# TELEPHONE SETS — 300 SERIES

## MAINTENANCE

### 1.00 INTRODUCTION

**1.01** This section covers the requirements and adjusting procedures for the maintenance of telephone sets of types 302, 304, 306, 307, 309, 332, 334, 354, 356, and 357.

**1.02** The 300-type sets not mentioned are sets for specific uses and are covered in separate sections of the C Series Bell System Practices.

### 2.00 GENERAL

- Inspect exterior and interior of the telephone set for loose, displaced, or broken parts and determine if any such defects are responsible for the trouble condition prior to proceeding with routine maintenance.
- 426A electron tubes can be used to replace 333A, 313A, 372A, and 405 electron tubes.
- When replacement parts are available, replace defective part; otherwise, replace set.
- When a set is equipped with a volume control, and a 101A gong attachment (resonator) is to be installed, it is recommended that the gongs be interchanged to prevent the gong attachment from striking the housing.
- Table A lists some of the troubles that may occur, their probable causes, and corrective measures.

**TABLE A**

| Trouble | Probable Cause | Corrective Measure |
|---|---|---|
| Bell Does Not Ring | Ringer disconnected or wired wrong in set. | Connect correctly. |
| | Open winding. | Replace ringer. |
| | Metal particles in armature gap. | Remove particles with Scotch tape or approved equivalent. |
| | No ground (party lines). | Check ground circuit. |
| | Open tube. | Short circuit yellow and black tube leads and if ringer operates when ringing voltage of correct polarity is applied, replace tube. |
| Bell Too Loud | Stroke limiting arm not properly adjusted. | Reduce armature travel. |
| Bell Not Loud Enough | Set on sound absorbent material or stroke limiting arm not properly adjusted. | Place set on hard surface or adjust stroke limiting arm. |

TABLE A (Contd)

| Trouble | Probable Cause | Corrective Measure |
|---|---|---|
| Bell Taps While Dialing, Operating Switch, or When Other Party is Called | Incorrect wiring.<br>Bias spring tension too low. | Check mounting cord and ringer connections.<br>Move spring to higher tension notch. If ringer still cross rings, replace ringer. Do not adjust bias spring. |
| Bell Keeps Ringing When Handset is Removed | Open in handset cord or at dial pulse contacts. | Replace cord or dial. |
| | Open induction coil or set wiring. | Replace coil. |
| | Line contacts on switch do not close. | Clean contacts and check alignment. |
| Bell Rings, No One on Line | Open handset cord or receiver unit. | Replace handset cord or receiver unit. |
| | Dial "off normal shunt" contacts closed. | Replace dial. |
| | Open induction coil or transmission capacitor. | Replace parts. |
| | Switch receiver contacts do not open. | Check contacts. |
| No Dial Tone or Set Dead | Open mounting or handset cords. | Replace cord. |
| | Defective receiver unit. | Replace unit. |
| | Dial pulse contacts open or "off normal shunt" contacts closed. | Replace dial. |
| | Open induction coil. | Replace coil. |
| | Switch contacts do not operate. | Clean and adjust contacts. |
| Cannot Break Dial Tone | Dial pulse contacts do not open. | Replace dial. |
| | Line reversed (tip party in No. 1 X-bar office). | Reverse line. |
| Loud Clicks While Dialing | Dial "off normal shunt" contacts do not close. | Replace dial. |
| Cannot Hear | Open or shorted receiver unit or handset cord. | Replace defective part. |
| | Dial "off normal shunt" contacts closed. | Replace dial. |
| | Open in induction coil. | Replace induction coil. |

TABLE A (Contd)

| Trouble | Probable Cause | Corrective Measure |
|---|---|---|
| Distant Party Cannot Hear | Switch receiver contacts do not open. | Clean and adjust contacts. |
| | Defective transmitter or handset cord open. | Replace transmitter or handset cord. |

## 3.00 TYPES 302, 304, 306, 307, 309, 354, 356, AND 357

### 3.01 CONTACTS

- Clean contacts with a 265C tool having a clean blade.
- The contacting surface of each contact shall fall wholly within the mating surface of the opposing contact; if not, replace set.

### 3.02 PLUNGERS

- If plungers bind or squeak, open set and check for sticky plungers or lever pin, or lack of end play in the set (see Fig. 1).
- Lubricate bearing surfaces with a No. 2 or softer graphite pencil.

