direct test multiple is not available and the test trunks as described herein are used. When the direct test multiple is available, the operating and testing procedures outlined in other sections of the 664-600 series will be followed.

1.05 To compensate for the lack of a direct test multiple, test trunks are provided between the 18B toll testboard and the connecting company office. These trunks are used for connecting the intertoll trunk under test at the connecting company switchboard or switching equipment to the 18B toll testboard. Three types of test trunks are available for use in making over-all tests: one is for use in offices having only ringdown intertoll trunks, a second for dial offices which can be reached by dialing code 101 (standard testboard code), and a third for dial offices where code 101 can not be used.

1.06 All tests and patches of the voice circuits are made on a 2-wire basis.

1.07 The primary test jack appearance in a combined primary and secondary 18B toll testboard will follow the usual standard arrangement applicable to toll offices. The secondary test jack appearance consists of patching jacks in both the talking and signaling paths and a monitoring jack. These jacks provide a means for making sectionalized, talking, monitoring, and signaling tests on the intertoll trunks.

1.08 The block diagrams and references to standard drawings given herein are for illustrative purposes only in connection with the operating and testing procedures described in this section. For exact wiring and circuit information, reference should be made to the drawings covering the specific circuit involved.

2. PRIMARY TEST CORD FUNCTIONS

2.01 The testing and operating procedures for using the primary test cords and associated circuits of the 18B toll testboard are given in Section 664-600-500 and are applicable to the maintenance of the outside plant facilities associated with the intertoll trunks serving connecting company offices.

