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STEP-BY-STEP SYSTEMS NO. 1, 350A, 355A OR 35E97 TEST DISTRIBUTOR CONTROL CIRCUIT FOR USE IN TESTING SUBSCRIBER LINES FROM A LOCAL TEST DESK ARRANGED FOR PERMANENT SIGNAL TESTS

Changes

D. Description of Changes

D.1 In Fig. 1, information is added to T, R, S and G leads to show connection with the Trunk Switching Circuit, LSV Test Trunk Applique Circuit and LSV Trunk Access Switch Circuit.

D.2 NO. 14 is removed from the title box so that this circuit may be used with any test desk similar to the 14 or 16 type.

F. Changes in Description of Operation

F.1 Change all titles to read:

STEP-BY-STEP SYSTEMS
NO. 1, 350A, 355A OR 35E97
TEST DISTRIBUTOR CONTROL CIRCUIT
FOR USE IN TESTING SUBSCRIBER LINES
FROM A LOCAL TEST DESK
ARRANGED FOR PERMANENT
SIGNAL TESTS

F.2 No. 14 is removed from paragraph 1, PURPOSE OF CIRCUIT under SECTION I - GENERAL DESCRIPTION.

F.3 Under 4, CONNECTING CIRCUITS, add:

(h) LSV Test Trunk Applique Circuit - SD-97553-01

(i) LSV Trunk Access Switch Circuit - SD-1C398-01

(j) Trunk Switching Circuit - SD-1C381-01 (typical)

F.4 Add to SECTION III - REFERENCE DATA:

5. This Test Distributor Control Circuit shall be capable of performing all the functions or working limits specified in SECTION III - REFERENCE DATA, and meeting all the requirements of the Circuit Requirements Table and battery voltage or other limits specified in SD-31401-01.

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DEPT 5225-LCB
WECo DEPT 5152-GDA-WEA

STEP-BY-STEP SYSTEMS
NO. 1, 350A, 355A OR 35E97
TEST DISTRIBUTOR CONTROL CIRCUIT
FOR USE IN TESTING SUBSCRIBER LINES
FROM LOCAL TEST DESK NO. 14
ARRANGED FOR PERMANENT
SIGNAL TESTS

CHANGES

D. Description of Changes

D.1 In Fig. 1, information is added at the T, R, and S leads to show connection to the remote testing circuit.

D.2 Fig. 53 and 54 are changed to reflect the above additions.

F. Changes in CD Sections

F.1 Under 4. CONNECTING CIRCUITS, add:

(g) Common Systems - Remote Testing Circuit - Far End - SD-99311-01.

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DEPT 5823-WCB-MR

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STEP-BY-STEP SYSTEMS
NO. 1, 350A, 355A OR 35E97
TEST DISTRIBUTOR CONTROL CIRCUIT
FOR USE IN TESTING SUBSCRIBER LINES
FROM LOCAL TEST DESK NO. 14
ARRANGED FOR PERMANENT
SIGNAL TESTS

CHANGES

D. Description of Changes

D.1 The circuit title is changed to add reference to No. 355A and 35E97 offices.

D.2 The circuit is rated A&M Only for 350A and 35E97 offices.

BELL TELEPHONE LABORATORIES, INCORPORATED

DEPT 5641-WCB-RMW

STEP-BY-STEP SYSTEMS
NO. 1 OR 350A
TEST DISTRIBUTOR CONTROL CIRCUIT
FOR USE IN TESTING SUBSCRIBER LINES
FROM LOCAL TEST DESK NO. 14
ARRANGED FOR PERMANENT
SIGNAL TESTS

TABLE OF CONTENTS

SECTION I - GENERAL DESCRIPTION

1. PURPOSE OF CIRCUIT

This circuit is used as a control circuit for connecting a test line at the local test desk with the test distributor circuit for the purpose of testing subscriber lines from the local test desk NO. 14.

2. GENERAL DESCRIPTION OF OPERATION

The circuit is seized by placing a bridge across tip and ring leads and causing high negative current to flow into the sleeve lead. This is done by inserting a test cord into jack of the associated test trunk and operating the dial key at the local test desk. The tester then dials the appropriate number to activate the test distributor and test connector to connect to the line to be tested.

