

## 53-TYPE HEAD TELEPHONE SETS

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

#### 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 equipments. It also covers approved procedures for repairing and cleaning these sets.

**1.02** This section is reissued to:

- Incorporate the change information contained in Addendum 028-361-811, Issue 1, dated March, 1964.
- Change the code designation of all 53-type head telephone sets.
- Include the 15A headband as an alternate for the 15F headband.
- Advise that the HC3 and HC4 receiver units have been replaced by the HC6 and HC7 units, respectively, where applicable.
- Revise Fig. 1, 4, 5, 6, and 8.
- Add Table C.
- Add Table D.
- Cover the replacement of 396A plug.
- Cover the replacement of PVC jacketed cord.
- Cover the replacement of 240A switch.

**1.03** Part 2 of this section covers part numbers and the corresponding names of the parts which it is practicable to replace in the field in the maintenance of these sets. No attempt should be made to replace parts not designated. Part 2 also contains explanatory figures showing the different parts. This information is called Piece-Part Data.

**1.04** Part 3 of this section covers the approved procedures for the replacement of parts covered in Part 2. This information is called Replacement Procedures.

**1.05** Part 4 of this section covers the methods of cleaning various parts of the head telephone set. This information is called Cleaning Procedures.

**1.06** Part 5 of this section covers the approved procedures for making minor repairs on the head telephone sets. This information is called Minor Repairs.

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

**1.08** When replacement of the obsolete braided cord and/or the 289B plug is necessary, both are to be replaced using the PVC jacketed cord and 396A plug.

**1.09** The code designation of the 53-type head telephone set is changed whenever the braided cord and 289B plug are replaced by the new PVC jacketed cord and 396A plug.

**1.10** Information on the 153A and 153B amplifiers to be used with these head telephone sets for persons with impaired hearing may be found in Section 024-108-100.

**1.11** Table A lists the present and replacing codes for the 53-type head telephone sets.

**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 cords and associated parts for the 53-type head telephone sets.

- 1.14 Table D lists the individual components used in the 53-type head telephone sets.

**TABLE A — PRESENT AND REPLACING CODES FOR 53-TYPE HEAD TELEPHONE SETS**

PRESENT SET CODES BEING RATED "MD"	REPLACING SET CODES
53A	53J
53C	53K
53F	53N
53AR	53JR
53DR	53LR
53ER	53MR
53GR	53PR

## 2. PIECE-PART DATA

2.01 The figures included in this part show the various parts in relation to other parts of the head telephone set. The piece-part numbers

are given together with the names of the parts as listed by the Western Electric Company Merchandise Department. Where these names differ from those in general use in the field, the latter names, in some cases, are shown in parentheses.

2.02 When ordering parts for replacement purposes, give the piece-part number and the name of the part, for example, P-115157 Screw. Do not refer to the BSP number or to any information shown in parentheses following the piece-part number.

2.03 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.

**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
53JR	Order service in test centers — 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 — CORDS AND ASSOCIATED PARTS FOR 53-TYPE HEAD TELEPHONE SETS

HEAD TELEPHONE SET	CORD		PLUG	SWITCH
	TYPE	LENGTH (FEET)		
53J	L4BR	5 (non-spring)	396A	—
53K	L4BT	5 (non-spring)	—	—
53N	L3K*	5 (non-spring)	310	KS-8010
53JR	L4BS	5 (spring)	396A	—
53LR	L4BU	12 (spring)	396A	240A
53MR	L4BW	9 (spring)	396A	—
53PR	L4BW	15 (spring)	396A	—

\* Code of the cord includes a 310 plug and KS-8010 switch.

TABLE D — 53-TYPE HEAD TELEPHONE SET COMPONENTS

HEAD TELEPHONE SET	XMTR UNIT	RCVR UNIT	HEAD-BAND	CORD	PLUG	SWITCH
53J	N1	HC6	15F*	L4BR	396A	—
53K	N1	HC6	15F*	L4BT	—	—
53N	N1	HC6	15C	L3K	310	KS-8010
53JR	N1	HC6	15F*	L4BS	396A	—
53LR	N1	HC7	15C	L4BU	396A	240A
53MR	N1	HC6	15C	L4BW	396A	—
53PR	N1	HC7	15C	L4BW	396A	—

\* 15A headband may be used as an alternate in place of 15F.

↳ **Note 1:** When replacing either handle or cover, order P-43A889 handle and cover assembly and replace both parts (See Fig. 2.)

**Note 2:** The 15A headband, which may be used as an alternate for the 15F headband, is equipped with a P-10E121 cushioned pad. The flat P-240421 pad is available as an alternate on special order.

