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COMMON SYSTEMS
LOCAL TEST CABINET NO. 3
LOCAL TEST DESK NO. 14
DIAL TESTING CIRCUIT

CHANGES

B. Changes in Apparatus

B.1 Superseded

E, 18HB Resistor,
2200 ohms, R Option

Superseded By

E, 18HC Resistor,
3000 ohms, K Option

D. Description of Changes

D.1 In Fig. 1, resistor E is changed to 18HC, 3000 ohms, and designated K option.

D.2 Note 103 is changed to rate R option Mfr Disc. and add K option as the new standard for resistor E.

D.3 Note 107 is added for K option.

D.4 New working limits are added for P and P1 relays when K option is provided.

D.5 Options Used Table is enlarged to add option K.

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DEPT 5643 - JEK - MR

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COMMON SYSTEMS
LOCAL TEST CABINET NO.3
LOCAL TEST DESK NO.14
DIAL TESTING CIRCUIT

CHANGES

A. Changed and Added Functions

A.1 These changes provide for the use of this circuit in testing dials in a No.1 ESS office.

B. Changes in Apparatus

B.1 ADDED

185A Network DT, Q Option
186A Network C, Q Option

D. Description of Changes

D.1 Q option was added to provide connections to the No.1 ESS tone circuit where this circuit is used for testing dials in a No.1 ESS office. Q option also provides a ground return circuit to reduce cross induction, and provides contact protection networks on the DT and C relay windings to eliminate sources of extraneous noise.

D.2 Circuit Note 102 was rearranged to include options N and Q.

D.3 Circuit Notes 104 and 105 were added.

D.4 The battery limits 42.75 to 52.5 volts for No. 1 ESS offices were added.

D.5 Circuit Note 106 was added to clarify the fusing of the LT2 tone lead. No fuse is required where the tone supply is superimposed on ground.

D.6 Equipment Note 202 and ED-92867-18 were added. Note 202 covers space reservation to facilitate the running of the cable to the unit in No.1 ESS offices.

D.7 Options Q and N were added in the Options Used table and reference to these options was added in the Record Note 103.

F. Changes in CD Sections

F.1 In 4. CONNECTING CIRCUITS, add:

4.3 Power Systems, Tone Circuit for Interruption, Control, and Distribution in No.1 ESS offices - SD-81652-01.

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CIRCUIT DESCRIPTION
SWITCHING SYSTEMS DEVELOPMENT DEPARTMENT

CD-96335-01
Issue 2-B
Appendix 2-D
Dwg. Issue 5-D

COMMON SYSTEMS
LOCAL TEST CABINET NO. 3
LOCAL TEST DESK NO. 14
DIAL TESTING CIRCUIT

CHANGES

B. CHANGES IN APPARATUS

B.1 Superseded Superseded By
19CM Res. (E) 18BH Res. (E)

D. DESCRIPTION OF CIRCUIT CHANGES

D.1 "S" option is designated, rated
"Mfr. Disc.", and is superseded
by "R" option.

D.2 Battery limits "45-50V" are added. All other headings, no change.

D.3 This change is made to pro-
vide dial speed testing over
a maximum loop of 3000 ohms.

D.4 Working limits for (P) and
(Pl) relays, with "R" option,
are added and note 103 is expanded
to reflect the above changes.

TO BE USED AS AN ORIGINAL
BY THE REPRODUCTION PRINT SHOP

BELL TELEPHONE LABORATORIES, INC.

DEPT. 3310-DR-RLL-RJ

COMMON SYSTEMS
LOCAL TEST CABINET NO. 3
LOCAL TEST DESK NO. 14
DIAL TESTING CIRCUIT

CHANGES

B. CHANGES IN APPARATUS

B.1 Superseded Superseded by
239HE relay (P) 280W relay (P)

C. CHANGES IN CIRCUIT REQUIREMENTS OTHER THAN THOSE APPLYING TO ADDED OR REMOVED APPARATUS

C.1 Requirements for relay (P) formerly read:

<u>Code</u>	<u>BSP Fig</u>	<u>See Test Note No</u>	<u>Test for</u>	<u>After Soak</u>	<u>Test</u>	<u>Readj.</u>
239HE	10	1/2	O	-27	1.6	1.5
		1/2	H	27	1.5	1.4
		1/2	O	-19	1.2	
		1/2	O	-75	4.4	

C.2 Test Note 1 formerly read:
Contact separation Min. 3, Max. 4.
There shall be contact follow in both directions. This shall be checked by first inserting a 3 gauge in the gap between the armature stop pin and its pole face and then noting that the corresponding contact is made to close by the application of 27 M.A. in the proper direction.

D. DESCRIPTION OF CIRCUIT CHANGES

- D.1 "X" wiring is rated "Mfr. Disc." and is superseded by "W" wiring.
D.2 Notes 102 and 103 are changed to reflect the above changes.

All other headings, no change.

