

## 52-TYPE HEAD TELEPHONE SETS

### PIECE-PART DATA, REPLACEMENT PROCEDURES, AND MINOR REPAIRS

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**1. GENERAL**

1.01 This section covers information necessary for ordering parts to be used in the maintenance of 52-type head telephone sets such as those used by operators and supervisors. It also covers approved procedures for replacing these parts and for repairing and cleaning these sets.

1.02 The reasons for reissuing this section are listed below:

- (1) To incorporate addendum 1 into the practice
- (2) To revise Table C

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- (3) To revise Fig. 4 and 7
- (4) To revise the List of Tools and Materials
- (5) To rate the 153A and 153B amplifiers Mfr Disc.

Revision arrows are used to emphasize the more significant changes. The Equipment Test List is not affected.

**1.03** The following Bell System Practices are referenced within this section:

- 024-108-100 153A and B Amplifiers For Use with Head Telephone Sets General Descriptive Information
- 024-108-105 292A and 292B Amplifiers Description
- 069-380-811 Plugs Cleaning and Polishing Using Portable Plug Cleaner
- 069-380-812 Plugs Cleaning and Polishing Using Cotton Sleaving

**1.04** Piece parts which may be replaced in the field are listed in Part 3.

**1.05** Part 4 covers the approved procedures for the replacement of the piece parts designated in Part 3. No attempt should be made in the field to replace parts not so designated.

**1.06** Part 5 of this section covers the methods of cleaning various parts of the head telephone set.

**1.07** Part 6 of this section covers the approved procedures for making minor repairs on the head telephone sets.

**◆Warning:** *To avoid damage to the transmitter case, carry the head*

*telephone set by some part other than the transmitter case. Care should be exercised not to scratch or nick the thermoplastic parts.*

**1.08** Refer to Section 024-108-100 or 024-108-105 for information on the 153A and B (Mfr Disc.) and the 292A (Mfr Disc.) and B amplifiers. These amplifiers are mainly used for persons with impaired hearing.◆

**1.09** Table A lists the Mfr Disc. and replacing codes for the 52-type head telephone sets.

**TABLE A**

**MANUFACTURE DISCONTINUED AND REPLACING CODES FOR 52-TYPE HEAD TELEPHONE SETS**

| CODES MFR DISC. RATED | REPLACING SET CODES |
|-----------------------|---------------------|
| 52A                   | 52S                 |
| 52B                   | 52L                 |
| 52C                   | 52M                 |
| 52D                   | 52N                 |
| 52E                   | 52EA                |
| 52FR                  | 52PR                |
| 52GR                  | 52RR                |
| 52H                   | 52S                 |
| 52J                   | 52M                 |
| 52K                   | 52T                 |

**1.10** Table B lists the principal applications of the 52-type head telephone sets and the differences in equipment features of the various sets.

**1.11** Table C lists the cords and components for the 52-type head telephone sets.

TABLE B

## PRINCIPAL USES AND EQUIPMENT FEATURES OF 52-TYPE HEAD TELEPHONE SETS

| HEAD TELEPHONE SET | USES  | FEATURES  |
|--------------------|---|---|
| 52AH               | For maintenance on T1-type Carrier Systems                  | 18-foot semi-spring cord<br>High-impedance receiver unit  |
| 52EA               | For cable splicers—with 84A test set                        | 7-foot cord<br>Low-impedance receiver unit  |
| 52L                | Switchboard—4 order turret, 331-type telephone set          | 10-foot spring cord<br>Push-to-talk locking switch<br>Low-impedance receiver unit                       |
| 52M                | Installations at airports—102A, 109A, or 111A key equipment | 7-foot cord<br>High-impedance receiver unit   |
| 52N                | Night operator—switchboard—84A Test Set                     | 15-foot spring cord<br>Low-impedance receiver unit  |
| 52PR               | FAA air route traffic control centers — 102A key equipment  | 7-foot spring cord<br>Push-to-talk locking or non-locking switch<br>High-impedance receiver unit        |
| 52RR               | Switching System 300  | 7-and 12-foot spring cord<br>Push-to-talk locking or non-locking switch<br>High-impedance receiver unit |
| 52S                | Operators-switchboard-101-type key equipment                | 5-foot cord<br>Low-impedance receiver unit  |
| 52T                | N, O, and ON-type Carrier Systems                           | 25-foot cord<br>High-impedance receiver unit<br>Sound power transmitter unit                            |

◆ TABLE C ◆

## 52-TYPE HEAD TELEPHONE SET COMPONENTS

| HEAD TELEPHONE SET | XMTR UNIT | RCVR UNIT |          | XMTR ARM | HEAD-BAND | CORD  | CORD LENGTH (FEET)* | PLUG  | SWITCH  | CORD FASTENER |
|--------------------|-----------|-----------|----------|----------|-----------|-------|---------------------|-------|---------|---------------|
|                    |           | OLD       | NEW      |          |           |       |                     |       |         |               |
| 52A‡               | N1        | HC3‡      | LB2      | 55A      | 15F       | L4BM‡ | 5<br>(nonspring)    | 289B‡ |         | P-478356      |
| 52B‡               | N1        | HC3‡      | LB2      | 55A      | 15F       | L4AH‡ | 10<br>(spring)      | 289B‡ | KS-8010 | P-478356      |
| 52C‡               | N1        | HC4‡      | LB3      | 55A      | 15F       | L4BM‡ | 7<br>(nonspring)    | 289B‡ |         | P-478356      |
| 52D‡               | N1        | HC3‡      | LB2      | 55A      | 15F       | L4AK‡ | 15<br>(spring)      | 289B‡ |         | P-478356      |
| 52E‡               | N1        | P-48V124  | P-48V545 | 55A      | 15C       | L2Y†  | 7<br>(nonspring)    |       |         |               |
| 52H‡               | N1        | HC3‡      | LB2      | 55A      | 15F       | L4BL‡ | 5<br>(nonspring)    | 464A  |         | P-478356      |
| 52J‡               | N1        | HC4‡      | LB2      | 55A      | 15F       | L4BL‡ | 7<br>(nonspring)    | 464A  |         | P-478356      |
| 52K‡               | AD1       | HC7‡      | LB3      | 55B      | 15F       | L4BP‡ | 18<br>(semispring)  | 422A  |         | P-17E761      |
| 52L                | N1        | HC6‡      | LB2      | 55A      | 15F       | L4BY  | 10<br>(spring)      | 464A  | 240A    | P-478356      |
| 52M                | N1        | HC7‡      | LB3      | 55A      | 15F       | L4CC  | 7<br>(nonspring)    | 464A  |         | P-478356      |
| 52N                | N1        | HC6‡      | LB2      | 55A      | 15F       | L4CA  | 15<br>(spring)      | 464A  |         | P-478356      |
| 52S                | N1        | HC6‡      | LB2      | 55A      | 15F       | L4CC  | 5<br>(nonspring)    | 464A  |         | P-478356      |
| 52T                | AD1       | HC7‡      | LB3      | 55B      | 15F       | L4CD  | 18<br>(semispring)  | 422A  |         | P-17E761      |
| 52AH               | AD1       | HC7‡      | LB3      | 55B      | 15F       | L4CE  | 18<br>(semispring)  | 425A‡ |         | P-17E761      |
| 52EA               | N1        | —         | LB2      | 55A      | 15C       | L2Y   | 7<br>(nonspring)    |       |         |               |
| 52FR‡              | N1        | HC4‡      | LB2      | 55A      | 15C       | L4BK‡ | 7<br>(spring)       | 289B‡ | 225A    |               |

♦ TABLE C (Contd) ♦

## 52-TYPE HEAD TELEPHONE SET COMPONENTS

| HEAD TELEPHONE SET | XMTR UNIT | RCVR UNIT¶ |     | XMTR ARM | HEAD-BAND | CORD | CORD LENGTH (FEET) * | PLUG  | SWITCH | CORD FASTENER |
|--------------------|-----------|------------|-----|----------|-----------|------|----------------------|-------|--------|---------------|
|                    |           | OLD        | NEW |          |           |      |                      |       |        |               |
| 52GR‡              | N1        | HC4‡       | LB2 | 55A      | 15C       | L6G‡ | 7<br>(spring)        | 338A‡ | 225A   |               |
| 52PR               | N1        | HC7‡       | LB3 | 55A      | 15C       | L4CB | 7<br>(spring)        | 464A  | 240A   |               |
| 52RR               | N1        | HC7‡       | LB3 | 55A      | 15C       | L6H  | 7<br>(spring)        | 425A  | 240A   |               |

\* When ordering cord, specify the length as shown in the table.