#### 53-TYPE HEAD TELEPHONE SETS

	53A	53C	53F	53J	53K	53N	53AR	53DR	53ER	53GR	53JR	53LR	53MR	53PR
HC3 Receiver Unit	X	X	X				X		X				X	
HC4 Receiver Unit								X		X				
HC6 Receiver Unit				X	X	X					X			
HC7 Receiver Unit												X		X
15C Headband			X			X		X	X	X		X	X	X
↳ 15F Headband (Note 2)	X	X		X	X		X				X			

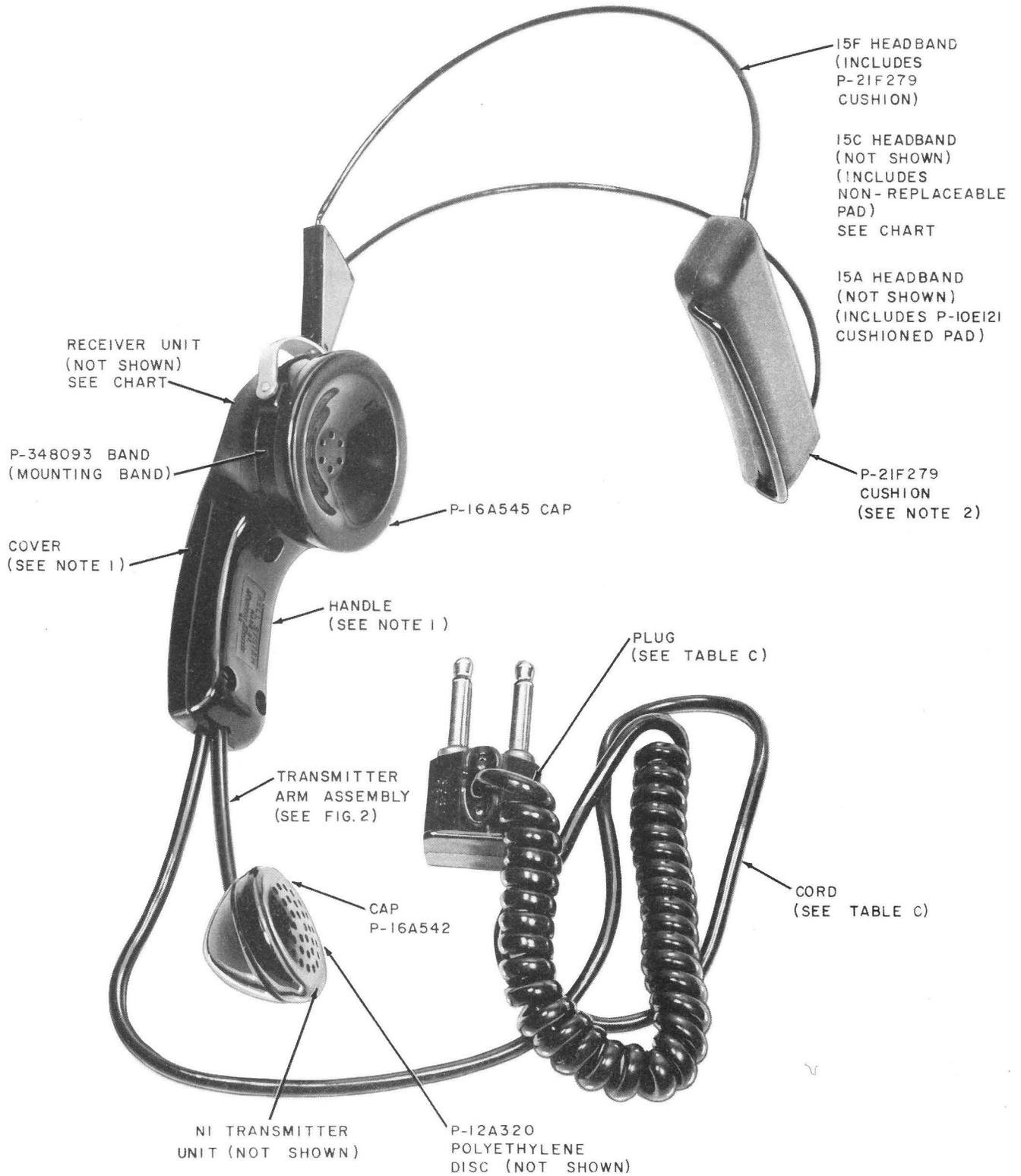
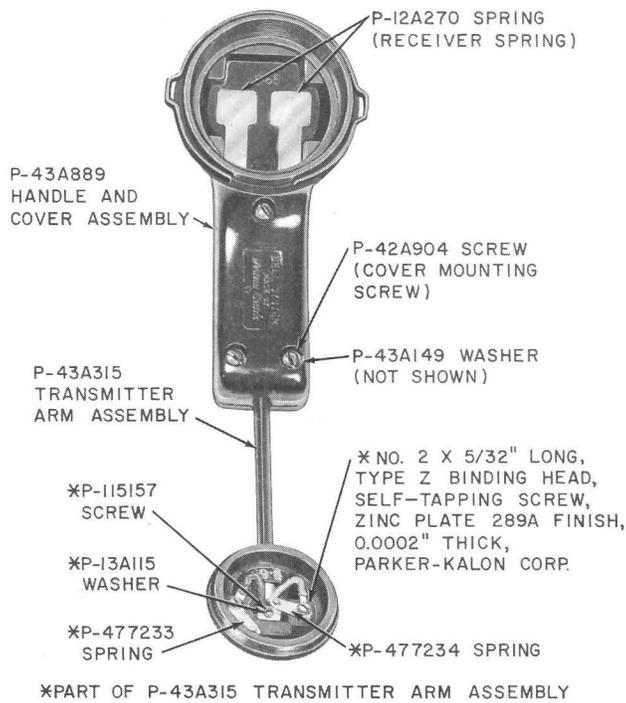
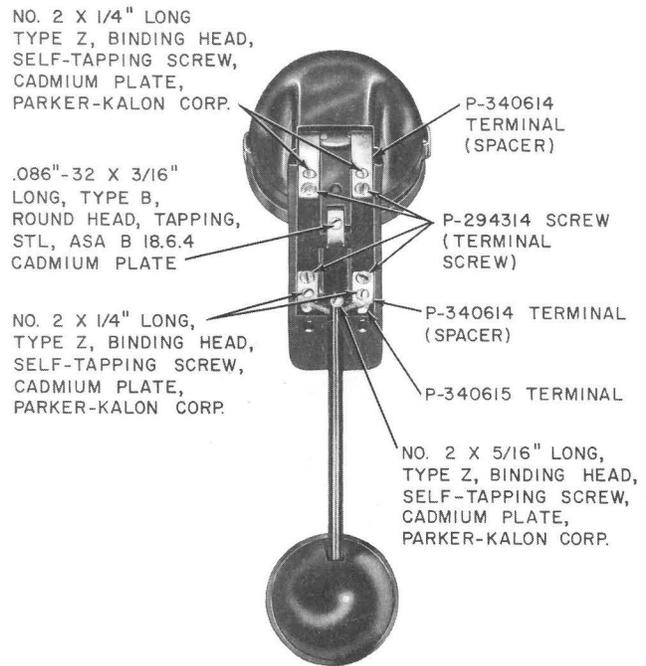


