

## 53-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 repair of 53-type head telephone sets used at PBXs and at other locations, such as teletypewriter switchboards and key equipment. It also covers approved procedures for repairing and cleaning these sets.

**1.02** The reasons for reissuing this section are listed below. Since this reissue is a general revision, no revision arrows have been used to denote significant changes. This reissue does not affect the Equipment Test List.

- To revise the List of Tools and Material
- To update to standard format
- To revise Fig. 5

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**SECTION 028-361-811**

- To rate the 153A and B Amplifiers Mfr Disc.
- To revise Table C.

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

- 024-108-100 153A and 153B Amplifiers for use with Head Telephone Sets—General Descriptive Information
- 024-108-105 292A and 292B Amplifiers—Description
- 028-361-501 53-Type Head Telephone Sets—Visual Inspections and Electrical Tests
- 069-380-811 Plugs—Cleaning and Polishing Using Portable Plug Cleaner
- 069-380-812 Plugs—Cleaning and Polishing Using Cotton Sleeving

**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.

**1.08** The 53-type head telephone set is provided with a handle so the set can be used as a handset.

**1.09** A D-180417 kit of parts is available which permits the conversion of 53-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. The kit of parts may be ordered as follows:

(Qty) D-180417 Kit of Parts

**Note:** The P-48V108 insulator is provided for use on the 52-type head telephone sets and is not required on the 53-type sets.

**1.10** 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.

**1.11** Table A lists the Mfr Disc. and replacing codes for the 53-type head telephone sets. The 53R head telephone set does not replace any headset.

**TABLE A**

**MANUFACTURE DISCONTINUED AND REPLACING CODES FOR 53-TYPE HEAD TELEPHONE SETS**

CODES MFR DISC. RATED	REPLACING SET CODES
53A	53J
53C	53K
53F	53N
53AR	53JR
53DR	53LR
53ER	53MR
53GR	53PR

**1.12** Table B lists the principal applications of the 53-type head telephone sets and the differences in equipment features of the various sets.

**1.13** Table C lists the individual components used in the 53-type head telephone sets.

**TABLE B**  
**PRINCIPAL USES AND EQUIPMENT FEATURES OF 53-TYPE**  
**HEAD TELEPHONE SETS**

HEAD TELEPHONE SET	USES	FEATURES
53J	Order service in test centers—Switchboard—4A key equipment	5-foot cord Low-impedance receiver unit
53K	1A, 3A, or 3C teletype switchboards	5-foot cord Low-impedance receiver unit
53N	107-type test set	5-foot cord Push-to-talk locking switch Low-impedance receiver unit
53R	100A Communication Set, part of Order Wire System L4 Coaxial Carrier system	9-foot spring cord High-impedance receiver unit Magnetic-type transmitter unit
53JR	Order service in test center—Switchboard—4A key equipment	5-foot semispring cord Low-impedance receiver unit
53LR	Antiaircraft operation control system—102A and 109A key equipment	12-foot spring cord Push-to-talk locking or nonlocking switch High-impedance receiver unit
53MR	Air defense direction center installations	9-foot spring cord Low-impedance receiver unit
53PR	112A key equipment (Missile Master)	15-foot spring cord High-impedance receiver unit

TABLE C

## 53-TYPE HEAD TELEPHONE SET COMPONENTS

HEAD TELEPHONE SET	XMTR UNIT	RCVR† UNIT		HEAD BAND	CORD	CORD LENGTH (FEET)*	PLUG	SWITCH
		OLD	NEW					
53A†	N1	HC3	LB2	15F	L4BJ-52†	5 (non-spring)	289B†	—
53C†	N1	HC3	LB2	15F	L4BD†	5 (non-spring)	—	—
53F†	N1	HC3	LB2	15C	L3J†	5 (non-spring)	310	KS-8010
53J	N1	HC6	LB2	15F	L4BR	5 (non-spring)	464A	—
53K	N1	HC6	LB2	15F	L4BT	5 (non-spring)	—	—
53N	N1	HC6	LB2	15C	L3K	5 (non-spring)	310	KS-8010
53R	AD1	HC7	LB3	15C	L4CF	9 (spring)	—	—
53AR†	N1	HC3	LB2	15F	L4BG†	5 (spring)	289B†	—
53DR†	N1	HC4	LB3	15C	L4BE†	12 (spring)	289B†	225A
53ER†	N1	HC3	LB2	15C	L4BH†	9 (spring)	289B†	—
53GR†	N1	HC4	LB3	15C	L4BH†	15 (spring)	289B†	—
53JR	N1	HC6	LB2	15F	L4BS	5 (spring)	464A	—
53LR	N1	HC7	LB3	15C	L4BU	12 (spring)	464A	240A
53MR	N1	HC6	LB2	15C	L4BW	9 (spring)	464A	—
53PR	N1	HC7	LB3	15C	L4BW	15 (spring)	464A	—

**Notes:**

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

† Mfr Disc.

