KS-20778 HEAD TELEPHONE SETS

1. GENERAL

1.01 This section covers the description, use, and maintenance of the KS-20778 L1 through L15 (manufacture discontinued) and L1A through L16A head telephone sets. The L1 through L15 head telephone sets are intended for use by PBX and console attendants, attendant supervisors, FAA personnel in 4-wire and 6-wire circuits, and for customer use with jack equipped station sets. The L1 through L15 head telephone sets are not approved for use at operators service positions. The L1A through L16A head telephone sets are intended for general use in the Bell System including FAA 4-wire and 6-wire circuits.

The L1A through L16A head telephone sets are equipped with a new design amplifier and a smaller-diameter earpiece tube. The new amplifier and earpiece can be used as a conversion or direct replacement components on old type KS-20778 head telephone sets now in use.

The L1A through L16A head telephone sets may be used as an alternative for the 52-type head telephone sets in both operator and PBX-type applications.

1.02 This section is reissued for the following reasons:

- To add the L1A through L16A head telephone sets.
- To revise Part 2 and 3.

1.03 The KS-20778 head telephone sets (Fig. 1 and 2) are lightweight sets which do not require headbands. The head telephone set is held on the head by a flat plastic capsule shaped to fit behind and around either outer 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 his clothing.

1.04 The receiver unit of the head telephone set is acoustically coupled to the ear by a small plastic tube and ear tip. 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. A transistor amplifier increases the transmitter output to a level suitable for telephone use.

1.05 Each head telephone set ▶except the L16A◀ is furnished with a box containing six plastic ear-pieces of graded sizes, two eyeglass mounting clips, and an instruction booklet. The L16A is furnished with an instruction book but not with earpiece kit or eyeglass mounting clips. A lanyard is provided with L1A through L3A, and L16A sets. A cradle which may be clipped to a desk telephone set is included with ▶L1, L2, L1A, L2A◀ sets. Each set is provided with a zippered plastic pouch for storage. See Table A for other items provided with each list number.

1.06 The FAA sets are available in black only. All other sets are available in beige only.

1.07 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 set 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 as the low impedance of the carbon transmitter will seriously reduce the gain of the head telephone set amplifier.

1.08 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. 3). Removal of the resistors will also improve the transmit levels of the other types of head telephone sets.