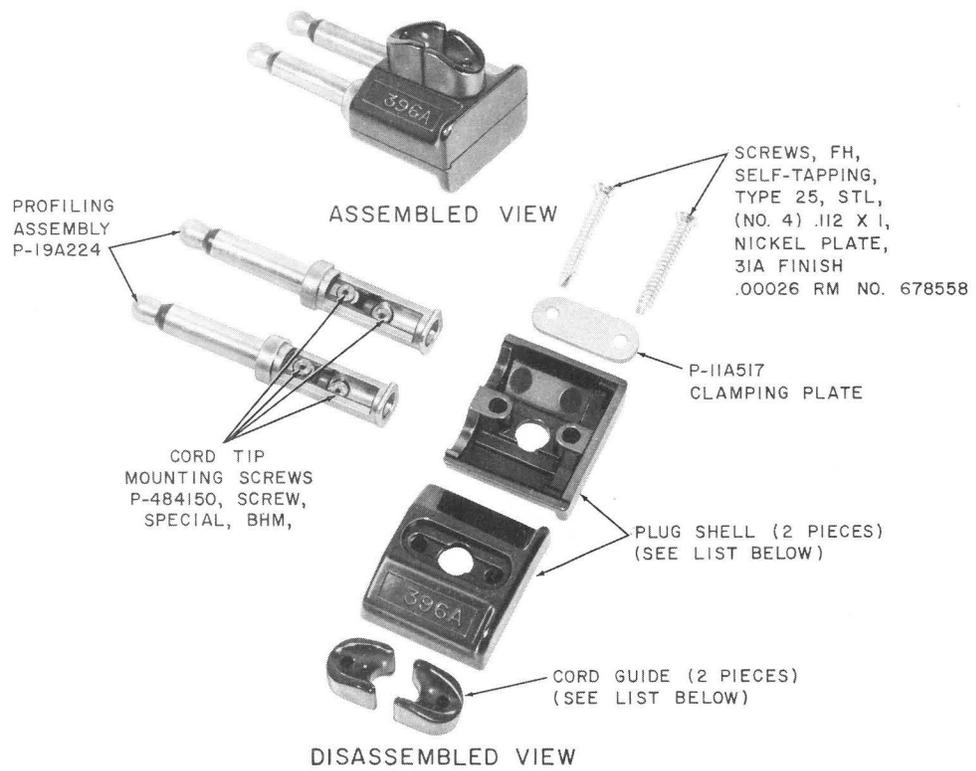
Fig. 1 — 53-Type Head Telephone Sets (53JR Head Telephone Set Illustrated)



