

**BELL SYSTEM PRACTICES**  
**Station Installation and Maintenance**

**ADDENDUM C32.275**  
**Issue 1, Sept., 1954**  
**AT&T Co Standard**

**HANDSETS**  
**MAINTENANCE**

**1. GENERAL**

1.01 This addendum supplements Section C32.275, Issue 5. It is issued to revise 5.10, 5.11, and 5.12, and to delete 5.13. A handset listing is changed; cord listings and the notes associated with the charts are deleted.

**5. F-TYPE HANDSETS**

5.10 Change to read as follows: F4-, F5-, and BA-type handsets are provided as alternate equipment where it is necessary to change a handset in order to comply with zoning requirements as covered in Section C30.002 (C63.002), Transmission Zoning, of Station Apparatus. Use the BA-type handsets only if they are available from the distributing house or field stocks.

5.11 Change to read as follows: These handsets are equipped as follows:

Handsets	Transmitter Unit	Receiver Unit
F4 and F5	*F1	U1
BA Types	T1	HC5

\*Use only F1 transmitter units with stabilized carbon, any F1 unit manufactured or refilled (stamped with R) after February, 1953.

5.12 Change to read as follows: Handsets may be substituted as indicated in Table A for the purpose outlined in 5.10 of this addendum.

**TABLE A**

<b>Regular Handset*</b>	<b>Substitute Handsets*</b>	<b>Used With</b>
F1G-3	F4A-3 or BA-760726	Telephone sets
F1B-3	F4B-3 or BA-767447	Coin collectors having three conductor cords
F2E-3	F5A-3 or BA-761728	Coin collectors having four conductor cords

\*See Section C32.203, Handsets, Description, for replacement parts.

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**SECTION C32.275**  
**Issue 5, April, 1954**  
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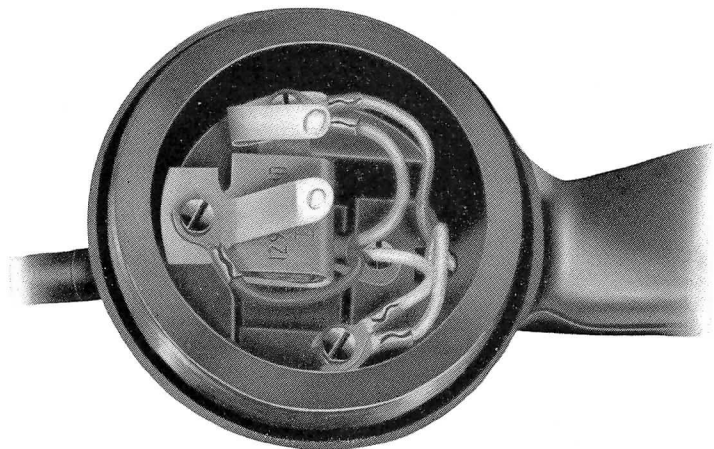
**HANDSETS**  
**MAINTENANCE**

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**1. GENERAL**

- 1.01 This section outlines the procedures and methods to be employed in maintaining handsets and their component parts.
- 1.02 This section is reissued to include the following information:
- (a) Use of the 514-type tool and its limitations.
  - (b) Use of locking devices with F-type handsets.
  - (c) Use of G-type handsets with station apparatus other than the 500-type telephone sets.
  - (d) Use of a new F-type handset in long loop areas.
- 1.03 Due to the extensive changes made, arrows indicating changes have been omitted.

1.04 E- and F-type handset used at stations subject to radio interference shall be equipped with a 129-type condenser bridged across the transmitter as shown in Fig. 1. To equip an F-type handset with the 129F condenser the outer terminal of of the condenser (with eyelet) is assembled under mounting screw of the center contact spring. The inner terminal is placed under the outer contact spring.



**Fig. 1—F-Type Handset with 129 Condenser**

**Note:** E-type handset are shop equipped.

- 1.05 Broken or cracked parts of handsets shall be replaced. If difficult to disassemble, replace entire handset.
- 1.06 Transmitter and receiver units shall be placed in cartons when returned to shop for repairs.
- 1.07 When applying the procedures of this section to colored handsets, use extreme care to avoid marring the finish. If the cleaning procedure does not result in a satisfactory appearance (stains not removed), replace the handset.