† Cord includes two P-16E169 test clips and a 516A capacitor.

‡ Manufacture Discontinued.

¶ New 52-type head telephone sets are equipped with LB-type receiver units. Older type head telephone sets using the HC-type receiver units may be converted to accept the LB-type by installing a D-180417 kit of parts.

## 2. APPARATUS

## MATERIALS

## 2.01 List of Tools and Materials:

| CODE OR SPEC NO. | DESCRIPTION  |         |   |
|------------------|--|---------|---|
|                  |  | KS-2423 | Cloth   |
|                  |  | KS-8496 | No. 3 Lubricating Compound  |
| <b>TOOLS</b>     |  | —       | Black Ceresin, C-244 Eimer and Amend, New York, N. Y. (Ozokerite) or Equivalent |
| 255              | Tool   | —       | Clear Petrolatum  |
| 567B             | Pad Assembly Tool                                    | —       | Mild Paste Metal Polish   |
| KS-2348          | Cord Repair Screwdriver (equipped with P-484700 bit) | —       | Mild Powdered Soap  |
| KS-6854          | 3-1/2 Inch Screwdriver                               | —       | Friction Tape   |
| R-1005           | Jewelers Screwdriver                                 | —       | Mild Detergent  |
| R-8950           | Syringe  |         |   |
| AT-7860          | D Long-Nose Pliers                                   |         |   |
| AT-7739          | Size 1, B Screwdriver                                |         |   |
| AT-7825          | 3-Inch C Screwdriver                                 |         |   |

## 3. PIECE-PART DATA

3.01 Figures 1 through 8 show the relationship of the various parts of the head telephone sets. The piece-part numbers of these parts are given with the names as listed by the Western Electric Merchandise Department.

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**3.02** When ordering replacement parts, give both the piece-part number and the name, for example: P-484150 Screw. Do not refer to the BSP number.

**3.03** Information enclosed by parentheses ( ) is not ordering information. This information may be references to notes, parts referred to in other portions of the section and not considered replaceable, or part names in general use in the field if these names differ from those assigned by the manufacturer.

**3.04** A D-180417 kit of parts is available which permits the conversion of 52-type head telephone sets to accept the more efficient LB-type receiver units in place of the HC-type receiver unit. The D-180417 kit of parts consists of one P-48V109 adapter ring, one P-48V108 insulator, two 840163877 terminals, and two P-48V110 receiver screws. See Fig. 6 for installation procedures. The kit of parts may be ordered as follows.

(QTY) D-180417 Kit of Parts

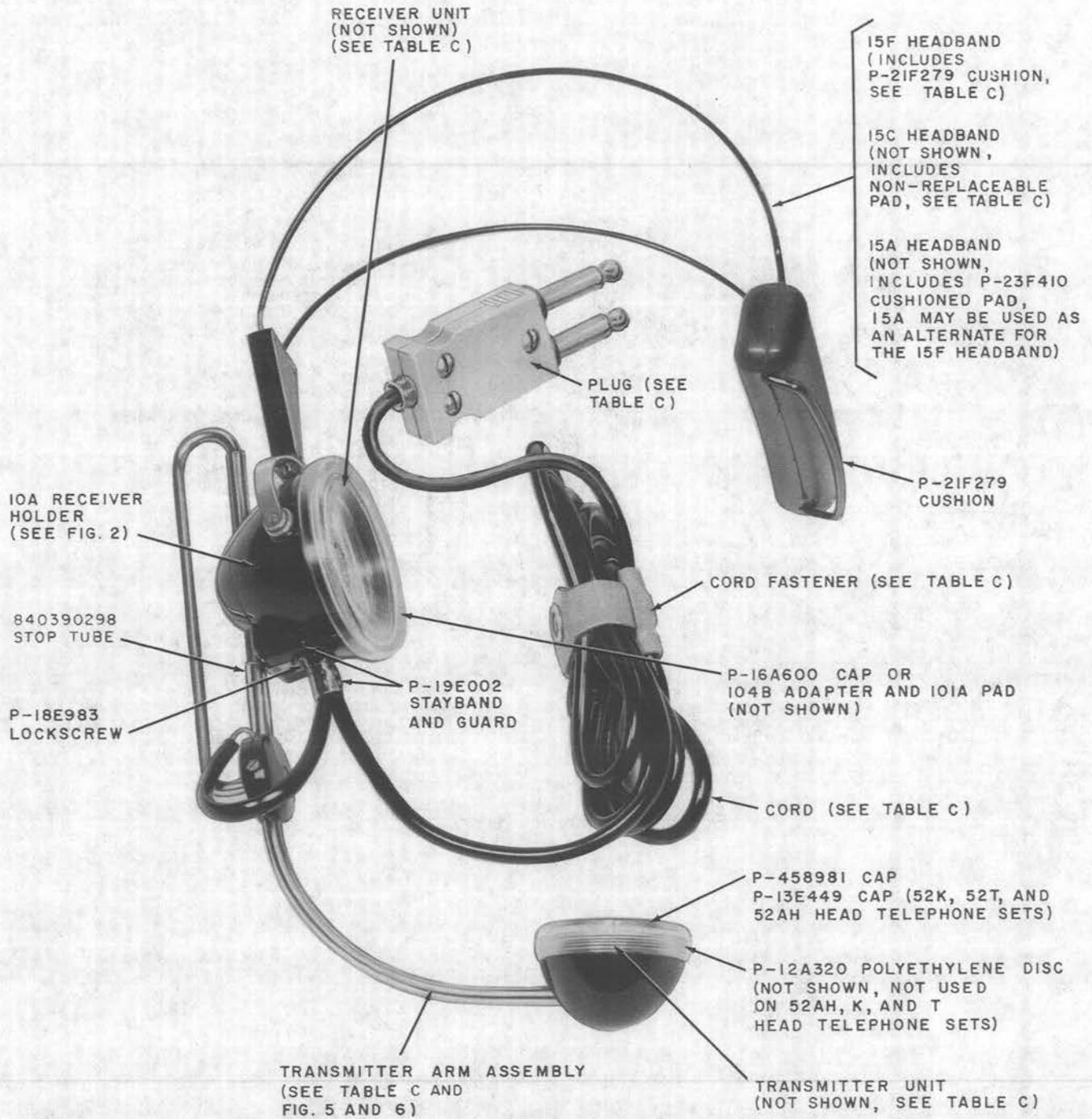


Fig. 1—52-Type Head Telephone Sets (52S Head Telephone Set Equipped With Stopbar Illustrated)

