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STEP-BY-STEP SYSTEMS
NO. 355A OR 35-E-97
TEST JACK AND
CONNECTOR TEST LINE CIRCUIT

CHANGES

D. Description of Changes

D.1 Note 105 is changed to clarify use of Fig. 15 in various CO environments.

D.2 Aux. intercepting trunk is added in connecting information in Fig. 15.

D.3 Connecting Circuit added:

4.15 Auxiliary Intercept Trunk SD-35042-01

D.4 Fig. 65 is changed to add connecting information.

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DEPT. 5245-GFC
WECO DEPT. 2311-JS-WEA

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STEP BY STEP SYSTEMS
NO. 355A OR 35-E-97
TEST JACK AND
CONNECTOR TEST LINE CIRCUIT

CHANGES

A. Changed and Added Functions

A.1 This circuit is modified to provide the routing to intercept capability when Fig. 15 is used.

B. Changes in Apparatus

B.1 Added

AIS key 597A, Fig. 15
ID Diode 446T, ZB option, Fig. 15

D. Description of Changes

D.1 Fig. 15 was added to enable this circuit to route to intercept.

D.2 Options ZA and ZB were established by the modification of this circuit for use with an intercept system.

D.3 Circuit note 105 is changed to show option application for offices equiped with both 100 PT and 200 PT connectors also applicable for offices equipped with 200 PT connectors only.

D.4 Connecting circuits added:

4.11 Intercept trunk circuit SD-31337-01.
4.12 Auxiliary intercept trunk SD-32531-01.

All other headings under Changes, No Change

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STEP BT STEP SYSTEMS
NO. 355A OR 35-E-97
TEST JACK AND
CONNECTOR TEST LINE CIRCUIT

CHANGES

D. DESCRIPTION OF CIRCUIT CHANGES

D.1 A Replacement Note stating that this circuit replaces Fig. 2, SD-30947-01 is added in the title box.

4. CONNECTING CIRCUITS

4.12 Connector Test Line Circuits - SD-30947-01.

BELL TELEPHONE LABORATORIES, INCORPORATED

DEPT. 2335-MKD-FBB-MS

STEP BY STEP SYSTEMS
NO. 355A OR 35E97
TEST JACK AND
CONNECTOR TEST LINE CIRCUIT

CHANGES

B. CHANGES IN APPARATUS

B.1

Superseded	Superseded By
400B (+R)	400J (+R)
400B (-R)	400J (-R)
Varistors	Diodes

D. DESCRIPTION OF CIRCUIT CHANGES

D.1 The 19-type resistors in Fig. C, D and F shown incorrectly in the previous issue, are shown correctly to agree with WECo drawings.

D.2 Note 110 was revised to cover the use of Fig. 4, 6, 7, 13 and 14 and reference to this change was added in Note 108 for Issue 11-D.

D.3 The designation ± was added to Fig. 2 to agree with associated drawing ED-30664-30.

D.4 The 400B varistors (Fig. 9) are rated Mfr. Disc., superseded by 400J diodes as shown in Note 108.

D.5 Options "T, Q, K, U, P and Fig. 6 previously rated A&M Only, now rated Mfr. Disc.

D.6 Information in Note 105 for Fig. 9, 10 and 11, revised to agree with Fig. 9, 10 and 11 information in CD.

D.7 Title of Fig. 11 is revised to delete "or 4-pty", unnecessarily added in previous issue.

D.8 In Fig. 5, the connecting information for the A or EC lead has been changed. The "A" lead is changed to "H" lead to agree with equipment designations on the terminal strips.

All other headings, no change.

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DEPT. 2335-WCB-FBB-LL

STEP BY STEP SYSTEMS
NO. 355A OR 35-E-97
TEST JACK AND
CONNECTOR TEST LINE CIRCUIT

CHANGES

B. CHANGES IN APPARATUS

B.1 Added

1 - 240 type jack, Option F, Fig. 3.

1 - 597A (TRANS) key, Option E, Fig. 12.

D. DESCRIPTION OF CIRCUIT CHANGES

D.1 Options E and A are added for use in offices equipped with both 100 and 200 point connectors. Option F shows the former wiring and is furnished in offices equipped with 100 point connectors only.

D.2 Circuit Note 104 is rated Mfr. Disc. and replaced by Note 111.

D.3 Circuit Note 105 is changed to include use of A, E and F options.

D.4 Reference to Options A, E and F is added to Note 108 and Options Used table.

All other headings under Changes, no change.

1. PURPOSE OF CIRCUIT

1.1 This circuit provides battery and ringing current supply jacks, a connector test line at the various frames and means for making miscellaneous tests on certain types of connectors and reverting call selectors.