## **2. TOOLS**

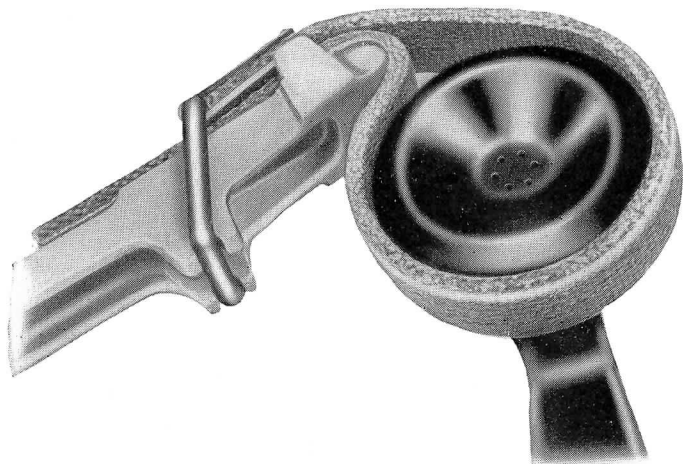
### **The 514-type**

- 2.01 The 514B tool is a multipurpose tool, replacing the 514A tool, and used primarily to loosen the transmitter and receiver caps of handsets.

2.02 The 514-type tool shall not be used to tighten transmitter and receiver caps, except where locking devices are employed on F-type handsets.

2.03 The 514B tool has an adjustable strap and may be applied to all type of handsets. Avoid excessive force when employing the 514B tool, otherwise the threads are apt to be damaged. The 514A tool is for F-type handsets only.

2.04 When using the 514B tool, leave sufficient strap length to wrap around the cap once, and fold over the end of the tool against the area of the handle opposite the strap positioning ears. Under this condition there will be a thickness of the strap between the cap and the tool handle, and no projections will extend toward the cap. See Fig. 2.

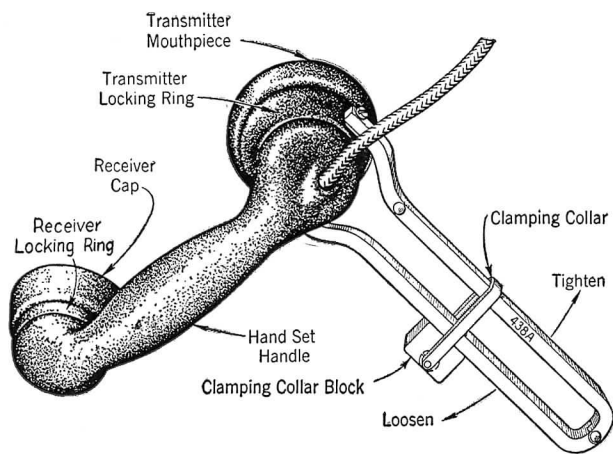


**Fig. 2—514B Tool**

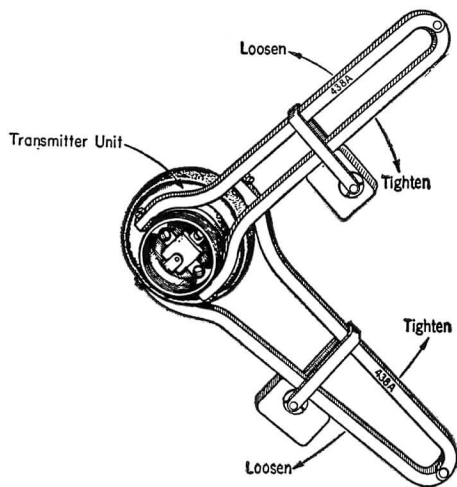
**The 438A Tool (Modified Collar)**

2.05 The 438A tool fits the receiver and transmitter cases, caps, and lock rings of E-type handsets.

2.06 Use the 438A tool on the lock rings or metal cases and the 514B tool on the transmitter and receiver caps. The 439A tool will not be required.



**Fig. 3—Correct Positioning of a Single 438A Tool**



**Fig. 4—Correct Positioning of Two 438A Tools**

2.07 On all operations where the 438A tool is employed, the two pins in the end of the tool shall be inserted in the holes of the part to be turned and the clamping collar adjusted as shown in Figs. 3 and 4. The clamping collar is pushed toward the held part as far as possible to prevent slipping, which could result in damage to the handset.

2.08 To aid in removing lock rings which have jammed on the cases of 395- and 625-type units, employ a 460A tool with the 438A tool.

### **3. CLEANING**

3.01 Caps, grids, and mouthpieces may be cleaned by wiping with a clean cloth moistened with water and the holes in the grids of the caps if clogged shall be cleaned. The 557-type receiver diaphragm shall be cleaned by wiping with a clean dry cloth.

3.02 Do not use cleaning fluids or antirust compounds on transmitter or receiver units or other component parts of handsets.