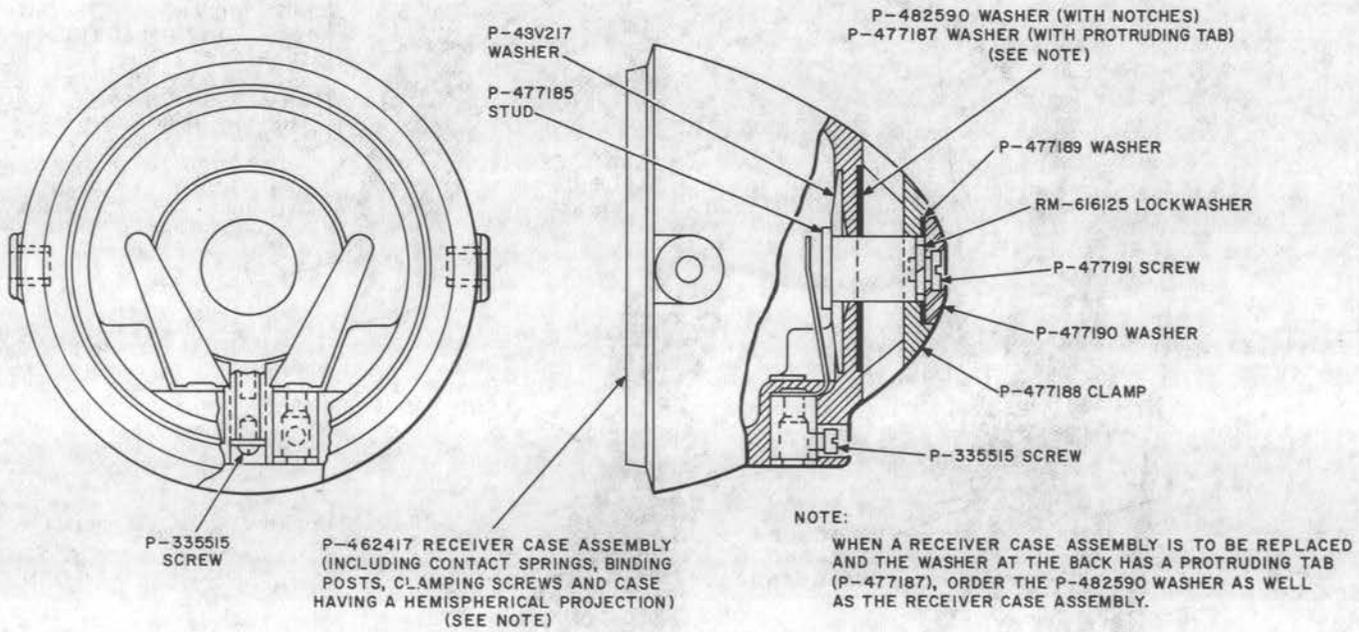


Fig. 2—10A Receiver Holder

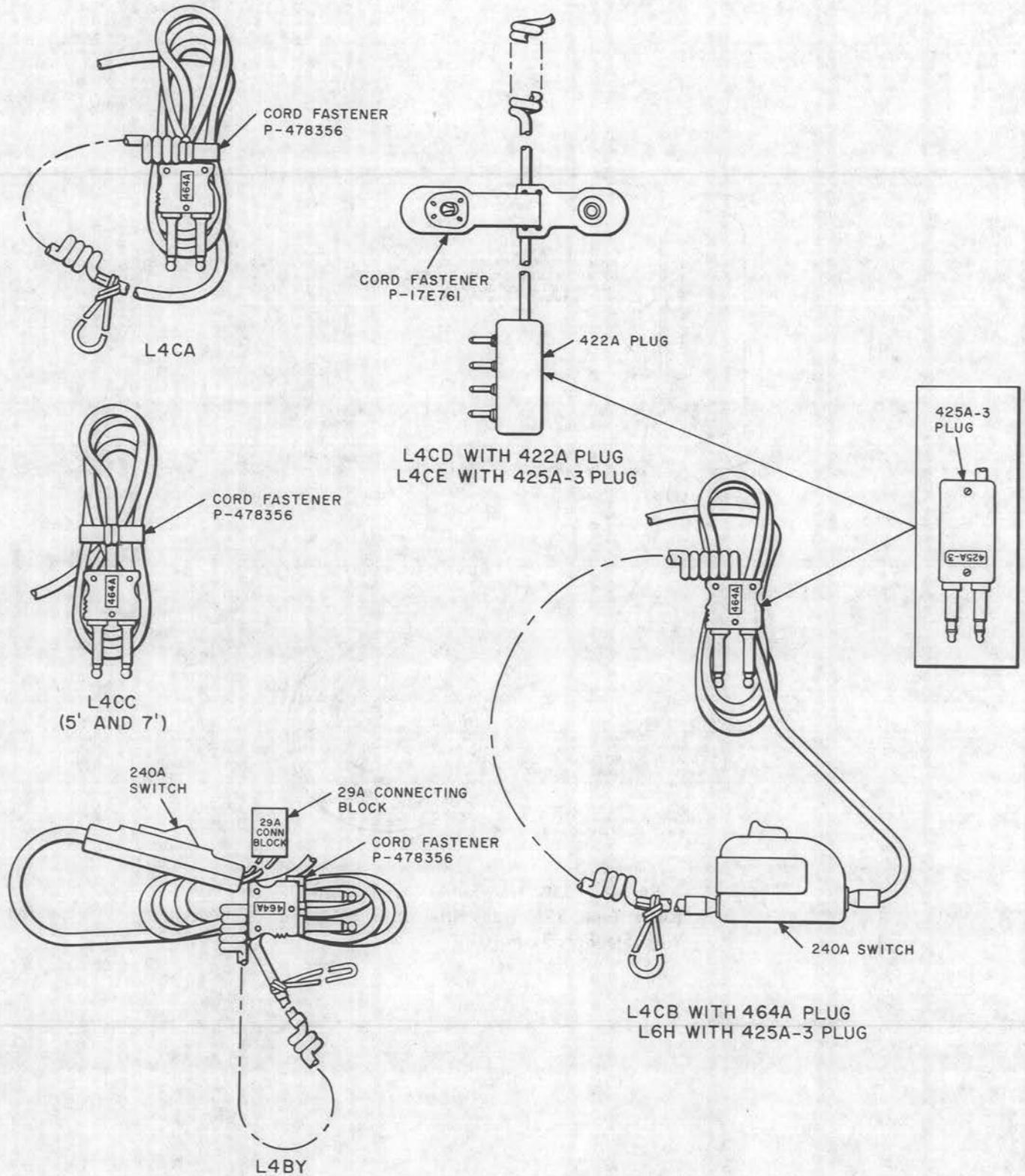


Fig. 3—Cords and Switches Used With 52-Type Head Telephone Sets Except 52E Cord Assembly

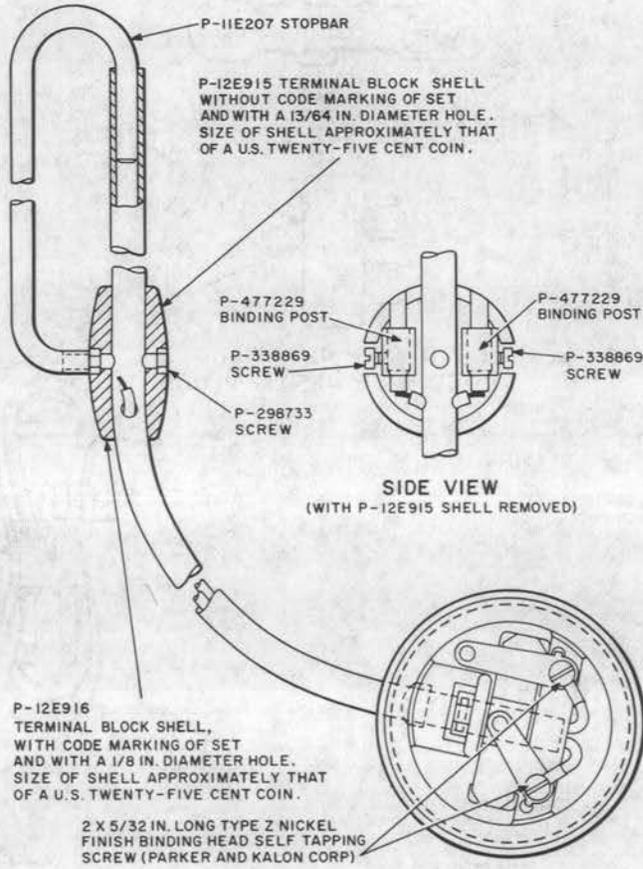


Fig. 4—55A and 55B Transmitter Arm Assembly  
(Later Type 55A Transmitter Arm Equipped  
With Stopbar Illustrated)