**Fig. 2 — Handle, Cover, and Transmitter Arm Assembly With Receiver and Transmitter Units Removed**



**Fig. 3 — Handle and Transmitter Arm Assembly With Handle Cover Removed**



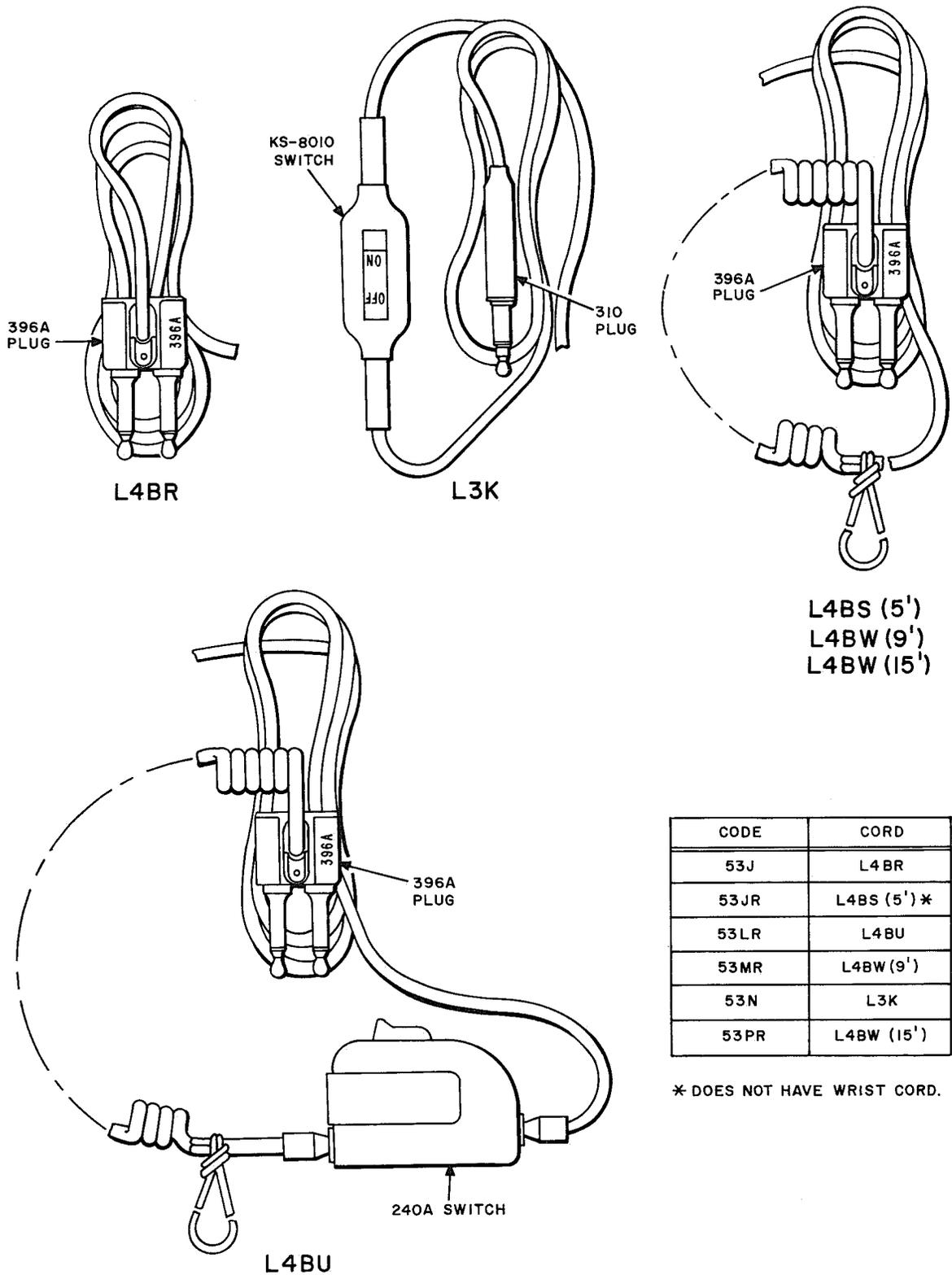
PLUG CODE	COLOR	SHELL (2 PIECES)	CORD GUIDE (2-PIECES)
396A-3	BLACK	P-376940	P-376945
396A-51	MOSS GREEN	P-376941	P-376946
396A-58	WHITE	P-376942	P-376947
396A-60	LIGHT BEIGE	P-376943	P-376948
396A-61	LIGHT GREY	P-376944	P-376949
396A-53	RED	P-42L044	P-42L043*
396A-56	YELLOW	P-42L045	P-42L043*
396A-59	ROSE PINK	P-42L046	P-42L043*
396A-62	AQUA BLUE	P-42L047	P-42L043*
396A-64	TURQUOISE	P-42L048	P-42L043*

\*CLEAR

Fig. 4 — 396A Plug



Fig. 5 — Cord, Plug, and Switch Used With 53LR Head Telephone Set



CODE	CORD
53J	L4BR
53JR	L4BS (5') *
53LR	L4BU
53MR	L4BW (9')
53N	L3K
53PR	L4BW (15')

\* DOES NOT HAVE WRIST CORD.

