

**KS-20778 HEAD TELEPHONE SETS, KS-21430 HEADSET,  
AND KS-22729 "STARSET II\*" HEAD TELEPHONE SETS  
DESCRIPTION, USE, AND MAINTENANCE**

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**1. GENERAL**

1.01 This section covers the description, use, and maintenance of the KS-20778 and KS-22729 head telephone sets and the KS-21430 headsets.

1.02 This section is reissued to add the KS-20778, L76B through L78B, L176B through L178B, KS-22729, L1 and L2, head telephone sets, and rate the KS-20778, L1A, L1B, L2A, L3A, L4B through L15B, L17B, L18B, and L104B through L115B head telephone sets Mfr Disc. Revision arrows are used to emphasize the more significant changes.

1.03 The KS-20778, L3B, L76B through L78B,

L176B through L178B, and KS-22729, L1 and L2 head telephone sets replace the KS-20778, L1B, L4B through L15B, L17B, L18B, and L104B through L115B which are Mfr Disc. The following is a list of the old units and their corresponding replacements.

SPECIFICATION NUMBER	REPLACEMENT
KS-20778, L1A	KS-22729, L1
KS-20778, L1B	KS-22729, L1
KS-20778, L2A	KS-22729, L2
KS-20778, L3A	KS-20778, L3B
KS-20778, L4B	KS-20778, L76B
KS-20778, L5B	KS-20778, L76B
KS-20778, L6B	KS-20778, L76B
KS-20778, L7B	KS-20778, L76B
KS-20778, L8B	KS-20778, L76B
KS-20778, L9B	KS-20778, L76B
KS-20778, L10B	KS-20778, L77B
KS-20778, L11B	KS-20778, L77B
KS-20778, L12B	KS-20778, L78B
KS-20778, L13B	KS-20778, L77B
KS-20778, L14B	KS-20778, L77B
KS-20778, L15B	KS-20778, L78B
KS-20778, L16A	KS-20778, L16B
KS-20778, L17B	KS-22729, L2
KS-20778, L18B	KS-22729, L2
KS-20778, L104B	KS-20778, L176B
KS-20778, L105B	KS-20778, L176B
KS-20778, L106B	KS-20778, L176B
KS-20778, L107B	KS-20778, L176B

SPECIFICATION NUMBER	REPLACEMENT
KS-20778, L108B	KS-20778, L176B
KS-20778, L109B	KS-20778, L176B
KS-20778, L110B	KS-20778, L177B
KS-20778, L111B	KS-20778, L177B
KS-20778, L112B	KS-20778, L178B
KS-20778, L113B	KS-20778, L177B
KS-20778, L114B	KS-20778, L177B
KS-20778, L115B	KS-20778, L178B

**1.04** The KS-20778 head telephone sets are intended for use by private branch exchange (PBX) and console attendants, attendant supervisors, Federal Aviation Agency (FAA) personnel in 4- and 6-wire circuits, and for customer use with jack-equipped station sets. ♦The KS-20778, L3B, L16B, L76B through L78B (Fig. 1), and L176B through L178B (Fig. 2) head telephone sets are intended for general use in the Bell System, including FAA 4- and 6-wire circuits.♦

**1.05** ♦The KS-20778, L3B, L16B, L76B through L78B, and L176B through L178B♦ head telephone sets are equipped with a new design amplifier which can function more reliably at higher supply currents. ♦The new amplifier can be used as a conversion or direct replacement component on Mfr Disc. head telephone sets KS-20778, L1 through L15, L1A through L16A, L1B, L4B through L15B, L17B, and L18B now in use. The KS-20778, L1A through L16A, L1B, L4B through L15B, L17B, and L18B (Mfr Disc.) head telephone sets can continue to be used on most applications with no degradation of reliability.♦ The new integrated circuit amplifier package is color coded with a yellow dot to differentiate it from the previous amplifier used in the "A" versions. The KS-20778, ♦L2B, L3B, and L16B♦ head telephone sets may be used as an alternative for the 52-type and 60-type head telephone sets.

**1.06** The KS-20778, ♦L176B through L178B head telephone sets♦ have a lightweight capsule

that is well suited for use by operators wearing eyeglasses or has an over-the-head band. The amplifier is the same as the amplifiers used in all KS-20778, series B, head telephone sets.

**1.07** The KS-21430 headset is used at service observing desks. The headset consists of an ear mounted lightweight receiver capsule connected to a 5-foot straight cord, terminated into a dual 2-conductor plug. The tip and sleeve of each plug are internally connected together.

**1.08** ♦The KS-22729 STARSET II head telephone set is designed to be worn behind the ear and is lighter in weight. The headset plug amplifier assembly contains a new integrated circuit which permits adjustable receiver levels and limits the power of the receive signal. A new electret microphone improves the transmit signal. The KS-22729 is intended for use primarily in customer-related headset applications in jack equipped telephone sets and PBX consoles.♦

