

## 85 TYPE RELAYS TESTS AND ADJUSTMENTS

### 1. GENERAL

- 1.01 This section covers methods of testing and adjusting 85E, 85G, 85J, 85L, 85M, 85N and 85P relays.
- 1.02 Before making any tests or adjustments see that the subscriber set is mounted plumb and that the relay is in proper alignment in the set since all relay adjustments depend upon these conditions.
- 1.03 When the relay is dirty or dusty, clean by brushing off with a No. 7 sash tool or other approved cleaning brush.

**Caution:** As it is rather difficult to obtain a satisfactory adjustment of the contact springs in the field, the springs should be adjusted only as a last resort in order to make the relay meet the requirements of this section.

### 2. CLEANING AND ALIGNMENT OF CONTACTS

- 2.01 Contacts shall be clean.
- (a) To clean, burnish with a 265B tool.
- 2.02 The contact point shall fall wholly within the circumference of the opposing contact disc. If relay does not meet this requirement replace the relay.

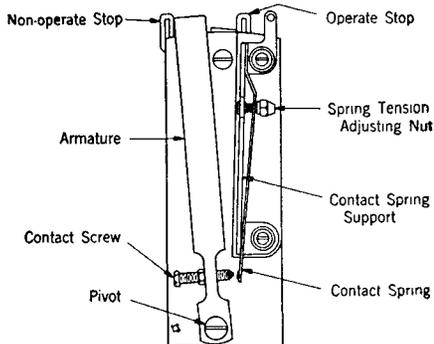
### 3. ARMATURE OPERATION

3.01 Armature shall work freely and shall not rub against the frame of the relay. If relay does not meet this requirement replace the relay. Check for rubbing of armature as follows:

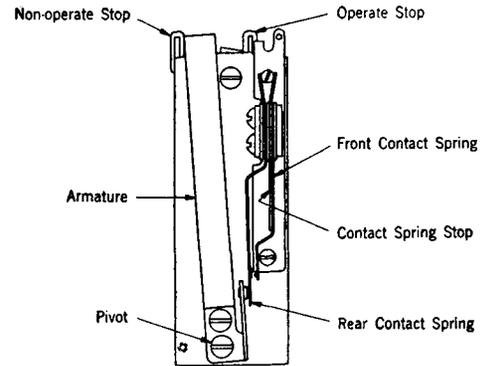
- (a) Apply a slight pressure to the armature near the pivots so that all the play in the pivots is taken up towards one side of the relay. Move the armature to and fro.
- (b) Repeat check with pivot play taken up toward other side of relay.

3.02 The armature when released from the operated position shall fall back to the non-operate stop. Check this, after meeting the requirements in 1.02, by pushing the armature manually to the operate stop and then releasing it. To adjust proceed as follows:

- (a) Adjust the operate stop so that it is at right angles to the spoolhead. Use long nose pliers.
- (b) If armature still fails to fall back from the operated position increase the tension of the contact spring against the armature. This may be done on the 85E, 85G, 85J and 85L type relays by tightening the spring tension adjusting nut with a 403A tool or equivalent, and on the 85M, 85N and 85P relays by adjusting the rear contact spring close to the spring pile-up. Use a 466A tool. This adjustment should be no more than is required to restore the armature to the non-operated position.



**Fig. 1—Arrangement of Operating Parts—85E, 85G, 85J and 85L Relays.**



**Fig. 2—Arrangement of Operating Parts—85M, 85N and 85P Relays.**

### 4. CONTACT FOLLOW AND SEPARATION

4.01 The contacts shall have an appreciable follow (minimum .005" gauged by eye). The separation between the contacts shall be noticeable (minimum 1/64"). To adjust proceed as follows:

- (a) On 85E, 85G, 85J and 85L relays, loosen lock-nut on contact screw with long nose pliers and adjust the contact screw with a 403A tool or equivalent. Retighten lock-nut.
- (b) On 85M, 85N and 85P relays, adjust the front contact spring and contact spring stop using a 466A tool. The contact spring should be adjusted close to the spring pile-up and should lie against the contact spring stop when the contacts are open.