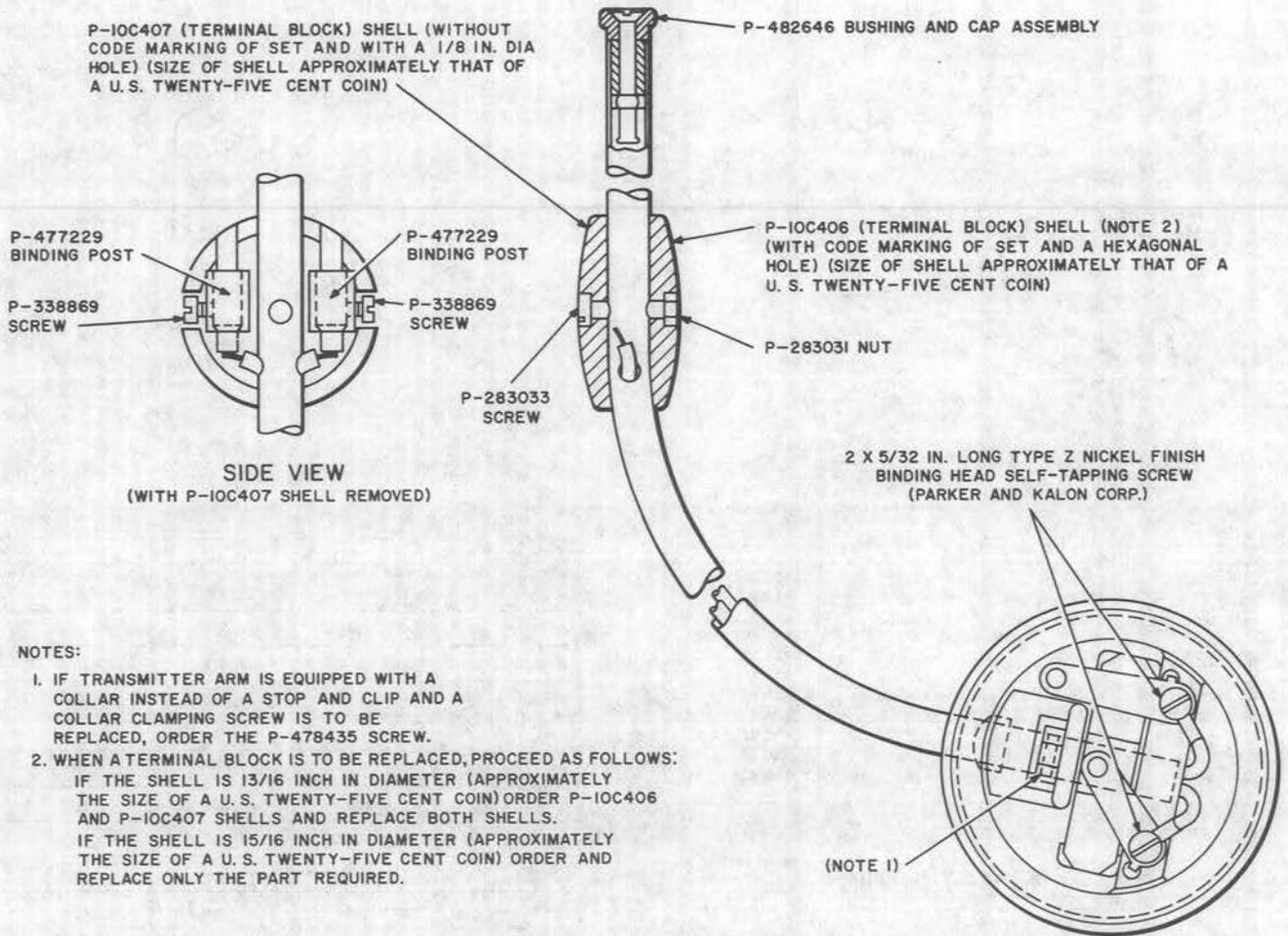


Fig. 5—55A Transmitter Arm Assembly—Earlier Type Equipped With Bushing and Cap Assembly

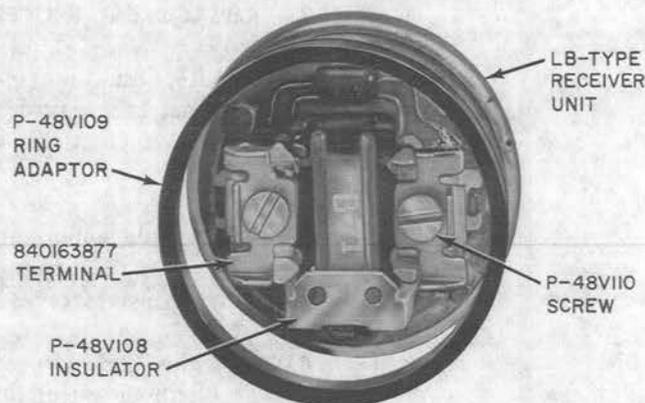
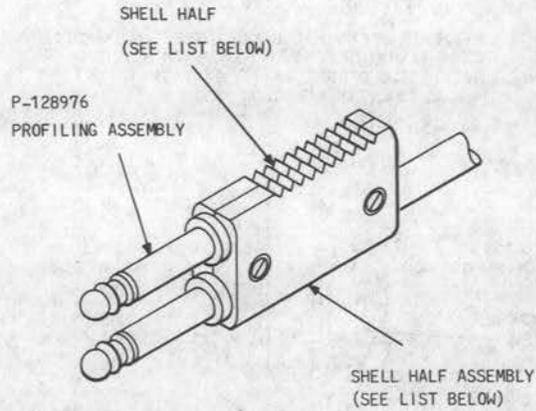
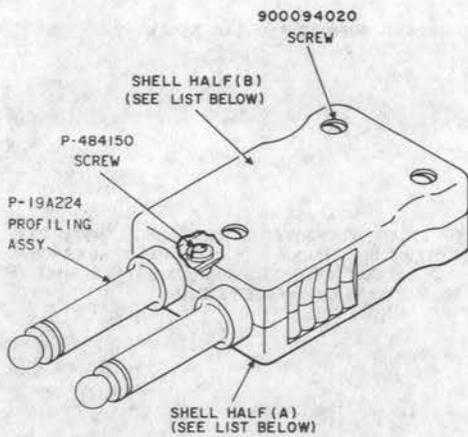


Fig. 6—52-Type Head Telephone Set Components Associated With LB-Type Receiver Unit



| PLUG CODE | COLOR       | SHELL HALF (A) | SHELL HALF (B) |
|-----------|-------------|----------------|----------------|
| 464A-3    | BLACK       | P-43X302       | 43X316         |
| 464A-50   | IVORY       | P-43X312       | 43X326         |
| 464A-51   | MOSS GREEN  | P-43X303       | 43X317         |
| 464A-52   | OXFORD GRAY | P-43X313       | 43X327         |
| 464A-53   | RED         | P-43X307       | 43X321         |
| 464A-56   | YELLOW      | P-43X308       | 43X322         |
| 464A-58   | WHITE       | P-43X304       | 43X318         |
| 464A-59   | PINK        | P-43X309       | 43X323         |
| 464A-60   | LIGHT BEIGE | P-43X305       | 43X319         |
| 464A-61   | LIGHT GRAY  | P-43X306       | 43X320         |
| 464A-62   | AQUA BLUE   | P-43X310       | 43X324         |
| 464A-64   | TURQUOISE   | P-43X311       | 43X325         |

Fig. 7 — 464A-Type Plug

| CODE    | COLOR       | SHELL HALF | SHELL HALF ASSEM. |
|---------|-------------|------------|-------------------|
| 425A-3  | BLACK       | P-123975   | P-376964          |
| 425A-51 | MOSS GREEN  | P-42L025   | P-42L034          |
| 425A-53 | RED         | P-42L026   | P-42L035          |
| 425A-56 | YELLOW      | P-42L027   | P-42L036          |
| 425A-58 | WHITE       | P-42L028   | P-43L037          |
| 425A-59 | PINK        | P-42L029   | P-42L038          |
| 425A-60 | LIGHT BEIGE | P-42L032   | P-42L041          |
| 425A-61 | LIGHT GRAY  | P-42L033   | P-42L042          |
| 425A-62 | AQUA BLUE   | P-42L030   | P-42L039          |
| 425A-64 | TURQUOISE   | P-42L031   | P-42L040          |

Fig. 8—425A-Type Plug

4. REPLACEMENT PROCEDURES

4.01 After making replacement of parts which affect transmission, check the telephone set to see that it meets the tests specified in Section 028-360-501.

