SLEEVE RELAYS
UNIVERSAL CORD CIRCUITS
NO. 10 OFFICE

1. GENERAL

1.01 This section provides for current flow tests of the sleeve relays used for battery supply and busy test purposes in the universal cord circuits in No. 10 offices.

1.02 This issue differs from Issue 1, which it replaces, in that it includes the use of the portable type (K-2232) a-c. continuity test set, covers new jack designations associated with the various a-c. continuity test circuits and lists new cords for patching purposes.

1.03 The tests are to be made from the front of the switchboard on a one-man basis and should be made during periods of light load.

2. APPARATUS

2.01 No. 35-C Test Set, or equivalent.

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

Note: When the No. K-2232 test set is employed it will be necessary to provide a spare O. G. T. jack wired as shown in Fig. 1-B.

2.03 No. 528 Head Receiver (or equivalent), equipped with No. R2AC Cord terminating in a No. 110 or No. 78 Plug, as required.

2.04 No. P3E Cord equipped with two No. 110 Plugs.

2.05 Two No. 893 Cords each equipped with two No. 360-A Tools.

2.06 Two No. 364 Tools.

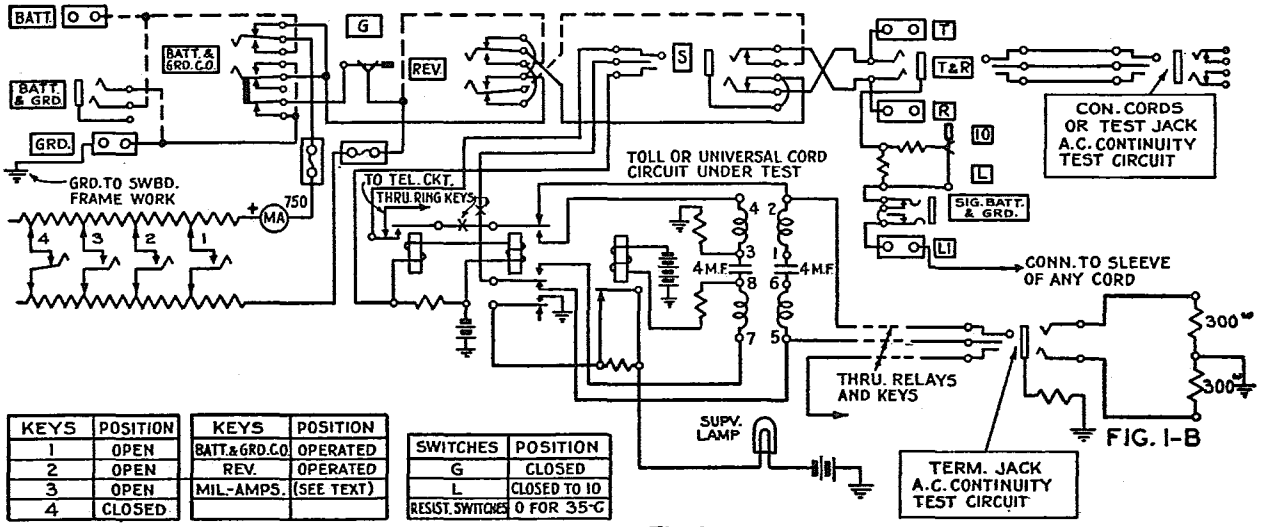
2.07 Two No. 365 Tools.

3. TEST SET PREPARATION

3.01 When the K-2232 (portable type) A-C. continuity test set is used, obtain the battery and ground by inserting the plug of any common battery cord into the test set jack BATT prior to starting the test. Depress the 34 ohm key and note that the interrupter starts vibrating.

3.02 Before using the current flow test set, **care should be taken to see that all resistance is cut in** to avoid damaging the milammeter. On the 35-C test set, all resistance is cut in when all slides are to the extreme right. Care should be taken to see that the scale change key, designated MIL-AMPS, is not operated from its normal position unless the reading on the normal (.750 ampere) scale indicates that the current flow in the circuit does not exceed the scale range, as indicated by the designation of the position to which the key is to be operated. Before operating the MIL-AMPS key, a current flow which approximates the desired value should be set up on the normal (.750 ampere) scale of the milammeter; then the MIL-AMPS key should be operated to the .015 or .075 ampere position as required and the final value accurately set up. **The position of any of the red slides should not be changed while the MIL-AMPS key is in an operated position.** These precautions will keep the current value within the limits of the

FIG 1-A



KEYS	POSITION
1	OPEN
2	OPEN
3	OPEN
4	CLOSED

KEYS	POSITION
BATT. & GRD. CO.	OPERATED
REV.	OPERATED
MIL-AMPS.	(SEE TEXT)

SWITCHES	POSITION
G	CLOSED
L	CLOSED TO 10
RESIST. SWITCHES	0 FOR 35-C

Fig. 1

milammeter scale used, thus avoiding damage to the milammeter.