‡ New 53-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****2.01 List of Tools and Materials:**CODE OR  
SPEC NO.

DESCRIPTION

**TOOLS**

KS-2348	Cord Repair Tool (equipped with P-484700 bit)
KS-6854	3-1/2 Inch Screwdriver
KS-8511	Tweezers
R-8950	Syringe
AT-7860	B Long-Nose Pliers
AT-7739	3-Inch B Screwdriver
AT-7825	3-Inch C Screwdriver

**MATERIALS**

KS-2423	Cloth
---------	-------

KS-8496

No. 3 Lubricating Compound

—

Mild Detergent

—

Clear Petrolatum

—

Mild Powdered Soap

**3. PIECE-PART DATA**

**3.01** Figures 1 through 7 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.

**3.02** When ordering replacement parts, give both the piece-part number and the name, for example: P-115157 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.



NOTE:

WHEN REPLACING EITHER HANDLE OR COVER, ORDER P-43A889 HANDLE AND COVER ASSEMBLY AND REPLACE BOTH PARTS.

Fig. 1—53-Type Head Telephone Sets (53JR Head Telephone Set Illustrated)

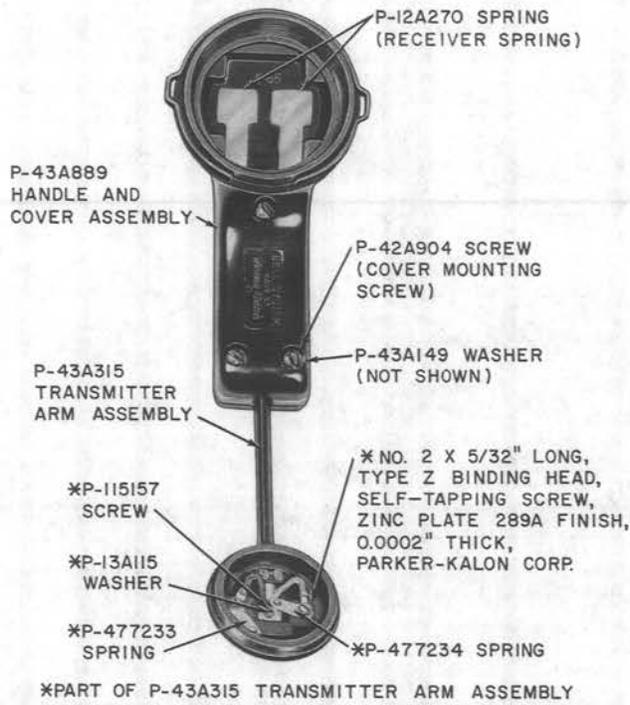


Fig. 2—Handle, Cover, and Transmitter Arm Assembly With Receiver and Transmitter Units Removed (All 53-Type Head Telephone Sets Except 53R)