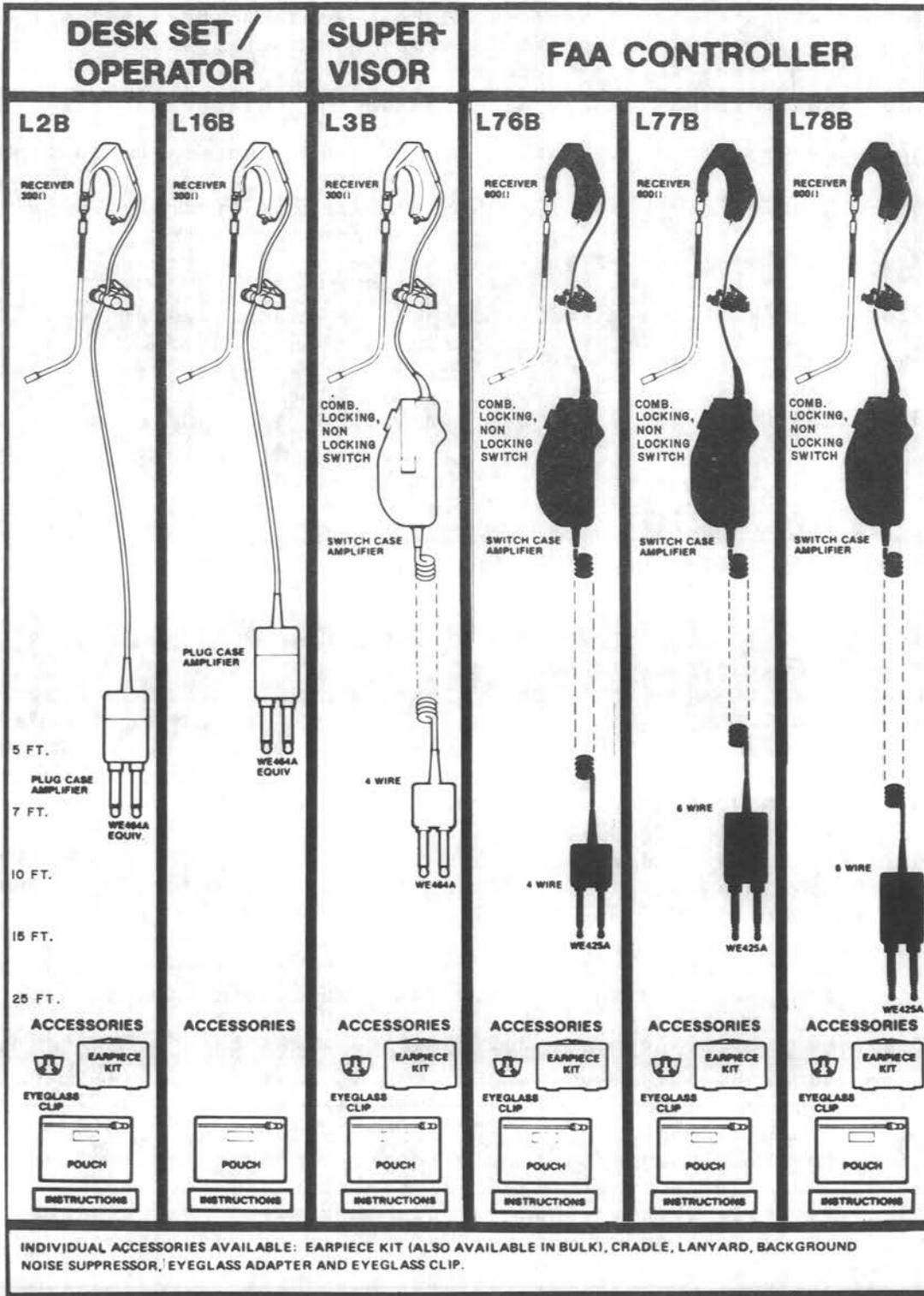
## 2. GENERAL DESCRIPTION

### A. KS-20778 Head Telephone Sets

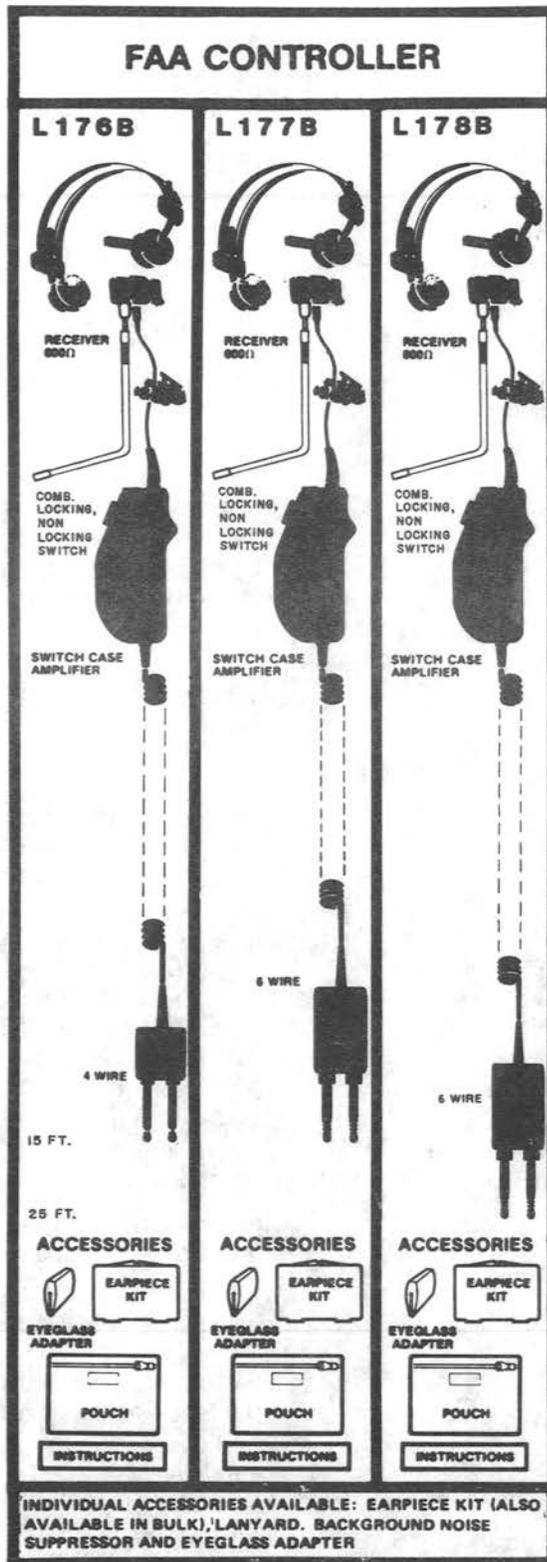
**2.01** The KS-20778, ♦L2B, L3B, L16B, and L76B through L78B, head♦ telephone sets (Fig. 1, 3, 4, and 5) have a receiver and a transmitter which are lightweight sets that do not require headbands. The sets are held on the head by a flat, plastic capsule that is shaped to fit either ear, or by a clip attached to the user's glasses. The KS-20778, ♦L176B through L178B♦ have an over-the-head (Fig. 2 and 6) or eyeglass clip style support. An over-the-head band is provided with each head telephone set. A cable clamp is provided with either style to permit the user to fasten the cable to their clothing.

**2.02** The receiver unit of the KS-20778 head telephone set is acoustically coupled to the ear by a small, plastic tube and ear tip. The sound is conducted from the user's mouth to the transmitter unit by means of a colorless, plastic tube which can be rotated and adjusted for length. An integrated circuit (IC) amplifier increases the transmitter output to a level suitable for telephone use.

**2.03** Each head telephone set, except the KS-20778, L16B, is furnished with a box containing six plastic earpieces of graded sizes, an eyeglass mounting clip, and an instruction booklet. The KS-20778,

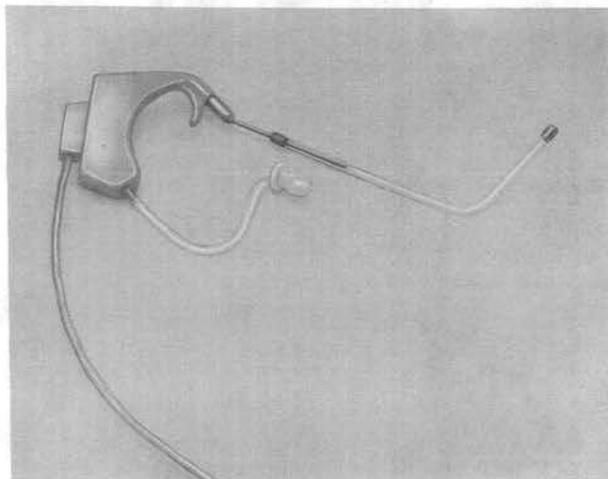


◆ Fig. 1 — KS-20778, L2B, L3B, L16B, and L76B, L77B, and L78B Head Telephone Sets ◆



◆ Fig. 2—KS-20778, L176B, L177B, and L178B Head Telephone Sets◆

L16B, is furnished with an instruction book, but not with an earpiece kit or eyeglass mounting clip. Each set is provided with a zippered, plastic pouch for storage. Tables A and B list the principal applications of the KS-20778 head telephone sets and the differences in equipment features of the various sets.



◆Fig. 3—KS-20778, L2B, L3B, L16B, L76B, L77B, and L78B Head Telephone Sets◆

2.04 The FAA sets (L76B through L78B, and L176B through L178B) are available in black only. All other sets are available in beige only.

#### B. Quick Disconnect

2.05 The KS-20778, ◆L117B quick disconnect (Q/D)◆ head telephone set (Fig. 7) is primarily intended for use on station sets equipped for head telephone set service and PBX consoles. ◆The L2B head telephone set is equipped with a straight cord containing a Q/D connector between the capsule and the amplifier.◆ The L117B is equivalent to the L101B head telephone set except that a small Q/D connector has been added in the cord. With the Q/D sets, the user can unplug the Q/D connector, thus separating the capsule and its short cord from the amplifier and its longer cord. The amplifier is left plugged into the position jacks. This allows the user to leave the position without removing the head telephone set or placing the call on hold.