Operation of the 3WO key at the local test desk will release the cutoff relay without releasing the connecting chain of circuits.

In case there is a permanent signal on the line to which the test connector is connected, the tester can operate a permanent signal release key at the test desk to release the associated selector.

The test connector can be advanced to other lines of the same level or released and advanced to a different level by operating the dial key and connector release keys at the test desk. This can be done without disconnecting and reseizing the chain of circuits.

Disconnect is accomplished by connecting low resistance negative battery to the sleeve lead while tip and ring are open. The high negative sleeve current in the absence of a bridge across tip and ring is the disconnect signal. This is done by removing the test cord from the test trunk and operating the disconnect key.

SECTION II - DETAILED DESCRIPTION

1. ORIGINATING A TEST

When the plug of a test cord is inserted in the jack of a test trunk and the dial key is operated, a bridge is placed across the tip and ring in series with compensating resistances C and D (when furnished) or through Z wiring, completing a circuit over the line tip and line ring to operate the A and G relays in the test distributor circuit in series with relay LS of the control circuit. The operation of these relays connects a ground to the line sleeve which operates the SB relay through contacts of relay LS. The operation of relay SB locks itself to the line sleeve, closes a circuit for the operation of relay KD and at the same time connects the sleeve relays S and D to the sleeve of the cord at

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line circuit when sleeve lead is opened (by operating key 3WO) at local test desk.

3.5 Advances test connector by rotary stepping without releasing connecting chain of circuits.

3.6 Connects to a permanent signal test circuit in order to release the selector which is connected to the line.

3.7 Restores to normal when test cord is removed from test trunk jack and the disconnect key in the test trunk is operated.

3.8 Relay LS requires a plug to be in the test trunk jack in order to operate relay SB. This permits varying the test distributor without blocking relay SB.

3.9 When option M is provided relay D in combination with polar relay TT in TOUCH-TONE frequency test applique circuit acts to detect both magnitude and polarity of sleeve current to differentiate between TOUCH-TONE test signal and dial or disconnect signals on the sleeve lead from the test desk.

4. CONNECTING CIRCUITS

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

(a) Test Trunk Circuit from Local Test Desk No. 14 - SD-95737-01.

(b) Test Trunk Ringing Circuit - SD-96474-01.

(c) Test Distributor Circuit - SD-32007-01.

(d) Permanent Signal Test Circuit - SD-31402-01.

(e) Line Insulation Test Control Circuit - SD-32219-01.

(f) TOUCH-TONE Frequency Test Applique Circuit - SD-99321-01.

SECTION IV - REASONS FOR REISSUE

A. CHANGED AND ADDED FUNCTIONS

A.1 When M option is specified, relay D in combination with polar relay TT in TOUCH-TONE frequency test applique circuit acts to detect both magnitude and polarity of sleeve current from the test desk. High negative current indicates dialing or disconnect condition as in the past. High positive current in interpreted as TOUCH-TONE signal to activate the applique circuit.

D. DESCRIPTION OF CHANGES

D.1 Options M and N are added. When option M is specified, new leads "T1", "R1", "D", and "D1" are provided to the TOUCH-TONE frequency test applique circuit.

D.2 Crossconnect information for leads "T", "R", and "S" has been changed to add TOUCH-TONE frequency test applique circuit.

D.3 Circuit Note 112 has been added.

D.4 Connecting circuits list has been brought up to date.

D.5 Options Used Table has been changed to show options M and N.

D.6 CD has been rewritten in sectionalized form.

D.7 Crossconnect Fig. 51 and 54 have been changed to show new leads "T1", "R1", "D", and "D1".

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DEPT 2361-KES-AAB

Restoring the permanent signal test key at the test desk will close the sleeve circuit to reoperate relay S. This will operate relay SD which opens the locking circuit for relay DB which releases and in turn releases relay PT. This again cuts through the test leads to the test desk for further tests. The purpose of the chain circuit through the CH relays of different control circuits is to permit only one control circuit to be connected to the common permanent signal test circuit at a time.