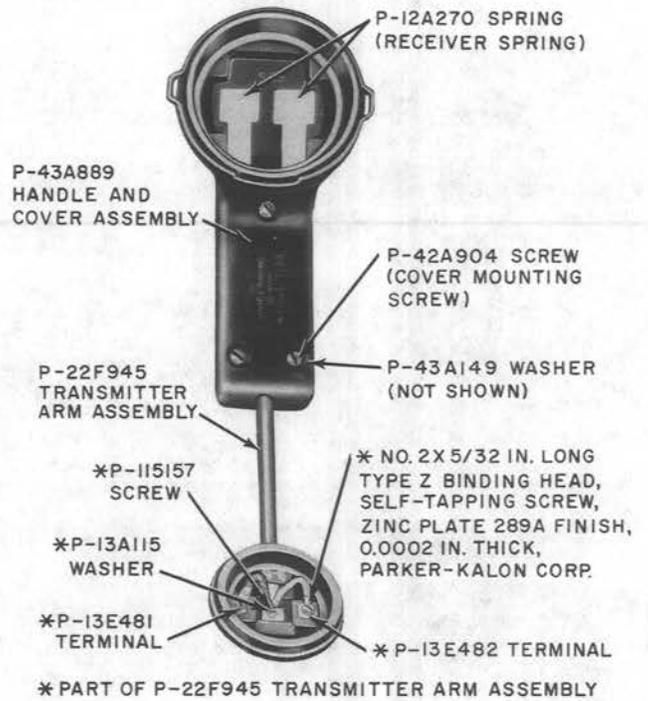


Fig. 3—Handle, Cover, and Transmitter Arm Assembly With Receiver and Transmitter Units Removed (53R Head Telephone Set)

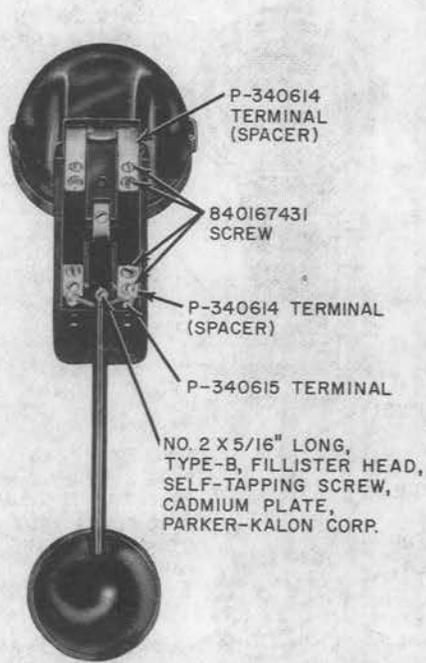
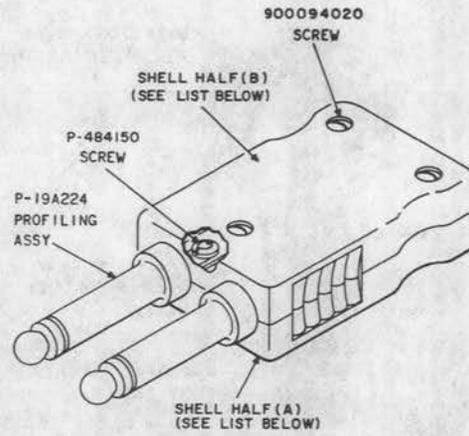