2.06 Since the Q/D feature makes it more convenient for the user to leave the amplifier

plugged into the position jacks when leaving the position, proper training and/or administrative procedures should be applied before using the Q/D head telephone sets. The Automatic Call Distributors and telephone company operator services positions, equipped with Force Administration Data Systems (FADS), rely upon the presence of the amplifier in the position jacks to be a valid indicator of an attendant at that position. Improper handling of calls could result if the amplifiers of the Q/D sets are left in the position jacks while no attendant is present.

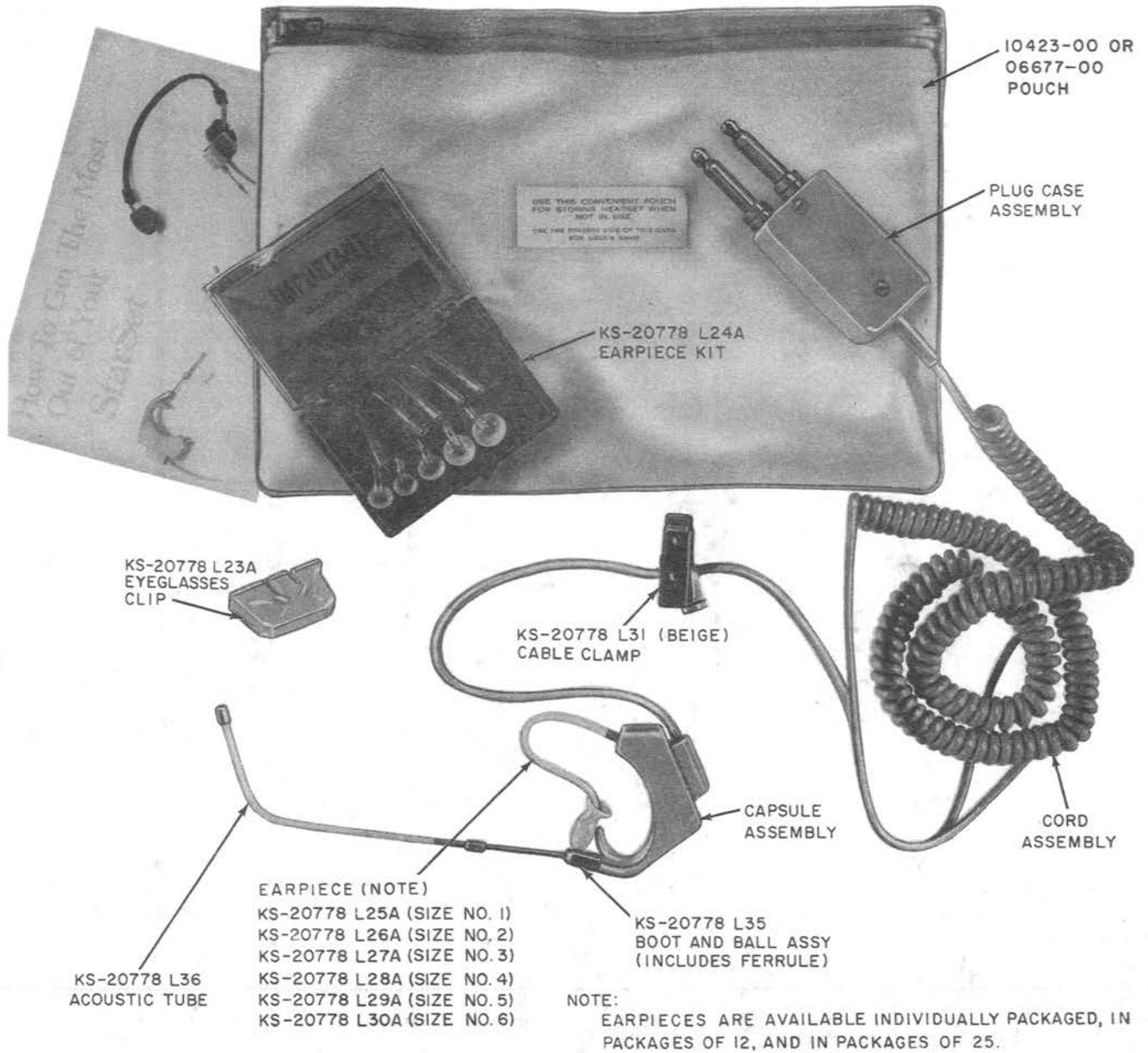
2.07 The Q/D subassemblies can be randomly interchanged and still maintain the same tolerance on transmit and receive levels as the KS-20778, L2B and L16B, head telephone sets. This is accomplished by tightening the tolerance of two components used in the Q/D sets. The capsule assembly will use a tight tolerance acoustic tube having black ferrule tips. A tight tolerance amplifier is also used and is identified by a yellow dot on the integrated circuit package and a red dot on the amplifier board. It is important for repair personnel to use the appropriate parts when repairing Q/D sets in order to ensure proper performance.

2.08 The Q/D concept lends itself to improved repair procedures and reduced inventory stocks. Trouble with a faulty unit can be quickly isolated to the capsule or amplifier by interchanging the subassemblies with repair spares or those of another Q/D head telephone set which is known to be functioning properly.