2. WORKING LIMITS

2.1 The rated resistance for operating relay B to close springs 4T-5T only is 3000 ohms.

3. FUNCTIONS

3.1 To supply battery and ground and ringing current to test sets.

3.2 To provide means for connecting a connector test line to a test set.

3.3 To test the polarity of ringing for 8 party connectors and reverting call selectors.

3.4 To control connection of the 8 party ringing test circuit from the test set (Figs. 9 & 10).

3.5 To provide for transmission tests through connectors.

3.6 To provide Trip and Non-Trip Resistances for Testing and adjusting Tripping Relays of Reverting Call Selectors and of certain connectors.

3.7 To provide means for connecting the connector test line in both upper and lower sets of banks of 200 point connectors to a test set.

3.8 To provide for extending the test line jacks to the toll transmission selector frames and to the relay rack for coin box trunks or incoming trunks from toll with rering for testing through the switching train.

4. CONNECTING CIRCUITS

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

4.01 This circuit connects with test set circuits which require 48 volt battery of continuous ringing current.

4.02 Connector Circuits, 355A Dial Office - SD-31737-01.*

4.03 Interrupter Relay Circuit, 355A Dial Office - SD-31868-01.

4.04 Power Ringing Circuit - SD-80885-01.*

4.05 Reverting Call Selectors - SD-31330-01.*

4.06 Connector Test Set - SD-31859-01.

4.07 Trunk Test Set - SD-31858-01.

4.08 Misc. Circuit for Relay Racks - SD-32153-01.

4.09 One-way Transmission Test Line - SD-96000-01.

4.10 Local Connectors - SD-33005-01, SD-33006-01, SD-33007-01, SD-33008-01.

4.11 Combination Connectors - SD-33009-01, SD-33010-01.

*Typical Circuit

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P5

DESCRIPTION OF OPERATION

5. BATTERY AND GROUND SUPPLY - FIG. 1

48 volt battery and ground are connected respectively to the tip and sleeve of the jack and the connection is established with the test set to be used, by means of a suitable patching cord.

6. RINGING CURRENT SUPPLY - FIG. 2

Ringing Current and ring ground are connected respectively to the ring and tip of the jack and connection is established with test sets requiring ringing current, by means of a suitable patching cord.

7. CONNECTOR TEST LINE - FIGS. 3 AND 8

Battery and ground are connected respectively to the tip of the jack (R) and the ring of jack (B). The ring and tip of the test line are connected respectively to the ring and sleeve of jack (R) with the sleeve of the test line connected to the tip of jack (B) and grounded normally when no plug is in the jack. Connection is established to the test set by suitable patching cords. Option F is provided in offices equipped with 100 point connectors only. Options A and E are provided in offices equipped with both 100 and 200 point connectors.

Fig. 8 is used for extending the test line jacks of Fig. 3 to the toll transmission selector frames and to the relay rack for coin box trunks or incoming trunks from toll with rering. In this case ground, "Y" wiring, is connected to the ring of jack (B) in the last Fig. 8 of a series, to ground the sleeve of the test line when no plug is in the jack. When "V" option is not provided, battery should be connected to the test set and the test set connected to the (B) and (R) jacks. Other connections to the test line are set up as described for Fig. 3. Connection is then established to the circuit under test by suitable patching cords. With "V" and "Y" options, jacks (R) and (B) of Fig. 8 supply battery and ground to the test set. With "V" option, connection to the jack of Fig. 1 is not required since jack (R) supplies battery to the test set.

8. 8-PARTY SEMISELECTIVE CONNECTORS (TPS) OR 10-PARTY - 3 CODE RINGING CONNECTORS (TPS) - FIGS. 4, 5 AND 6

Note: Test set shall be connected to Fig. 3.

The test line number is dialed from an 8-party semiselective or 10-party - 3 code ringing connector and when the test line is seized by the connector, ringing current is supplied, causing one of the bells of the subsets to ring according to the polarity of the ringing current. Operate the (BELL R) key to connect the subsets of Fig. 6 to the ring side of the line. Different tone gongs are supplied to enable the test man to determine audibly that the proper ringing current and ringing code is received. The bell in the R- subset should ring with the NOR key normal or with the NO-MG key operated and the bell in the R+ subset should ring with the OP-MG key operated. These keys test the sensitive relay operate, marginal relay non-operate and marginal relay operate respectively in the 8-party semiselective or 10-party 3 code ringing connectors. Restore the (BELL R) key after ringing tests are completed.

9. RINGING TEST - 8-PARTY SEMISELECTIVE CONNECTORS (TPL) - FIGS. 4 AND 6

Note: Test set shall be connected to Fig. 3.