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

## 3. REPLACEMENT PROCEDURES

3.01 *List of Tools and Materials*

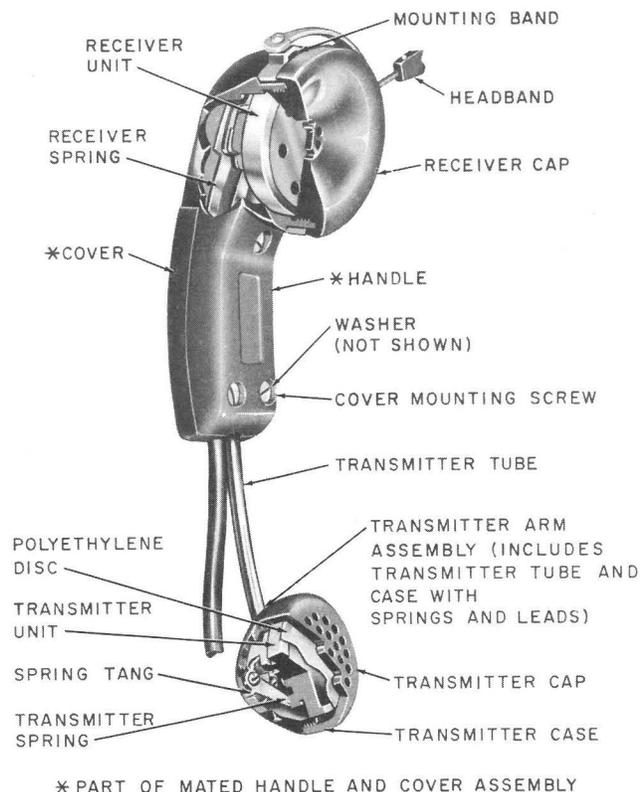
CODE OR SPEC NO.	DESCRIPTION
<b>TOOLS</b>	
KS-2348	Cord Repair Tool (equipped with P-484700 bit)
KS-6854	3-1/2 Inch Screwdriver
KS-8511	Tweezers
KS-8950	Syringe
—	P Long-Nose Pliers
—	3-Inch B Screwdriver
—	3-Inch C Screwdriver
<b>MATERIALS</b>	
KS-2423	Cloth
KS-8496	No. 3 Lubricating Compound
—	Mild Detergent
—	Clear Petrolatum
—	Bell System Powdered Soap

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

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

**3.04 Receiver Unit:** Fig. 7 — To replace the receiver unit, 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. 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.

**3.05 Handle and Cover Assembly, and Associated Parts:** Fig. 7 — Using the 3-inch C screwdriver, remove the screws and washers securing the cover to the handle and remove the



**Fig. 7 — Handle, Cover, and Transmitter Arm Assembly**

cover. Using the KS-6854 screwdriver, remove the screws holding the cord terminals, the receiver springs, the transmitter terminals and their associated spacers. Remove the cord conductors, the receiver springs, and associated spacers. Remove the transmitter terminals and associated spacers taking care not to damage the flexible leads and the soldered connections in the transmitter arm. Remove the transmitter arm screws and the arm. If either the handle or cover is to be replaced, replace the complete assembly. Substitute a new handle and cover assembly and other parts as required, and mount the parts in the handle in the reverse order of removal. Take care to mount the spacers in the handle with the threaded holes for the cord terminal screws toward the center of the handle. Connect the leads to the terminals in accordance with Fig. 8. Mount the cover on the mated handle, place the washers, and tighten the screws. Mount the receiver unit and cap in the handle as covered in 3.04.

**3.06 Transmitter Unit:** Fig. 7 — Unscrew the cap from the transmitter case and remove the unit and the polyethylene disc. If the polyethylene disc is torn, dirty, wrinkled, or otherwise damaged, replace it. If the disc is missing, place a new disc in the cap. Hold the transmitter cap with the threaded side up and place the polyethylene disc in it. 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 clear petrolatum sparingly to the threads of the case.

**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.

**3.07 Polyethylene Disc:** Remove the cap from the transmitter case and replace the polyethylene disc as covered in 3.06.