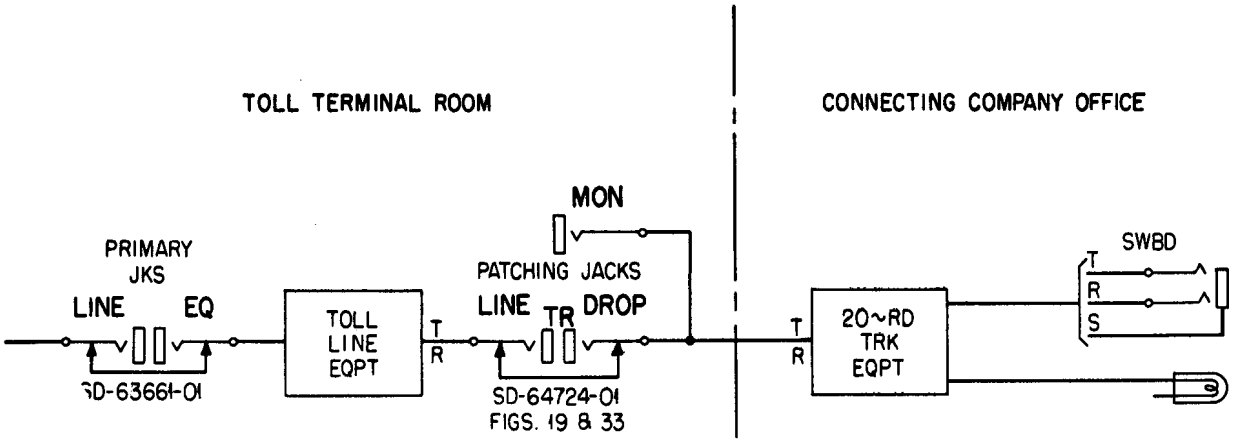


FIG. 1-RD. INTERTOLL TRKS. WITH 20~ SIGNALING TOWARD SWBD

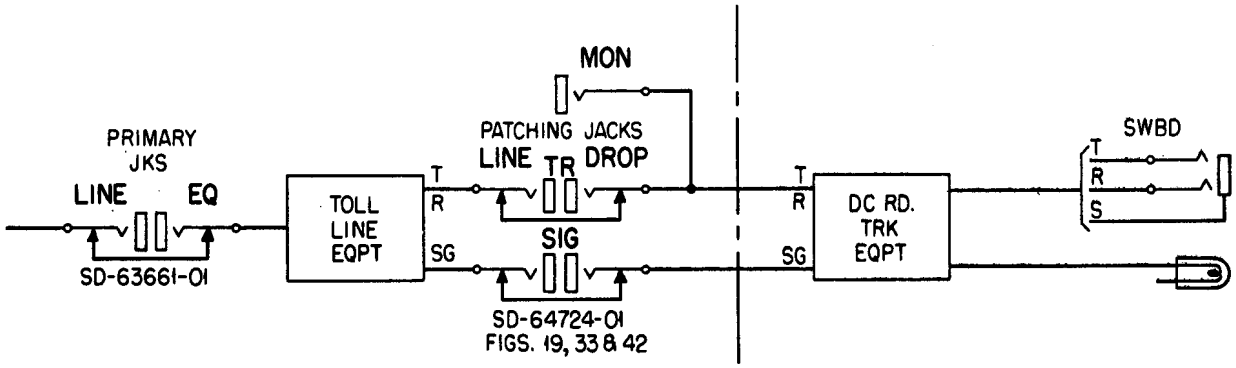


FIG. 2-RD. INTERTOLL TRKS. WITH DC SIGNALING TOWARD SWBD

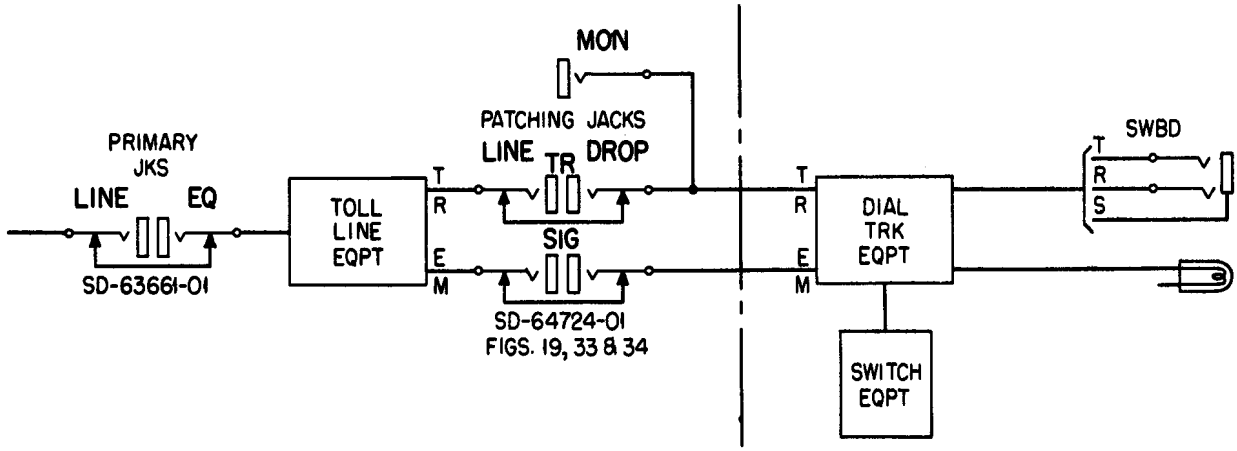


FIG. 3 -DIAL INTERTOLL TRKS

2.02 Primary tests may be made by connecting any primary test cord to the primary jacks of the intertoll trunk to be tested and operating the primary test cord keys as required.

Caution: No tests should be performed in the primary test jacks without first making the necessary provisions for preventing an interruption to other communication services that may be dependent upon continuity through these jacks.

3. SECONDARY TEST CORD FUNCTIONS

3.01 Where the 18B toll testboard is used for maintaining intertoll trunks serving a connecting company office having 20-cycle signaling toward the switchboard, a standard 20-cycle applique circuit is added to the rear secondary test cord. This enables the attendant to signal the distant end by sending out 20-cycle ringing current when the ringing key associated with the rear secondary test cord is operated. This applique circuit adds transmission loss when a secondary test cord pair is used for transmission measurements. This loss should be predetermined and recorded for future reference.

3.02 Where dc signaling is used for signaling toward the switchboard, the 20-cycle applique is not required since the secondary test cord applies the dc signaling voltage when its associated ringing key is operated.

3.03 On dial type intertoll trunks the sectionalized signaling tests are made using a 1A signaling test set or its equivalent test panel, or a 2B signaling test set. A 2A signaling test set may also be used for sectionalized signaling tests. However, this set is not arranged for signaling monitor tests.

3.04 When a direct test multiple of a ringdown intertoll trunk is not available at the testboard, the usual procedure for making busy tests can not be followed. Verbal verification as to the condition of the intertoll trunk to be tested must be obtained from the switchboard operator. In the case of dial trunks the signaling test set may be used to determine the availability of the circuit.

