CORD CIRCUITS
FEATURES OTHER THAN SUPERVISORY RELAYS
NO. 9 (SPECIAL) SWITCHBOARD

1. GENERAL

1.01 This section describes the method of performing the following tests on subscriber and universal cord circuits of the No. 9 (Special) switchboard.

(A) A-C. Continuity Test

(B) Ringing Key Test

(C) Coin Control Test

(D) Busy Test

(E) Test of Ringing Key Contact Sequence

1.02 This issue replaces Issue 1. The section has been reissued to revise the method of manipulating cords in the a-c. continuity test, to include testing of toll cords and to add test (E) to provide a check for the sequence of operation of the ringing contacts.

1.03 Test (D) need be made only on cords having the busy test connection through a back contact of a relay in the sleeve of the cord circuit.

1.04 Test (E) need be made only on cords used for manual ringing on party lines..

2. APPARATUS

Tests (A), (C), and (E):

2.01 No. 528 Receiver equipped with an R2CF Cord (2W4A) equipped with a No. 110 or No. 78 Plug.

Tests (A) and (C):

2.02 A-C. Continuity Test Circuit, SKS-1019, G-2108, K-2232 or equivalent.

Test (B):

2.03 Ringing Test Line.

Tests (B) and (D):

2.04 Operator's Telephone Set.

Test (E):

2.05 Test line as shown in Fig. 1. Two spare O.G.T. or subscriber multiple jack circuits may be used. The resistances A, B and C may be spare O.G.T. sleeve resistances. Resistance D should be approximately 6,000 ohms of No. 18 or No. 19 type. This resistance may be decreased if the tone received on a properly adjusted key is not sufficiently audible.

3. METHOD

(A) A-C. Continuity Test

Subscriber Cords; Universal Cords (Common Battery Condition).

3.01 Insert the plug of the cord attached to the receiver into the REC jack of the a-c. continuity test circuit.

3.02 Before proceeding with the test, check the operation of the tone circuit as follows: While listening in the receiver, partially insert the plug of the cord circuit to be tested into the CON, CORDS or TEST jack, so that the tip of the plug makes contact with the ring spring of the jack and the sleeve of the plug makes contact with the sleeve of the jack. The cord supervisory lamp should light. Tone should be heard as an indication that the tone circuit is functioning properly.

3.03 Insert the plug completely into the CON, CORDS or TEST jack of the testing circuit. It is probably that a slight tone will be heard in the receiver. This slight tone can be expected and is not an indication of trouble. After testing several cords, the tester should become familiar with the volume of the tone which is heard on normal cords. Cords on which this volume is increased appreciably should be considered in trouble.

3.04 Listen in the receiver during the operations of 3.05 to 3.08, inclusive, for any clicks or changes in the volume of the tone which will indicate a cutout or other trouble condition.

3.05 Hold the plug in the jack with one hand and shake the cord with the other hand.

3.06 Turn the plug around in the jack so as to cause the jack springs to make contact at all possible points of the tip and ring of the plug.

Note: Scratchy noises heard while the plug is being rotated should be disregarded.

3.07 With the keys of the cord circuit under test in the normal positions, tap lightly on the key top with the finger tips or the eraser end of a pencil to detect loose connections or defective contacts in the talking circuit. .

3.08 Move the levers of lever type keys slightly forward and backward while exerting a reasonable pressure to the left and to the right to take up any play or side lash, in order to detect faulty key adjustments that might cause clicks.

3.09 On the plunger type keys, check that an appreciable movement of the key is obtained before a click is heard, as an indication that the follow of the inside springs is satisfactory.

3.10 On cord circuits having a talk-ring lever type key combination, make a non-click test by operating the lever to the talk position and allowing it to restore unrestrained. Any clicks in the receiver indicate excessive overthrow of the lever.

Through Toll Arrangement of Toll Cords.

Note: Cords having the repeating coil in on a through toll connection cannot be tested by this method.

3.11 With the listening key of the last cord circuit in the position operated, operate

the listening key of the cord circuit under test. Exert pressure on the key handle on one side and then the other. If any change in tone or a scratchy noise is detected, the key contacks should be burnished and, if necessary, the contact springs should be readjusted.