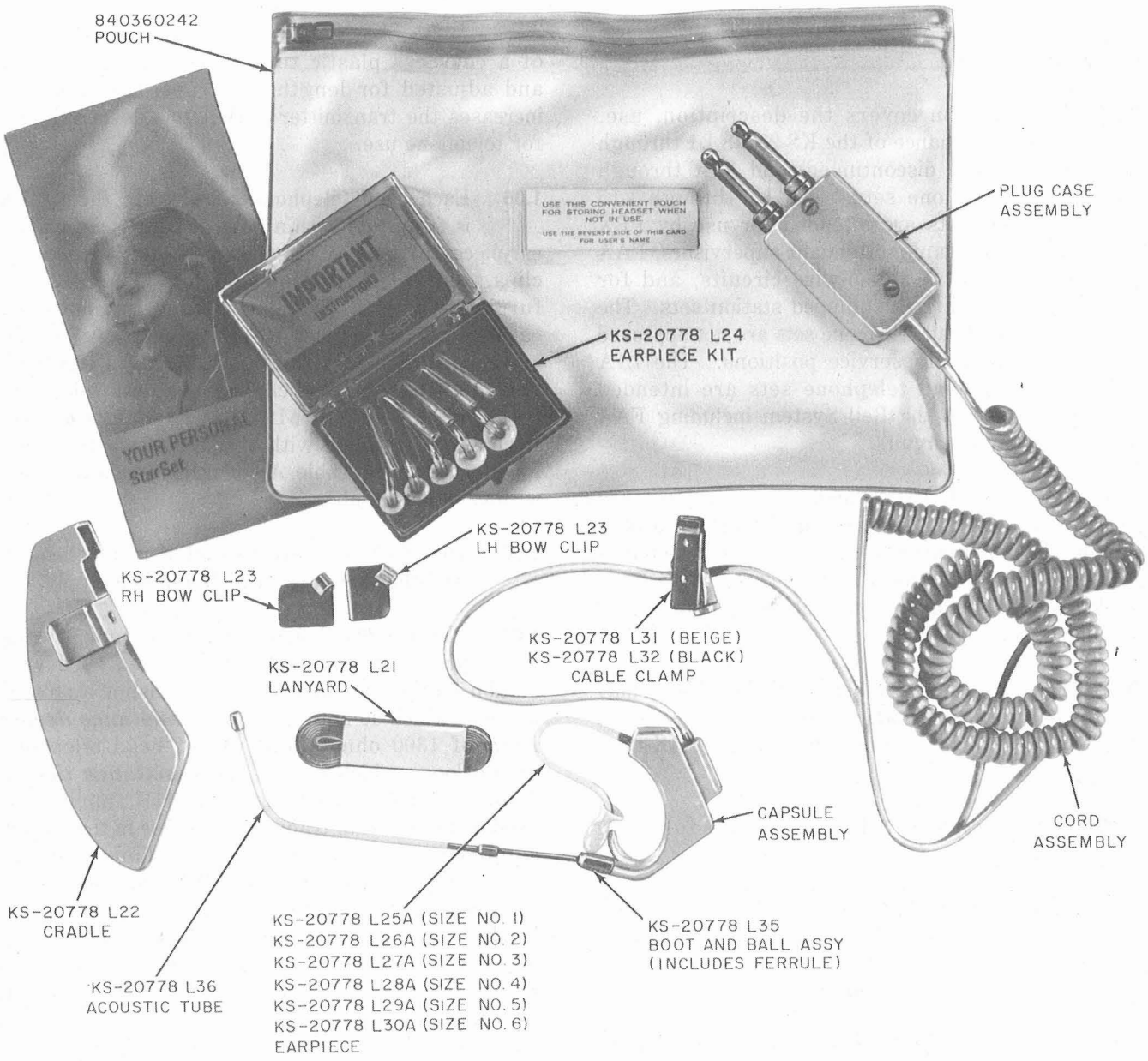

Fig. 1—KS-20778 ▶L1, L2, L1A, L2A and L16A◀ Head Telephone Sets ▶(L1 shown)◀

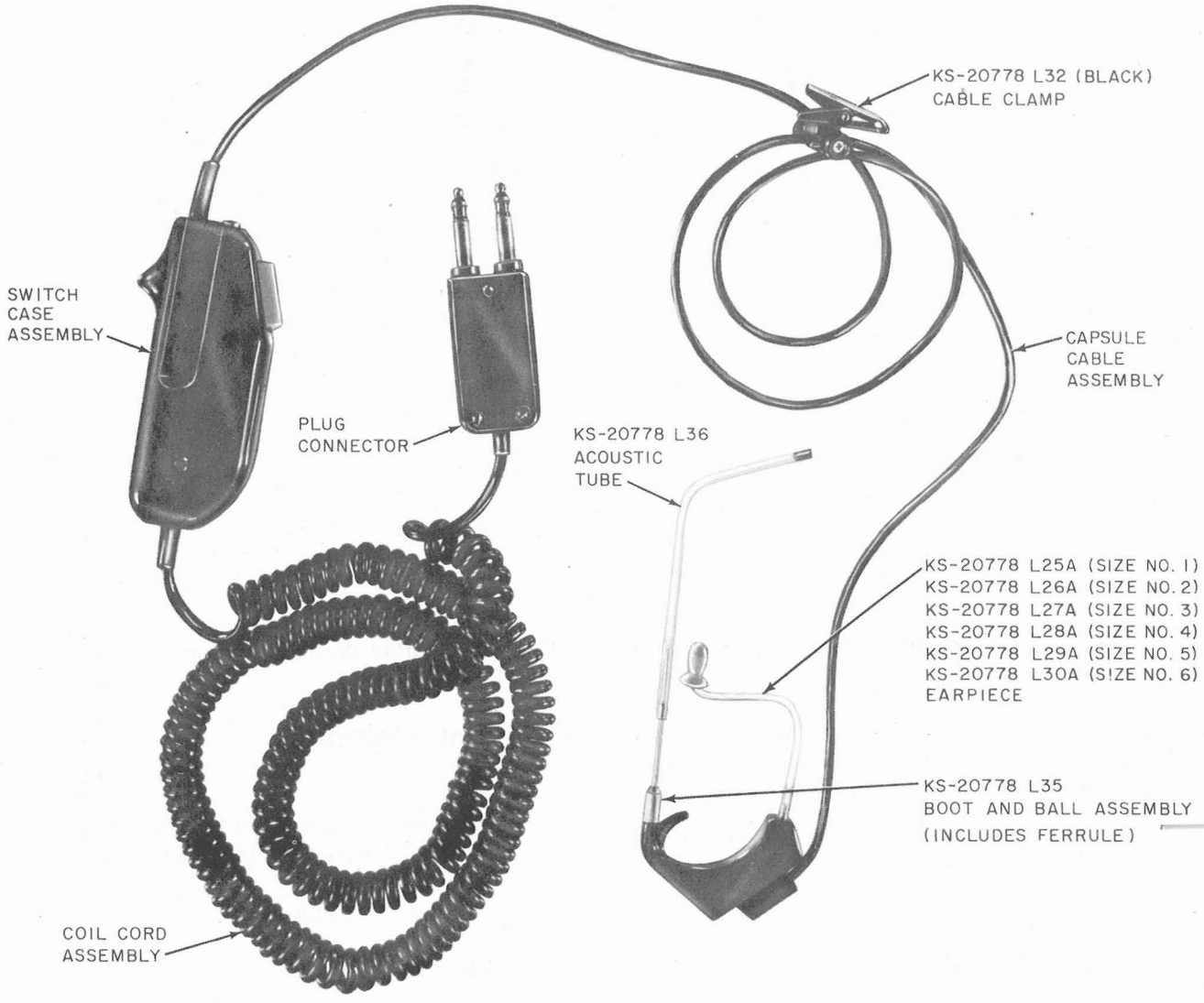

Fig. 2—KS-20778 ▶L3 Through L15 and L3A Through L15A◀ Head Telephone Sets ▶(L14 shown)◀

1.09 Table A lists the principal applications of the KS-20778 head telephone sets and the differences in equipment features of the various sets.

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

1.11 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."

1.12 Most of the head telephone sets will be stamped on the amplifier case with the Bell System emblem and the legend, "Bell System Property—Not for Sale." All Bell System head telephone sets date stamped 12-70 and after will