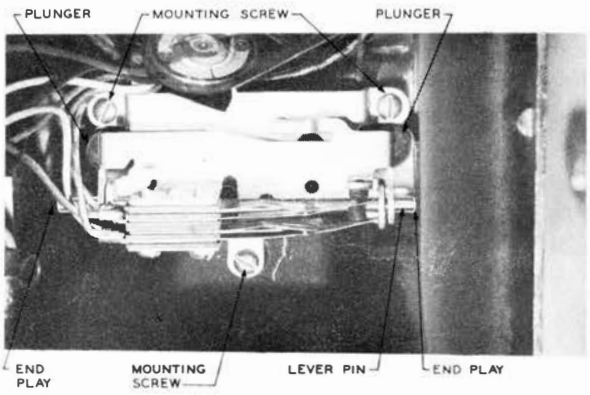


FIG. 1—PLUNGER ASSEMBLY

### 3.03 SWITCHHOOK

- When handset is placed on or removed from hook, hook should move freely without binding or squeaking.
- Binding may be caused by either a bent pin or bent switchhook. If this trouble occurs, replace defective part.
- Squeaks may be caused by a dirty pin. Remove pin and clean it and bearing holes with KS-2423 cloth moistened with KS-8760 petroleum spirits.
- When reassembling, care should be taken to be sure the undercut in the pin is assembled so that the screw for the helical spring engages with the undercut (see Fig. 2).

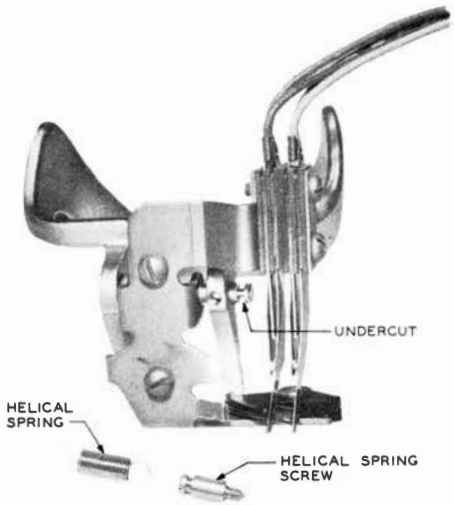


FIG. 2—SWITCHHOOK ASSEMBLY

### 3.04 BASE PLATE FEET

- Feet covered with felt shall be equipped with triangular friction pads.
- Leather feet which are badly cut, excessively worn, or embedded with foreign matter shall be replaced or covered with triangular friction pads.
- If one foot is equipped with a friction pad, both feet on that end shall be so equipped.

### 3.05 ASSEMBLY

- Check all wiring and cords to ensure that there is no interference with any moving parts and the base is flush with the housing before tightening base screws.

## 4.00 332 AND 334 TYPES

- Both sets are equipped with a 111B amplifier and a 129F capacitor (see Fig. 3).
- The right hand plunger also serves as an on and off and volume control switch (see Fig. 4).

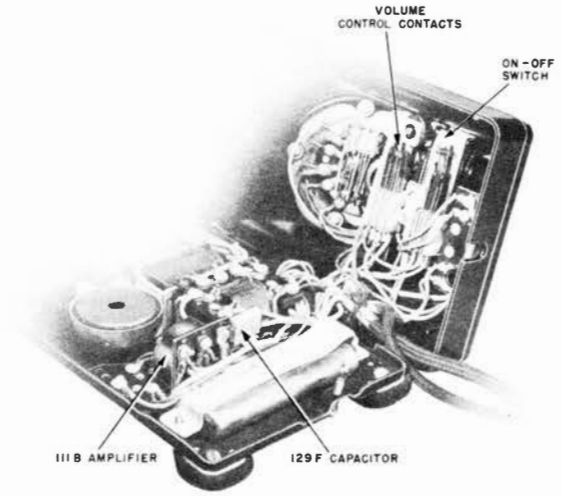


FIG. 3—111B AMPLIFIER AND 129F CAPACITOR


FIG. 4—RIGHT HAND PLUNGER

- Sets can be wired so the amplifier can be either cut in or out by lifting the right hand plunger to its fullest extent.
- When testing effect of volume control with test desk, there should be an increase in volume between off L, M, and H. If not, inspect volume control contacts, batteries, and amplifier.