3.12 When a position containing universal cord circuits is tested, the calling cord of the last cord circuit should be inserted into the TERM jack and the associated cord circuit key operated to the talking position. The cord of the circuit to be tested should be inserted into the TOLL jack and the key contacts tested as in 3.11.

3.13 Insert the toll cord plug into the TERM jack. Insert the associated toll and subscriber cord plug into the TOLL jack and proceed with the test as outlined in 3.02 and 3.03, except for employing the TOLL jack instead of the CON, CORDS or TEST jack.

(B) Ringing Key Test

3.14 Connect the operator's telephone set to the position at which the cords are to be tested. Operate the talking key of an idle cord circuit and connect the associated cord to a spare O.G.T. jack.

3.15 Insert the plug of the cord under test into the jack of the ringing test line. Connect the other cord of the circuit under test to a multiple jack of the spare O.G.T. used in 3.14.

3.16 Operate the ringing keys in succession. Listen in the receiver for clicks as each ringing key is operated. Sharp clicks heard usually indicate that the inner springs of the ringing key have excessive follow, that is, they do not break before the outer (ringing) springs make. On cord circuits equipped with the audible ringing feature, the ringing tone should be heard while the key is operated.

3.17 While the key is operated, note that the proper bell of the test line rings. Also, note that the bell starts ringing before the end of the movement of the key as an indication that the ringing springs have sufficient follow.

(C) Coin Control Test

3.18 Connect the test receiver to the REC jack of the a-c. continuity test circuit.

3.19 Insert the plug of the answering cord under test into the COIN test jack.

3.20 Depress and release the associated coin collect and coin return keys one at a time. Note that the coin pilot lamp is lighted, and that high tone for coin collect and low tone for coin return is heard in the receiver while the respective keys are depressed.

(D) Busy Test

3.21 Connect an operator's telephone set to the position.

3.22 With the associated listening key operated, touch the tip of the calling cord to the sleeve of any nearby cord. Note that a distinct busy test click is heard.

(E) Test of Ringing Key Contact Sequence

3.23 Connect the test receiver to the LIST jack of the test line. Connect the cord to be tested to the RING jack. See Fig.1. The cord supervisory lamp should be extinguished.

3.24 While listening in the receiver, very slowly operate the ringing key. A slight click will be heard and the cord lamp will light when either of the inside contacts breaks. When both the outside (ringing) contacts make, ringing tone will be heard at low volume.

3.25 If ringing tone at high volume is heard, it indicates that the key is not in proper adjustment, that is, the generator contact makes before the ground contact. In this case the outside springs should be adjusted so that the ground spring makes before the generator spring, except where a master ringing key is used.

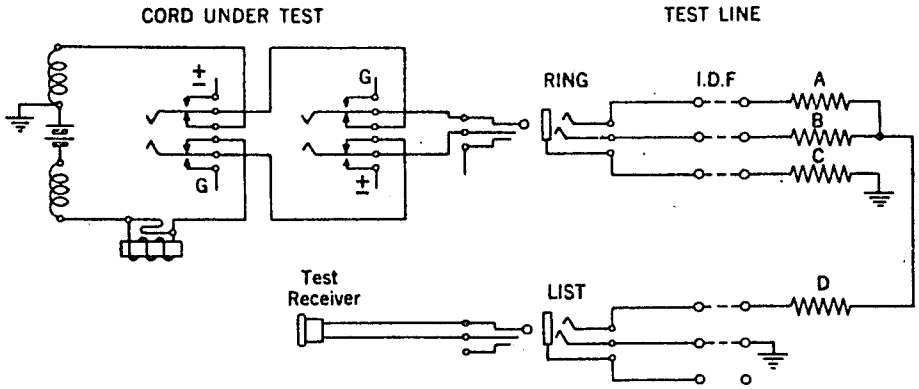

Fig. 1 - Test of Ringing Key Contacts.

3.26 Where a master ringing key is used the ringing springs of the cord circuit key should be adjusted so that they make, as nearly as possible, simultaneously. This adjustment will be indicated by absence of high volume ringing tone when ringing on each side of the line.

Note: This adjustment is in addition to the requirements specified in the section of the A400 Division covering the key. In meeting this requirement care should be exercised that all other requirements in the A400 Division sections are maintained.

4. REPORTS

4.01 The required record of these tests should be entered on the proper form.