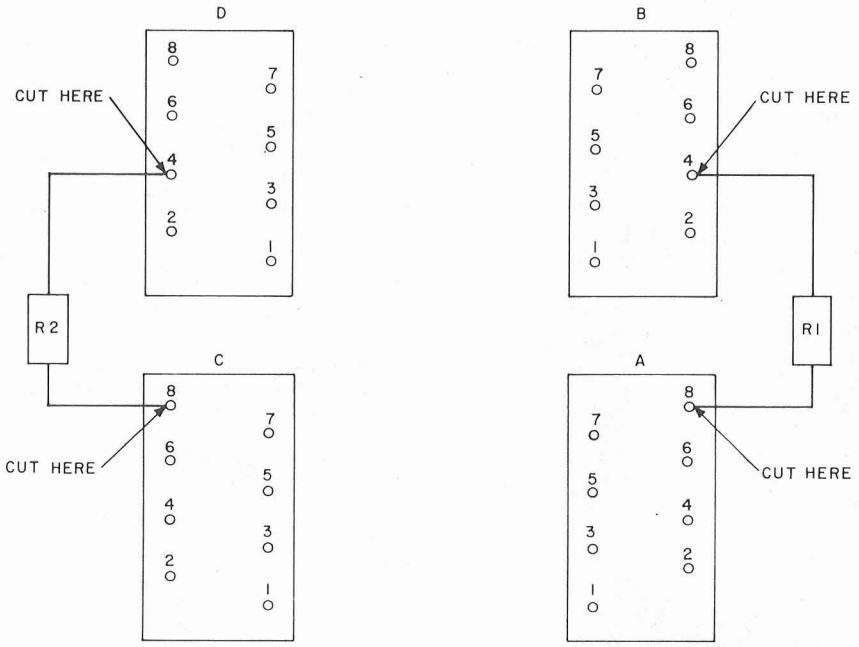

Fig. 3—1-and 2-Type Attendant Telephone Consoles—Partial Wiring Diagram

have the letter B immediately after the stampings on both the capsule and amplifier case. If the head telephone set is identified as non-Bell System, follow the local procedure for reporting this as a suspected illegal installation.

2. ▶VISUAL INSPECTION

2.01 The head telephone set should be inspected according to the following procedure.

STEP	ACTION	VERIFICATION
1	Inspect for the presence of all parts. (See Fig. 1 through 4.)	Replace head telephone set or 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 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 eartip.	Clean or replace eartip.
6	Inspect clothes clip for proper operation.	Replace defective clothes clip.
7	Inspect for dirty or damaged plug profiles.	Clean or replace damaged parts.

→TABLE A←

PRINCIPAL USES AND FEATURES OF KS-20778
HEAD TELEPHONE SETS

KS-20778, LIST NO.	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10	L11	L12	L13	L14	L15	L1A	L2A	L3A	L4A	L5A	L6A	L7A	L8A	L9A	L10A	L11A	L12A	L13A	L14A	L15A	L16A
Station Set	X															X														
Operator*	X	X														X	X													X
Supervisor*			X															X												
Color Beige	X	X	X													X	X	X												X
Color Black				X	X	X	X	X	X	X	X	X	X	X	X				X	X	X	X	X	X	X	X	X	X	X	
FAA Personnel 4-Wire Circuits				X	X	X	X	X	X										X	X	X	X	X	X						
FAA Personnel 6-Wire Circuits										X	X	X	X	X	X										X	X	X	X	X	X	
Coil Cord 10′	X															X														
Straight Cord 5′ Long																															X
Wrist Loop			X	X	X	X	X	X	X	X	X	X	X	X	X			X	X	X	X	X	X	X	X	X	X	X	X	X	
Straight Cord 7′ Long		X															X														
Coil Cord (4 Cond) 10′			X	X														X	X			X								
Coil Cord (4 Cond) 15′					X			X												X			X							
Coil Cord (4 Cond) 25′						X			X												X			X						
Coil Cord (6 Cond) 10′										X			X												X			X		
Coil Cord (6 Cond) 15′											X			X												X			X	
Coil Cord (6 Cond) 25′												X			X												X			X	
Amplifier & Case/Plug	X	X														X	X													
Capsule Cord 45″			X	X	X	X	X	X	X	X	X	X	X	X	X			X	X	X	X	X	X	X	X	X	X	X	X	X	
Amplifier & Case With Locking Switch			X	X	X	X				X	X	X						X	X	X	X				X	X	X			
Amplifier & Case With Nonlocking Switch							X	X	X				X	X	X							X	X	X				X	X	X	
Plug 425A 6-Wire										X	X	X	X	X	X										X	X	X	X	X	X	
Plug 464A 4-Wire			X	X	X	X	X	X	X									X	X	X	X	X	X	X						
Receiver 300 Ohm	X	X	X													X	X	X												X
Receiver 600 Ohm				X	X	X	X	X	X	X	X	X	X	X	X				X	X	X	X	X	X	X	X	X	X	X	X	
Eyeglass Clips	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Headset Cradle	X	X														X	X														
Earpiece Kit	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Pouch	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Lanyard	X	X	X													X	X	X												X
Instruction Booklet	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

* See 1.01.