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DEPT. 3350-DR-FJS-AL

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COMMON SYSTEMS
LOCAL TEST CABINET NO. 3
LOCAL TEST DESK NO. 14
DIAL TESTING CIRCUIT

CHANGES

B. CHANGES IN APPARATUS

B.1 Added	Superseded	Superseded by
U735 (DT) Relay "W" Option	107A (L) Res. 25,000Ω ± 1% "Y" option	107A (L) Res. 24,900Ω ± 1% "V" option

D. DESCRIPTION OF CIRCUIT CHANGES

- D.1 "W" option was added for use with No. 14 L.T.D. and "X" option was designated.
- D.2 Circuit Note 103 was added.
- D.3 "Options Used" table was added.
- D.4 "W" and "X" options were added to Circuit Note 102.
- D.5 Max. dial speed (15 pps) and Max. Trk. conductor loop (21500) were removed from working limits table.
- D.6 "V" option was added and "Y" option was rated "Mfr. Disc."

All other headings under "Changes",
No Change.

1. PURPOSE OF CIRCUIT

- 1.1 This circuit provides facilities in the Local Test Cabinet No. 3 or Local Test Desk No. 14 for testing the speed of subscriber dials.

2. WORKING LIMITS

For (P) & (P1) Relays

- 2.1 Max. Ext. Ckt. Loop Res. - 2250 ohms
- 2.2 Min. Ins. Res. - 15,000 ohms
- 2.3 Allowable Rated Bridged Cap. at Sub. Sets - 4 mf

3. FUNCTIONS

- 3.1 This circuit receives dial pulses, translates them into condenser charge pulses, discharges these pulses through the volt-milliammeter in the associated circuit which measures and indicates them as pulses per second.

- 3.2 Provides a potentiometer to fix the charging voltage on the condenser.

- 3.3 Sends dial tone to the subscriber set when ready to receive dial pulses.

- 3.4 Removes dial tone when dialing starts.

4. CONNECTING CIRCUITS

- 4.1 Telephone and Test Circuit for Testing Subscriber Lines - SD-96181-01 (Local Test Cabinet No. 3).
- 4.2 Primary and Secondary Test Circuit - SD-90497-01 (Local Test Desk No. 14).

DESCRIPTION OF OPERATION

5. CALIBRATION

When the appropriate keys in the connecting circuit are operated to calibrate the meter for dial testing, the (C) relay operates. Relay (P) operates in a circuit through the subscribers line causing relay (P1) to operate and lock relay (C). Relay (C) operated connects ground through a 25,650 ohm resistance to the 24 volt terminal of the meter. Ground and battery are connected through the (K) and (G) resistances respectively and a rheostat in the connecting circuit to the negative terminal of the meter. The rheostat should be set to give a reading of 10 volts on the 24 volt scale of the meter. This will fix the voltage at a constant value compensating for the condition of the central office battery. One side of condenser C is connected to the negative terminal of the meter but with relay (C) operated the condenser is shunted by a discharging resistance.

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6. TEST

After the meter is set to read 10, the appropriate key is operated to prepare the circuit for dialing. This will open the operating circuit of relay (C), which remains locked to relay (P1), and when "X" option is provided connect ground to the (TN) rep coil to impress dial tone on the subscriber's line or when "W" option is provided operate the (DT) relay which connects dial tone to the (TN) rep coil and to the subscriber's line. Ten pulses will then be received, relays (P) and (P1) following these pulses. When relay (P1) releases on the first open it releases relay (C) which (a) removes dial tone when "X" option is provided or releases relay (DT) which removes dial tone when "W" option is provided, (b) opens the circuit through the 24 V. winding of the meter, (c) closes an equivalent (45,650 ohm) circuit locally to maintain the same voltage on the condenser and negative terminal of the meter, (d) opens the shunt on condenser C, (e) connects the other side of condenser C through the (P1) relay to the 1.2 M.A. terminal of the volt-milliammeter although no current will flow at this time. When relay (P1) reoperates on the next dial closure it disconnects condenser C from the meter and connects it to ground, thus charging it to the calibration voltage. When relay (P1) operates on subsequent dial opens

it discharges condenser C through the meter. Due to the inertia of the meter (its ballistic characteristics) it will accept these condenser pulses and integrate them as average current or coulombs per second. Since the coulombs are fixed by the voltage and capacity the meter reading will be inversely proportional to the time required for each pulse or directly proportional to the dial speed. The constants have been so chosen that the dial speed may be read directly on the 24 V. scale. When pulsing ceases the meter reading will fall off to zero, therefore, the reading just prior to falling off should be noted.

7. REPEAT TEST

If it is desired to repeat the dial test it is necessary only to momentarily return the connecting circuit to the dial set position and then return to the dial position. This will reoperate relay (C) which remains locked up to relay (P1) and once more impresses dial tone on the line under test. From this point the operation will be the same as described above.

8. DISCONNECTION

Restoring the keys in the connecting circuit to normal will at any time disconnect this circuit and release the relays.

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DEPT. 3350-WLS-FS-IF