4.02 No replacement procedures are specified for screws or other small parts where the procedure consists of a simple operation.

4.03 When making any replacement on a head telephone set, make sure that the association of the set and its means of identification is retained.

4.04 To avoid the possibility of electrical shock, after making any replacement of parts on a head telephone set equipped with a transmitter arm provided with the bushing and cap assembly

shown in Fig. 5, proceed as follows: Determine whether the terminal block is the earlier or the later type. The earlier-type terminal block may be recognized by the diameter of the terminal shell which is that of the U.S. 5-cent coin; the diameter of the later-type shell is that of a U.S. 25-cent coin. If the terminal block is of the earlier type, check the terminal block cord clamping screws to make sure that they are covered with Ceresin at least flush with the surface of the terminal block. If not covered as specified above, in order to insulate the terminal screws, apply Ceresin over the screws flush with the surface of the terminal block. To facilitate applying Ceresin, work it with the hands to make it pliable.

#### RECEIVER UNIT

**4.05** To replace the receiver unit (Fig. 9), unscrew the cap from the handle and remove the old unit. Mount the new unit so the code designation on the unit is toward the transmitter. If replacing an HC-type receiver unit with an LB-type unit, install the adapter ring, insulator, and terminals as shown in Fig. 6. Screw the cap on the handle fingertight. When properly tightened, there will be a slight gap between the rims of the cap and case. If difficulty is encountered in screwing the cap on the handle, apply clear petrolatum sparingly to the threads of the handle.

#### 10A RECEIVER HOLDER, RECEIVER CASE ASSEMBLY, LARGE SPRING WASHER, AND FRICTION WASHER

**4.06** To replace the receiver holder, proceed as follows: Remove the headband. Disconnect the cord by removing the three cord clamping screws, using the KS-2348 cord repair screwdriver, and then remove the cord terminals and the cord stay and plastic guard.

**4.07** Unscrew the cap and remove receiver unit.

**4.08** Remove the clamp and associated washers by removing the receiver holder clamp mounting screw (Fig. 10) using the 3-inch C screwdriver, and proceed as covered in paragraph 4.09 or 4.10, as applicable.

**4.09** Where the transmitter arm is equipped with a stopbar, back off the terminal block clamping screw, using the KS-6854 screwdriver, until the lower end of the stopbar can be removed from the terminal block. Remove the stopbar from

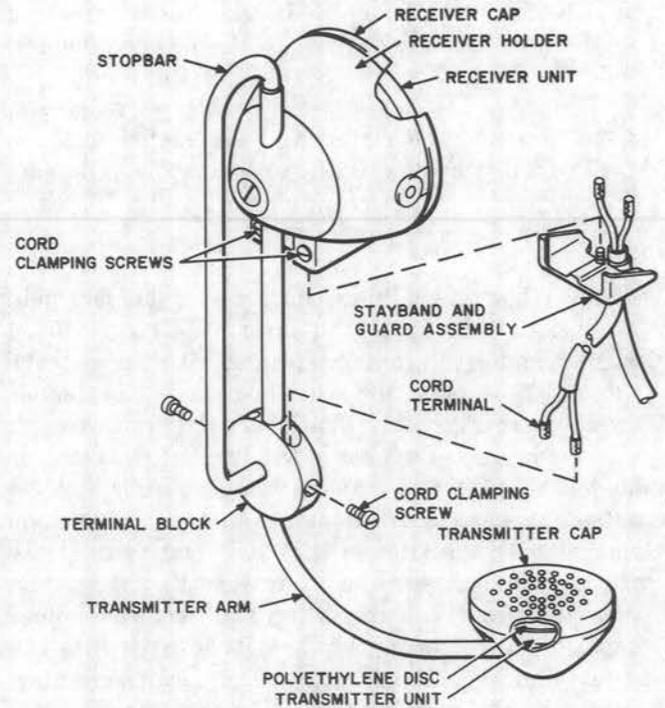


Fig. 9—Transmitter Arm Assembly and Receiver Holder

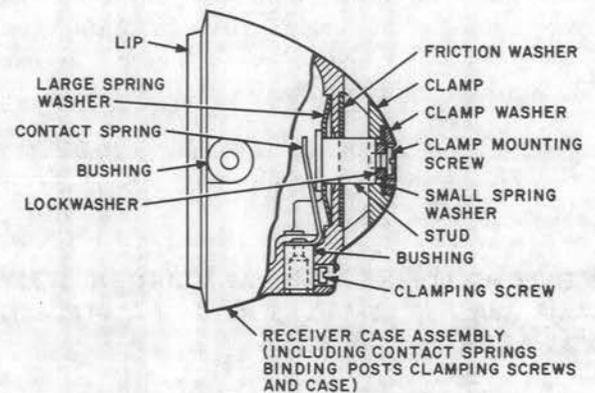


Fig. 10—10A Receiver Holder

the transmitter arm tube. With the fingers pressing on the stud from the inside of the receiver holder (Fig. 10), slide the tube through the hole in the stud.

**4.10** Where the transmitter arm is equipped with the bushing and cap assembly, remove the end cap assembly from the transmitter arm tube after loosening the end cap assembly screw with

the KS-6854 screwdriver. With the fingers pressing on the stud from the inside of the receiver holder, slide the tube through the hole in the stud.

**4.11** Remove the clamp and associated washers from the new receiver holder by removing the clamp mounting screw, shown in Fig. 10, using the 3-inch C screwdriver.

**4.12** When assembling the receiver holder, hold it in one hand and insert the large spring washer under the contact springs with the concave side of the washer toward the back of the holder as shown in Fig. 10. Then insert the stud through this washer and the hole in the back of the receiver holder so that the transmitter arm tube hole is outside the receiver holder. Mount the friction washer over the stud so that it is flat against the receiver holder as shown in Fig. 10. Press on the stud from the inside of the receiver holder and slide the transmitter arm tube back into the stud. Reinsert the stopbar or end cap assembly, as applicable, and tighten the screw.

**4.13** Assemble the clamp and three associated washers as shown in Fig. 10.

**4.14** Insert the cord terminals so that the smooth surface of the metal tip is in contact with the screw. Tighten the screws. Tighten stay band and guard assembly screw.

**4.15** To replace the receiver unit, proceed as covered in paragraph 4.05. Replace the headband.

#### **RECEIVER HOLDER CLAMP, CLAMP MOUNTING SCREW, CLAMP WASHER, SMALL SPRING WASHER, AND LOCKWASHER**

**4.16** To replace any of these parts, remove the clamp, clamp washer, small spring washer, and the lockwasher from the receiver holder by removing the receiver holder clamp mounting screw, shown in Fig. 10, using the 3-inch C screwdriver.

**4.17** After replacing the part, assembly the clamp and three associated washers as shown in Fig. 10 and tighten the clamp mounting screw.

#### **101A PAD AND 104B ADAPTER**

**4.18** Unscrew the adapter from the receiver holder. To replace the pad, place a new pad on the

567B tool with the plastic washer side toward the tool. Then place the nipple part of the 104B adapter over the central part of the plunger of the tool, substituting a new adapter, if necessary. Press the adapter firmly toward the tool with a slight turning motion to snap the washer on the pad over the nipple of the adapter. Screw the adapter on the receiver holder.

**4.19** The pad may be left on the receiver until the four layers of tissue have been used. A layer of tissue is removed while the pad is on the adapter by breaking the top layer near the outer edge, peeling the tissue from the whole outer edge first, and then from around the plastic washer.

#### **TRANSMITTER UNIT, POLYETHYLENE DISC**

**Caution:** *In removing or replacing the transmitter unit, hold it between the thumb and one or two fingers on the outer edge of the unit. Pressing against the moisture-resistant membrane may result in excessive sag of the membrane impairing the transmission characteristics of the unit. This precaution applies to both the replacing unit and the unit removed for repair. In packing the unit to be returned for repair, use the box in which the new unit was received. Take care that no packing material presses against the membrane.*

**4.20** To replace the transmitter unit or polyethylene disc shown in Fig. 9, unscrew the cap and carefully lift the unit from the case. Where the unit is not provided with leads, proceed as covered in paragraph 4.21. Where the unit is provided with leads, proceed as covered in paragraph 4.22.