STEP	ACTION	VERIFICATION
8	Inspect amplifier switch for easy operation and locking.	Replace defective switch.

3. ELECTRICAL TEST

Caution: 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.

3.01 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. Reverse head telephone set plug and repeat. Trouble location can best be isolated by interchanging capsule and amplifier from known good head telephone set. The information included in this paragraph is given to aid in determining the cause and correction of any trouble.

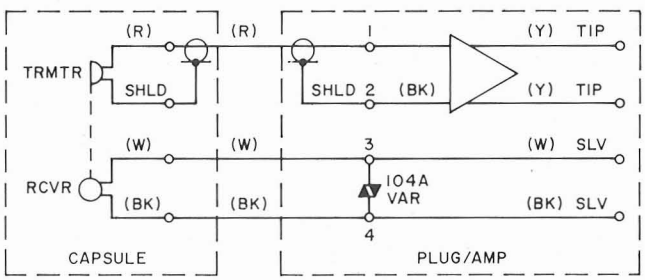

Fig. 4—KS-20778 L1, L2, L1A, L2A, and L16A Headset Schematic

STEP	TROUBLE SYMPTOM	POSSIBLE CAUSE	CORRECTIVE ACTION
1	No sidetone, intermittent sidetone.	Loose connections in amplifier, amplifier switch, or plugs.	Check and tighten connections.
	▶*Caution: For hygenic reasons do not insert operators personal earpiece into ear.*◀	Defective cord.	Replace.
		Defective capsule.	Replace.
		Defective amplifier.	Replace.
		Defective switch on amplifier (if used).	Replace.
2	No sidetone when telephone set plug is reversed.	Defective amplifier.	Replace.
3	Receiver noisy when cord is twisted or shaken.	Loose connections at amplifier or plugs.	Check and tighten connections.
		Defective cord.	Replace.
4	▶Crackling noise in receiver when push-to-talk amplifier switch is operated.◀	Loose connections at amplifier switch.	Check and tighten connections.
		Defective switch.	Replace.