3.03 Discoloration or tarnish on the silver plated contact surfaces or component parts of the handset is not objectionable and no attempt shall be made to remove it.

### **4. E-TYPE HANDSETS**

#### **To Remove Transmitter**

4.01 Employ the 514-type or 438A tool to disassemble the component parts. If locking ring is jammed against aluminum adapter, use 438A and 460A tools in combination or apply rubber tape to surface of unit so that 438A and 514-type tools may be applied.

#### **To Replace Transmitter**

4.02 Reassemble the component parts of the transmitter making sure the mouthpiece is tool tightened. Then screw assembly on to handle and tighten lock ring with the 438A tool.

4.03 If difficulty is encountered in aligning properly, proceed as follows:

- (a) Back off assembled unit approximately 1/8 of a turn.
- (b) Hold mouthpiece firmly in position, tighten lock ring against handle hand tight and finally apply 438A tool.

#### **Replacement of 395B Transmitter**

4.04 The 395B transmitter shall be replaced by the 625A transmitter.

#### **To Remove Receiver**

4.05 Disassemble the receiver and component parts by hand, otherwise employ the 438A tool, the 514-type tool, or if pin holes are missing apply rubber tape to unit, to provide a gripping surface.

#### **To Replace Receiver**

4.06 After screwing locking ring on the aluminum case by hand, with the large bevel side toward the diaphragm, proceed as follows:

- (a) The receiver shall be screwed on to handle and tightened with proper tool.
- (b) The locking ring shall be tightened slightly with the proper tool against the handle.
- (c) Finally the diaphragm and cap shall be reassembled hand tight.

### **5. F-TYPE HANDSETS**

#### **To Remove Transmitter or Receiver Units**

5.01 The caps shall be turned off by hand or, if necessary, with the 514-type tool.

#### **To Reassemble Transmitter or Receiver Units**

5.02 Place the unit with grid side against grid of the inverted cap and screw on to handle, hand tight.

**Note:** Unless locking device is employed, do not use 514-type tool to tighten cap.

#### **Locking Devices**

5.03 Two locking devices are available for use with the F-type handsets, when a maintenance problem arises due to repeated loss of either the caps or units. The KS-14200 lock is for the transmitter cap and the 24A lock is for the receiver cap. The 24A lock may also be used on the 706-type receiver.

#### **Installation of the KS-14200 Lock**

5.04 The procedure recommended for installing these locks (two are required) is as follows:

- (a) Place one lock in inverted transmitter cap.
  - (b) Place transmitter unit in cap (normal position).
  - (c) Place second lock on transmitter unit.
  - (d) Assemble on handle and tighten with the 514-type tool. See Fig. 5.
-





**Fig. 5—Lock KS-14200 Order of Assembly of  
Lock Transmitter Unit and Cap**

5.05 If trouble is encountered in engaging the first thread of the transmitter cap with the handset handle, the following steps are recommended:

- (a) Place one lock on the seating surface of the transmitter end of handle.
- (b) Insert transmitter unit.
- (c) Thread on transmitter cap and tighten with 514-type tool to compress the tines of lock and reduce over-all thickness.
- (d) Disassemble.
- (e) Reassemble using standard procedure and a second lock (new) between the transmitter unit and cap.

#### **Installation of 24A Lock**

5.06 With the receiver unit in the receiver bowl of the handle, the lock shall be located on the rim of the bowl adjacent to the receiver unit. Then the cap shall be threaded on and tightened with the 514-type tool. See Fig. 6.



**Fig. 6—24A Receiver Cap Lock Assembly Position**

**Removal of Lock-Equipped Caps**

5.07 The 514-type tool shall be used to remove transmitter and receiver caps equipped with locks.

**F1-Type Lightweight Handsets**

5.08 Lightweight (thermoplastic) handsets having any broken plastic parts shall be replaced by a complete lightweight handset or a regular E- or F-type (phenol plastic handset).

**Note:** The lightweight handsets have a hollow handle and are molded of thermoplastic; they are identified from the regular F-type handsets by a dot following the handle code. The phenol plastic caps do not fit the thermoplastic handles and vice versa.

**Caution:** A lightweight handset should never be used to replace a regular E- or F-type handset, because the mountings for the latter type handset contain springs which are too stiff to be operated reliably by the lightweight handset.

### **F3-Type Handsets (Push-Button Switch in Handle)**

5.09 F3-type handsets shall be serviced the same as other type handsets, except that repairs or adjustments of push-button contact springs shall not be made in the field. Handsets having defective springs or contacts requiring adjustment shall be replaced by an equivalent handset.