4. ARRANGEMENT OF TEST TRUNKS TO THE CONNECTING COMPANY OFFICE

4.01 The purpose of the test trunks between the 18B toll testboard and the connecting company office is to permit the testboard attendant to make over-all talking, monitoring, sectionalizing and transmission tests on the intertoll trunks. Due to the large number of different types of connecting company equipment, no provision for repeating supervisory signals is included in the test trunks shown.

4.02 Ringdown Offices: A typical test trunk arrangement between the 18B toll testboard and a connecting company switchboard in a ringdown office is shown in Fig. 4.

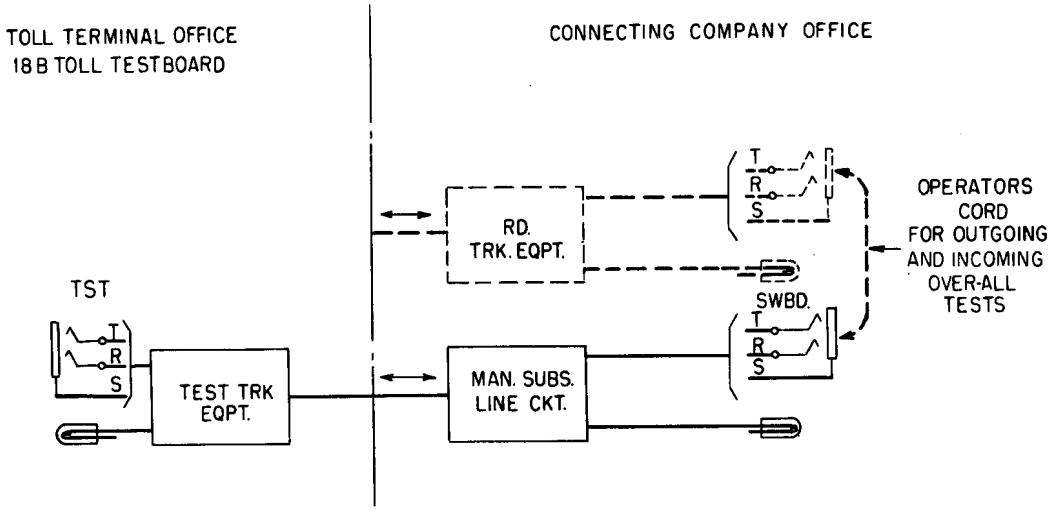


Fig. 4 - Test Trunk from 18B Toll Testboard to Switchboard in Ringdown Office

4.03 Dial Offices: For dial offices two test trunk arrangements are available, one for use when a code 101 trunk is provided at the testboard and the other when a code in the subscriber number series is used. In cases where the code 101 trunk is available at the testboard, a 2-way automatic trunk is provided for communication between the testboard and the connecting company switchboard. In cases where a code in the subscriber number series is used the test trunk also provides means of communication between the testboard and the connecting company switchboard. Typical arrangements of the two types provided are shown in Figs. 5 and 6.