**4.21** Remove the transmitter unit. If the polyethylene disc is torn, dirty, wrinkled, or otherwise damaged, replace it. Hold the transmitter cap with the threaded side up and place the polyethylene disc in it so that it is centrally located. Place the new transmitter unit, membrane side down, on top of the disc in the cap. Place the transmitter case, threaded side down, over the cap. While maintaining the cap and case in this position, screw the cap on the case, fingertight. When properly tightened, there will be a slight gap between the rims of the cap and case. If difficulty is encountered in screwing the cap on the case,

apply petrolatum sparingly to the threads of the case.

**4.22** Remove the clamping screws with the KS-6854 screwdriver and remove the transmitter unit. Substitute the new unit. With the new unit lead terminals in place, insert the clamping screws and tighten them securely using the KS-6854 screwdriver. Position the new unit in the case and screw the cap on the case fingertight. When properly tightened, there will be a slight gap between the rims of the cap and case. If difficulty is encountered in screwing the cap on the case, apply petrolatum sparingly to the threads of the case.

#### TRANSMITTER ARM ASSEMBLY

**4.23 General:** If it is necessary to replace a transmitter case, replace the transmitter arm assembly also. See Fig. 11.

**4.24** To replace the arm assembly, proceed as covered in paragraph 4.20 to remove the transmitter unit. Then disconnect the cord from the terminal block by removing the two cord clamping screws, using the KS-6854 screwdriver.

**4.25** Remove the receiver holder and mount it on the new transmitter arm assembly as covered in paragraphs 4.06 through 4.15.

**4.26** Insert the cord terminals from the outside of the transmitter arm into the holes in the terminal block so that the smooth surface of the metal tip is in contact with the screw. Take care that the cord tips are seated on the bottom of the binding post holes; then tighten the screws.

**4.27** Where applicable, replace transmitter as covered in paragraph 4.21 or 4.22.

#### TRANSMITTER CONTACT SPRING AND TERMINAL CLAMPING SCREWS

**4.28** To replace the clamping screws that hold the transmitter contact springs in place, proceed as covered in paragraphs 4.29 and 4.30. To replace the clamping screws that hold the transmitter terminals in place, proceed as covered in paragraph 4.31.

**4.29** Remove the transmitter cap, transmitter unit, and polyethylene disc as covered in

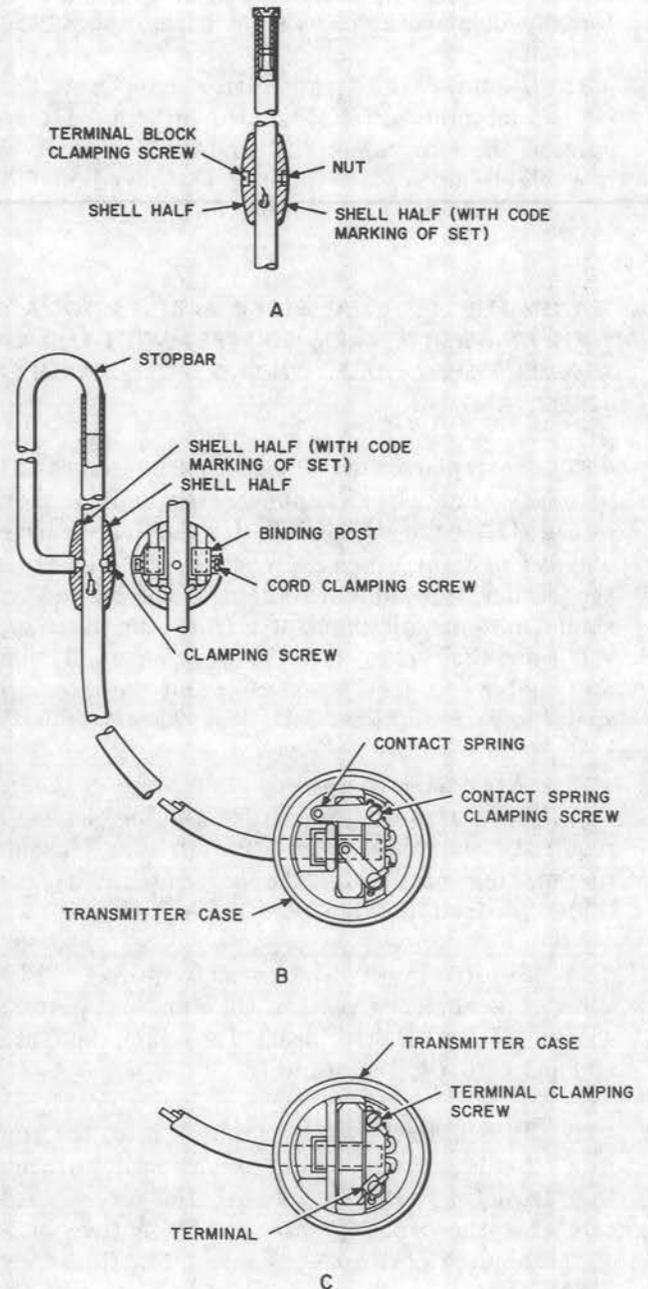


Fig. 11—55A and 55B Transmitter Arm Assembly

paragraphs 4.20 and 4.21. Remove the clamping screws shown in Fig. 11B with the KS-6854 screwdriver.

**4.30** With the contact springs in their proper position as shown in Fig. 10, insert the new clamping screws and tighten them using the KS-6854 screwdriver. Place the polyethylene disc and

transmitter unit in the transmitter cap and screw the cap in place as covered in paragraph 4.21.

**4.31** Remove the transmitter cap, unit, and clamping screws, shown in Fig. 11C, as covered in paragraphs 4.20 and 4.22. Insert the new clamping screws through the terminals and remount the parts as covered in paragraph 4.22.

**TRANSMITTER TERMINAL BLOCK PARTS ASSOCIATED WITH TRANSMITTER ARM EQUIPPED WITH END CAP ASSEMBLY SHELL HALF, BINDING POST, CLAMPING SCREW, AND NUT**

**4.32** To replace any of these parts, remove the terminal block clamping screw and nut shown in Fig. 11A using the R-1005 jewelers screwdriver, and remove the shells. When the shells are of the earlier type, discard them. The earlier-type shells may be distinguished from the later-type shells by their diameter. The earlier shells have a diameter of a U.S. 5-cent coin and the later-type shells have a diameter of a U.S. 25-cent coin.

**4.33** When it is necessary to replace a binding post, remove the cord clamping screw, as required, using the KS-6854 screwdriver. Unsolder the binding post from the associated wire, and solder the new binding post to this wire.

**4.34** Substitute new parts as required. Place the shell halves on the binding posts as shown in Fig. 11B. Insert the clamping screw and nut and tighten securely.

**4.35** Insert the cord terminals into the new binding posts so that the smooth surface of the metal tip is in contact with the screw. Take care that the cord tips are seated on the bottom of the binding post holes, then tighten the screws.

**TRANSMITTER TERMINAL BLOCK PARTS ASSOCIATED WITH TRANSMITTER ARM EQUIPPED WITH STOP TUBE AND STOPBAR—SHELL HALF, BINDING POST, AND CLAMPING SCREW**

**4.36** To replace any of these parts, remove the screw shown in Fig. 11B, using the KS-6854 screwdriver, and remove the shells.

**4.37** When it is necessary to replace a binding post, proceed as covered in paragraph 4.33.

**4.38** Substitute new parts as required. Place in Fig. 11B, insert the lower end of the stopbar, and tighten the screw.

**Caution:** *After assembly of the stopbar, the stopbar and associated screw should be examined for projecting burrs or sharp edges.*

**4.39** Insert the cord terminals into the new binding posts as covered in paragraph 4.35.

**4.40** Where trouble has been experienced with transmitter leads breaking, the problem may be minimized by correctly dressing the leads as shown in Fig. 1. Also, an 840390298 stop tube (Fig. 1) is available to limit the travel of the transmitter arm and prevent damage to the transmitter leads. All new head telephone sets will be equipped with the stop tube.