5. ADVANCE OF TEST CONNECTOR

When the dial key in the test desk is reoperated, a bridge is connected across the "T" and "R" leads and a low resistance battery is connected to the "S" lead, causing the D relay to operate. The D relay operated, shunts down the KD relay through the A resistor. The KD relay released, releases the CT and SC relays and operates the DC relay in turn operating the DD and CD relays. The CD relay operated opens the test tip and test ring leads. With the CT, KD, and SC relays released, the 100-ohm B resistor is short circuited and the test distributor is held by the bridge in the test desk. The connector may then be advanced by means of the dial to other lines in the same level or it may be released by means of the connector release key in the test desk and advanced to a different level by means of the dial. Restoring the dial key at the test desk will again switch the tip and ring to the test leads as previously described.

6. DISCONNECTION

When the plug is withdrawn from the test trunk jack and the disconnect key of the test trunk circuit is operated the "T" and "R" leads are opened and a low resistance battery is connected to the "S" lead, causing the D relay to operate. The D relay operated, shunts down the KD relay through the A resistor. The KD relay released, releases the CT and SC relays which opens the bridge across the line tip and ring leads causing the test distributor and test connector to release. When the test distributor is normal, ground is removed from the line sleeve lead releasing the SB relay in turn releasing the DC, DD, and CD relays, opening the operating circuit of the KD relay. The SB relay releasing opens the sleeve of the test line releasing the D and S relays in turn releasing the SD relay and the circuit is normal.

7. "TOUCH-TONE" STATION TESTS

When TOUCH-TONE station tests are provided for under control of the local test desk the TOUCH-TONE frequency test applique circuit is wired between the test distributor control circuit and the test desk. When option M is provided the path from contact 1 of D relay to winding of KD relay passes through break contacts of TT relay in the applique circuit via leads "D" and "D1". When the connection to the desired line has been established, as previously described, and the tester wants to establish the TOUCH-TONE station test condition he operates the TT key in the test desk. This switches the sleeve lead from high resistance negative battery to low resistance positive battery. Momentarily the S relay releases and then the high positive current causes relay TT in the applique circuit and relays D and S in the control circuit to operate. Relay TT operates before the D relay, transfering the ground from D relay operated to the winding of relay TTS in the applique circuit. This operates relay TTS and prevents the operation of D relay from shunting down relay KD.. The control circuit remains in same status as before TOUCH-TONE test commenced.

SECTION III - REFERENCE DATA

1. WORKING LIMITS

Working limits are given as maximum external resistance. Minimum insulation resistance is 60,000 ohms.

	Earth Pot.=0V	Earth Pot. =±15V	Earth Pot. =±27V
Adj A			
Relay D	1220 ohms	730 ohms	
Relay S	6915 ohms	4470 ohms	
Relay T			1609 ohms
Relay R			711 ohms
Adj B			
Relay D	1800 ohms	1025 ohms	
Relay S	8450 ohms	5600 ohms	
Relay T			2000 ohms
Relay R			711 ohms

2. FUNCTIONAL DESIGNATIONS

None.

3. FUNCTIONS

3.1 Operation of SB relay by test distributor closes the sleeve path from the test desk.

3.2 Holds a bridge across "LINE T" and "LINE R" leads during testing of the subscriber line.

3.3 Connects the test tip and test ring to the line when the dial key at the test desk is restored to normal after the desired number has been dialed.

3.4 Connects a ground to line tip and ring to release cut-off relay in subscriber

line circuit when sleeve lead is opened (by operating key 3WO) at local test desk.

3.5 Advances test connector by rotary stepping without releasing connecting chain of circuits.

3.6 Connects to a permanent signal test circuit in order to release the selector which is connected to the line.

3.7 Restores to normal when test cord is removed from test trunk jack and the disconnect key in the test trunk is operated.

3.8 Relay LS requires a plug to be in the test trunk jack in order to operate relay SB. This permits varying the test distributor without blocking relay SB.

3.9 When option M is provided relay D in combination with polar relay TT in TOUCH-TONE frequency test applique circuit acts to detect both magnitude and polarity of sleeve current to differentiate between TOUCH-TONE test signal and dial or disconnect signals on the sleeve lead from the test desk.

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