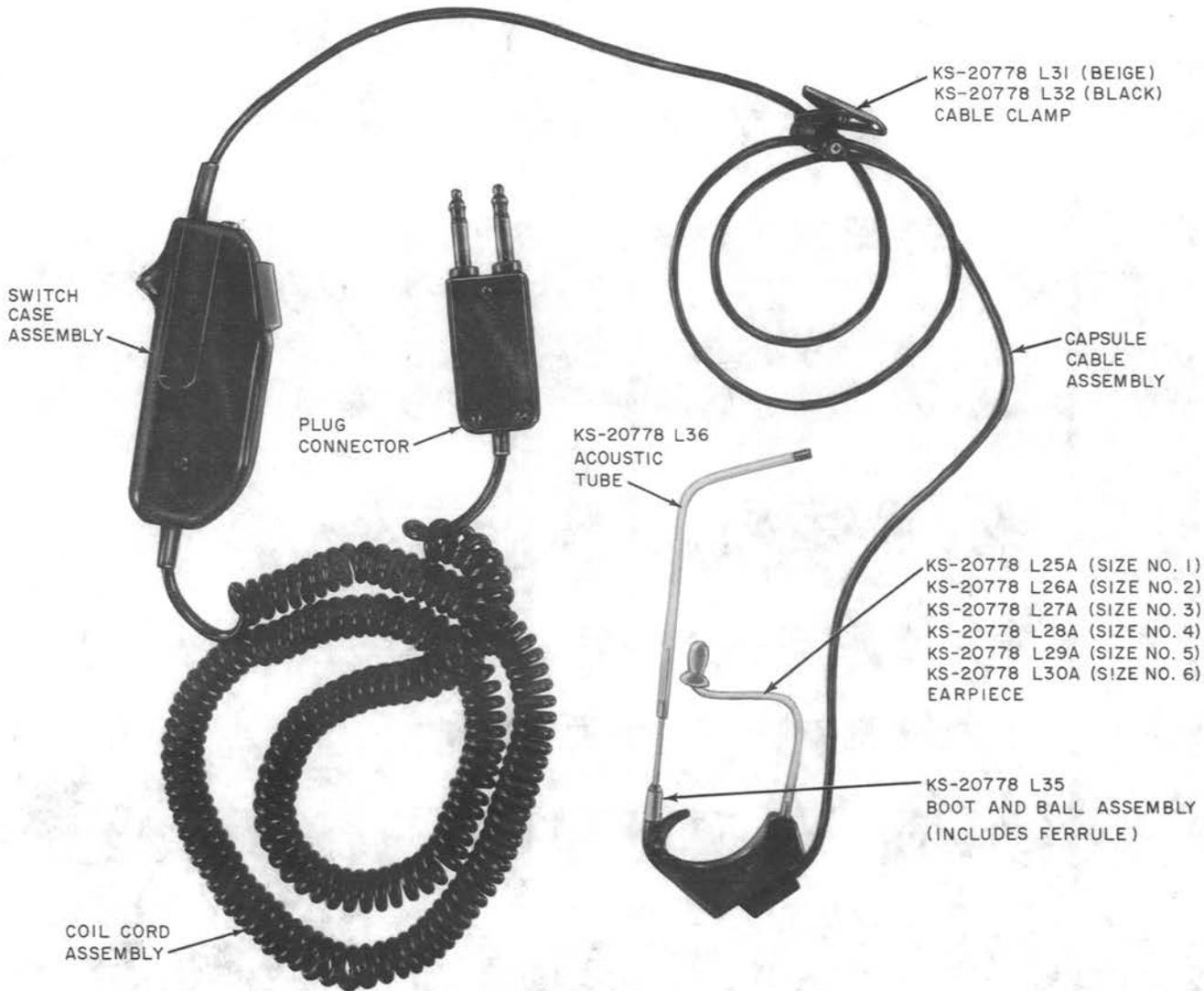
2.09 The KS-20778 head telephone sets provide proper transmission levels when used with station equipment having 241A transmit amplifier on loops which do not exceed the **resistance design limit** of 1300 ohms. For use of head telephone sets on loops which exceed the **resistance design limit**, it is recommended that a 241B amplifier be used as the internal transmit amplifier in the station equipment. When the head telephone sets are used with telephone sets or PBX consoles which contain internal transmit amplifiers, a 52- or 53-type headset should not be placed in parallel with any KS-20778 sets as the low impedance of the carbon transmitter will seriously reduce the gain of the head telephone set amplifier.

2.10 The newer 100C Traffic Service Position System (TSPS), DIMENSION® AIS\*/System 85 and 100B TSPS operator positions are manufactured

\* Trademark of AT&T.



◆ Fig. 4—KS-20778, L2B and L16B Head Telephone Sets ◆



◆Fig. 5—KS-20778, L3B, L76B, L77B, and L78B Head Telephone Sets◆

so that the KS-20778, L1A through L16A, ◆L1B, L4B through L15B, L17B, and L18B (Mfr Disc.),◆ head telephone sets can be used. These systems are identified by an asterisk at the end of the model number. Those systems that are not identified by the asterisk may be modified to have 110 dc milliamperes maximum transmitter current. The circuits operating on 24 volts can be modified by the craft person using the schematic drawings. Circuits operating on 48 volts must be returned to the factory for the modifications.

**2.11** When the KS-20778 head telephone set is used at 1- and 2-type attendant telephone consoles, it is necessary to remove the 68-ohm dummy loading

resistors across the console head telephone set jacks. The dummy load resistors were originally provided to ensure a constant transmit level when either one or two head telephone sets were used. The resistors designated R1 and R2 on SD-67001-01 may be removed simply by cutting the resistor leads off as close to the jack as practicable. (See Fig. 8.) Removal of the resistors will also improve the transmit levels of the other types of head telephone sets.

**2.12** Excessive mechanical abuse, including raps against a hard surface, can damage components in the capsule and amplifier.



◆Fig. 6—KS-20778, L101B, L103B, L117B, L176B, L177B, and L178B Head Telephone Sets◆

2.13 Spare head telephone sets should be substituted for sets which are reported as being in trouble several times during a period of 30 days, and on which the tests and inspections covered herein have disclosed no defects. These sets should be returned to Western Electric for repair and tagged "Intermittent Trouble."

#### C. KS-21430 Headset

2.14 The KS-21430 headset (Fig. 9) has a receiver and is a lightweight set which does not require headbands. The set is held on the head by a flat plastic capsule, shaped to fit either ear or by a clip attached to the user's glasses. A cable clamp is provided to permit the user to anchor the cable to clothing.

2.15 In the KS-21430 headset, a miniature magnetic transducer is used for the receiver unit.

The receiver unit is acoustically coupled to the ear by a small, plastic tube and ear tip. The KS-21430 headset can be used as an alternate for the 1020B or 1026A headset.

◆TABLE A◆

PRINCIPAL USES AND FEATURES OF KS-20778, L2B, L3B AND L16B HEAD TELEPHONE SETS

KS-20778, LIST NO.	L2B	L3B	L16B
Operator	X		X
Supervisor		X	
Color Beige	X	X	X
Straight Cord 5' Long			X
Wrist Loop		X	
Straight Cord 7' Long	X		
Coil Cord (4 Cond) 10'		X	
Amplifier and Case/Plug	X		X
Capsule Cord 45"		X	
Amplifier and Case With Locking Switch		X	
Plug 464A 4-Wire	X	X	
Receiver 300 Ohm	X	X	X
Eyeglass Clips	X	X	
Earpiece Kit	X	X	
Pouch	X	X	X
Instruction Booklet	X	X	X

#### D. ◆KS-22729 STARSET II Head Telephone Set

2.16 The KS-22729 STARSET II head telephone set (Fig. 10) is lighter in weight and has a new contoured capsule assembly which makes the headset more comfortable for the user. The new electret microphone provides better voice transmission. The redesigned acoustic tube from the microphone allows the user to place the microphone more easily in front of his mouth.

**TABLE B**  
**PRINCIPAL USES AND FEATURES OF KS-20778,**  
**L101B, L103B AND**  
**L117B HEAD TELEPHONE SETS**

KS-20778, LIST NO	L101B	L103B	L117B
Station Set	X		X
Operator	X		X
Supervisor		X	
Color Beige	X	X	X
Coil Cord 10' and 30' Strt	X		X
Wrist Loop		X	
Coil Cord (4 Cond) 10'		X	
Amplifier and Case/Plug	X		X
Amplifier and Case With Locking Switch		X	
Plug 464A 4-Wire	X	X	X
Receiver 300 Ohm	X	X	X
Eyeglass Clips	X	X	X
Headset Cradle	X		X
Earpiece Kit	X	X	X
Pouch	X	X	X
Instruction Booklet	X	X	X

**2.17** The headset contains a new improved adjustable sandwhite plastic clothing clip assembly which protects the capsule assembly from damage resulting from jerks and strains on the cord. A new redesigned quick disconnect module, which is located between the clothing clip assembly and the coil cord, prevents the use of the KS-22729 STARSET II head telephone set with an earlier noncompatible plug-amplifier assembly.

**2.18** A new amplifier integrated circuit, located within the headset plug-amplifier assembly, contains a receive signal limiting circuit. The limiting circuit protects the user from sound levels in excess of 95 decibels (dB) with no increase in signal distortion. The plug-amplifier circuit assembly contains a 3-position gain control switch. Switch posi-

tion I provides normal receive level, switch position II provides 5 dB of gain, and switch position III provides 10 dB of gain to the receive signal at the earpiece. The signal strength gain never exceeds the maximum of 95 dB allowed by the limiting circuit. This dB level is 5 dB more than the maximum level used in the following Bell System products:

- Traffic Service Position System (TSPS)
- DIMENSION® AIS/System 85 and others.