**4.41 Cord Associated with 464A Plug:** To replace the cord, disconnect at the plug end as covered in paragraph 4.42. At the headset end, disconnect the cord from the 10A receiver holder by removing the two clamping screws and the cord stay screw, using the KS-2348 cord repair screwdriver. Remove the cord terminals and cord stay. Substitute the new cord and connect it to the plug and 10A receiver holder. Reassemble all parts in the reverse order of removal. To replace a braided cord with a PVC jacketed cord on an old model 10A receiver, it will be necessary to move the P-335521 binding post from the hole furthest from the cap to the hole nearest the cap. Secure the P-19E002 stayband and guard to the 10A receiver holder with a P-18E983 lockscrew.

**425A-TYPE PLUG**

**4.42** Remove the clamping screws using the 3-inch C screwdriver. Remove the cord terminal screws using the KS-2348 screwdriver and pull the cord from the plug. Substitute new parts as required as shown in Fig. 8. Insert the cord terminals into the plug fingers taking care not to twist the cords more than 180 degrees. Insert and securely tighten the terminal screws. Reassemble the plug tightening the clamping screws.

**464A-TYPE PLUG**

**4.43** Remove the clamping screws using the KS-6854 screwdriver. Note the color of the

cord conductor connections to the terminals. Remove the cord terminal screws using the KS-2348 cord repair tool and remove the cord from the profiling assembly and plug shell as shown in Fig. 7. Insert the new cord through the hole in one half of the plug shell and connect the cord terminals. Place profiling assemblies in shell half and reassemble the parts in the reverse order of removal.

**4.44 240A and KS-8010 Switches:** To replace the 240A switch, remove the screws from the switch housing and clip using the size 1, B screwdriver. Remove the clip and open the housing. To replace the KS-8010 switch, remove the clamping screws of the switch using the KS-6854 screwdriver and separate the switch halves. Using the KS-6854 screwdriver, loosen the terminal and cord fastening screws and remove the cord from the switch. The L4BY cord is the replacement cord for the L4AH cord and will be furnished equipped with hardware if so ordered, to facilitate the complete replacement. Substitute the new switch, connect and fasten the cord to the switch and assemble the parts in the reverse order of removal. Figure 12 illustrates the installation of KS-8010 switch in the L4BY cord.

**4.45 Cord Fastener (plastic strap) Associated With 422A Plug:** To place a new P-17E761 cord fastener on the cord, proceed as follows: Secure the cord fastener to the cord with the P-360125 band as shown in Fig. 13A, using the 255 tool (grooved pliers) or the long-nose pliers. Form the cord fastener by slipping the E end of the fastener through slot 3, as shown in Fig. 13B, and the F end through slots 1 and 2, as shown in Fig. 13C.

#### HEADBAND PAD

**4.46** To replace the headband pad, remove the old pad from the headband. Substitute the new pad and pass the free end of the headband through the slot of the pad, making sure the thicker side of the pad is on the inner side of the headband as shown in Fig. 14.

### 5. CLEANING PROCEDURES

#### PLUGS

**5.01** Clean plugs in accordance with Section 069-380-811 or 069-380-812.

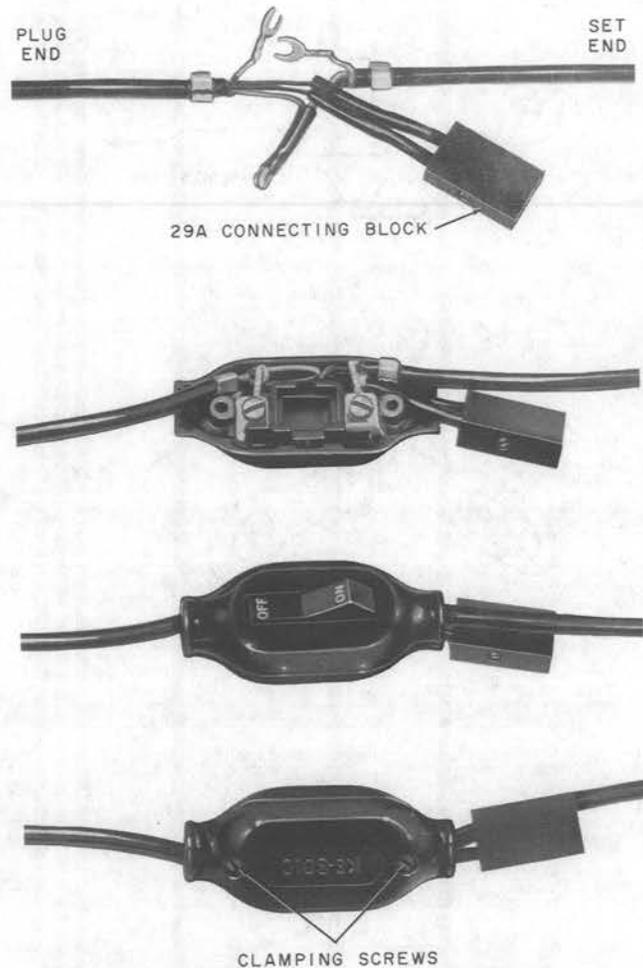
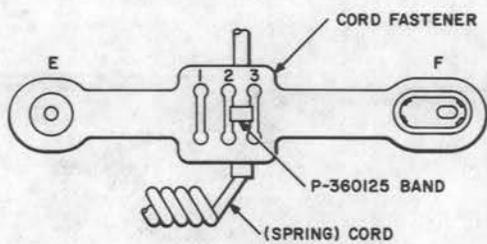


Fig. 12—L4BY Cord Switch and 29A Connecting Block Assembly

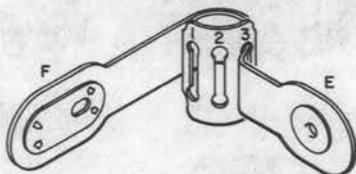
#### TRANSMITTER CAPS AND CASES

**5.02 Cloudy or Discolored Transmitter Caps:** Remove transmitter caps which are cloudy or discolored. Clean the caps with a small amount of mild metal polish applied to a lightly dampened KS-2423 cloth. Take care that the metal polish does not clog the holes in the caps. Wash the caps in a solution of soap and lukewarm water. If the metal polish did clog the holes and was not removed by washing, blow it out with the R-8950 syringe and wash the caps again.

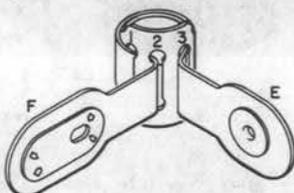
**5.03 Dirty Transmitter Caps:** Remove caps which are dirty but not cloudy or discolored and wash in a solution of soap and lukewarm water. If the caps cannot be released for washing, wipe



A



B



C

Fig. 13—Forming Cord Fastener

them with a clean KS-2423 cloth slightly dampened with water.

**5.04 Transmitter Cases:** Shake or blow dirt and dust out of the transmitter cases with the R-8950 syringe and wipe the exteriors with a cloth slightly dampened with water.

**5.05** Dry the cases and caps before the transmitter units are assembled in the cases as covered in paragraph 4.21 or 4.22, as applicable.