Fig. 4—Handle and Transmitter Arm Assembly With Handle Cover Removed



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. 5—464A-Type Plug

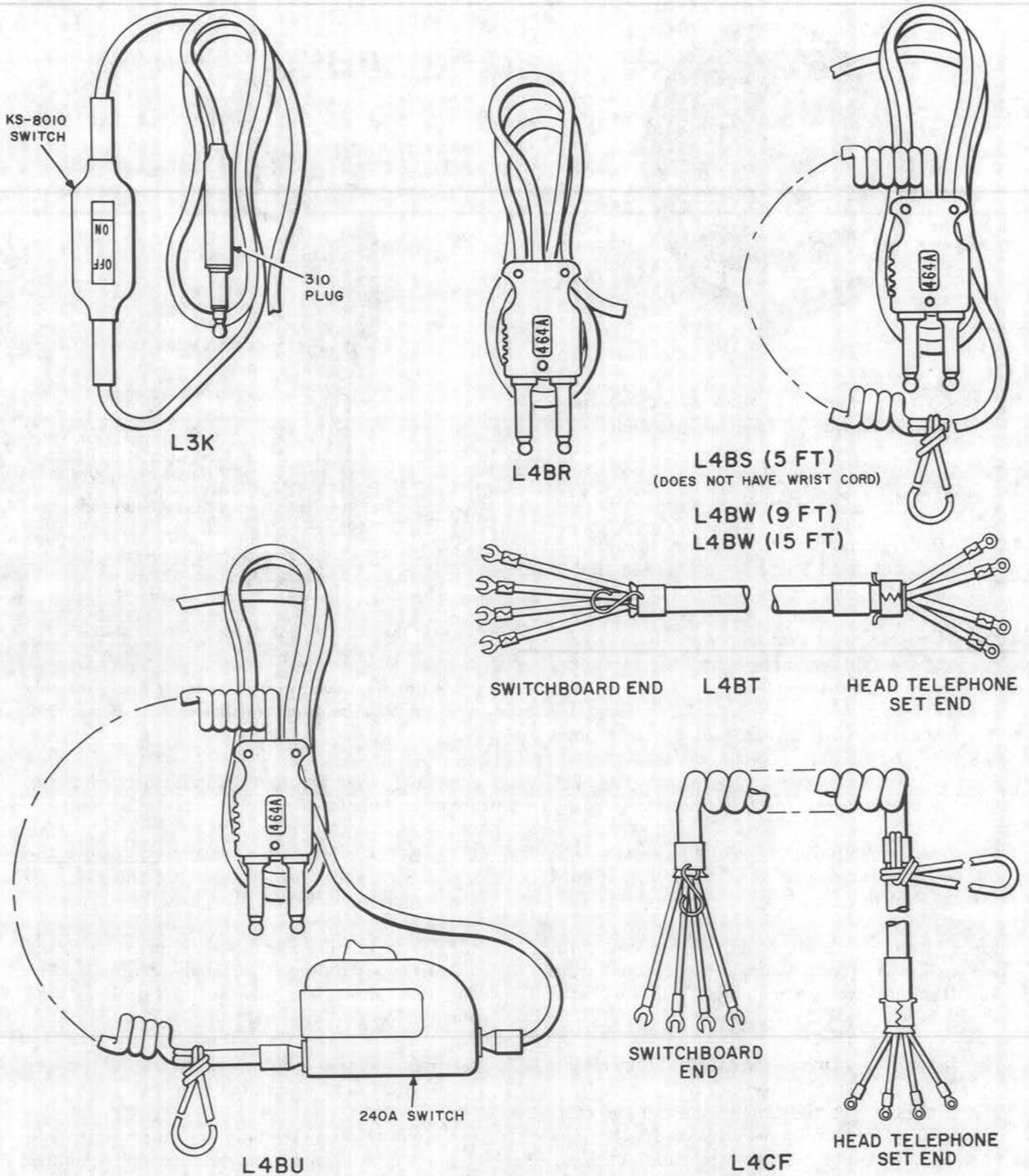


Fig. 6—Cords and Switches Used With 53-Type Head Telephone Sets

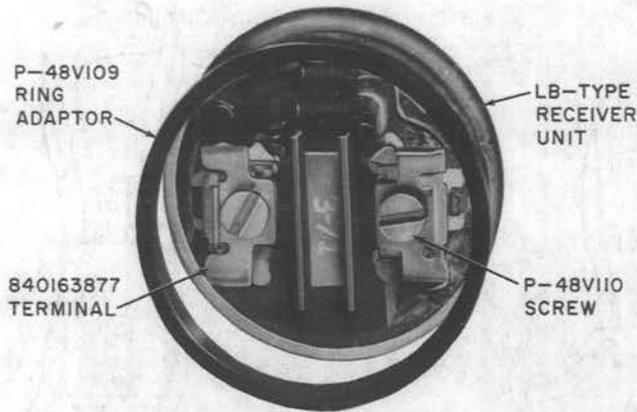


Fig. 7—53-Type Head Telephone Set Components Associated With LB-Type Receiver Unit

#### 4. REPLACEMENT PROCEDURES

**4.01** After replacing parts which affect transmission, check the head telephone set to see that it meets the tests specified in Section 028-361-501.

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

**4.03 Receiver Unit:** (Fig. 8 or 9)—To replace the receiver unit, proceed as follows:

- (1) Unscrew the cap from the handle.
- (2) Remove the old unit, position the new unit so the code designation on the unit is toward the transmitter.
- (3) To replace an HC-type receiver unit with an LB-type unit, install the adapter ring and terminals as shown in Fig. 7.

(4) 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.