3.03 Arrange the test set keys and switches as shown in Fig. 1 for this test.

3.04 Provide ground connection to the current flow test set by means of a No. 893 cord connected to the switchboard framework and to the GRD terminal of the test set, as shown in Fig. 1-A.

3.05 Provide battery connection to the current flow test set by means of a No. 893 cord connected to the sleeve of any other cord circuit (temporarily removed from service) and to the L1 terminal of the test set, as shown in Fig 1-A.

3.06 Patch the T & R jack of the current flow test set to the CON or TEST jack of the a-c. continuity test circuit by means of the No. P3E cord.

3.07 Insert the cord under test into the S jack of the current flow test set and the other cord of the pair in the TERM jack of the a-c. continuity test circuit.

Note: When the portable type a-c. continuity test set is employed, see note, associated with paragraph 2.02 and Fig. 1-B.

3.08 Insert the cord of the test receiver in the REC jack of the a-c. continuity test circuit.

3.09 **Busy Test Relay:** After closing the locking lever of key No. 4, move the associated No. 4 resistance slides to the left until the approximate specified TEST "non-operate" value for the busy test relay is observed on the milammeter. After the approximate value is obtained, operate the MIL-AMPS key to 15 and check the accuracy of the reading on the .015 ampere scale. Make any further changes in the No. 4 resistance slides which may be necessary to obtain the exact specified TEST "non-operate" value and then release the MIL-AMPS key.

3.10 With the locking lever of key No. 4 closed, depress key No. 3 and move the associated No. 3 resistance slides to the left until the approximate specified TEST "operate" value for the busy test relay is observed on the milammeter. After the approximate value is obtained, operate the MIL-AMPS key to 75 and check the accuracy of the reading on the .075 ampere scale. Make any further changes in the No. 3 resistance slides which may be necessary to obtain the exact specified TEST "operate" value and then release the MIL-AMPS key and key No. 3.

3.11 **Battery Control Relay:** With the locking lever of key No. 4 closed, depress key No. 2 and move the associated No. 2 resistance slides to the left until the approximate specified TEST "non-operate" value for the battery control relay is observed on the milammeter. After the approximate value is obtained, operate the MIL-AMPS key to 75 and check the accuracy of the reading on the .075 ampere scale. Make any further changes in the No. 2 resistance slides which may be necessary to obtain the exact specified TEST "non-operate" value and then release the MIL-AMPS key and key No. 2.

3.12 With the locking lever of key No. 4 closed, depress key No. 1 and move the associated No. 1 resistance slides to the left until the exact specified TEST "operate" value for the battery control relay is observed on the milammeter. As the TEST "operate" value exceeds the capacity of the .075 ampere scale, further checks of the reading through the use of the MIL-AMPS key are not provided for on the current flow test set.

3.13 Release key No. 1.

3.14 The above values are given in Section A491.599.

4. METHOD

4.01 Operation and non-operation of the busy test and battery control relays in the following tests will be indicated by changes in the volume of tone heard in the test receiver. The proper volume of tone normal for each test operation must be established by comparison with normal conditions. Where volume varies appreciably, investigate for improper relay operation or faulty contacts.

Note: If tone is not received on the first test, this is an indication that the interrupter of the a-c. continuity test circuit is not functioning or that the busy test relay has operated on the "non-operate" value.

4.02 With the locking lever of key No. 4 closed proceed with the test as follows:

4.03 **Busy Test Relay:** Listen in the test receiver. Tone should be loud indicating this relay has not operated.

4.04 Depress and release key No. 3. Tone should be reduced to minimum.

4.05 **Battery Control Relay:** Depress and release key No. 2 three times. Volume of tone should be the same as with key No. 3 depressed. This indicates proper continuity of circuit through the normally made contacts of this relay.

4.06 Depress and release key No. 1 three times. Volume of tone should increase slightly while the key is depressed. This indicates proper closure of the make contacts of this relay in response to application of the "operate" value.

5. REPORTS

5.01 The required record of this routine should be entered on the proper form.