

HANDSETS

CONNECTIONS AND MAINTENANCE

1. GENERAL

1.01 This section covers connections in the interior of handsets and outlines procedures for maintaining handsets and their component parts.

1.02 This section is reissued to:

- Change G8AR hand set to G8A.
- Add G1J, G3K, L, M, P, R, S, T; G4B, G5A, B, C, F, H, J, K, M; and F1L hand sets.

1.03 Interior connections for two or more handsets may be the same, but the cords furnished may differ. For information on handset cords, refer to section on identification and assembly of parts.

1.04 At time of installation or on subsequent station visits, check receiver and transmitter caps for tightness, and shake handset to determine whether the units are properly clamped in place. If either unit rattles, replace cap or unit.

1.05 Handsets should be placed in cartons or wrapped in paper bags to protect the surface when returned to the shop for repairs.

2. CONNECTIONS

2.01 Table A lists the handsets and their connection diagrams. Connection diagrams are shown in Fig. 1 through 29.

TABLE A
HANDSETS AND RELATED CONNECTION DIAGRAMS

| Handset | Fig. No. | Handset | Fig. No. | Handset | Fig. No. | Handset | Fig. No. | | | |
|---|-------------------|--|----------|---------------------------|-------------|-----------------------------------|----------------|-------------|-------------|-------------|
| F1B F1C F1E F1G F1K* F1L | 1 | Modification of F3B | 5 | G3R G3S G3T | 13 | G2C* G5C G2G* G5G G5M | 18 | | | |
| F1H* | | 2 | F3J | 6 | | G4A* G4B KS-16504 | | G5E G2E* | 19 | |
| F2A F2B F2C F2D F2F F2G | | 3 | F3K | 7 | | G3C G3L | | 14 | G2F* G5F | 20 |
| F3B F3F F3H F3M F3N F3U* | | | 4 | F3L | | 8 | | G1D G3D | 15 | G2H* G5H |
| | F3P | | | 9 | G2A* G5A | 16 | G5L | 22 | | |
| | F5A | 10 | | G2B* G5B G5J G5K | 17 | G6A | 23 24 29 | | | |
| | F6A F6C F6B | 11 12 | | | | G7A | 25 26 29 | | | |
| | | G1A G1B G1F G1G* G1J G3A G3B G3F G3K G3M G3P | 13 | | | G8A | 27 28 29 | | | |

Note: The letter R at the end of handset codes has been eliminated in this table. R indicates that the handset is equipped with a retractile cord.

* Manufacture Discontinued (MD).

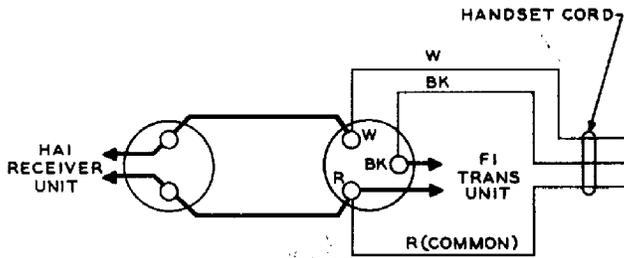
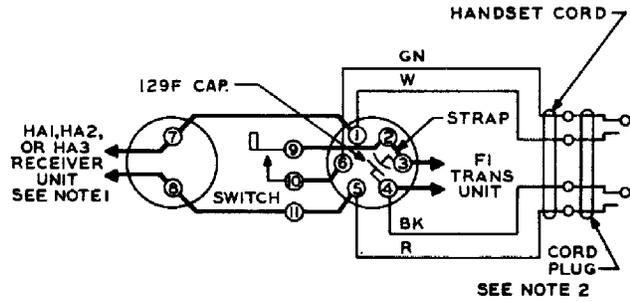


Fig. 1 - F1B, C, E, G, K, and L Hand Sets



Note 1: HA1 unit in F3B, F3H, F3M, and F3U hand sets.
 HA2 unit in F3F hand set.
 HA3 unit in F3N hand set.
 Note 2: Cord plug on F3B, F3F, and F3N hand sets only.

Fig. 4 - F3B, F, H, M, N, and U Hand Sets

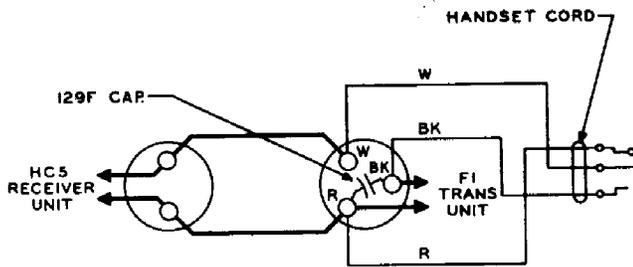


Fig. 2 - F1H Hand Set

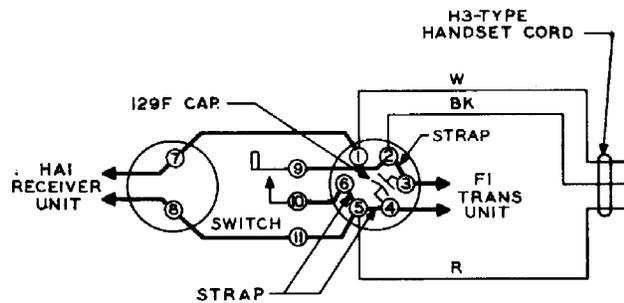
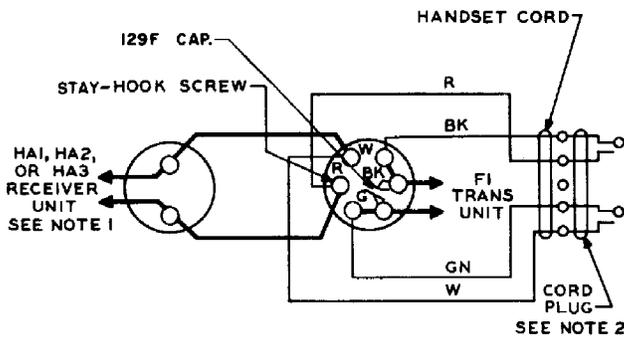


Fig. 5 - Modification of F3B Hand Set for Transmitter Cutout Operation



Note 1: HA1 unit in F2A, F2B hand sets.
 HA2 unit in F2D hand set.
 HA3 unit in F2C, F2F, and F2G hand sets.
 Note 2: Cord plug on F2A, F2D, and F2G hand sets only.