**3.08 Transmitter Arm Assembly:** Fig. 7 — Unscrew the cap from the transmitter case and remove the unit and the polyethylene disc. Loosen the cover screws in the handle with the 3-inch C screwdriver and remove the cover. 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. Substitute the new transmitter arm assembly and reassemble in the reverse order of removal, connecting the leads in accordance with Fig. 8, as applicable.

**3.09 Transmitter Spring:** To replace a spring, remove the transmitter units as covered in 3.06. Note whether the transmitter case is held in position on the tube by a strip extending

across the case or by a rectangular washer. If the strip is used, replace the transmitter arm assembly as covered in 3.08. If the rectangular washer is used, proceed with replacing the contact spring as follows: Using the KS-6854 screw-

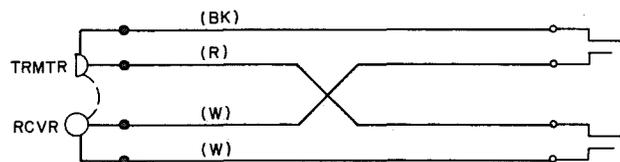


Fig. 8A — 53A, 53J, 53AR, 53ER, 53GR, 53JR, 53MR ←  
← and 53PR Head Telephone Sets

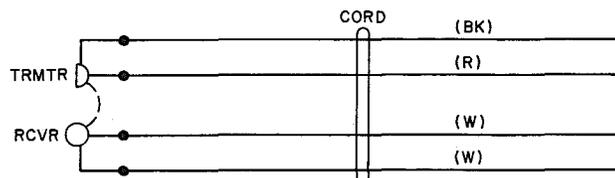


Fig. 8B — 53C and 53K Head Telephone Sets ←

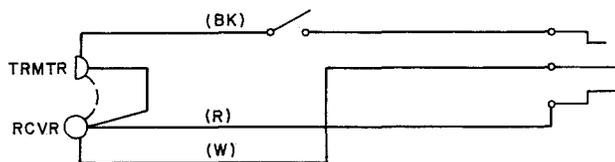


Fig. 8C — 53F and 53N Head Telephone Sets ←

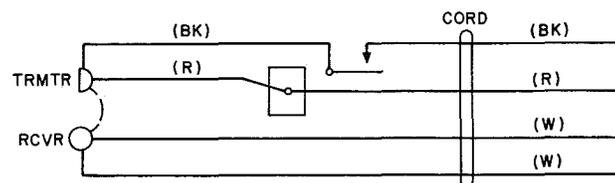


Fig. 8D — 53DR and 53LR Head Telephone Sets ←

Fig. 8 — 53-Type Head Telephone Sets — Wiring Diagrams

driver, remove the spring mounting screw and lift the spring from the case. Push the insulation back from the spring terminal and unsolder the lead from the spring. Solder the lead to the new spring and push the insulation over the terminal. 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. Insert and tighten the spring mounting screw using the KS-8511 tweezers and KS-6854 screwdriver. Place the transmitter unit in the case as covered in 3.06.

↗ **3.10 396A Plug:** Fig. 4 — Remove the plug clamp screws with 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. Insert the new cord terminals through the hole in one half of the plug shell and connect to cord terminals as shown in Fig. 8. Place profiling assemblies in shell half and reassemble the parts in the reverse order of removal.

**3.11 Cord Associated with 396A Plug:** To replace the cord, disconnect the cord at the plug end as covered in 3.10. At the headset end, loosen the screws in the handle with the KS-6854 screwdriver and remove the cover. Note the color of the cord conductor connections to the terminals and then, using the KS-6854, remove the screws holding the cord terminals and remove the cord. Substitute the new cord and connect it to the plug and handle making sure that the conductors are connected to the terminals in the plug and handle as shown in Fig. 8. Reassemble the parts in the reverse order of removal. If the L4BU cord is used with the 53LR head telephone set and is being replaced, disconnect the 240A switch from the replaced cord and connect it to the new cord as covered in 3.12.

**3.12 240A and KS-8010 Switches:** To replace the 240A switch, remove the screws from the switch housing and clip using the 3-inch 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. Substitute the new switch,

↗ connect and fasten the cord to the switch as shown in Fig. 8, and assemble the parts in the ↘ reverse order of removal.

#### HEADBAND PAD

**3.13 Synthetic Foam Headband Pad:** Remove the pad from the headband. To place the synthetic foam headband pad on the headband, pass the free end of the headband through the slot of the pad, making sure the thicker half of the pad is on the inner side as shown in Fig. 9.

**3.14 Synthetic Rubber Headband Pad:** Remove the pad from the headband. To place the synthetic rubber pad on the headband, pass the free end of the headband through slots A and B, and then C and D as shown in Fig. 10.

#### 3.15 Foam Rubber Headband Pad

(a) To remove a foam rubber pad from the headband, unsnap fastener C shown in Fig. 11 and pull the pad off the headband through slots A and B.