**Note:** If spring adjustments are changed to meet 4.01 recheck 3.02.

### 5. FALSE OPERATION DURING DIALING

5.01 At dial stations the relay shall not operate to make its contact during dialing. This check may be made by any of the following methods:

Method (a) Dial ringer test code and after hearing second dial tone dial proper digit in table below.

Digit to be Dialed	Party
6	— party on Ring
7	— party on Tip
8	+ party on Ring
9	+ party on Tip

Then dial "zero" as often as required.

Method (b) Dial any digit over "5" which is not a special code such as "long distance," "operator," etc. Hang up before repeating this test.

Method (c) At panel stations the station being tested may be dialed. When busy tone is heard hang up and dial again if necessary.

Method (d) At step-by-step stations the station being tested may be dialed. Note busy tone and dial "zero" as often as required before hanging up.

5.02 If the contact closes during any of the above dialing operations, proceed as follows:

- (a) Adjust non-operate stop away from core a little at a time checking for false operation after each adjustment until 5.01 is met. Use long nose pliers.

**6. ADJUSTMENT TO STOP HUMMING**

**85E, 85G, 85J, and 85L Relays**

6.01 If relay armature hums enough to cause trouble when other parties are being rung, humming may be materially reduced as follows:

- (a) Adjust operate stop as far away from core as possible without allowing armature to hit contact spring support. Use long nose pliers.
- (b) Recheck 3.02. If necessary, readjust as in 3.02 (b).

**85M, 85N, and 85P Relays**

6.02 As the 85M, 85N, and 85P relays are constructed to minimize humming no adjustment to reduce humming is required.

**7. OPERATION TEST**

7.01 In superimposed current districts apply ringer adjusting current and in pulsating current districts apply regular ringing current to the subscriber set. When the current is applied the relay shall operate and make its contact. To adjust proceed as follows:

Note: The method of obtaining the bell adjusting current and the regular ringing current is given in Section C31.205.

- (a) Adjust non-operate stop towards the core until relay operates and makes its contact. Use long nose pliers.
- (b) If armature chatters this may be overcome by adjusting the operate stop slightly towards the core. If this is done recheck 4.01.
- (c) At dial stations recheck 5.01.

**8. REPLACING DEFECTIVE RELAYS**

8.01 The 85N relay can be used to replace all defective 85E, 85G, 85J, 85L, 85M and 85N relays. A defective 85P relay should only be replaced by an 85P relay. To replace a defective relay proceed as follows:

**85E, 85G and 85M Relays**

- (a) Remove defective relay from set.
- (b) Remove mounting bracket and insulating bushings from the new 85N relay.
- (c) Install the new 85N relay, less mounting bracket and bushings, in the set, reusing the old relay mounting plate or bracket and mounting screws.
- (d) Assemble the mounting bracket and insulating bushings previously removed from the 85N relay on the defective relay.

**85J Relay**

- (a) Remove defective relay from its mounting bracket in set after removing one ringer gong to make mounting screws accessible.
- (b) Remove mounting bracket and insulating bushings from the new 85N relay.
- (c) Install the new 85N relay, less mounting bracket and bushings, on the mounting bracket in set, reusing the old relay mounting screw.
- (d) Assemble the mounting bracket and insulating bushings previously removed from the 85N relay on the defective relay.

Note: The use of the old type mounting bracket is desirable because the new type mounting bracket (having the insulation between the mounting bracket and the relay) cannot be satisfactorily used in sets equipped with the 85J relay.

**85L and 85N Relays**

Replace relay and mounting bracket complete with a new 85N relay and mounting bracket.

**85P Relay**

Replace relay and mounting bracket complete with a new 85P relay and mounting bracket.