Fig. 3 - F2A, B, C, D, F, and G Hand Sets

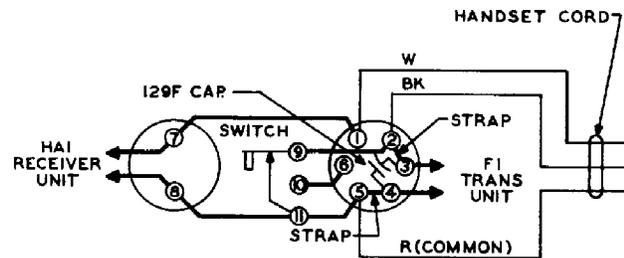


Fig. 6 - F3J Hand Set

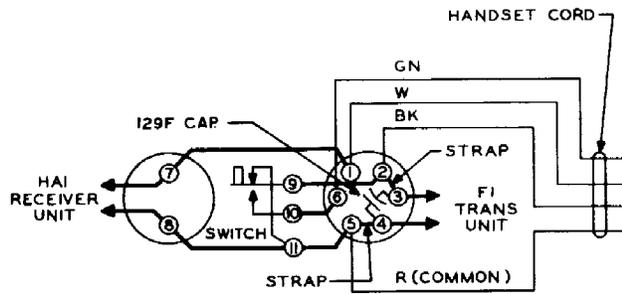


Fig. 7 - F3K Hand Set

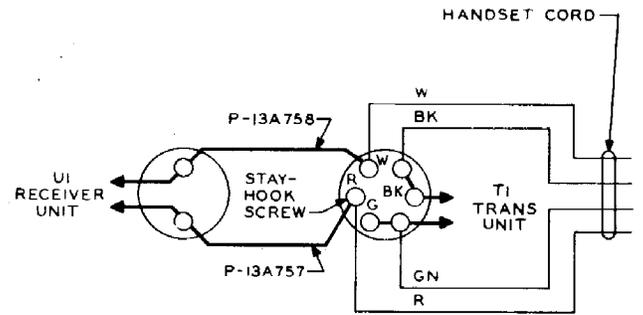


Fig. 10 - F5A Hand Set

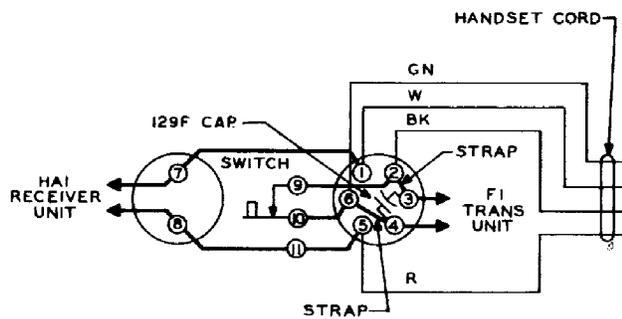
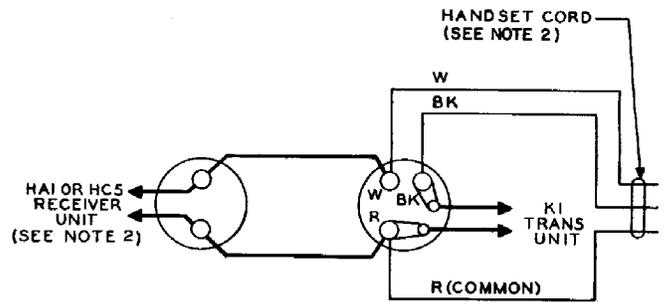


Fig. 8 - F3L Hand Set



Note 1: Cord not replaceable in field.
 Note 2: HA1 unit in F6A hand set. HC5 unit in F6C hand set.

Fig. 11 - F6A and C Hand Sets

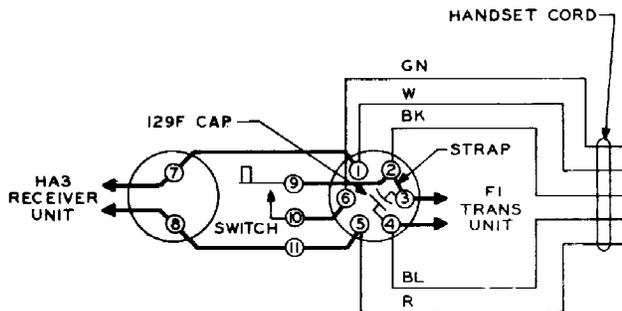


Fig. 9 - F3P Hand Set

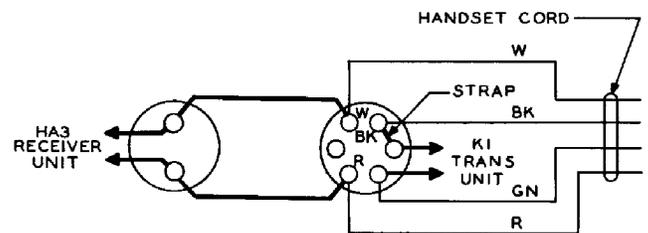
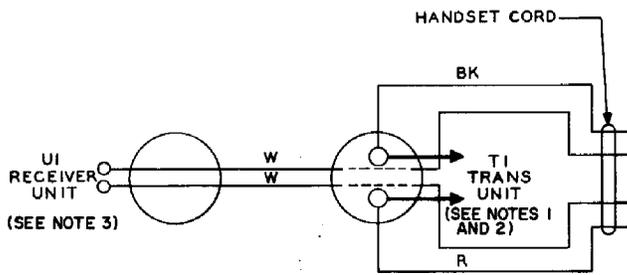
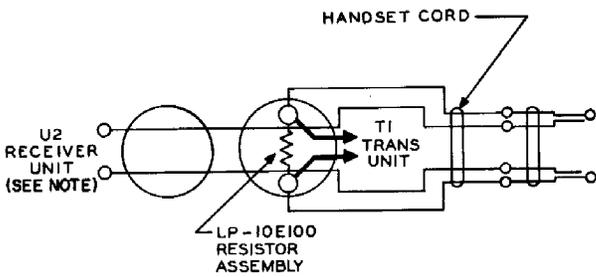


Fig. 12 - F6B Hand Set



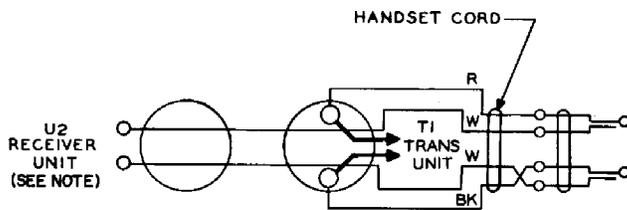
Note 1: T2 unit in G1G, G3P, G3R, G3S, and G3T hand sets.
Note 2: KS-16504, List 10 unit in KS-16504 hand set.
Note 3: U2 receiver in G3B hand set.