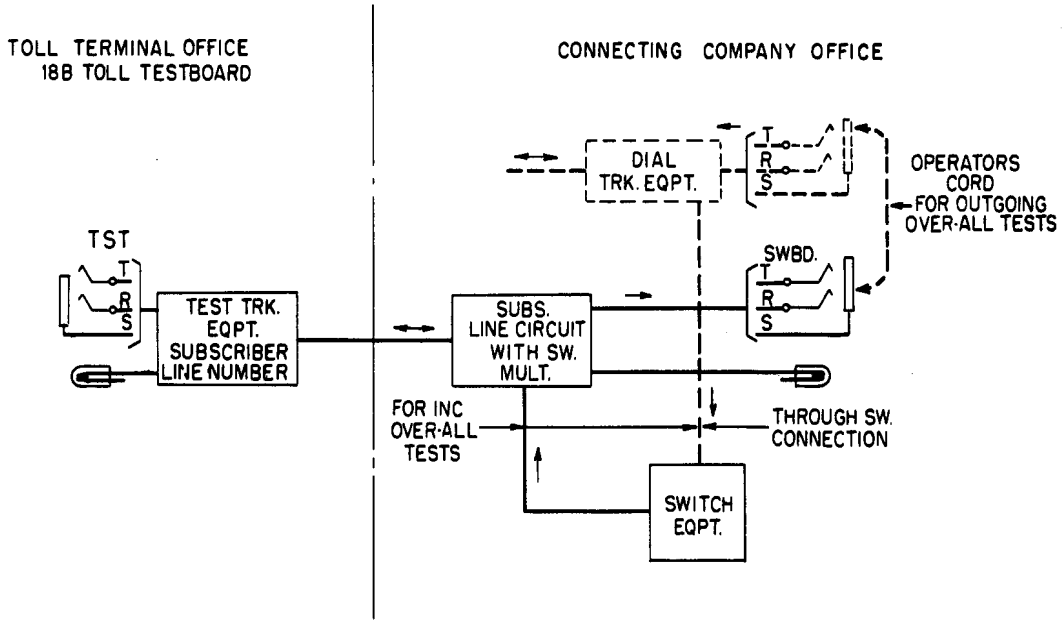


Fig. 5 - Test Trunk from 18B Toll Testboard to Switchboard and Switches for Dial Offices - Code 101 not Used

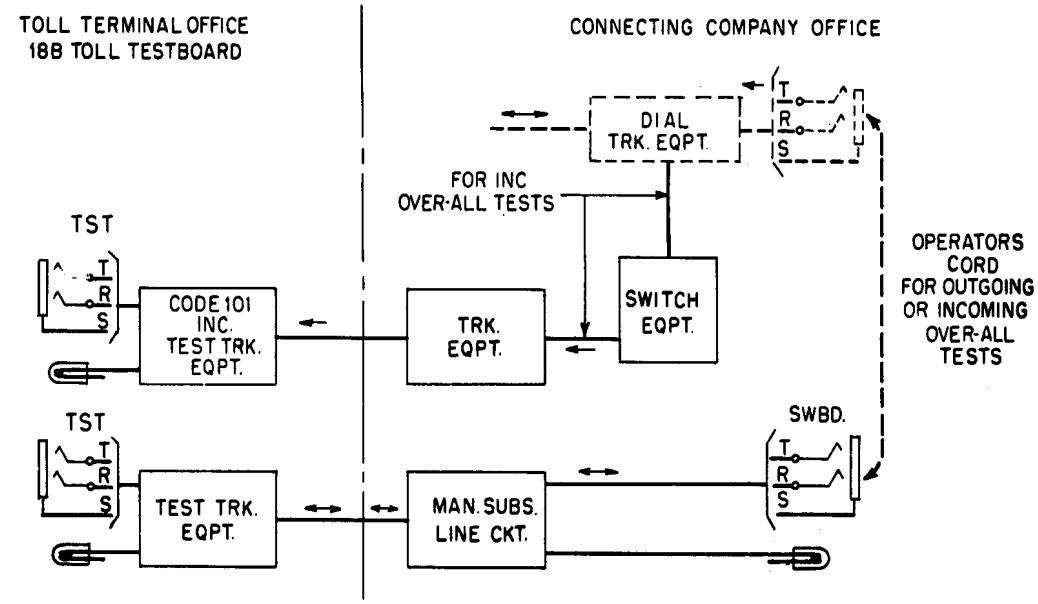


Fig. 6 - Test Trunk from 18B Toll Testboard to Switchboard and Switches for Dial Offices - Code 101 is Used

5. WITHHOLDING INTERTOLL TRUNKS FROM SERVICE FOR TESTING PURPOSES

5.01 It is important that the intertoll trunks being withheld from service for the purpose of performing specific tests, or for other reasons, be made to appear busy at their terminal ends to prevent a seizure by traffic operating forces or automatic switching equipment.