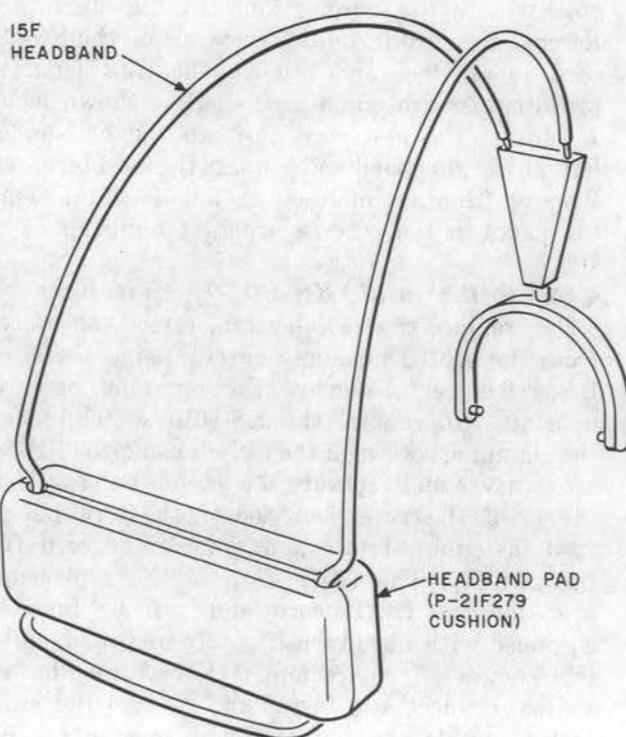


Fig. 14—Synthetic Foam Headband Pad

**Caution:** Do not use alcohol or a chloride base cleaner as these will attack the case and cap material and may render the set flammable.

#### RECEIVER CAPS AND CASES

##### 5.06 Cloudy or Discolored Receiver Caps:

Remove receiver caps which are cloudy or discolored from the receiver cases. Clean the caps with a small amount of mild metal polish applied to a slightly dampened KS-2423 cloth. Take care that the metal polish does not clog the holes in the caps. Wash the caps in a solution of soap and lukewarm water. If the metal polish did clog the holes and was not removed by washing, blow it out with the R-8950 syringe and wash the caps again.

##### 5.07 Dirty Receiver Caps:

Remove caps which are dirty but not cloudy or discolored and wash in a solution of soap and lukewarm water. If the caps cannot be released for washing, it will be satisfactory to wipe them with a clean, dry KS-2423 cloth.

**5.08 Receiver Cases:** Shake or blow dirt and dust out of the receiver cases with the R-8950 syringe and wipe the exteriors with a cloth slightly dampened with water.

**5.09** Dry the holders and caps before the receiver units are assembled in the cases. Replace receiver units as covered in paragraph 4.07.

**Caution:** *Do not use alcohol or a chloride base cleaner as these will attack the case and cap material and may render the set flammable.*

#### REMOVABLE SYNTHETIC FOAM HEADBAND PAD (15F HEADBAND)

**5.10** Remove the pad from the headband. Wipe with a clean KS-2423 cloth slightly dampened with a solution of mild detergent and water. Care should be exercised when wiping the pad so as not to let the water get into the slots of the pad. After wiping the foam rubber pad, allow it to dry with the slots down. Remount the dry pad on the headband.

#### NONREMOVABLE HEADBAND PAD (15C HEADBAND)

**5.11** Wipe with a clean KS-2423 cloth slightly dampened with a solution of mild detergent and water. Care should be exercised when wiping the pad so as not to let the water get on the inside surface of the pad at the ends. Allow to dry before using.

### 6. MINOR REPAIRS

#### KS-8010 SWITCH

**6.01** If the cord is not gripped securely by the retaining walls of the KS-8010 switch, proceed as follows: Remove the clamping screws of the switch using the KS-6854 screwdriver and separate the switch halves. Build up the cord with several turns of friction tape at a position between the two green or yellow conductors and approximately 1/4 inch from the conductor nearer the cord body. The buildup should allow the cord to be held firmly in the switch, but not so tightly that there is a possibility of the switch walls breaking. Reassemble the switch and tighten the screws.

#### HEADBAND

**6.02** Reform any badly bent headband wires. Take care when doing this that the wires will hold any adjusted positions but can still be moved into and out of the cradle without bending.

**6.03** Where the yoke pin binds in the one-piece cradle (except cradles that have an asterisk under the code marking), lubricate it as follows: Pull the pin out from the cradle as far as possible. With the yoke pin in the fully extended position, apply a thin film of KS-8496 lubricating compound to the shaft of the pin for a distance of 1/2 inch from the cradle. Work the pin back and forth through the cradle to check that it no longer binds.

**6.04** Where a yoke pin is so loose in the cradle that the receiver holder can no longer be held in an adjusted position, replace the headband.

**6.05** When a headband is new, the joint between the yoke and the yoke pin is tight. With use this joint may become loose, allowing some play between the yoke and the yoke pin. Eventually the yoke pin may break away from the yoke, particularly if the yoke pin is riveted by the earlier method as shown in Fig. 15A, where the riveted part is thin at the edges. Where there is play between these parts and it appears that the yoke pin may break away from the yoke, replace the headband. Do not attempt to repair the riveted joint.

**6.06** Do not attempt to repair headbands when the headband wires are marked sufficiently to impair their strength. Disregard nicks or cuts of a minor nature, such as rub marks or flattened areas at the first bend just above the cradle as shown in Fig. 15. Replace any headband on which nicks are deep enough to snag the fingernail as it is run along the wire.

**6.07** If a yoke does not hold a receiver, adjust the yoke as required. To do this, hold the yoke between the fingers and apply pressure taking care not to distort the yoke. Excessive bending of the yoke may weaken it in the section riveted to the yoke pin.

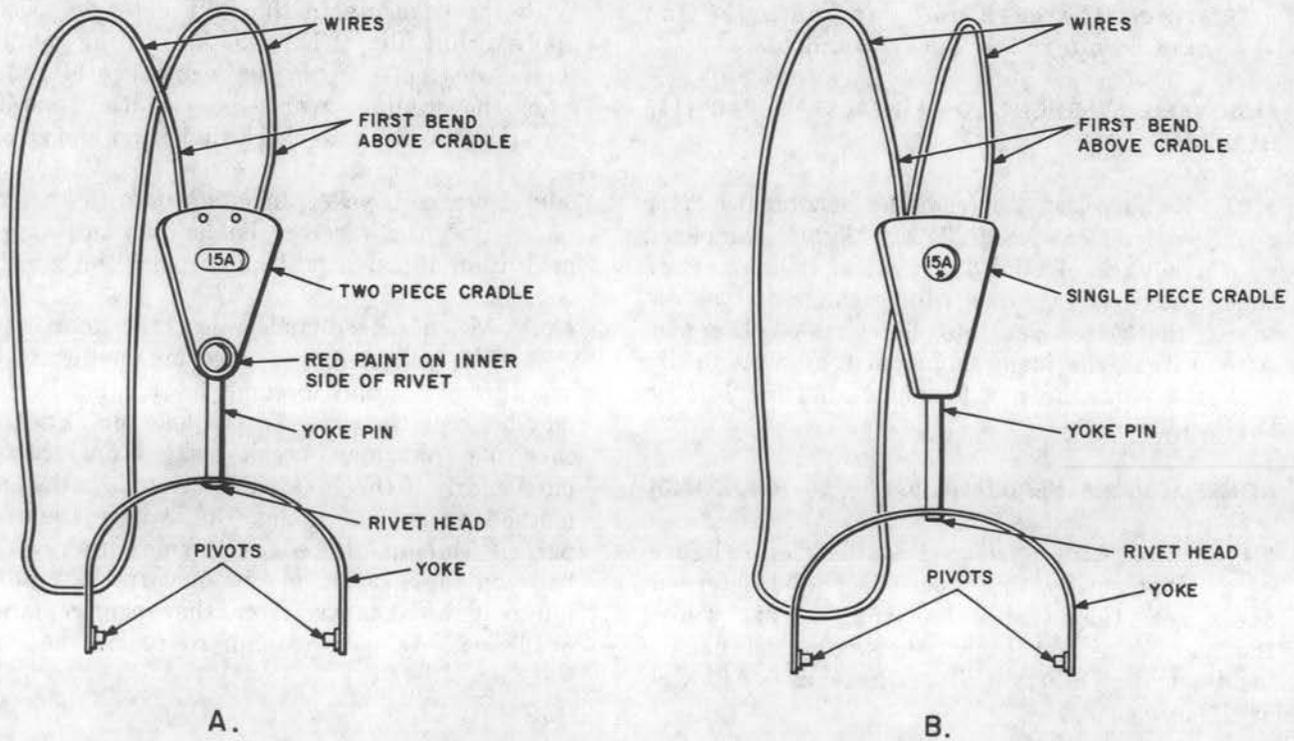


Fig. 15—Headband