Fig. 13 – G1A, B, F, G, J, G3A, B, F, K, M, P, R, S, T, G4A, B, and KS-16504 Hand Sets



Note: U1 unit in G3L hand set.

Fig. 14 – G3C, L Hand Sets



Note: U1 unit in G1D hand set.

Fig. 15 – G1D and G3D Hand Sets

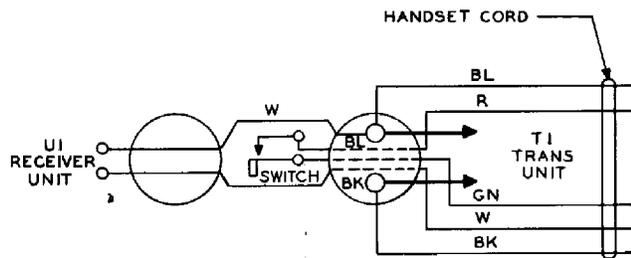
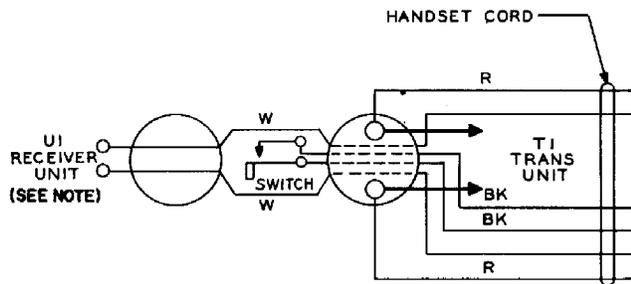
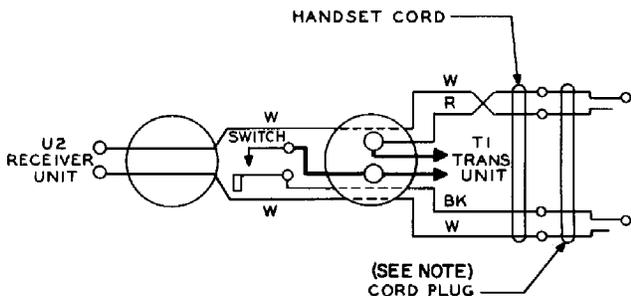


Fig. 16 – G2A and G5A Hand Sets



Note: U2 unit in G5J hand set.

Fig. 17 – G2B, G5B, J, and K Hand Sets



Note: Cord plug is not provided on G2G and G5G hand sets.