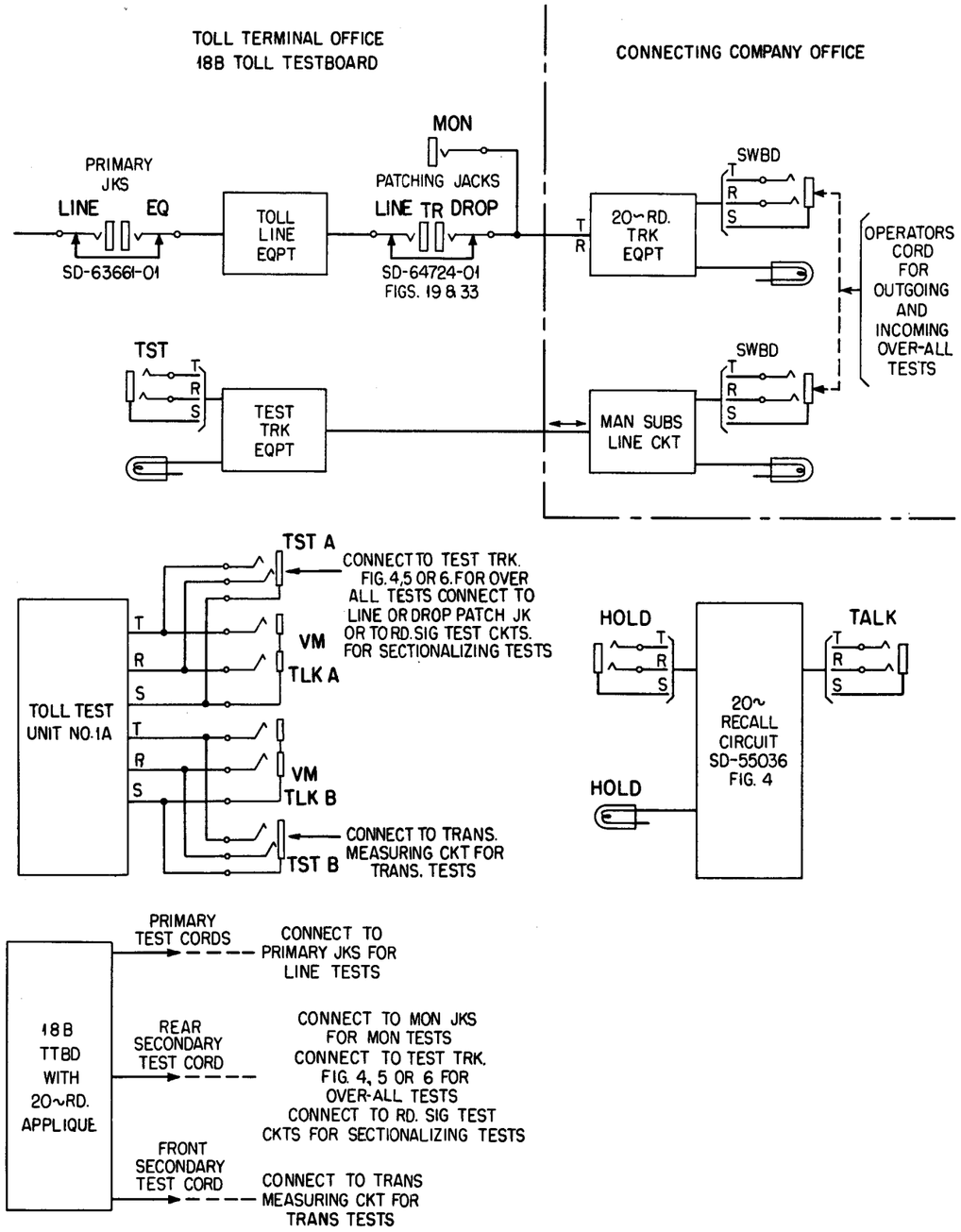
5.02 The manner in which a busy indication is to be maintained will be determined by the method of trunk operation as applied at the terminal ends. If the terminal end of the intertoll trunk is at a Bell System office, the standard procedures prevailing locally shall be followed. If the terminal end is at a connecting company office, the method of maintaining a busy indication will be determined by the connecting company office.

TESTBOARD NO. 18B - MESSAGE TRUNK TESTING PROCEDURES

CHART 6A: RINGDOWN TRUNK TESTING PROCEDURE - 20-CYCLE SIGNALING TOWARD THE SWITCHBOARD

A typical testing arrangement for ringdown intertoll trunks using 20-cycle signaling toward the switchboard is attached. Reference may be made to the sketch in this chart for the testing procedures that follow:

STEP	PROCEDURE
	MONITORING TESTS
1	Connect any rear secondary test cord to the MON jack of the intertoll trunk to be tested and operate the associated cord circuit key to MON.
	OVER-ALL TALKING TESTS
	These tests may be made by using the test trunk provided between the 18B toll testboard and the connecting company switchboard.
2	Connect a rear secondary test cord to the test trunk, operate the associated cord circuit key to TALK and momentarily operate the RING key.
3	When the operator at the switchboard answers, request a connection to the intertoll trunk to be tested and also have the operator signal the distant terminal. Note: No provision for over-all signaling is available since signals can not be repeated through the connecting company switchboard.
	OVER-ALL TRANSMISSION TESTS
	These tests are made using the test trunk between the 18B toll testboard and the connecting company switchboard. When this test trunk is used for transmission measurements, the necessary corrections for the transmission loss of the test trunk and the operator's cord circuit must be applied as required. The transmission loss of the test trunk, the operator's cord circuit, and the rear secondary cord applique circuit should be predetermined and the necessary correction values recorded and readily available to the testboard attendant.
4	Establish a connection to the distant end as described in Steps 2 and 3.
5	When the type of transmission test to be made is determined, connect the front test cord of the secondary test cord pair being used to the transmission measuring circuit as required.
6	To determine the correct loss of the intertoll trunk being tested apply the predetermined correction values of the test trunk, the operator's cord circuit, and the rear secondary cord applique circuit to the results obtained.
	SECTIONALIZED TALKING TESTS
	These tests are made using the test circuit arrangement shown in the sketch.
7	Remove the intertoll trunk from service.
8	Patch from the TST A jack of the 1A toll test unit to the TR LINE or DROP jack of the intertoll trunk to be tested, as required.
9	Operate the TALK key of the 1A toll test unit.
	SECTIONALIZED TRANSMISSION TESTS
10	Repeat Steps 7 and 8.
11	Patch from the TST B jack of the 1A toll test unit to the SEND or REC jack of the transmission measuring system as required. The TALK key should be normal during transmission measurements.
	SECTIONALIZED SIGNALING TESTS
	These tests are made using the test circuit arrangement shown in the sketch.
12	Repeat Steps 7 and 8.
13	To send a 20-cycle, operate the RING key of the 1A toll test unit.
14	To check the received signal, patch from the TST B jack of the 1A toll test unit to the HOLD jack of the 20-cycle recall circuit. The incoming signal should light the HOLD lamp of the 20-cycle recall circuit. The TALK keys of the 1A toll test unit should be normal.
15	To extinguish the lamp, insert a secondary test cord with its associated TALK key operated into the TALK jack of the recall circuit.