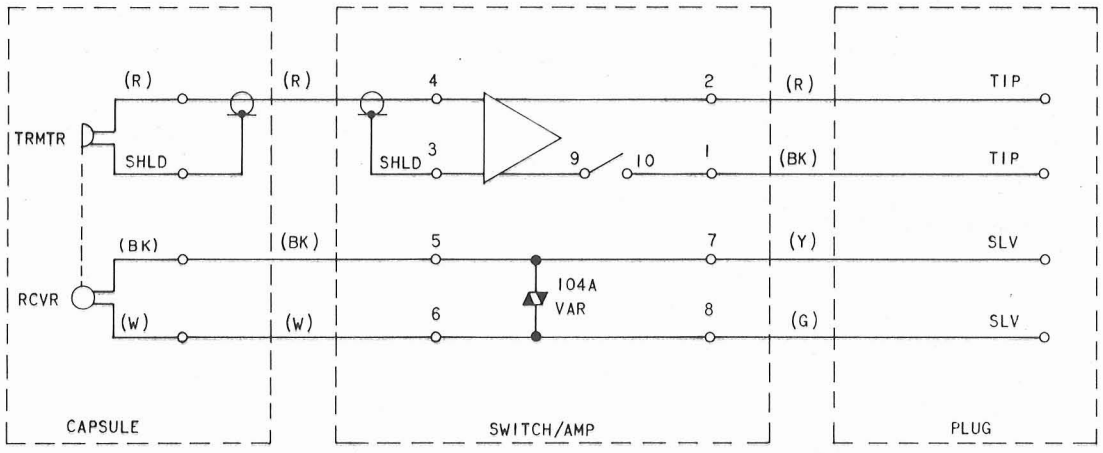

Fig. 5—KS-20778 L3 Through L9 ▶and L3A Through L9A◀ Headset Schematic

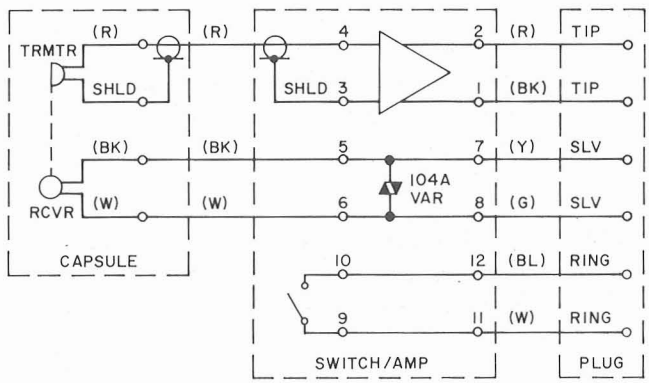

Fig. 6—KS-20778 L10 Through L15 ▶and L10A Through L15A◀ Headset Schematic

4. REPLACEMENT PARTS

4.01 Fig. 1 and 2 show the relationship of the various parts of the head telephone sets. The replacement part numbers of these parts are given together with the names as listed by the Western Electric Company Merchandise Department.

4.02 When ordering replacement parts, give both the replacement part number and the name, for example: Tube, Acoustic, KS-20778 L36. Do not refer to the BSP number.

5. REPLACEMENT PROCEDURES

5.01 The only items to be replaced in the field are shown and identified by part number on Fig. 1 and 2. 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 the Western Electric Company for exchange or repair by the manufacturer. If the receiver, transmitter, and amplifier circuit board fail from normal usage during the two year warranty period, the manufacturer will repair or replace the defective item. The date of shipment stamped on the amplifier and capsule cases indicate the warranty effective date. Where field replacement of cords may be locally authorized such as large or attended installations, the ▶KS-21233◀L1 Test Fixture will greatly aid in assembly. For authorized locations a detailed service manual is available from the manufacturer through Western Electric Company as "Starset* Service Manual 06480-00."

* Registered trade mark, Plantronics Incorporated

5.02 ***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.

5.03 ***Acoustic Tube:*** Remove the plastic acoustic tube by 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.

Caution: Do not bend the acoustic tube since it has been shaped by the manufacturer for best results.

5.04 ***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.

5.05 ***Cable Clamp:*** 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. 7).

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

6. CLEANING PROCEDURE

Note: It is the users responsibility to keep his earpiece clean by following procedures described in the instruction book.

6.01 The earpiece assembly should always be kept clean. Particular attention should be paid to keeping the sound opening unobstructed (free from wax).

6.02 Soap and water is recommended as a cleaning agent. Do not use cleaning solvents or detergents.

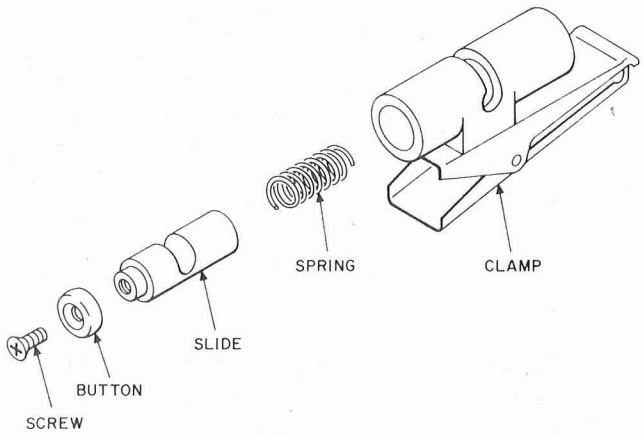

Fig. 7—Cable Clamps—Exploded View

6.03 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 electric polisher on the plugs.

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