Fig. 18 – G2C, G, G5C, G, and M Hand Sets

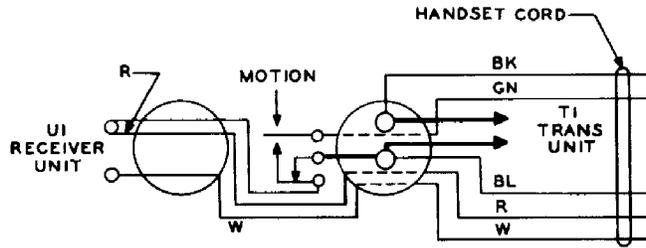


Fig. 19 - G2E and G5E Hand Sets

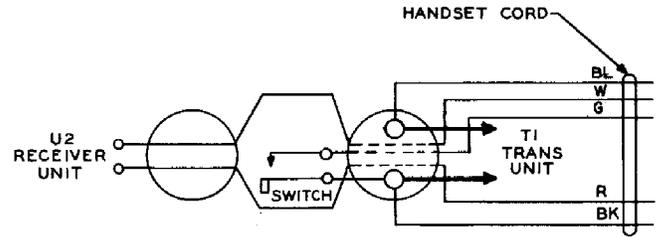


Fig. 21 - G2H and G5H Hand Sets

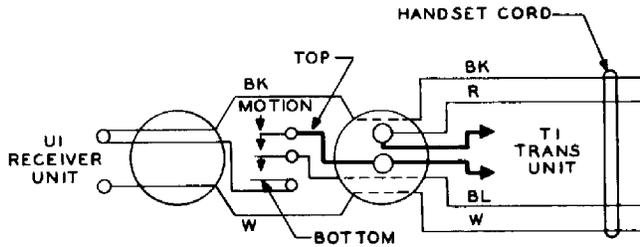


Fig. 20 - G2F and G5F Hand Sets

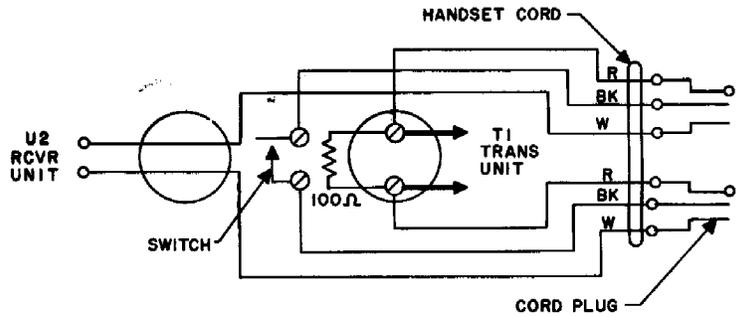


Fig. 22 - G5L Hand Set

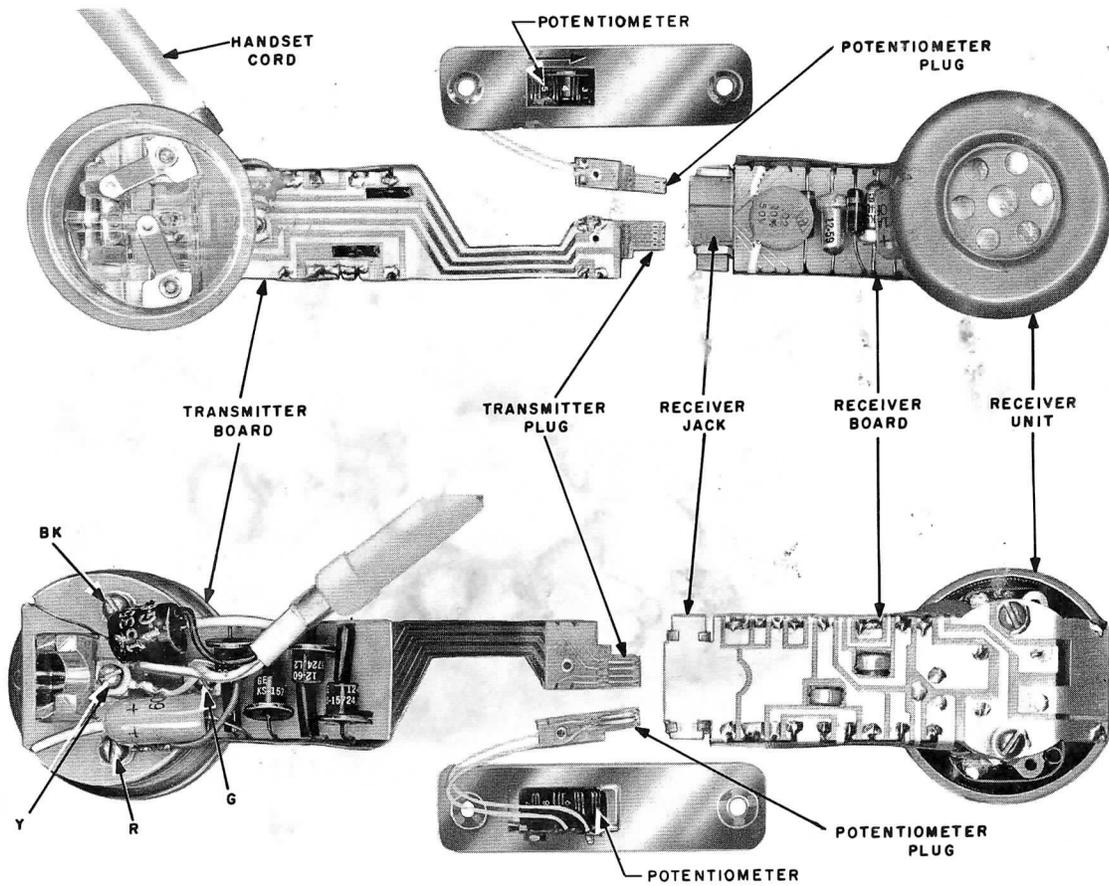


Fig. 23 – G6AR Hand Set, Interior

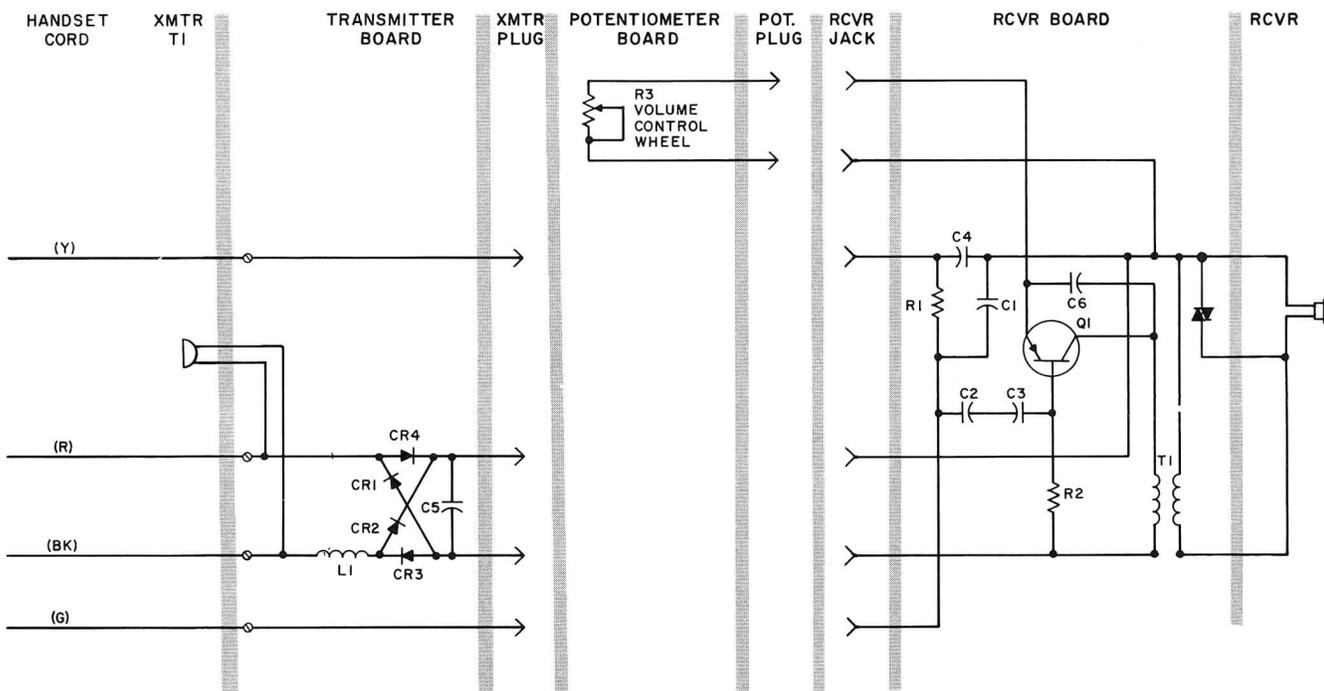


Fig. 24 – G6AR Hand Set, Schematic

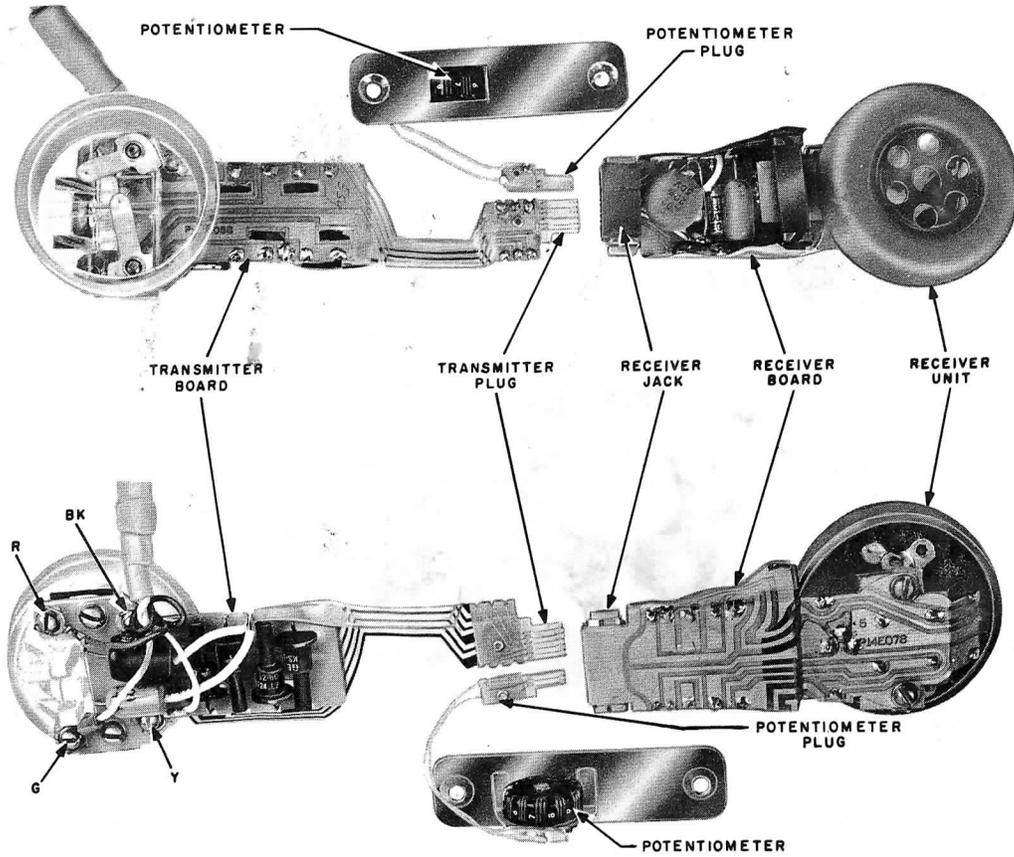


Fig. 25 - G7AR Hand Set, Interior

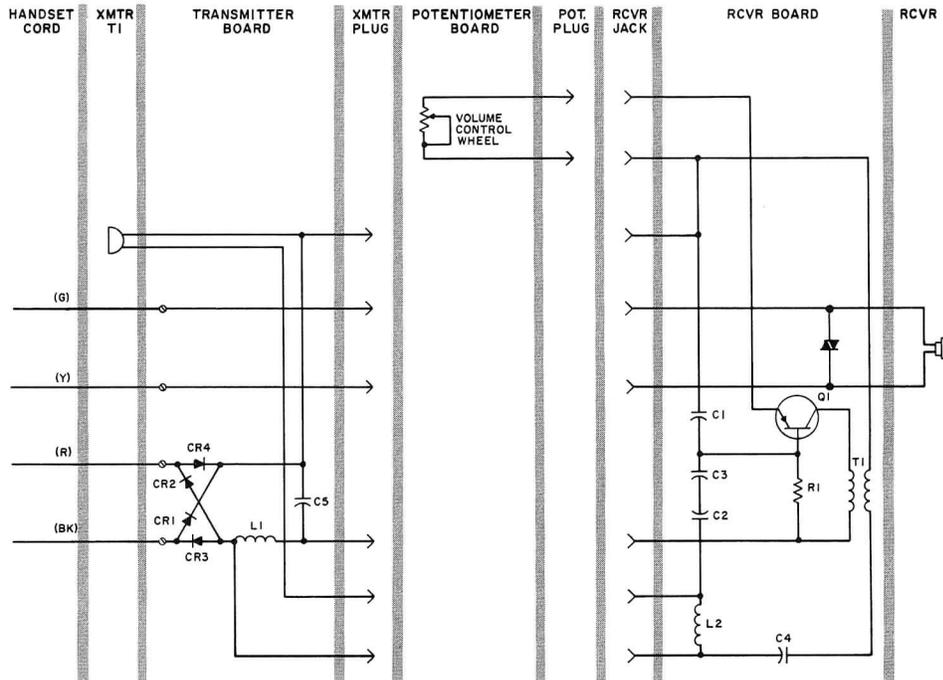


Fig. 26 - G7AR Hand Set, Schematic

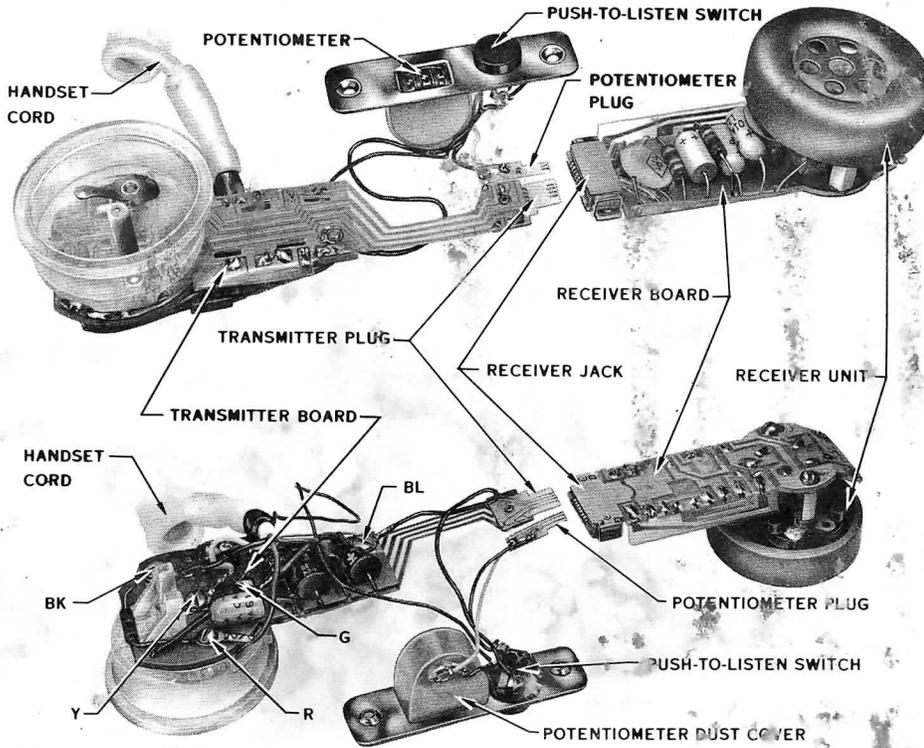


Fig. 27 - G8A Hand Set, Interior

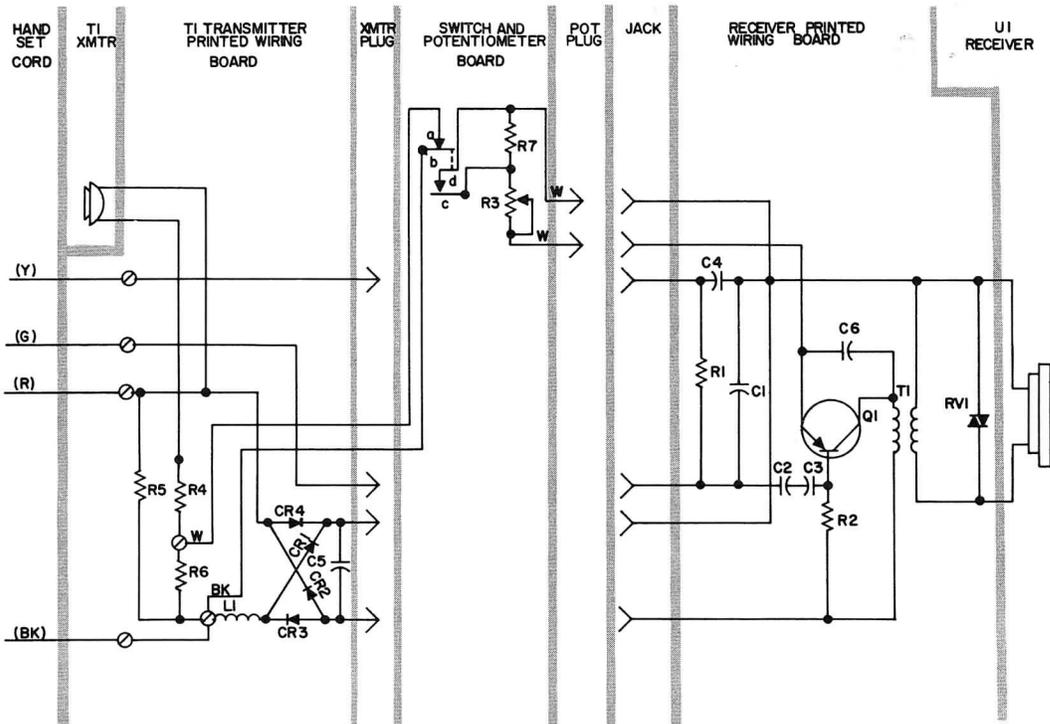


Fig. 28 - G8A Hand Set, Schematic

TABLE B

G6AR, G7AR, AND G8A HAND SET CONNECTIONS