The test line number is dialed from an 8-party semiselective connector and when the test line is seized by the connector, ringing current is supplied causing one of the bells of the subsets to ring according to the polarity of the ringing current. (BELL R) or (BELL T) keys change the bells from the ring to the tip of the test line. Different tone gongs are supplied to enable the test man to determine audibly that the proper ringing current and ringing code is received.

10. RINGING TEST - 8-PARTY SEMISELECTIVE REVERTING CALL SELECTOR - FIGS. 6 AND 7

Note: Test set shall be connected to Fig. 7.

Ringing current is supplied to Fig. 7 through the test set from the reverting call selector causing one of the bells of the subsets to ring according to the polarity of the ringing current. (BELL R) or (BELL T) position of the key changes the bells from the ring to the tip of the test line.

11. EIGHT PARTY SEMISELECTIVE CONNECTORS (TPS) OR TEN PARTY 3 CODE CONNECTORS (TPS) - FIGS. 5, 9 AND 10

Note: Test set (arranged to receive visual ringing signals) shall be connected to Figs. 3 and 10.

The test line number is dialed from an eight party semiselective or ten party - 3 code connector, and when the test line is seized ringing current will cause vacuum tube and relay +R or -R to function, lighting one of two lamps in the test set which will indicate whether positive or negative superimposed ringing was received. To test for positive superimposed ringing the OP-MG key of Fig. 5 should be operated. To test for negative superimposed ringing

the key of Fig. 5 should be in the NOR or in the NO-MG position. The key of Fig. 5 tests the sensitive relay operate, and the marginal relay operate and nonoperate in the connectors, respectively. As T.P.S. connectors always ring over the ring side of the circuit, the test set should supply low resistance ground over lead S to fully operate relay B thus connecting the vacuum tubes to the ring of the test line.

12. RINGING TESTS - EIGHT PARTY SEMISELECTIVE CONNECTORS (TPL) FIGS. 9 AND 10

Note: Test set (arranged to receive visual ringing signals) shall be connected to Figs. 3 and 10.

The key in the test set should be operated to supply low resistance ground over lead S when testing a connector for supplying ringing over the ring, or a 3000 or 3580 ohm ground for testing a connector for supplying ringing over the tip. The test line number is then dialed followed by the proper ringing digit for the type of ringing to be tested. When the test line is seized, ringing current will cause vacuum tube and relay +R and -R to function, lighting one of two lamps in the test set to indicate whether positive or negative superimposed ringing is received.

13. RINGING TESTS - EIGHT PARTY SEMISELECTIVE REVERTING CALL SELECTOR FIGS. 9, 10 AND 11

Note: Test set (arranged to receive visual ringing signals) shall be connected to Figs. 10 and 11.

The key in the test shall be operated to supply direct or low resistance ground over lead S when testing for ringing on the ring of the line, or high resistance ground (3000 ohms or more) when testing for ringing on the tip of the line. The proper code for the test to be made is then dialed and the key in the test set is operated to open the dialing loop. Ringing current will then be supplied by the reverting call selector thru the jack of Fig. 11 causing vacuum tube and relay +R or -R to function, in turn lighting one of two lamps in the test set to indicate whether positive or negative superimposed ringing current is received.

14. TEST AND READJUST JACKS FOR 4-PARTY SELECTIVE AND 8-PARTY SEMISELECTIVE LINES WITH RELAY SUB SETS AND 10-PARTY 3 CODE RINGING LINES - FIGS. C OR D AND G OR H

When there are any 42A subsets on 4-party selective ringing lines, or any relay type subsets on 8-party semiselective lines, or any 10-party 3 code ringing lines, jack SUP Fig. C is used for tests and Jack AC of Fig. A or G for adjustment of trip relays of connectors or reverting call selectors servicing these lines. When there are any 4-party inverted relay selective ringing lines, Figs. D and B or H are similarly used.

15. REVERTING CALL SELECTOR TEST AND READJUST JACKS

The (TST) jack of Fig. E is used as a test jack for the tripping relays of Reverting Call Selectors adjusted for 1000 or 1115 ohms external circuit loop. The TST and ADJ jacks of Fig. F are used for the trip relays of Reverting Call Selectors adjusted for 1400 or 1500 ohm external circuit loop. The 552E key should be turned to "AC-DC" before making pretrip tests of reverting call selectors using ac-dc ringing and to "ST" before making the silent interval trip test of reverting call selectors using 67 volt trip battery.

16. TRANSMISSION TESTS

When transmission tests are to be made, operating the key (TRANS) E or F option) of Fig. 12 connects the test line terminal to the one way transmission test line, and transmission tests through the connector may then be made.

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