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COMMON SYSTEMS
LOCAL TEST CABINET NO. 3
TELEPHONE AND TEST CIRCUIT
FOR TESTING SUBSCRIBER LINES

CHANGES

B. Changes in Apparatus

B.1 Added

W4CJ Cord Assembly - Fig. 14

B12 Removed

Replaced By

W4BK Cord Assembly, W4BR Cord Assembly,
Fig. 12, YH Option Fig. 12, YJ Option

D. Description of Changes

D.1 Connecting information on FS 1 is enlarged so that this circuit may function with MF outpulsing from a test trunk with key access. Option YK is designated and Option YL is added.

D.2 App. Fig. 14 is added for use at protector frame with 303 type connector for in and out test.

D.3 In App. Fig. 12, Cord Assembly W4BK is designated Option YH and rated manufacture discontinued - replaced by W4BR Cord Assembly - Option YJ.

D.4 Circuit note 113 is added to indicate that connection to positive coin voltage is required whenever option ZP for testing touch tone dials is equipped.

D.5 Changes supporting the above are made in the sheet index, apparatus index, lead index, option index and circuit notes 102 and 104.

BELL TELEPHONE LABORATORIES, INCORPORATED

DEPT 5225-ICB
WECO DEPT 5155-AAM-WEA

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D. Description of Changes

- D.1 In Section II paragraph 5.30 delete the words (Mfr. Disc.)
- D.2 In Section II paragraph 5.36 change the first sentence to read "An initial deposit in a multi-slot coin set, such as 1C-type, should cause ground to be applied to the coin relay through the hopper trigger contacts."
- D.3 In Section II paragraph 5.37 change the first sentence to read "In multi-slot coin stations, such as 200 type, arranged for dial tone first..."
- D.4 In Section II paragraph 5.42 change the first sentence to read "In a 1C-type coin telephone arranged..."
- D.5 In Section II paragraph 5.43 change the first sentence to read "The 1C-type coin sets arranged for dial tone first..."
- D.6 No record changes are made to bring the drawing into agreement with WECO manufacturing information.
- D.7 Wiring option YG is added to provide connection to a ~~DC-toDC converter on the Battery Supply Circuit.~~ The converter provides -72 volts in range-extended No. 2 ESS offices.

BELL TELEPHONE LABORATORIES, INCORPORATED

DEPT 5225-LCB
WECO DEPT 5155-JEH-WEA

COMMON SYSTEMS
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CHANGES

A. Changed and Added Functions

- A.1 A key (TTRK) and lamp are provided for switched access to test trunk kinds other than the test distributor. The connection can be held by operating the TTRK key to the HOLD position.
- A.2 A TMS key and TMS jack are provided for transferring a line under test to an external transmission measuring set.
- A.3 A %BK key and %BK jack are provided for transferring a line under test to an external percent break measuring set.
- A.4 Various features in coin telephones arranged for dial tone first can be tested by use of the COIN+ and COIN- keys when option YD is provided. This option allows G key to apply resistance ground to the ring lead while coin potential is applied to the tip lead by COIN- key.

B. Changes in ApparatusB.1 Added

- Jack, TMS, App Fig. 1, Option ZZ
Jack, %BK, App Fig. 1, Option ZZ
479K Key, TMS and %BK, App Fig. 1,
Option ZZ
18EY Resistor, DTF, App Fig. 1,
Option YD

D. Description of ChangesD.1 Description of Operation

- D.01 For description of operation see CD issue 10D.
- D.2 In FS 7 the interconnections between COIN- and COIN+ keys have been changed so coin potential connects to tip lead only and resistance ground through G key now can be connected to the ring lead.
- D.3 In FS 1 a block of leads has been added connecting externally to the test trunk circuit as option YB.
- D.4 FS 2 has been made optional as option YA. The TC B and LINE jacks of App Fig. 3 are also made optional as option YA.

D.5 In FS 1 a key (%BK and TMS) and two jacks (%BK and TMS) have been added as option ZZ. These are added for testing pole mounted repeaters per J98619D and E. These items are also included in App Fig. 1.

D.6 The transmission test pad, FS 5, has had option YE added and use made of the negative options -ZE, -ZF, and -ZG. This is to make the options in FS 5 conform to standards.

D.7 Circuit Note 102 has been changed to clarify the use of options ZK and ZL.

D.8 In FS 3 the strap between B and R terminals in the dial has been moved from internal to external to agree with reality.

D.9 The dial in FS 3 has always been designated option X, but wiring needed when the dial was not furnished was not shown. That wiring is now shown as option -X as an alternate to capacitor F and resistor D which are now shown as option X. App Fig. 1 is changed to show the capacitor and resistor as option X.

D.10 In FS 6 the pairing of some internal leads to REX key has been changed on a no record basis per agreement with WECO.