| Telephone Set Code | Handset Cords Conductor Colors | | Networks 425, 495, 4010-Type | Equalizer 311A | Term. Block | Key Term. Strip |
|-----------------------------------|--------------------------------|----------------|------------------------------|----------------|-------------|-----------------|
| | Cord Furnished with Handset* | H4CJ Modified† | | | | |
| 500 600 700 | R | R | R | | | |
| | Y | W | R | | | |
| | G | W (Knot) | GN | | | |
| | BK | BK | B | | | |
| 500A, B‡ 501A, B‡ | R | R | | RW | | |
| | Y | W | | RW | | |
| | G | W (Knot) | | W | | |
| | BK | BK | | B | | |
| 500J, K‡ 501J, K‡ | R | R | | | RW | |
| | Y | W | | | RW | |
| | G | W (Knot) | | | W | |
| | BK | BK | | | B | |
| D-17977‡ 565HA, HB Modified | R | R | R | | | |
| | Y | W | | | | ER |
| | G | W (Knot) | | | | ET |
| | BK | BK | B | | | |
| TOUCH-TONE Sets | R | R | | | ** | |
| | Y | W | GN | | | |
| | G | W | | | § | |
| | BK | BK | B | | | |

* The cord furnished with handset is not available to field forces. It is used only by Western Electric Company for manufacturing new sets.

† The H4CJ cord (Fig. 33) is modified for use in G6AR, G7AR, and G8A hand sets per Fig. 34 and 7. of this practice.

‡ The 500A, B, 501A, B, and 500J, K telephone sets are rated Manufacture Discontinued (MD). They are replaced by the 500C, D, and 501C, D respectively.

§ Terminate on same terminal as the No. 2 lead from dial.

** Terminate on same terminal as the No. 4 lead from dial.

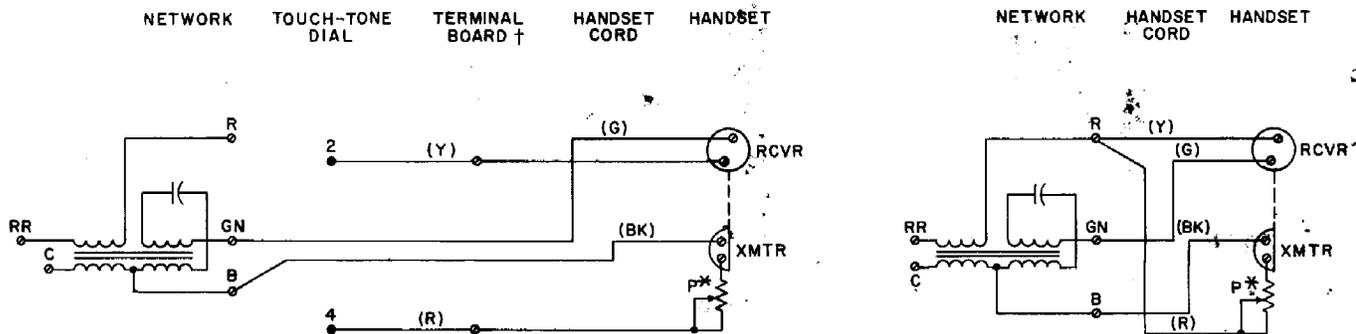
2.02 Table B lists the type sets and connections for the G6AR (impaired hearing), G7AR (weak speech), and G8A (noisy location) telephone sets.

