September, 1930

(Insert this Supplement before Specifications 3855)

# ADJUSTMENT OF STATION APPARATUS

## ARMATURE STOP SPRING AND OPEN COIL BIASING SPRING

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# APPARATUS

Armature Stop Spring ..... P-233968

For use on ringers of recent manufacture having large galvanized armatures. This spring is rounded at the stop screw end.

Armature Stop Spring ..... P-233969

For use on ringers of early manufacture having small galvanized armatures. This spring is square at the stop screw end.

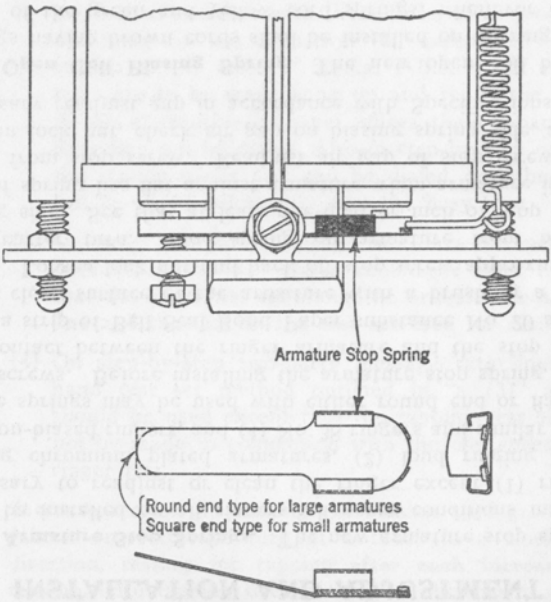
Open Coil Biasing Spring ..... P-290065

Assembled with brown cord.

129-B Tool.

Test Cord.

Bell System Bond Paper Substance No. 20.



# GENERAL

**1. Reasons for Issuing Practice.** Chromium plated armatures are now being used on new and repaired station ringers in order to reduce the difficulty experienced with the armature sticking to the stop screw especially under conditions of high humidity. Due to the difficulty of replacing armatures on ringers in the field with the new chromium plated type, a thin, flat, special bronze spring, which will slip over the armature, has been made available with a view to serving the same purpose as the chromium plating. One end of the spring lies flat and presses against the armature in such a position that the back stop screw strikes it instead of the armature.

As the new brown cord open coil biasing spring will, in general, improve the operation of station ringers and thereby tend to improve the subscriber's service and reduce ringer maintenance, its use has been approved for all new station ringers except the loud ringing types. The closed coil biasing spring heretofore used in many cases did not permit obtaining a tension of less than approximately 20 grams. In general, except on four-party full-selective stations, this is considerably more than the tension required to prevent bell tapping and cross-ringing. By the use of the new open coil biasing spring lower tensions will be possible, thereby decreasing the energy required to operate the ringer armature and giving a greater margin against the ringer failing to operate.

Another reason for issuing this supplement is to provide a definite method of adjusting ringers on manual two-party and four-party semi-selective lines against false ringing or tapping, which may occur at stations on the opposite side of the line when the party being rung takes the receiver from the hook while ringing current is on the line. This condition is most prevalent with manual ringing on long loops, including rings received over toll switching trunks.

For all stations, both manual and dial, except four-party full-selective which are to be adjusted in accordance with Specifications 3855, adjust the brown cord biasing spring as follows:

a. If necessary, reduce tension by turning biasing stud in a counter-clockwise direction with the 129-B tool until bell tapping occurs.

   (1) At manual stations test for tapping by operating the switchhook rapidly with central office talking battery on the line.

   (2) At dial stations, except two-party message rate, if the tapping test is being made in connection with a dial speed or ringer test, follow the method outlined in Supplement A to Specifications 4566 or replacing practices. If the tapping test is not being made in connection with these tests, after receiving dial tone, dial any digit over "5," except "0" at any station or "9" and "0" in dial P.B.X.'s. If repeat tests are to be made hang up and redial the digit. As an alternative in panel offices the permanently busy line can be dialed. Also in step-by-step offices, the station under test can be dialed, and then "0" can be dialed indefinitely over the busy tone.

   (3) On panel two-party message rate lines the methods outlined in "a (2)" above should be used except that the hand test set should be bridged across the line and the dial on the test set used for dialing.