D.11 In FS 9 a strap between 48V3 and 48V2 leads has been added as option YF. This is to permit full capability of the test cabinet that did not previously exist when it was portable.

D.12 Note 110 has been added to cover D.10.

D.13 Keys IN and RH may be mounted normal or reversed independently of the circuit schematic. Equipment Note 202 been added to explain this. References to Note 202 have been added at IN and RH key contacts in FS 1, 4, 7, and 8 and in App Fig. 1 for key and keytop.

D.14 Information Note 302 has been modified to account for unigauge loops.

D.15 Circuit Note 102 has been modified to reflect the above changes.

- D.16 Circuit Note 107 has been modified to reflect change D.5. Circuit 108 has been added for this D.5 change.
- D.17 Circuit Note 104 has been changed.
- D.18 Circuit Note 109 has been added to reflect change D.1.
- D.19 CAD 6 has been added.
- D.20 CAD 5 has been changed to show the terminal strip as A. Previously it was not designated.

BELL TELEPHONE LABORATORIES, INCORPORATED

DEPT 5822-KES-MAT

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CHANGES

D. Description of Changes

D.1 This reissue was made to correct Table A. GRD 2 has been removed from the table in the third major section from the top under CONNECT LEADS. A similar correction has been made on CADs 54 and 55.

D.2 This change is made on an AC basis and is required only for those installations that were wired per the changed section of Table A.

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DEPT 5822-KES-MAT

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SECTION I - GENERAL DESCRIPTION1. PURPOSE OF CIRCUIT

1.01 This circuit is used for testing subscriber lines and trunks in manual, step-by-step, panel, crossbar, and ESS offices. It is arranged for portable use, it can be mounted permanently on a desk with or without an associated jack panel, or it can be mounted on a distributing frame or a wall. It contains a telephone circuit and, optionally, a rotary dial and/or connections to an MF keyset.

2. GENERAL DESCRIPTION OF OPERATION

2.01 This test cabinet provides means for making conventional volt-milliammeter tests on subscriber lines or trunks. In addition, it has provisions for receiver off-hook tone application, dial speed tests (including connections for a dial percent break test set), insulation breakdown tests, certain types of transmission testing, and various tests of coin telephones.

2.02 When the cabinet is used on a portable basis the test and supply jacks of FS1 and 9 (App Fig. 2 and 3) are used for setting up test connections and connecting the required power supply voltages. Frequently, a test cabinet will be installed on a distributing frame but will be equipped as if it were portable.

2.03 A permanently mounted test cabinet by itself has access to one trunk to the main distributing frame or to a toll testboard, one test trunk to a switchboard or one outgoing test trunk via an MF keyset circuit, one subscriber line connection to a local switching machine, one call circuit to a switchboard, and one key accessed trunk to a test distributor or to any incoming test trunk of the kind arranged to work with the No. 14 local test desk. If access to additional trunks is required for a desk mounted test cabinet an associated jack panel can be provided. Test connections are then made on the jack panel with patch cords.

SECTION II - DETAILED DESCRIPTION1. TALKINGTALKING ON A TEST CONNECTION

1.01 Operation of the T key connects the telephone circuit to a line under test to permit talking on the line. Usually it is necessary also to supply talking battery and ground to the line. This is done by operating the RCCI key. Ground will then be applied to the tip lead through a winding of transformer A and battery will be applied to the ring lead through a winding of transformer A and the milliammeter (300-mA scale) in series.

TALKING OVER TRUNK TO LOCAL SUBSCRIBER LINE

1.02 When a test cabinet is permanently mounted and is not associated with a jack panel the ST and SR leads may be connected to a Subscriber Line Circuit of the local switching office. To talk over this path the TRK key is operated to the TALK position, bridging the telephone circuit across the path. In a manual office an operator responds and sets up the desired connection. In dial offices dial tone is received and the desired number can be reached by dialing it with the test cabinet rotary dial.

1.03 Incoming calls can be received over this path, in addition to making outgoing calls. An external bell provides a signal for the incoming calls. Ringing is tripped by operating the TRK key first to the HOLD position, then to TALK.

1.04 The TRK key can be operated to the HOLD position to hold a call and free the telephone for other use.

2. ESTABLISHING TEST CONNECTIONSTEST TRUNK TO PANEL OR CROSSBAR OFFICES VIA B SWITCHBOARD (OPTION C OR K)

2.01 If the SS key is provided (option K) it must be operated first to provide the proper sleeve potential and resistance. If the DO key is operated, operation of the SS key is not required.

2.02 The T and RCCI keys are now operated. The battery (on ring lead) and ground which they apply to the trunk signal the B board operator. The operator completes the connection by keying the desired telephone number into the switching machine and then drops off of the circuit. The machine automatically completes the connection.