The KS-20729 STARSET II head telephone set, with its 95 dB maximum signal level limiting circuit, meets the requirements of the Bell Operating companies.◀

### 3. VISUAL INSPECTION

**3.01** The head telephone set or headset should be inspected in accordance with Table C.

### 4. APPARATUS

**4.01 List of Tools, Materials, and Test Equipment:** The following list of tools, materials, and test equipment is used in this section:

TOOLS	DESCRIPTION
AT-7739	Screwdriver, Size 1
<b>MATERIALS</b>	
—	Soap
—	3M* Insulation Adhesive, No. 35
—	Cloth, Cotton or Tissue for Cleaning
<b>TEST EQUIPMENT</b>	
KS-21233, L1	Test Fixture Assembly

\* Trademark of 3M Company.

### 5. ELECTRICAL TESTS

**5.01 Warning:** Do not apply an ohmmeter to the plug tips since many ohmmeters use battery supplies in excess of 6 volts and could damage amplifier components.

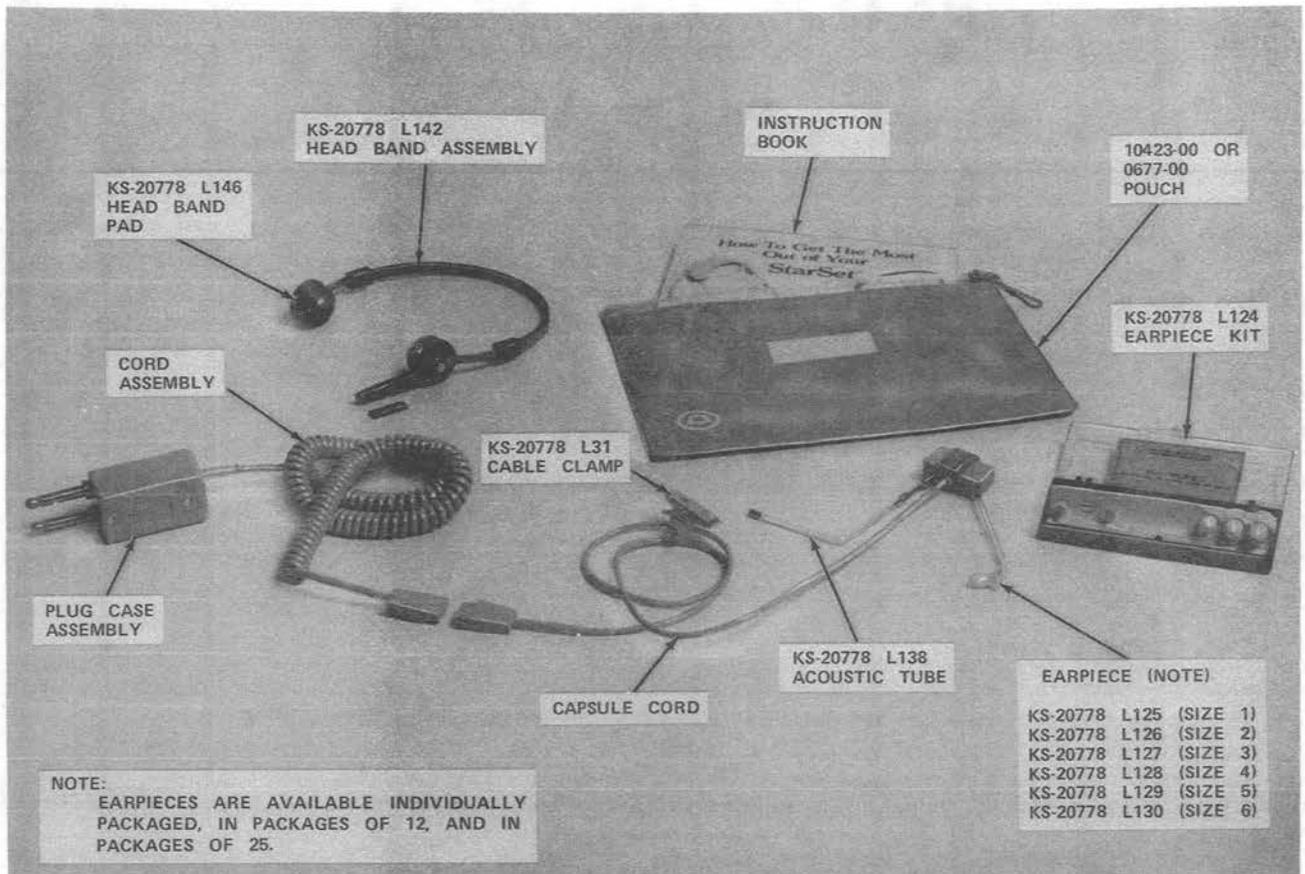


Fig. 7—KS-20778, L117B Head Telephone Set—Quick Disconnect

A. Electrical Test for KS-20778, L1A Through L16A, L11B, L4B Through L15B, L17B, and L18B (Mfr Disc.); L2B, L3B, and L16B, L101B, L103B Through L115B, and L117B

5.02 **DANGER:** For hygienic reasons, do not insert used earpiece into ear.

5.03 Connect head telephone set to suitable 4- or 6-wire circuit and activate. Most troubles can be found by talking, whistling, or blowing into the speech tube and listening to the receiver response (see Table D). Reverse head telephone set plug and repeat. Trouble location can best be isolated by interchanging capsule and amplifier from known good head telephone set. Schematics of these headsets and head telephone sets are shown in Fig. 11, 12, 13, and 15.

B. Electrical Test for KS-21430 and KS-22729

5.04 While listening in the headset receiver, insert the plug into a suitable attendant circuit. (See Table E.)

## 6. REPLACEMENT PARTS

6.01 The replacement part name and number along with the head telephone set or headset number must be included when ordering replacement parts from Western Electric Merchandise Department or the manufacturer.

### A. KS-20778 Head Telephone Sets and Headsets

6.02 The available replacement parts and corresponding part numbers are shown in Fig. 4, 5,

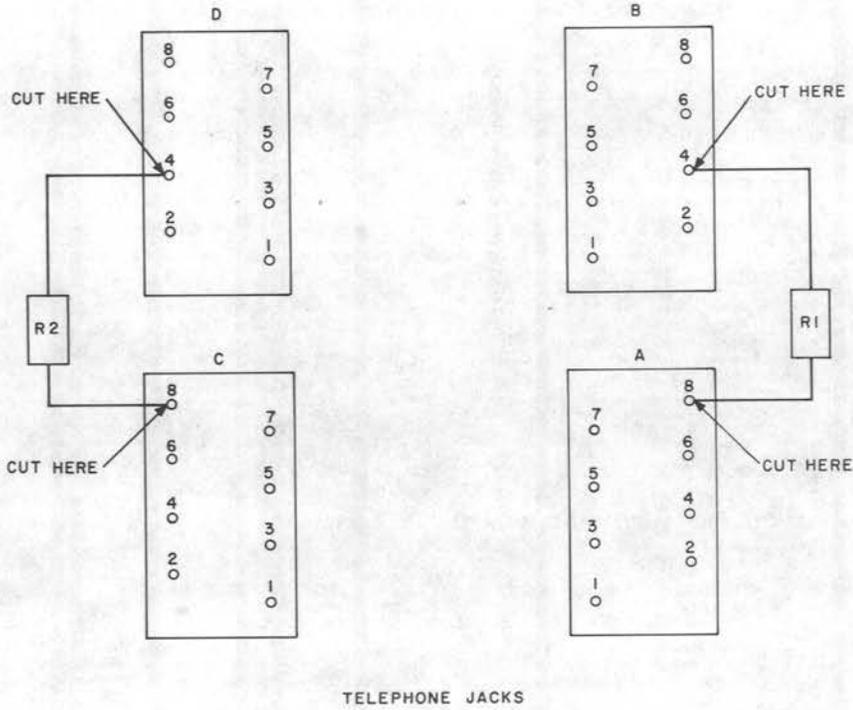


Fig. 8—1- and 2-Type Attendant Telephone Consoles—Partial Wiring Diagram

7, and Table F for the KS-20778 head telephone sets and headsets.