3. MAINTENANCE

3.01 To avoid repeated visits to stations to replace broken black phenolic handset caps, replace them with thermoplastic caps identified by a green or yellow date mark on the inside.

1500-, 1600-, AND 1700- TYPE
TOUCH-TONE TELEPHONE SET

500-, 600-, AND 700-TYPE TELEPHONE SETS



* The potentiometer P is in the receiver circuit of the G6AR and G8A hand sets.

† Refer to appropriate section for terminal designations.

FIG. 29 — G6AR, G7AR, and G8A Hand Set Connections to Telephone Sets

3.02 Replace cracked transmitter or receiver caps. Caps or grids may be cleaned by wiping with a clean cloth moistened with water.



Do not use cleaning fluids or antirust compounds on transmitter, receiver units, or other component parts of handset. Discoloration or tarnish on the silver plated contact surfaces is not objectionable, and no attempt should be made to remove it.

3.03 Use extreme care to avoid marring the finish when cleaning procedures of this section are applied to colored handsets. Replace handset if the cleaning procedure does not result in a satisfactory appearance.

3.04 To prevent fraudulence at coin telephones, it may be necessary to replace the T1 transmitter unit with a T2 transmitter unit equipped with a protective grid.

3.05 Replace cut, cracked, worn, or badly frayed cords. Connections should be checked for tightness at terminals.

3.06 When an E-type hand set is found at a station on a maintenance visit, replace the entire handset with an F-type hand set. Refer to the section covering transmission zoning.

F-Type Hand Set

3.07 To correct improper zoning transmission conditions, replace complete telephone set. This condition cannot be cleared by replacing F-type hand set. Refer to section covering transmission zoning for requirements.

3.08 The F3-type hand set (pushbutton switch in handle) should be serviced the same as other F-type hand sets. Repairs or adjustments of pushbutton contact spring should not be made in the field. Handsets having defecting springs or contacts requiring adjustment should be replaced by an equivalent handset.

3.09 The F1K3-, F4-, and F5-type hand sets have a cotton ball in the handle which provides an acoustical barrier. This ball should not extend into the receiver bowl.

3.10 Replace entire F6-type hand set if any part except the transmitter and receiver cap require replacement.

G-Type Hand Set

3.11 These handsets, in general, should be maintained in accordance with procedures outlined for F-type hand sets.

3.12 Weighted G1 hand sets (Fig. 30) may be furnished on coin collectors when authorized locally. They are used on 190 series and lower number coin collectors that have been modified with 425B network but do not have light weight switchhook assemblies. Coin collectors modified for network operation are identified by the letter N following the series number. Weight is added to transmitter end of handset and should be reused when maintenance requires replacement of handset.

3.13 Use a G1B hand set with coin collectors requiring a spring cord.

3.14 If a G1B hand set is defective, replace with a G3F.

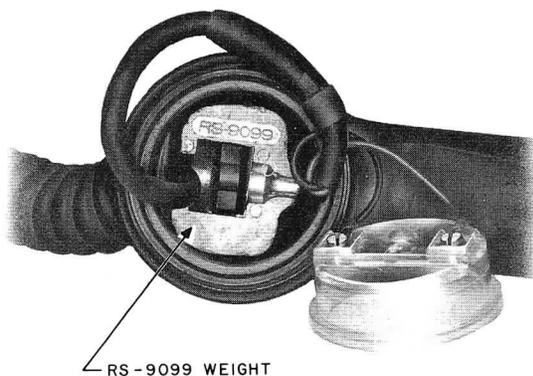


Fig. 30 — Weighted G1 Hand Set

3.15 The G2-type hand set (pushbar switch in handle) should be serviced the same as other G-type hand sets. Repairs or adjustments of pushbar contact springs should not be made in the field. Handsets having defective switches should be replaced by equivalent handsets.

3.16 The G3- and G5-type hand sets are serviced the same as other G-type hand sets except when replacing cord the cotton ball (acoustical barrier) must be reinserted as shown in Fig. 31. The cotton ball should not extend into receiver bowl.

3.17 Maintenance in the field is not recommended on the G3R hand set. If trouble exists in cord or handset, replace complete unit.

3.18 All parts of G4A hand set, with the exception of handle and shoulder support assembly are interchangeable with G1A hand set.

3.19 Amplified dial clicks in the receiver of the G6AR or G8A hand set, when reported by subscriber, may be eliminated by replacing the dial with one having an extra set of off-normal contacts. Refer to sections covering identification, assembly of parts, and connections for the particular type set involved.

4. 514-TYPE TOOLS

4.01 To remove transmitter or receiver units, turn caps off by hand or with 514-type tool. For correct use of tool, refer to section on identification and assembly of parts of handsets.

4.02 On completion of maintenance work, make necessary electrical and transmission tests with test board.

5. LOCKING DEVICES

5.01 Locking devices are available for use with F- and G-type hand sets when repeated loss of either caps or units occurs.

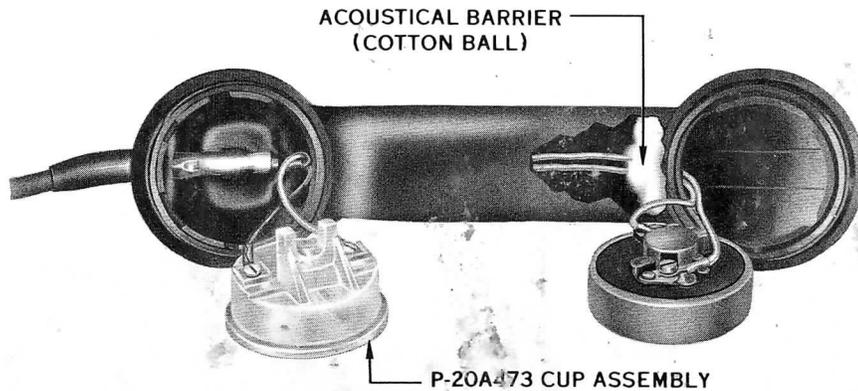


Fig. 31 – G3-Type Hand Set, Placement of Acoustical Barrier

5.02 For locking device information, see the section covering identification and assembly of parts of handsets.

6. CORDING FOR G-TYPE HAND SET

6.01 To remove cord from G-type hand set, remove transmitter and receiver units, disengage cord tips, and pull cord outward through hole in handle.