   (4) On step-by-step two-party message rate lines the hand test set method outlined in "a (3)" above should be used except that the tapping test should not be made in connection with the dial speed and ringer test.

b. Increase tension by turning the biasing stud gradually (about one-sixteenth turn at a time) in a clockwise direction, testing for tapping **after each increase in tension,** until tapping does not occur. Provide a slight

# INSTALLATION AND ADJUSTMENT

**2. Armature Stop Springs.** The new armature stop springs shall be installed on all ringers whenever conditions make it necessary to readjust or clean the ringer except (1) ringers having chromium plated armatures, (2) loud ringing types, (3) non-biased ringers, and (4) No. 38 ringers and similar types. These springs may be used with either round end or flat end stop screws. Before installing the armature stop spring, clean the contact between the ringer armature and the stop screw with a strip of Bell Seal Bond Paper substance No. 20 and, if dirty, clean surface of the armature with a brush or a clean cloth. Loosen lock nut and back off stop screw approximately one-quarter turn. Slide spring on armature from biasing spring side. See that at least one-quarter inch of stop screw end of spring lies flat against armature when armature is held away from stop screw. Readjust air gap of stop screw side, tighten lock nut, check air gap on biasing spring side, and if necessary readjust gap in accordance with Specifications 3855.

**3. Open Coil Biasing Spring.** The new open coil biasing springs having brown cords shall be installed on all ringers in place of the green and yellow cord springs, whenever conditions make it necessary to readjust the biasing springs except (1) 8-B ringers which should continue to have red cord springs, (2) ringers at four-party full-selective stations, since no advantage will be gained by the replacement of the old type springs, and (3) loud ringing types.

The brown cord biasing spring shall, however, be used to replace all defective biasing springs, including those at four-party full-selective stations, except on 8-B ringers and loud ringing bells.

After removing the old spring and cord, push the free end of the new cord through the hole in the biasing stud, pass the spring through the loop of the cord projecting through the stud, and attach to the armature. Turn stud with 129-B tool, in clockwise direction until cord is taut without extending spring. Then give stud an additional three-quarters turn.

Note: Ringing from the test desk in the above three conditions is not satisfactory for offices tested from a test desk in a distant building unless the test trunks are arranged for remote control of ringing or for offices in the same building having a ringing voltage not provided in the test desk. In these cases have the test deskman dial the station over a talking trunk.

(4) In a manual area request the operator to ring.

e. In adjusting ringers against tapping at stations having extension ringers or extension stations with ringers, tests should be made, if possible, to see that dialing at the main or extension station does not cause any other ringers to tap.

When station or ringer cut-off keys are provided, tests should be made for tapping and ringing with the keys in all positions.

P.B.X. extension stations arranged for through dialing should be adjusted against tapping when dialing. Stations likely to be placed on night connections should be tested when being rung from the central office under night connection conditions and also from the P.B.X.

f. In case of dial conversions, the bell tapping test should simulate the actual conditions after cut-over. After the adjustments have been made a ring should be obtained from the ringing source for the new office as well as the old office.

In case of dial conversions of party lines previously rung manually, it probably will be desirable for the ringers to be adjusted so that they will not cross-ring during the period before cut-over while they are being rung manually.

extra tension, approximately one-eighth turn, for additional margin against tapping.

c. For manual two-party selective and four-party semi-selective stations, take the following additional steps to guard against cross-ringing. Obtain a manual ring from the operator for the station being tested, the ring being interrupted at approximately the same intervals as machine ringing.

(1) During a silent interval after the first ring, short-circuit the tip and ring of the line at the set terminals with the test cord. If ringer does not ring or tap during a subsequent ring, no further adjustment of the biasing spring is necessary. Receiver should be on hook during this test.

(2) If ringing or tapping is encountered under the above condition, increase tension gradually (about one-sixteenth turn at a time **during the silent interval**) until ringing or tapping does not occur. Provide a slight extra tension, approximately one-eighth turn, to give additional margin against tapping.

d. After all adjustments have been made obtain a ring as indicated below for the central office condition which applies:

(1) In a panel area dial the ringer and dial testing circuit or the test desk if the ringer and dial testing circuit is not available.

(2) In a step-by-step area equipped with line switches and arranged for message rate service dial the test desk in all cases. The test deskman should ring the station with the secondary ringing circuit by way of a test connection established through the test connector.

(3) In other step-by-step areas dial the ringer and dial testing circuit or dial the reverting call circuit. If these circuits are not available dial the test desk.