**4.04 Handle and Cover Assembly, and Associated Parts:** (Fig. 8 or 9)—To replace

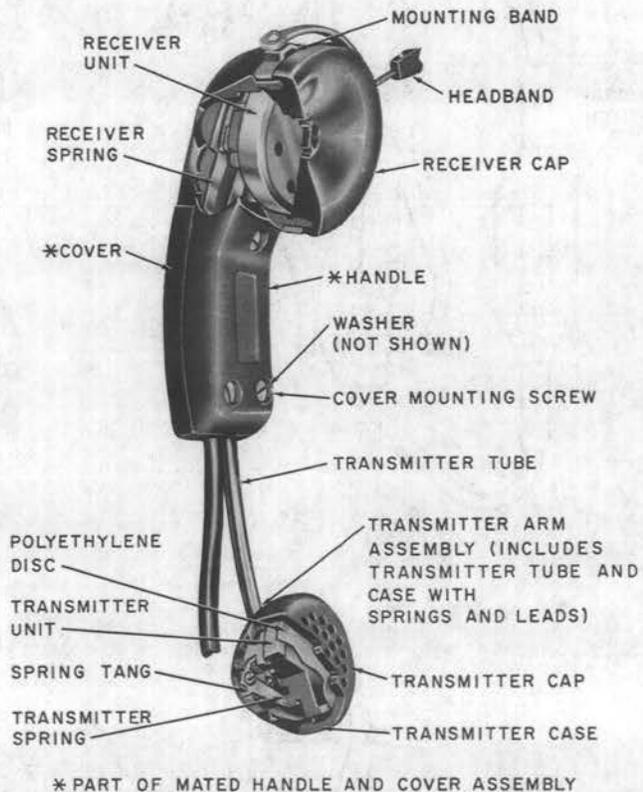
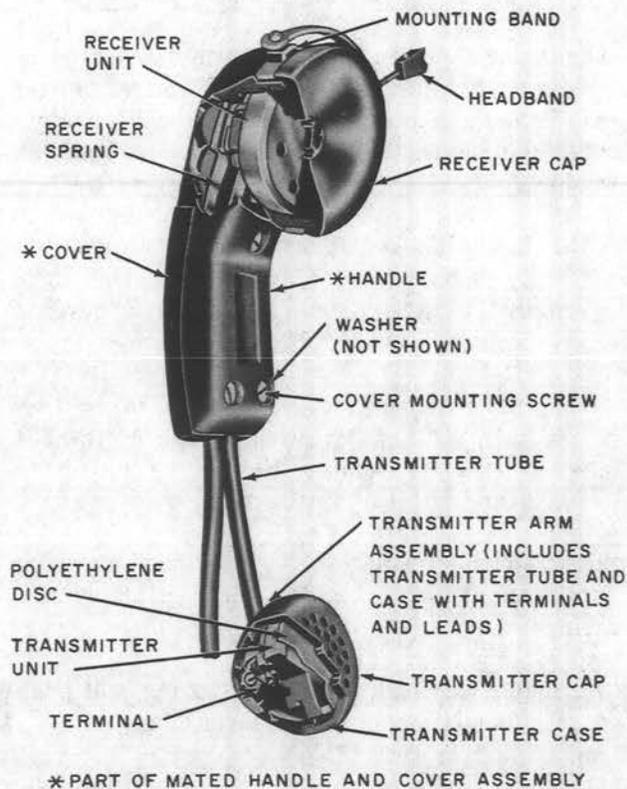


Fig. 8—Handle, Cover, and Transmitter Arm Assembly of 53-Type Head Telephone Sets Except 53R

the handle, cover assembly, and associated parts, proceed as follows:

- (1) Using the 3-inch C screwdriver, remove the screws and washers securing the cover to the handle and remove the cover.
- (2) Using the KS-6854 screwdriver, remove the screws holding the cord terminals, the receiver springs, the transmitter terminals, and their associated spacers.
- (3) Remove the cord conductors, the receiver springs, and associated spacers.
- (4) Remove the transmitter terminals and associated spacers, taking care not to damage the flexible leads and the soldered connections in the transmitter arm.
- (5) Remove the transmitter arm screws and the transmitter arm.



**Fig. 9—Handle, Cover, and Transmitter Arm Assembly of 53R Head Telephone Set**

- (6) If either the handle or cover is to be replaced, replace the complete assembly.
- (7) Substitute a new handle and cover assembly and other parts as required.
- (8) Mount the parts in the handle in the reverse order of removal.
- (9) Take care to mount the spacers in the handle with the threaded holes for the cord terminal screws toward the center of the handle.
- (10) Connect the leads to the terminals in accordance with Fig. 10.
- (11) Mount the cover on the mated handle, place the washers, and tighten the screws.
- (12) Mount the receiver unit and cap in the handle as covered in paragraph 4.03.