### **F4- and F5-Type Handsets**

5.10 These handsets may be used in certain cases where poor transmission causing inadequate service is encountered due to exceptionally long loops.

5.11 These handsets are equipped with a U1-type receiver and an F1 transmitter containing a stabilized carbon.

**Note:** The F1 unit may be identified as follows:

1. New—dated after 2/53.
2. Repaired—having "R" following repair date.

5.12 The F4- (three conductor) or F5- (four conductor) type handsets may be interchanged with other F-type handsets as listed in Chart A.

**Chart A**

<b>Application</b>	<b>Handset Now Used</b>	<b>New Code</b>
Telephone Sets	F1G-3	F4A-3
Coin Collectors Three Cond. Handsets Four Cond. Handsets	F1E-3 F2E-3	F4B-3 F5A-3

**Notes:**

1. Cords used on current handsets are applicable to new handsets.
2. Receiver leads in new handsets are listed as P-13A758 (white) and P-13A757 (red).

5.13 The following chart lists the number and use of F-type handsets employing an HC5 receiver unit and T-1 transmitter. They are considered approximately equivalent to the F4 and F5 in transmission properties.

**Chart B**

Application	Handset Now Used	New Code	Old Cord	New Cord
Telephone Sets	F1G-3	BA-760726	H3H H3AD	H3AG
Coin Collectors Three Cond. Handsets	F1B-3	BA-767447	H3S	H3AE
Four Cond. Handsets	F2E-3	BA-761728	H4BC	H4BC

**Notes:**

1. The contact springs in the handle should be adjusted if necessary to insure satisfactory contact with the T-1 transmitter unit.
1. The adapter for HC5 receiver must be assembled in its proper position to obtain gain in receiving efficiency.
3. P-482080—Adapter for use with HC5 receiver unit.
4. P-12A167—Adapter for use with T-1 transmitter unit. Two required.

**6. G-TYPE HANDSETS**

- 6.01 The G-type handsets, in general, shall be maintained with the procedures outlined for F-type handsets.
- 6.02 Assembling and disassembling methods applied to G-type handsets are similar to those used on the F-type handsets. In addition, note the following:
  - (a) Do not use the 514A tool on caps.
  - (b) Check seating surfaces of the component parts for foreign substances, burrs, etc. prior to assembly to insure a tight acoustic chamber and to provide moisture protection.
  - (c) Be certain that key in the transmitter cup engages slot in handle.

- (d) The lower edge of the gripping portion of the 514B tool, when used to loosen the cap, shall be kept above the joint between the cap and the handset handle.
- (e) Locking devices are not available.
- (f) Caps shall be hand tight.

#### **G-2 Handsets (Push-Button Switch in Handle)**

6.03 G-2 handsets shall be serviced the same as other G-type handsets, except that repairs or adjustments of push-button contact springs shall not be made in the field. Handsets having defective switches shall be replaced by an equivalent handset.

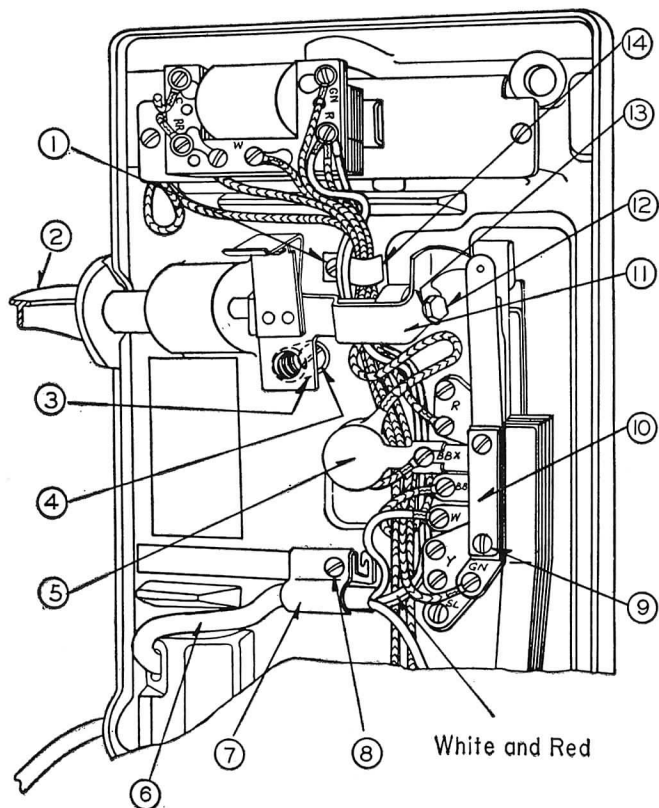
#### **G-Type Handset with Coin Collector**

6.04 Where transmission conditions in long loop areas create a maintenance problem, the G1B-3 handset may be used with coin collectors which have been modified to include the new switchhook spring assembly shown in Fig. 7. Such coin collectors are designated by a star after the code marking, e.g., 191G\*. On other types of handset coin collectors which have not been modified, it will be necessary to use the F4- or F5-type handset as noted in 5.10.