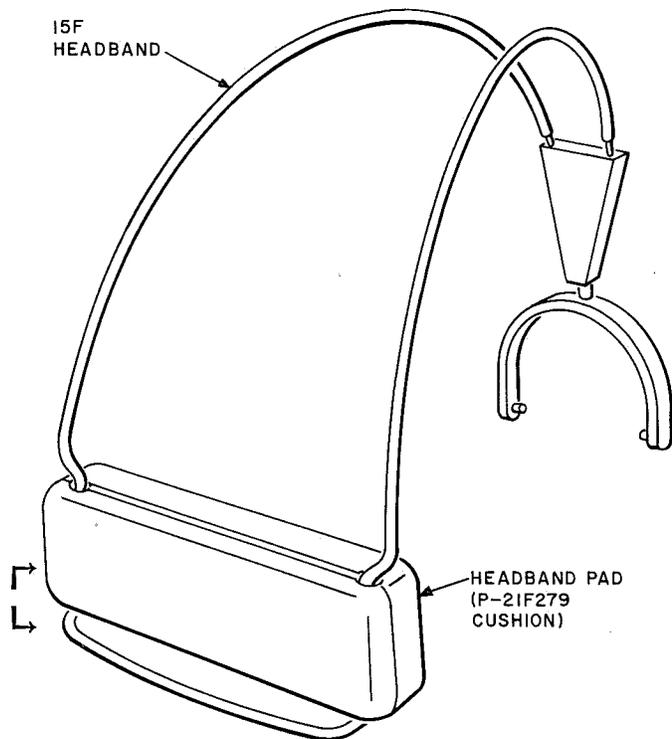


Fig. 9 — Synthetic Foam Headband Pad in Position on Headband

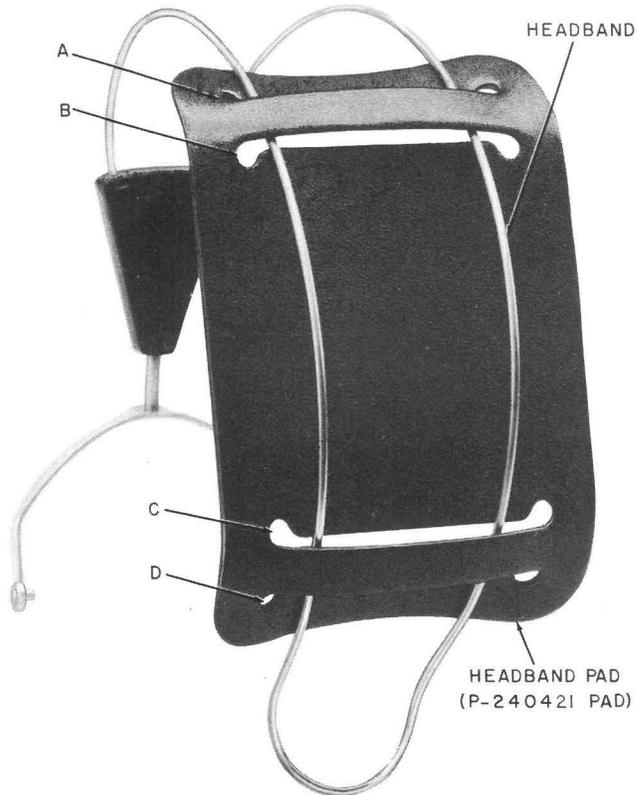


Fig. 10 — Synthetic Rubber Headband Pad in Position on Headband

(b) To place the foam rubber pad on the headband, unsnap fastener C shown in Fig. 11 and pass the free end of the headband through slot A and out through slot B. Snap fastener C to hold the headband in place.

#### 4. CLEANING PROCEDURES

##### PLUGS

4.01 Clean plugs in accordance with Section 069-380-811 or 069-380-812. ←

##### TRANSMITTER CAPS AND CASES

4.02 *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.

#### 4.03 Cases

(a) 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.

(b) Dry the cases and caps before the transmitter units are assembled in the cases as covered in 3.06. If difficulty is encountered in screwing the caps on the cases, apply clear petrolatum sparingly to the threads of the 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.