6.02 To replace cord on handset:

- (1) Pass free conductors of handset end of cord through hole in handle.
- (2) Advance cord through hole by turning it with a threading motion until grommet is in proper position. Because of an occasional snug fit it may be necessary, after advancing cord through hole, to grasp it firmly by groove on grommet with a pair of long-nose pliers. Use pliers as a lever inside bowl to pull grommet into position.
- (3) Fold back one free white receiver conductor at the tie, guide the other into the hollow handle, and feed slowly until lead conductor appears in receiver well; then grasp conductor and draw through.
- (4) Dress excess receiver lead length into receiver bowl so that seat is clear.
- (5) Anchor cord by inserting transmitter cup assembly.

(6) Reassemble transmitter and receiver units. Check for tight connections, and screw caps in place by hand.

6.03 Another method of replacing cord is as follows:

- (1) Tie a pull wire or string to receiver conductors of defective cord before pulling out of receiver well.
- (2) With pull wire or string, pull defective cord out of handset.
- (3) Tie pull wire or string to ends of receiver conductors of new cord, and pull them into place in receiver well.

6.04 The G4A hand set cord is replaced in the same manner as other G-type handset cords, except that procedure for placing a cord into handle of the G4A differs as follows:

- (1) Using a stiff piece of wire, make a loop in the end (Fig. 32).
- (2) Feed wire through handle.
- (3) Place ends of receiver conductors through loop and feed into handle while pulling in from other end.
- (4) Dress excess receiver lead length into receiver bowl so that seat is clear.

6.05 To replace handset handle, remove component parts and assemble them on a new handle of same type; otherwise, replace complete handset.

7. CORD REPLACEMENT FOR G6AR, G7AR, AND G8A HAND SETS

7.01 When it is necessary to replace the original cord on the G6AR, G7AR, and G8A hand sets, modify the H4CJ cord (Fig. 33) as follows:

- (1) Carefully remove outer plastic covering on two white conductors with diagonal pliers.
- (2) Tone out and identify one conductor. For identifying purposes, loose knots may be tied in both ends of this conductor, designating it green. The other white conductor would then become yellow.
- (3) Loop and tie or tape excessive cordage. (Fig. 34.)
- (4) Place in transmitter bowl carefully so as not to disrupt printed board circuit (Fig. 35).



Connect green and yellow conductors on both the G6AR and G8A hand sets as shown in Table B. If they are reversed, full amplification cannot be obtained.

7.02 For information on disassembly and assembly of the handset, see section on identification and assembly of parts of handsets.

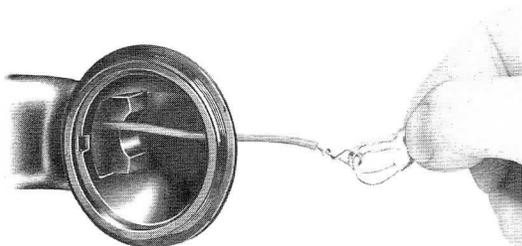


Fig. 32 — Feeding Cord into Handle Assembly

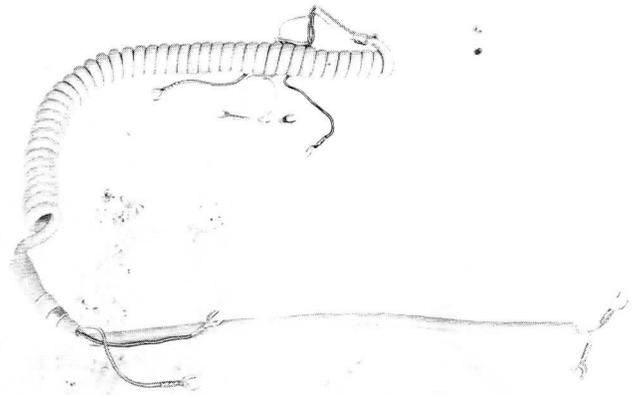


Fig. 33 — H4CJ Cord

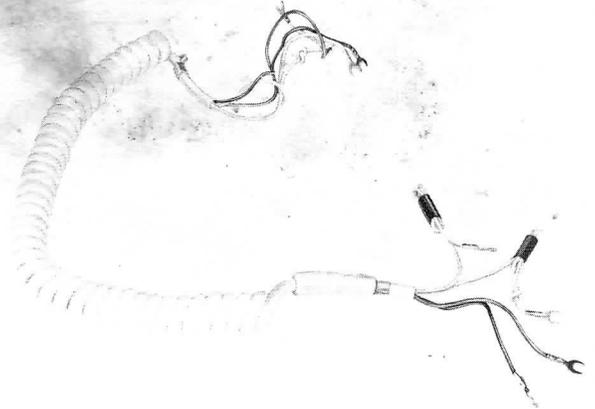


Fig. 34 — H4CJ Cord, Modified

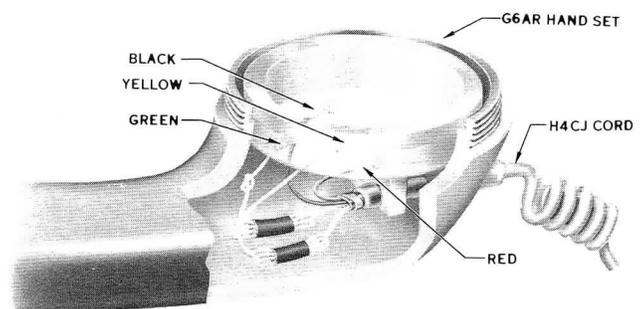


Fig. 35 — G6AR, G7AR, and G8A Hand Sets, Cord Mounting