**B. KS-21430 Head Telephone Sets**

**6.03** The available replacement parts and corresponding part numbers are shown in Fig. 9 and Table G for the KS-21430 head telephone sets.

**C. KS-22729 STARSET II Head Telephone Sets**

**6.04** The available replacement parts and corresponding part numbers are shown in Fig. 10 and Table H for the KS-22729 STARSET II head telephone sets.

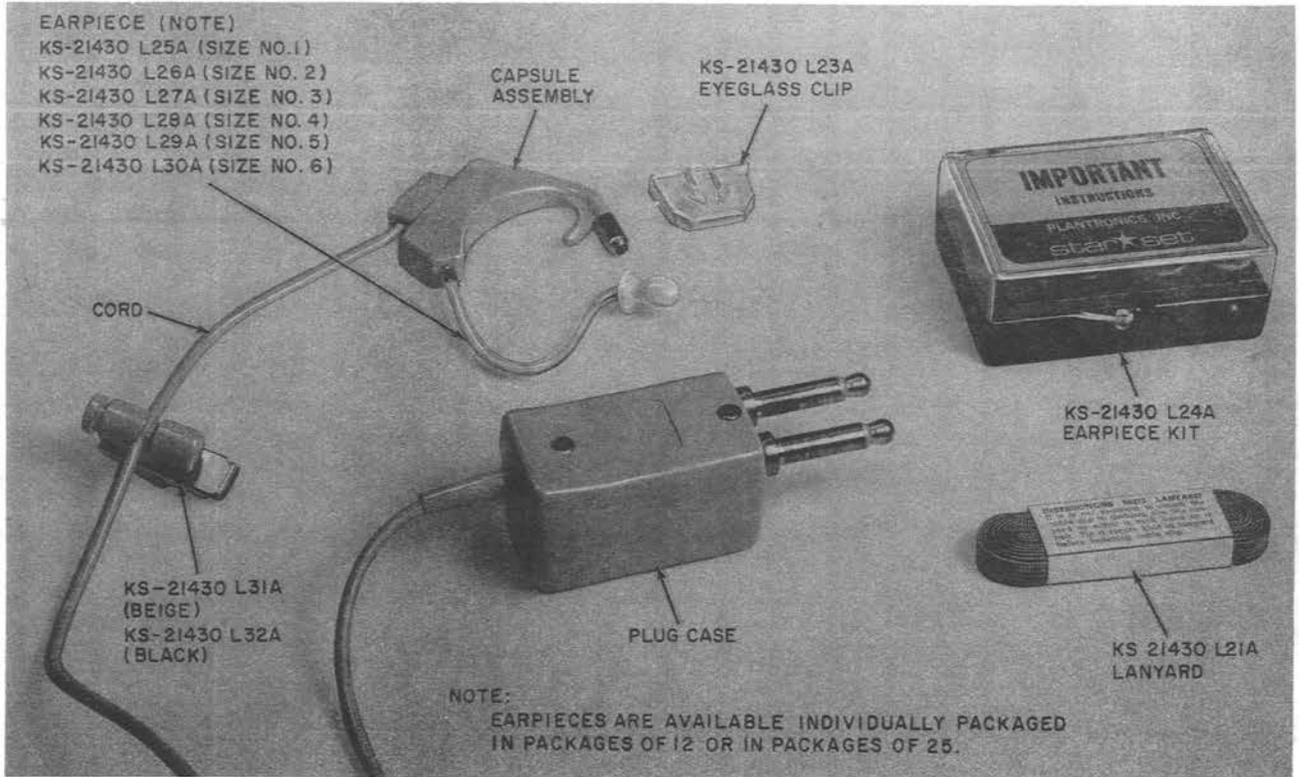
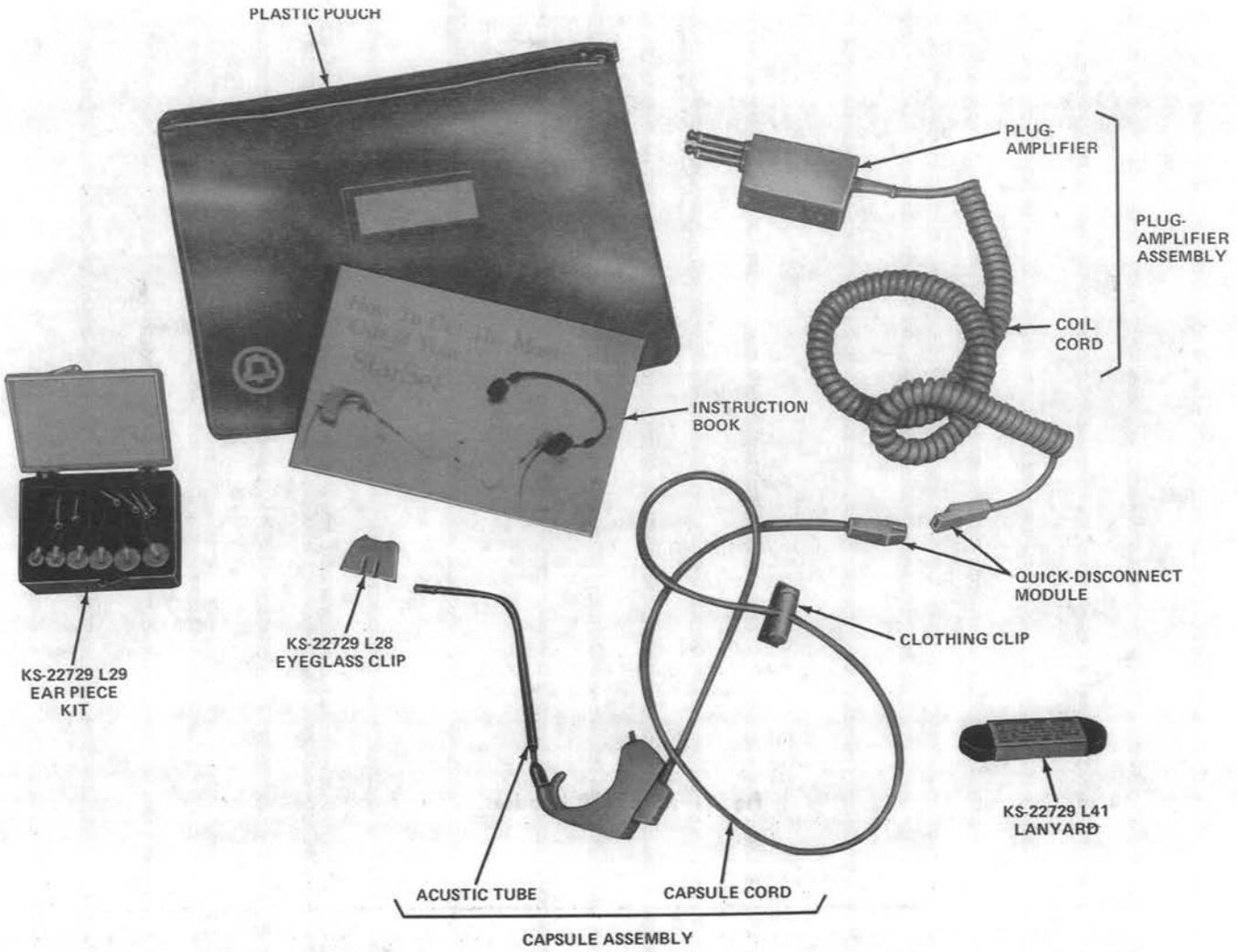