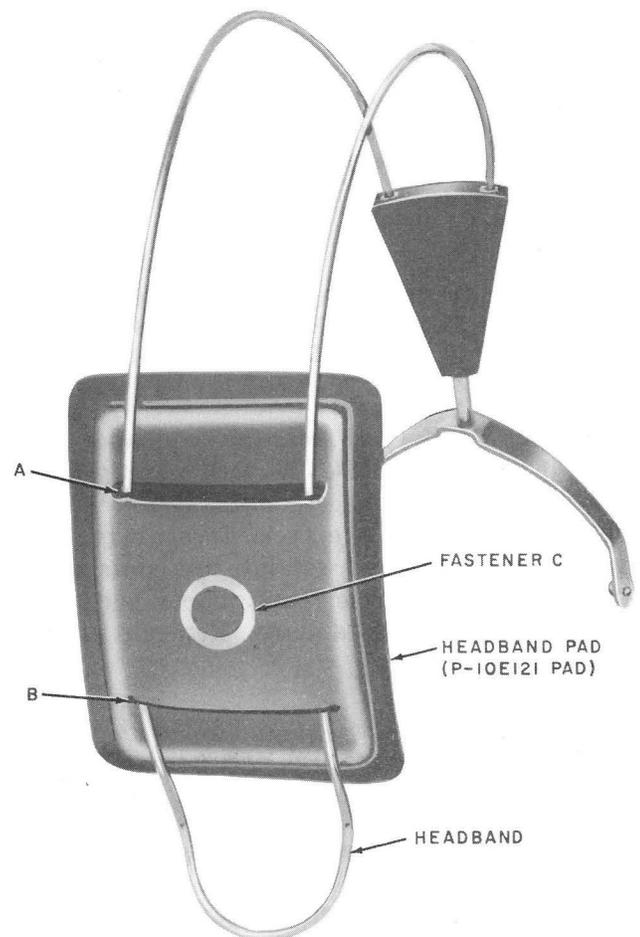


Fig. 11 — Foam Rubber Headband Pad in Position on Headband

## RECEIVER CAPS AND HANDLES

**4.04 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.

**4.05 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 an → HC3, HC4, HC6, or HC7 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.

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

**REMOVABLE SYNTHETIC AND FOAM RUBBER HEADBAND PADS (15A HEADBAND) AND SYNTHETIC FOAM HEADBAND PAD (15F HEADBAND)**

**4.06** 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)**

**4.07** 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.

## 5. MINOR REPAIRS

## HEADBAND

**5.01** 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.

**5.02** 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.

**5.03** 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.

**5.04** 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(A) 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.

**5.05** 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.

**5.06** 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.

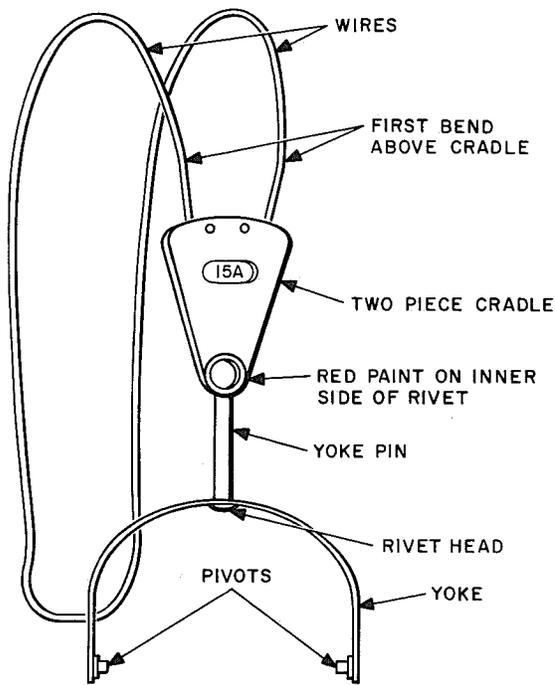


Fig. 12A — Earlier Method of Riveting Yoke Pin To Yoke

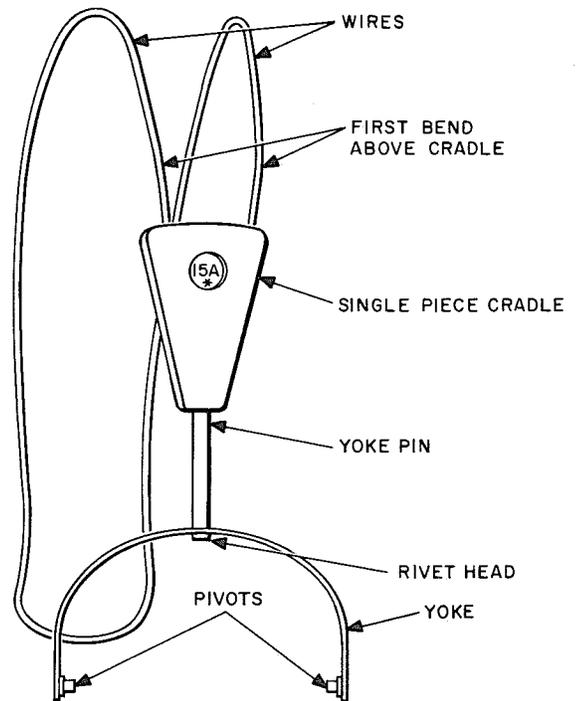


Fig. 12B — Later Method of Riveting Yoke Pin To Yoke

Fig. 12 — Headband