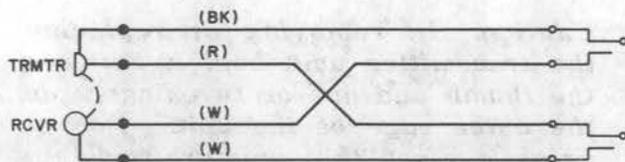
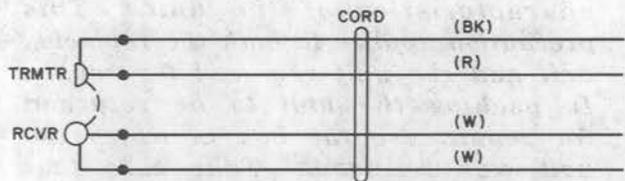
**Caution:** In removing or replacing the transmitter unit, hold it between the thumb and one or two fingers on the outer edge of the unit. Do not press against the moisture-resistant membrane because this might result in excessive sag of the membrane; thereby impairing the transmission characteristics 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 unit was received. Take care that no packing material presses against the membrane.

**4.05 Transmitter Unit and Polyethylene Disc:** (Fig. 8)—To replace the transmitter unit and polyethylene disc, proceed as follows:

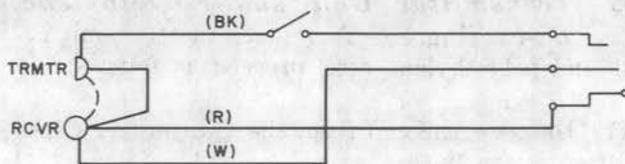
- (1) Unscrew the cap from the transmitter case.
- (2) Remove the transmitter unit and the polyethylene disc. If the polyethylene disc is torn, dirty, wrinkled, or otherwise damaged or missing, replace with a new disc in the cap.
- (3) Hold the transmitter cap with the threaded side up and place the polyethylene disc in it.
- (4) Place the new transmitter unit, membrane side down, on top of the disc in the cap.
- (5) Place the transmitter case, threaded side down, over the cap.
- (6) 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 clear petrolatum sparingly to the threads of the case.

**4.06 Transmitter Arm Assembly:** (Fig. 8)—To replace the transmitter arm assembly, proceed as follows:

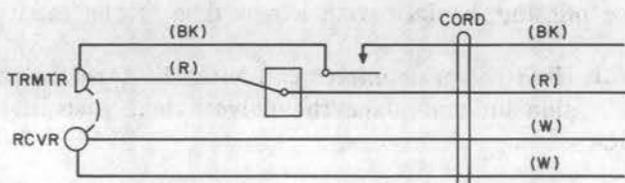
- (1) Unscrew the cap from the transmitter case.
- (2) Remove the unit and the polyethylene disc.

53J, JR, MR, PR, AND MFR DISC 53A, AR, ER, AND GR  
HEAD TELEPHONE SETS

53K, R, AND C (MFR DISC.) HEAD TELEPHONE SETS



53N AND F (MFR DISC) HEAD TELEPHONE SETS



53LR AND DR HEAD TELEPHONE SETS

**Fig. 10—53-Type Head Telephone Sets—Wiring Diagrams**

- (3) Loosen the cover screws in the handle with the 3-inch C screwdriver and remove the cover.
- (4) With the KS-6854 screwdriver, remove the screws from the transmitter terminals in the handle and the screws securing the transmitter tube in the handle.
- (5) Substitute the new transmitter arm assembly.
- (6) Reassemble in the reverse order of removal, connecting the leads in accordance with Fig. 10, as applicable.

**4.07 Transmitter Spring:** (Fig. 8)—To replace a transmitter spring, proceed as follows:

- (1) Remove the transmitter units as covered in paragraph 4.05. Note whether the transmitter case is held in position on the tube by a strip extending across the case or by a rectangular washer.
  - (a) If the transmitter case is held in position by a strip extending across the case, replace the transmitter arm assembly as covered in paragraph 4.06.
  - (b) If the transmitter case is held in position by a rectangular washer, use a KS-6854 screwdriver to remove the spring mounting screw and lift the spring from the case.
- (2) Push the insulation back from the spring terminal and unsolder the lead from the spring.
- (3) Solder the lead to the new spring and push the insulation over the terminal.
- (4) Place the spring in position in the case, taking care that the prong on the spring enters the associated hole in the case in order to properly position the spring.
- (5) Using the KS-8511 tweezers and KS-6854 screwdriver, insert and tighten the spring mounting screw.
- (6) Place the transmitter unit in the case as covered in paragraph 4.05.