Fig. 9—KS-21430 Headset



◆ Fig. 10—KS-22729 STARSET II Head Telephone Set ◆

TABLE C

## HEAD TELEPHONE SET OR HEADSET INSPECTION PROCEDURE

STEP	ACTION	VERIFICATION
1	Inspect for the presence of all parts. (See Fig. 1 through 10).	Replace head telephone set or parts. (See paragraph 6.01 for recommended field replacement parts.)
2	Inspect for soiled, cut, crushed, kinked, or abraded cord and wrist loop (if used).	Clean or replace defective cord or wrist loop.
3	Inspect for stained, broken, cracked, or chipped plastic parts.	Clean or replace head telephone set or or defective parts.
4	Inspect for deformed, mutilated, plugged, or loose speech tube assembly.	Replace defective speech tube assembly.
5	Inspect for cracked or plugged tube and ear tip.	Clean or replace ear tip.
6	Inspect clothes clip for proper operation.	Replace defective clothes clip.
7	Inspect for dirty or damaged plug profiles.	Clean or replace damaged parts.
8	Inspect amplifier switch for easy operation and locking or nonlocking.	Replace defective switch.

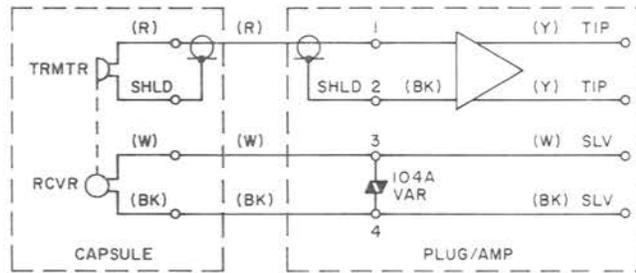
\*Trademark of 3M Company.

TABLE D

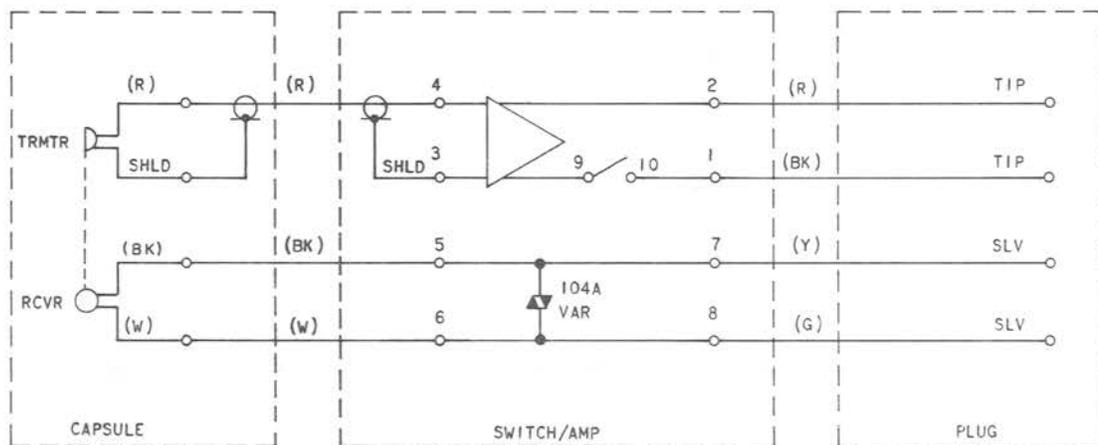
## KS-20778 TROUBLE ANALYSIS

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
No sidetone or intermittent sidetone.  <b><i>DANGER: For hygienic reasons, do not insert used earpiece into ear.</i></b>	Loose connection in amplifier, switch, or plugs	Check and tighten connections.
	Defective cord	
	Defective capsule	
	Defective amplifier	Replace*
	Defective switch on amplifier (if-used)	Replace*
No sidetone when telephone set plug is reversed.	Defective amplifier	Replace*
Receiver noisy when cord is twisted or shaken	Loose connections at amplifier, or plugs	Check and tighten connections.
	Defective cord	
Crackling noise in receiver when push-to-talk amplifier switch is operated.	Loose connections at amplifier, switch	Check and tighten connections.
	Defective switch	

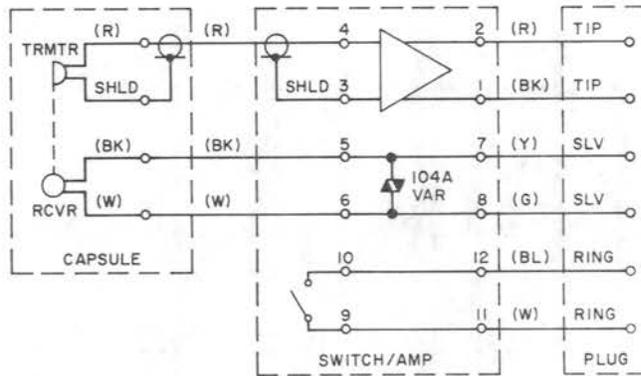
\* See paragraph 6.01.



◆ Fig. 11 — KS-20778, L2B, L16B, L101B, and L117B Headset Schematic ◆



◆ Fig. 12 — KS-20778, L3B Through L9B, L76B, L103B Through L109B, and L176B Headset Schematic ◆



◆ Fig. 13—KS-20778, L10B Through L15B, L77B, L78B, L110B Through L115B, L117B, and L178B Headset Schematic◆

◆TABLE E◆

KS-21430 AND KS-22729 TROUBLE ANALYSIS

SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
No click or circuit noise	Loose connections at receiver end or plug end	Check and tighten connections.
	Defective cord	
	Defective plug	Replace.*
	Defective receiver	

\* See paragraph 6.01.