2.03 To reach numbers in the extra number series in No. 1 Crossbar offices, the REV key is operated before the T and RCCI keys. This reversal of battery and ground on the trunk leads directs the incoming test trunk to prepare for connection to a number in the extra number series.

TEST TRUNK TO SWITCHBOARD

2.04 When the testman desires a connection to a line or trunk at the local switchboard, he operates the C CKT key (FS6). This connects his telephone circuit to the operator telephone circuit over the call circuit. He then orders up the desired connections.

TEST DISTRIBUTOR - STEP-BY-STEP OFFICE (FS2)

2.05 The test cabinet is either wired directly to a test distributor or is connected to one via the test distributor trunk at an associated jack panel. In either case

the test circuit is connected to the outgoing test leads (TT, TR, LT, and LR) by operating the TD key to the DIAL position. The test train (test distributors and test connectors) then completes the connection to the line whose number is dialed. The TT and TR leads are extended to the line under test directly and free of any bridges. This permits the normal voltmeter or other tests to be made on that line.

2.06 If the test connector is busy a tone will be heard in the telephone set.

2.07 After a test connection has been established the telephone circuit can be made free for other use and the test connection held by operating the TD key to the HOLD position. Also under this condition the line under test can be made available to the customer by operating the 3WO key after putting the TD key in the HOLD position. This holds the test connection but releases the cutoff relay in the line circuit under test. The test path is held by the 3WO and TD keys placing a 100-ohm ground on the LR lead to the test distributor.

TEST CONNECTOR - STEP-BY-STEP OFFICE (FS2)

2.08 When the cabinet is portable it can be connected to test connectors by patch cords using the TC B and LINE jacks. The test connector is then seized by operating the TD key to the DIAL position. Connection to the desired line is achieved by dialing the tens and units digits. The telephone circuit can be released for other use and the test connection held by operating the TD key to the HOLD position.

TEST TRUNKS USING DIAL PULSE SIGNALING (FS1, 3, 4)

2.09 Under this category we include trunks to test distributor control circuits in step-by-step offices, and incoming test trunks to panel, crossbar, and ESS offices. This circuit is first connected to the test trunk by patching in the patch panel or by operating the TTRK (test trunk) key, if provided.

2.10 If the SS key is provided (option K) it must be operated in order to connect the proper potential and resistance to the outgoing sleeve lead. If the DO key is operated, operation of the SS key is not necessary.

2.11 Seizure of the trunk is achieved next by operating the DIAL key. This switches the sleeve lead to low-resistance -48 volts and places a bridge across the TT and TR (or T1, R1) leads. The bridge includes the dial, 300-mA winding of the volt-milliammeter, and inductor B in series. The DIAL key contact sequence is designed to close the bridge before switching the sleeve to low-resistance -48 volts.

2.12 The distant trunk is ready for dialing when the meter reads some on-scale value of current. It may initially read off-scale low. The meter tries to follow the dial pulses during dialing. After dialing is completed the meter changes to off-scale low in all but step-by-step offices as a normal condition. If it reverses from a step-by-step office it indicates a connection to a busy line. During dialing (between digits) a continuous low tone is heard from the trunk except from step-by-step offices. The low tone is removed when the test connection is established or changed to interrupted tone if overflow or line busy is encountered. The DIAL key is released after the connection is completed or busy is encountered.

2.13 In Crossbar No. 1 offices having an extra number series a connection to an extra number is obtained by operating the VM REV key before operating the DIAL key. The VM REV key operated grounds the TR (or R1) lead through the meter to indicate to the crossbar test trunk that it should prepare for connection to an extra number.

TEST TRUNKS USING MF SIGNALING (FS1)

2.14 When the test cabinet is associated with test trunks using MF signaling this circuit will be wired to an MF keyset and from there to the jack panel. A patch cord is used to connect the test jack to the desired outgoing test trunk jack.

2.15 The KP key in the MF Keyset Circuit is operated to seize the trunk in the distant office. When the register in that office is ready to receive MF pulses it causes the S lamp in the MF Keyset Circuit to light. After pulsing the desired number the KP key is restored. The switching machine then attempts to set up the test connection. If the attempt fails an overflow tone or a line busy tone should be heard after restoring the KP key. If a no-test trunk is used it will complete the test connection even if the called line is busy.

Note: To determine whether the connection through a no-test trunk in a crossbar office was completed on regular or no-test basis operate the MON and 3WO keys. The presence of steady high tone indicates no-test basis; otherwise, it is regular.

2.16 To reach a number in the extra number series in a Crossbar No. 1 office, operate the VM REV key before operating the KP key. This grounds the TR lead to the MF keyset, which repeats the ground to the test trunk in the crossbar office, causing it to prepare for connection to an extra number. Proceed from here as in 2.15.