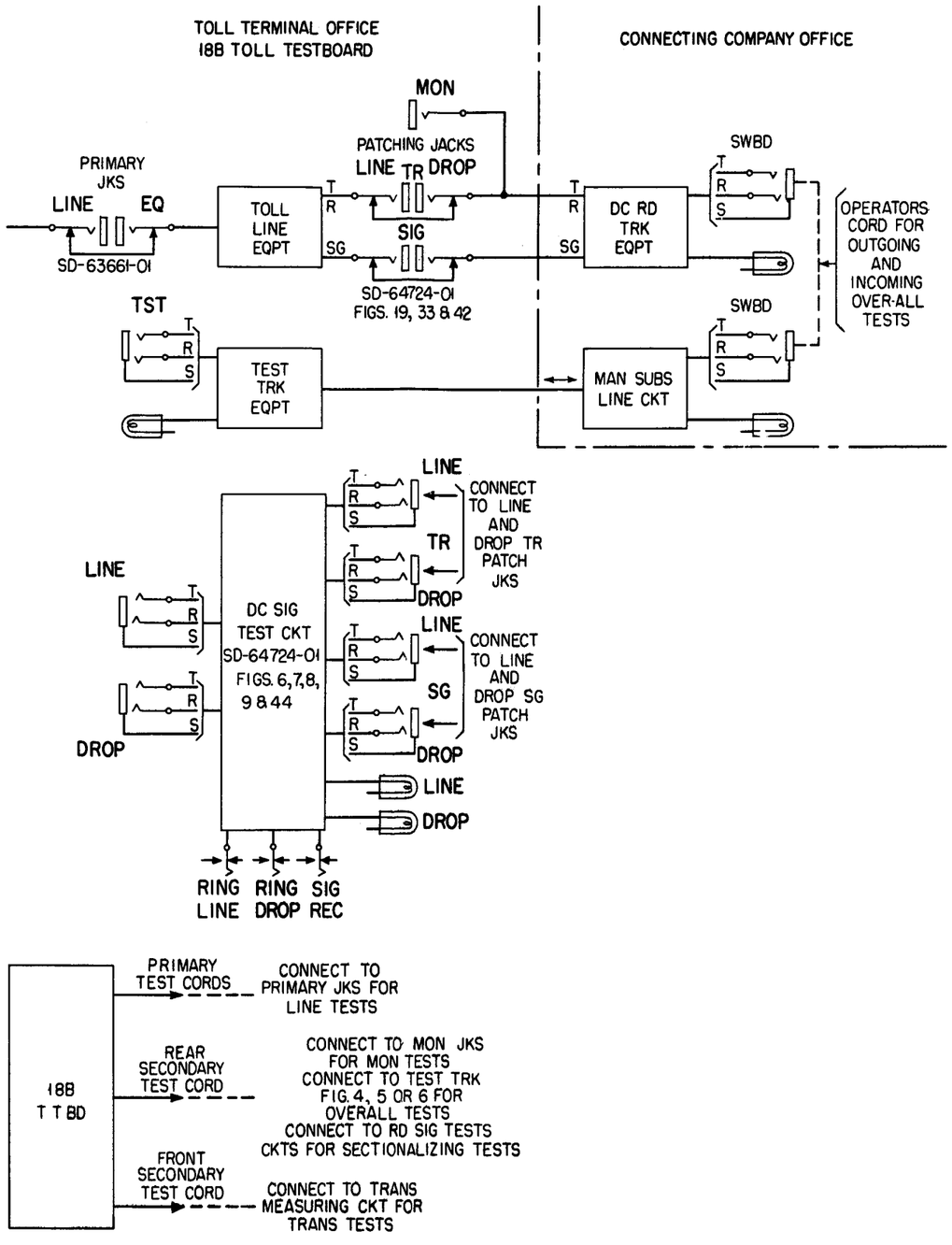


TESTBOARD NO. 18B - MESSAGE TRUNK TESTING PROCEDURES

CHART 6B: RINGDOWN TRUNK TESTING PROCEDURE - DC SIGNALING TOWARD THE SWITCHBOARD

A typical testing arrangement for ringdown intertoll trunks using dc signaling toward the switchboard is attached. Reference may be made to the sketch in the chart for the testing procedures that follow:

STEP	PROCEDURE
	MONITORING TESTS
1	Connect any rear secondary test cord to the MON jack of the intertoll trunk to be tested and operate the associated cord circuit key to MON.
	OVER-ALL TALKING TESTS
	These tests may be made by using the test trunk provided between the 18B toll testboard and the connecting company switchboard.
2	Connect a rear secondary test cord to the test trunk, operate the associated cord circuit key to TALK and momentarily operate the RING key.
3	When the operator at the switchboard answers, request a connection to the intertoll trunk to be tested and also have the operator signal the distant terminal. Note: No provision for over-all signaling is available since signals can not be repeated through the connecting company switchboard.
	OVER-ALL TRANSMISSION TESTS
	These tests are made using the test trunk between the 18B toll testboard and the connecting company switchboard. When this test trunk is used for transmission measurements, the necessary corrections for the transmission loss of the test trunk and the operator's cord circuit must be applied as required. The transmission loss of the test trunk and the operator's cord circuit should be predetermined and the necessary correction values recorded and readily available to the testboard attendant.
4	Establish a connection to the distant end as described in Steps 2 and 3.
5	When the type of transmission test to be made is determined, connect the front test cord of the secondary test cord pair being used to the transmission measuring circuit as required.
6	To determine the correct loss of the intertoll trunk being tested, apply the predetermined correction values of the test trunk and the operator's cord circuit to the results obtained.
	SECTIONALIZED TALKING TESTS
	These tests are made by using the signaling test circuit shown in the sketch.
7	Remove the intertoll trunk from service.
8	Patch from the TR LINE and DROP jacks of the signaling test circuit to the TR LINE and DROP patching jacks of the intertoll trunk to be tested.
9	After determining the direction in which the test is to be made, connect a rear secondary test cord to either the LINE or DROP jack of the signaling test set as required, and operate the associated cord circuit key to TALK.
	SECTIONALIZED TRANSMISSION TESTS
10	Repeat Steps 7 and 8.
11	To make a transmission measurement toward either the line or the drop section, insert a secondary test cord into the LINE or DROP jack of the signaling test circuit.
12	With the key of the associated cord circuit normal, connect the front cord of the secondary test cord pair being used to the transmission measuring circuit as required.
13	In the case of a measurement toward the drop it will be necessary to apply the correction value of the test trunk and the operator's cord circuit to the results obtained.
	SECTIONALIZED SIGNALING TESTS
	These tests are made by using the signaling test circuit shown in the sketch.
14	Repeat Steps 7 and 8.
15	Patch from the SG LINE and DROP jacks of the signaling test circuit to the SG LINE and DROP patching jacks of the intertoll trunk to be tested.
16	Insert a rear secondary test cord into the LINE or DROP jack of the signaling test circuit as required, for talking toward either the line or drop section.
17	To signal toward the line, operate the RING LINE key of the signaling test circuit.
18	To signal toward the drop, operate the RING DROP key of the signaling test circuit.
19	To check incoming signals, operate the SIG REC key of the signaling test circuit. Signals from the line section will light the LINE lamp. Signals from the drop section will light the DROP lamp.