♦TABLE F ♦  
 REPLACEMENT PART LIST FOR KS-20778 HEAD TELEPHONE SETS AND HEADSETS

DESCRIPTION	APPLICATION
Acoustic Tube Assembly L36 L66 L138 L139	L2B, L3B, and L16B L60 L101B and L103B L117B
Adapter Assembly, L144	L101B, L103B, and L117B
Amplifier L59B (Q/D Coil Cord), lower portion	L117B
BNS (Back Ground Noise Suppressor) Kit, L145	L101B, L103B, and L117B
Boots and Ball Assembly, L35	L2B, L3B, and L16B
Brochure, L147	L2B, L3B, and L16B L101B, L103B, and L117B
Cable Clamp L31 (Beige)	L2B, L3B, L16B L101B, L103B, and L117B
L32 (Black)	L2B, L3B, L16B
Capsule Clips L141 (Sandlewood)	L101B, L103B, and L117B
Coil Cord L62 (10', beige, with Q/D connector for amplifier assembly)	L117B
Straight Cord L63 (32", beige, with Q/D connector for amplifier assembly)	L16B
Earpieces L25A (Size 1) L26A (Size 2) L27A (Size 3) L28A (Size 4) L29A (Size 5) L30A (Size 6) L125 (Size 1) L126 (Size 2) L127 (Size 3) L128 (Size 4) L129 (Size 5) L130 (Size 6)	L2B, L3B, and L16B L2B, L3B, and L16B L101B, L103B, and L117B L101B, L103B, and L117B

♦TABLE F♦ (Contd)

## REPLACEMENT PART LIST FOR KS-20778 HEAD TELEPHONE SETS AND HEADSETS

DESCRIPTION	APPLICATION
Earpiece Kits L24A (Six sizes per kit) L124 (Six sizes per kit)	L2B and L3B L101B, L103B, and L117B
Eyeglass Clip L23A	L2B, L3B, and L16B
Glasses Bow Adapter Kit L148	L101B, L103B, and L117B
Head Band Assembly L142 (single support band)	L101B, L103B, and L117B
Head Band Pads L146 (10 per pkg.)	L101B, L103B, and L117B
Headset Capsule Assembly and Accessories L160	L117B
Headset Cradle L22 (holder)	L2B, L101B, and L117B
Lanyard, L21	L2B, L3B, L16B L101B, L103B, and L117B
Loop L56 (Wrist)	L3B and L103B
Pouches L150 (Nongussetted)  L151 (Gussetted)	L2B and L16B L101B and L117B L3B and L103B

## 7. REPLACEMENT PROCEDURES

7.01 The only items to be replaced in the field are shown and identified by part numbers. Do not attempt to replace or repair the capsule assembly, switch case assembly, plug case assembly, or cords. These items shall be returned in accordance with local instructions to Western Electric ♦or the manufacturer♦ for exchange or repair. If the receiver, transmitter, and amplifier circuit board fail from normal usage during the 2-year warranty period, the manufacturer or Western Electric will repair or replace the defective item. The date of shipment stamped on the capsule cases indicates the warranty

effective date. For authorized locations, a detailed service manual is available from Western Electric ♦or the manufacturer♦.

7.02 **Earpiece:** To remove the earpiece for replacement, grasp the tube adjacent to its attachment at the capsule and pull it off the projecting insert. Substitute the new earpiece, and push it on the projecting insert.

7.03 **Acoustic Tube: Warning:** To ensure proper operation, do not bend the acoustic tube since it has been shaped by the manufacturer. Remove the plastic, acoustic tube by

♦TABLE G♦

## REPLACEMENT PART LIST FOR KS-21430 HEADSET

DESCRIPTION	NUMBER
Clothing Clip	
Beige	KS-21430, L31A
Black	KS-21430, L32A
Earpieces	
Size No. 1	KS-21430, L25A
Size No. 2	KS-21430, L26A
Size No. 3	KS-21430, L27A
Size No. 4	KS-21430, L28A
Size No. 5	KS-21430, L29A
Size No. 6	KS-21430, L30A
Earpiece Kit	KS-21430, L24A
Eyeglass Clip	KS-21430, L23A
Lanyard	KS-21430, L21A

♦TABLE H♦

REPLACEMENT PART LIST FOR KS-22729  
HEAD TELEPHONE SETS

DESCRIPTION	NUMBER
Bow Adapter	KS-22729, L42
Earpieces	
Size No. 1	KS-22729, L32
Size No. 2	KS-22729, L33
Size No. 3	KS-22729, L34
Size No. 4	KS-22729, L35
Size No. 5	KS-22729, L36
Size No. 6	KS-22729, L37
Earpiece Kit	KS-22729, L29
Eyeglass Clip	KS-22729, L28
Lanyard	KS-22729, L41

sliding it off the metal tube of the ball assembly. Substitute the new plastic tube and, using a rotary motion, slide it on the metal tube.

**7.04 Boot and Ball Assembly:** To remove the boot and ball assembly, grip the ferrule and push it toward the head telephone set capsule. Rotate

the ferrule counterclockwise until the pins are aligned with the slots in the ferrule, and remove the ferrule from the end of the capsule. Substitute the new boot and ball assembly, and install in the reverse order of removal.

**7.05 Cable Clamp:** *DANGER: The slide is under spring tension and pressure should be slowly released.* The cable clamp may be slipped up and down the cord by squeezing the ends of the clamp together. To replace the cable clamp, remove the associated screw using a B screwdriver, size 1, and remove the cable clamp. Substitute the new cable clamp, and install in the reverse order of removal. (See Fig. 14.)

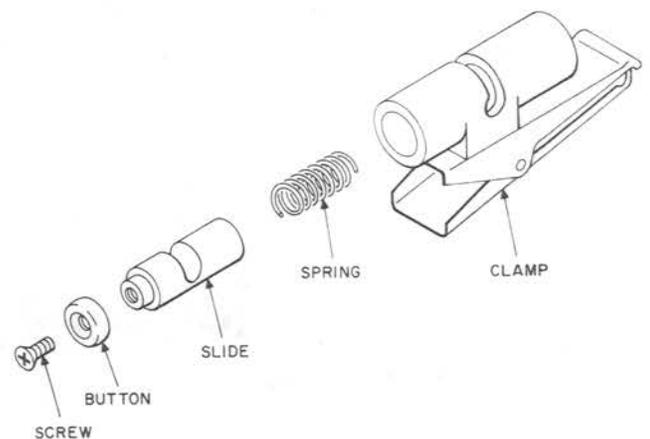


Fig. 14—Cable Clamp—Exploded View

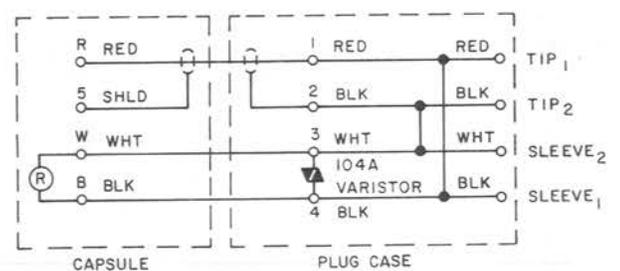


Fig. 15—Schematic for KS-21430 Headset

**Note:** Clipping the cable clamp to a stationary object will facilitate the removal and replacement of the clamp.

**7.06 Headband Pads:** When either or both of the headband pads require replacement, both pads should be replaced at the same time. The pad should be cemented to the headband, using 3M Insulation Adhesive, No. 35.

## 8. CLEANING PROCEDURES

**Note:** It is the user's responsibility to keep his earpiece clean by following procedures described in the instruction book and in paragraphs 8.01 through 8.04.

**8.01** The earpiece assembly should always be kept clean. Particular attention should be paid to

keeping the sound opening unobstructed (free from wax).

**8.02** Soap and water are recommended as cleaning agents. Do not use cleaning solvents or detergents.

**8.03** Where possible, visible contaminants should be removed with clean tissue, cloth, or cotton. Further cleaning or washing should be done with the earpiece removed from the capsule. Do not use an electric polisher on the plugs.

**8.04** The cleaning agents should be wiped dry and accumulations thereof should not be allowed to obstruct the openings. Blowing through the tube will remove the agents.