6.05 The G1B-3 handset shall be equipped with an H4BJ-3 cord when used with a coin collector. The red and long white conductors shall be connected to the R terminal of the induction coil and the remaining conductors to their respective terminals.

6.06 When the F-type handset of a coin collector is replaced by a G-type handset the cord shall be clamped as shown in Fig. 7.

6.07 The G-type handset may be used with G- and M-type mountings where transmission problems exist. Review Section in the C32.000 series entitled "G-Type Handset Mountings and M-Type Telephone Set Mountings with G1A Handset Cording."



**Fig. 7—Coin Collector Equipped for Use With G1B Handset**

**Notes:**

- A. Cord shall be held securely and packing material may be used to take up play. (Judge by feel.)

B. Piece Part Information (See Fig. 7)

- |    |          |                                |
|----|----------|--------------------------------|
| 1  | P-299453 | R.H.M. Screw                   |
| 2  | P-371761 | Switchhook                     |
| 3  | P-12A642 | Helical Spring                 |
| 4  | P-181640 | R.H.M. Screw                   |
| 5  |          | 37A Varistor                   |
| 6  |          | H4BJ-3 Cord                    |
| 7  | P-12A096 | Clamp                          |
| 8  | P-111530 |                                |
| 9  | P-295416 | R.H.M. Screw (Spl. Hd.)        |
| 10 | P-16A744 | (For 181, 182, 191, & 195)     |
|    | P-16A743 | (For 183, & 193)               |
| 11 | P-16A741 | Switchhook Spring Assembly     |
|    | P-12A703 | (For 191, 193, & 195)          |
|    |          | (For 181, 182, & 183)          |
|    |          | Switchhook Arm Assembly        |
| 12 | P-338905 | Hex. H.M. Screw                |
| 13 |          | No. 1208 Shakeproof Lockwasher |
| 14 | P-297767 | Cable Holder                   |

7. HANDSET CORDS

**To Remove Cord (E- and F-type)**

- 7.01 Remove transmitter, disengage cord tips and fastener, then pull cord through hole in handle.

**To Replace Cord (E- and F-type)**

- 7.02 Reverse procedure in 7.01, connect to proper terminals and check for tight connections.

**Notes:**

1. On E-type four-conductor handsets the green conductor (stay cord hook) is connected to the unmarked terminal.
2. When changing a four-conductor cord on an E-type handset, replace U-shape transmitter contact bracket with Z-type (P-247667).
3. On F-type four-conductor handsets, the red conductor (stay cord hook) is connected to the unmarked terminal and the green conductor to the "R" terminal.

**To Remove Cord—G-Type**

- 7.03 Remove transmitter and receiver units, disengage cord tips and grommet, then pull cord outward through hole in handle.

#### **To Replace Cord—G-Type**

7.04 When placing cords on G-type handsets, the following method is recommended:

- (a) Pass the free conductors of the handset end of cord through the hole in handle.
- (b) Advance the cord through the hole by turning it with a threading motion until the grommet is in line with the anchoring posts.
- (c) Fold back one free white receiver conductor at tie, guide other into the hollow handle, feed slowly until lead conductor appears in receiver well, then grasp and draw through.
- (d) Anchor cord by inserting grommet between posts.
- (e) Reassemble transmitter and receiver units, check for tight connections and screw caps in place, hand tight.

### **8. HANDSET HANDLES**

#### **Replacement**

8.01 To replace the handset handle, remove the component parts and assemble them on a new handle of same type, otherwise replace the complete handset.

### **9. TESTS**

9.01 After reassembling the transmitter and receiver, the handset should be shaken to determine if the units are properly clamped in place. If either of the units rattle, replace the cap or unit with another part.

9.02 Receiver and transmitter caps shall be checked for tightness at time of installation and on subsequent station visits.

9.03 On completion of maintenance work, make tests with test desk as covered in the C61.000 series entitled "Tests with Test Desk Common Battery Stations."