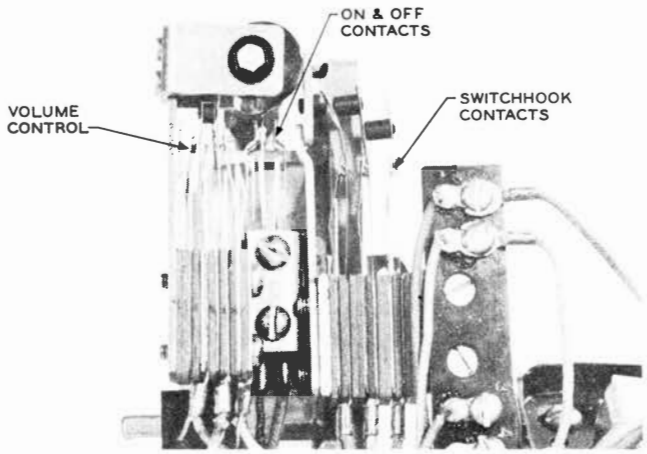


FIG. 5—CONTACT ASSEMBLY

### 4.01 VOLUME CONTROL CONTACTS

- If contacts test open, clean with a 265C tool having a clean blade. If trouble still exists, carefully make adjustments with a 363WE tool. If adjustment cannot be made satisfactorily, replace set.
- Figs. 6A, 6B, and 6C show positions of contacts.

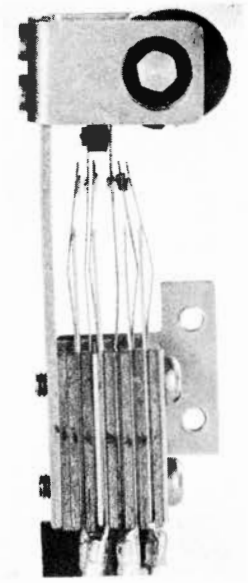

FIG. 6A—CONTROL ON LOW

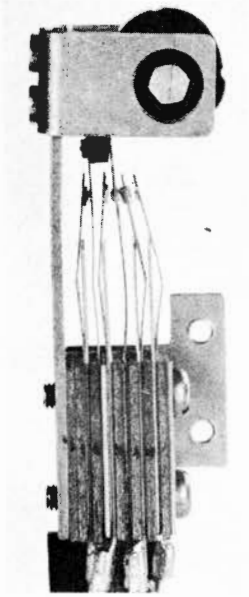

FIG. 6B—CONTROL ON MEDIUM

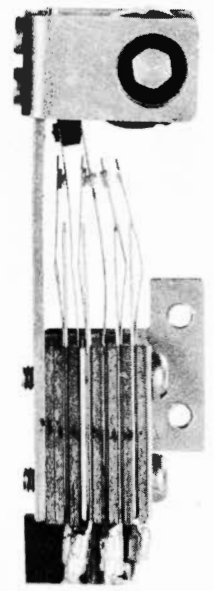

FIG. 6C—CONTROL ON HIGH

**4.02** BATTERIES

- Test by connecting leads from meter across terminals BK and 4, or BK and 1 if the right hand plunger has to be pulled up to connect amplifier in circuit.
- Voltage should be over 4 volts after meter is connected for approximately one minute.
- After checking contacts and batteries, if set still fails to function, replace amplifier and capacitor.
- If set still fails to function, replace set.

**4.03** Table B lists some of the troubles that may occur, their probable causes, and corrective measures.

**TABLE B**

| Trouble | Probable Cause | Corrective Measure |
|---|---|---|
| Does Not Amplify on Low Volume | Dead or low batteries. | Replace batteries. |
| | Defective amplifier. | Replace 111B amplifier and 129F capacitor. |
| Sets Howl by Tapping Transmitter | Handset amplifier defective. | Change handset.<br>Change 111B amplifier.<br>If howling recurs change complete set. |
| Does Not Amplify From Low to Medium or Medium to High | Contact trouble. | See 4.01. |
| Mechanical or Electrical Trouble Between the Control Key Mounted in Upper Housing and Component Parts in the Base Due to Closing | Insufficient clearance between upper housing and base of set. | Place three P-14A100 captive washers on each base screw. |