TESTBOARD NO. 18B - MESSAGE TRUNK TESTING PROCEDURES

CHART 6C: DIAL TYPE INTERTOLL TRUNK TESTING PROCEDURES

A typical testing arrangement for dial type intertoll trunks employing signaling over E and M leads is shown in the sketch. Two test trunk arrangements are shown and the type of test trunk provided at a particular installation will determine the part of the sketch to be used.

The testing procedures that follow are applicable to the following dial type intertoll trunks: 2-way dial, incoming dial-outgoing automatic and outgoing dial-incoming automatic.

STEP	PROCEDURE
	MONITORING TESTS
1	Connect any rear secondary test cord to the MON jack of the intertoll trunk to be tested and operate the associated cord circuit key to MON.
	OVER-ALL TALKING TESTS
	These tests are made using the test trunk provided between the 18B toll testboard and the connecting company switchboard.
2	Connect a rear secondary test cord to the test trunk and operate the associated cord circuit key to TALK. If necessary, dial the proper code to signal the operator.
3	When the operator at the switchboard answers, request a connection to the intertoll trunk to be tested and also have the operator signal the distant end.
	Note: No provision for over-all signaling is available since signals can not be repeated through the connecting company switchboard or switches.
	OVER-ALL TRANSMISSION TESTS
	These tests are made using the test trunk provided between the 18B toll testboard and the connecting company office. When this test trunk is used for transmission measurements, the necessary corrections for the transmission loss of the test trunk and the operator's cord circuit must be applied as required. The transmission loss of the test trunk and the operator's cord circuit should be predetermined and the necessary correction values recorded and readily available to the testboard attendant.
4	Establish a connection to the distant end as described in Steps 2 and 3.
5	When the type of transmission test to be made is determined, connect the front test cord of the secondary test cord pair being used to the transmission measuring circuit as required.
6	To determine the correct loss of the intertoll trunk being tested, apply the predetermined correction values of the test trunk and the operator's cord circuit to the results obtained.
	SECTIONALIZED TALKING TESTS
	These tests are made by using the signaling test circuit shown in the sketch.
7	Remove the intertoll trunk from service.
8	Patch from the TR LINE and DROP jacks of the signaling test circuit to the TR LINE and DROP patching jacks of the intertoll trunk to be tested.
9	After determining the direction in which the test is to be made, connect a rear secondary test cord to either the LINE or DROP jack of the signaling test circuit as required and operate the associated cord circuit key to TALK.
	SECTIONALIZED TRANSMISSION TESTS
	These tests are made using the test trunk provided between the 18B toll testboard and the connecting company switchboard.
10	Repeat Steps 7 and 8.
11	To make a transmission measurement toward either the line or the drop section, insert a secondary test cord into the LINE or DROP jack of the signaling test circuit.
12	With the key of the associated cord circuit normal, connect the other cord of the cord pair to the transmission measuring circuit as required.
13	In the case of a measurement toward the drop it will be necessary to apply the correction value of the test trunk and the operator's cord circuit to the results obtained.
	SECTIONALIZED SIGNALING TESTS
	These tests are made using the E and M signaling test circuit shown in the sketch.
14	Remove the intertoll trunk from service.
15	Patch from the TEST LINE and DROP jacks of the E and M signaling test circuit to the SIG LINE and DROP patching jacks of the intertoll trunk to be tested.
	Note: The number and type of tests with their respective requirements that are applicable to the various types of signaling facilities are not given herein. The detailed methods and requirements to be employed will be found in other Bell System Practices issued for the various types of signaling test sets and methods of signaling.