**4.08 464A-50 Plug:** (Fig. 8)—To replace the 464A-50 plug, proceed as follows:

- (1) With the KS-6854 screwdriver, remove the three 900094020 plug clamp screws.
- (2) Lift shell half B and note the color of the cord conductor connections to the terminals.
- (3) With the KS-2348 cord repair tool, remove the four P-484150 cord terminal screws.
- (4) Remove the cord from the profiling assembly and shell half A.

- (5) For reassembly, position the profiling assembly and cord in the P-43X312 shell half and connect terminals as noted in (2).
- (6) Position the P-43X326 shell half and replace the 900094020 screws.

**4.09 Cord Associated With 464A Plug:** To replace the cord, proceed as follows:

- (1) Disconnect the cord at the plug end as covered in paragraph 4.08.
- (2) At the headset end, loosen the screws in the handle with the KS-6854 screwdriver and remove the cover.
- (3) With the KS-6854 screwdriver, remove the screw holding the cord terminals.
- (4) Note the color of the cord conductor connections to the terminals and remove the cord.
- (5) Substitute the new cord and connect it to the plug and handle, making sure the conductors are connected to the terminals in the plug and handle as shown in Fig. 10.
- (6) Reassemble the parts in the reverse order of removal.

**4.10 240A and KS-8010 Switches:** To replace the switches, proceed as follows:

(a) **240A Switch:**

- (1) With the 3-inch B screwdriver, remove the screws from the switch housing and clip.
- (2) Remove the clip and the housing.

(b) **KS-8010 Switch:**

- (1) With the KS-6854 screwdriver, remove the clamping screws of the switch and separate the switch halves.
- (2) With the KS-6854 screwdriver, loosen the terminal and cord fastening screws.
- (3) Remove the cord from the switch.

- (c) Substitute the new switch, connect and fasten the cord to the switch as shown in Fig. 10.
- (d) Reassemble the parts in reverse order of removal.

**4.11 Headband Pad:** (Fig. 11)—To replace the headband pad, proceed as follows:

- (1) Remove the old pad from the headband.
- (2) 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. 11.

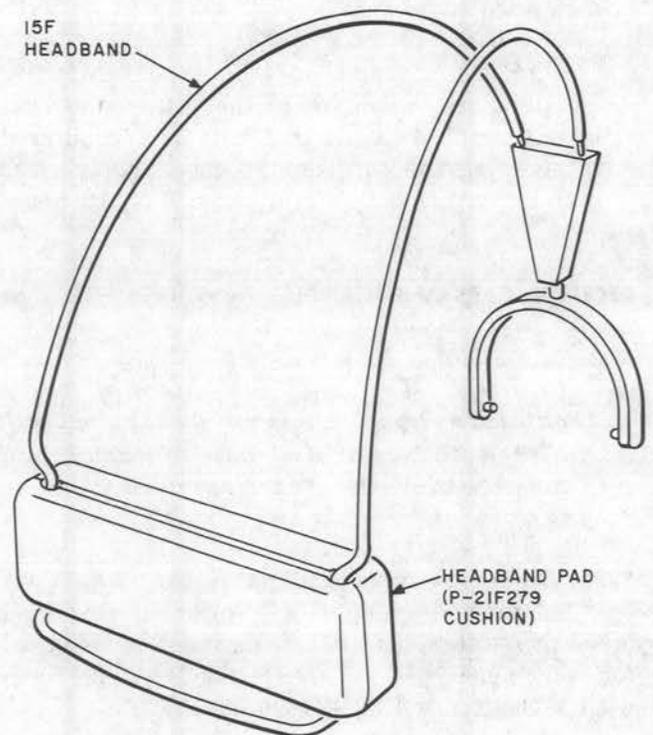


Fig. 11—P-21F279 Cushion in Position on Headband

## 5. CLEANING PROCEDURES

### PLUGS

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

**TRANSMITTER CAPS AND CASES**

**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.

**5.02 Transmitter Caps:** Remove caps which are dirty and wash in a solution of soap and lukewarm water. If the caps cannot be released for washing, wipe them with a clean KS-2423 cloth slightly dampened with water.

**5.03 Cases:**

- (1) 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.
- (2) Dry the cases and caps before the transmitter units are assembled in the cases as covered in paragraph 4.05. If difficulty is encountered in screwing the caps on the cases, apply clear petrolatum sparingly to the threads of the cases.

**RECEIVER CAPS AND HANDLES**

**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.

**5.04 Receiver Caps:** Remove caps which are dirty 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.

**5.05 Handles:** Shake or blow dirt and dust out of the receiver end of the handle with the R-8950 syringe and wipe the exterior with a cloth slightly dampened with water. Dry the handles and caps before the receiver units are assembled in the handles. When positioning the receiver unit in the handle, mount it so the code marking on the unit is toward the transmitter. If difficulty is encountered in screwing the caps on the handles, apply clear petrolatum sparingly to the threads of the handles.

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

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

**5.06** 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 water will not 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)**

**5.07** 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 water will not get on the inside surface of the pad at the ends. Allow to dry before using.

**6. MINOR REPAIRS**

**HEADBAND**

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

**6.02** 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.

**6.03** 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.

**6.04** When a headband is new, the joint between the yoke and the yoke pin may be 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. 12 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.

**6.05** 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. 12. Replace any headband on which nicks are deep enough to snag the fingernail as it is run along the wire.

**6.06** If a yoke does not hold a handle, 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.

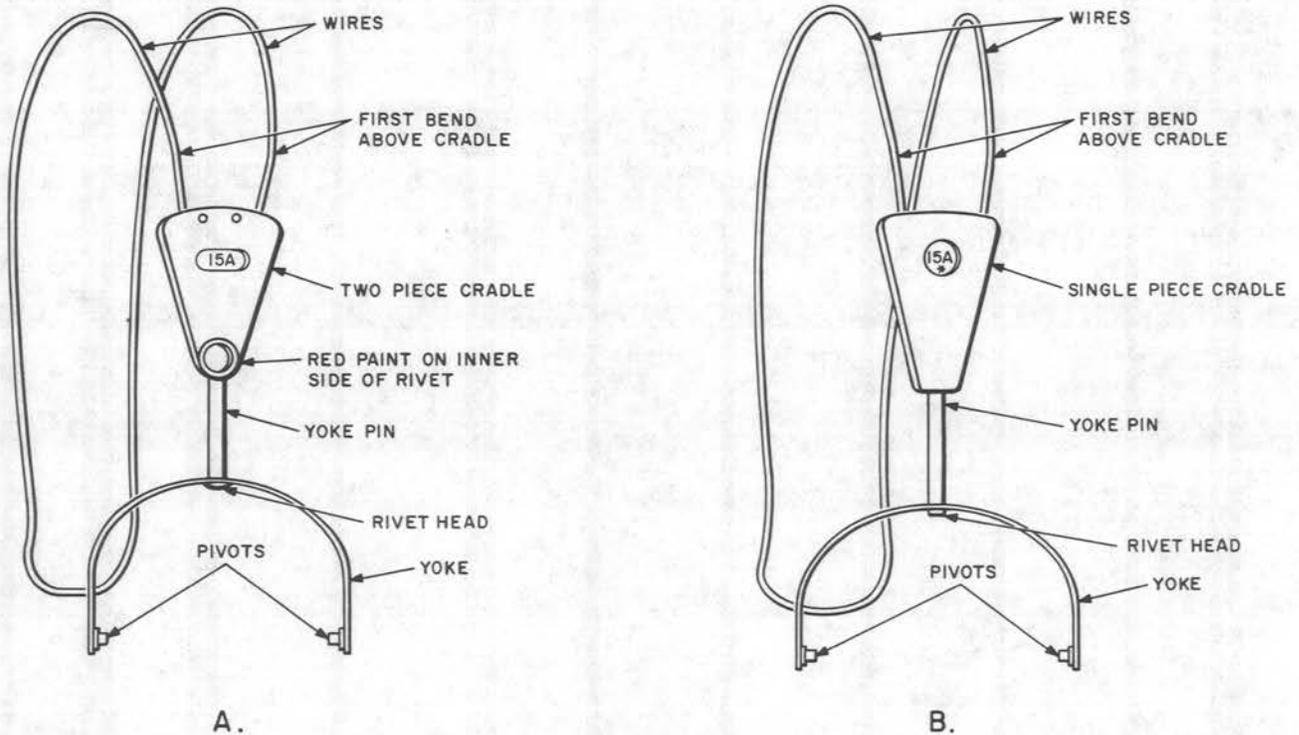


Fig. 12—Headband