

## TELEPHONE APPARATUS FOR IMPAIRED HEARING SELECTION

### 1. GENERAL

1.01 This section covers selection of apparatus to amplify incoming speech. It also covers selection of gongs which change the frequencies or tones of the ringing signal for those with impaired hearing.

1.02 This section is reissued to:

- Show addition of two 104A varistors used to modify telephone set when used with 106-type loudspeaker.
- Mention the possibility of using 64A gongs with 500-type wall sets.

1.03 In cases where special telephone equipment is needed, two general types of problems are involved:

- Inability to hear received speech
- Inability to hear ringing signal

1.04 Recommendations for customers who cannot hear incoming speech are discussed in Part 2.

### 2. APPARATUS FOR AMPLIFYING INCOMING SPEECH

#### G6- and G13-Type Handsets

2.01 These handsets are designed for receiver amplification. The G6B or G6AR (MD) handset can be installed on any 500, 600, or 700 series telephone set. The G13A- and G13B-type handsets are used on 200-type coin collectors and 1A-type coin telephone stations. For further information, refer to section covering handsets.

#### 532- (MD) and 533-Type (MD) Telephone Sets

2.02 These sets are designed for receiver amplification. For further information, see section covering these sets.

#### 106-Type Loudspeaker With 500-Type Telephone Set

2.03 This arrangement is used when customer has extreme difficulty in hearing. The loudspeaker set with speaker disconnected acts as an amplifier for incoming speech.

2.04 The loudspeaker set is equipped with a volume control which can be set to meet individual needs. Locate the loudspeaker set near its associated telephone set so the volume control is within easy reach of the telephone user.

2.05 The ON-OFF switch must be disabled so the amplifier is on at all times (Fig. 1).

2.06 Modify the telephone set as follows:

- (1) Remove the varistor from across the receiver in the handset. Place two 104A varistors in series across the receiver using D-161488 connectors or spare terminals. See steps (3), (4) and Fig. 1.
- (2) Remove the 3-conductor mounting cord and replace with D10P mounting cord.
- (3) Remove (W) handset lead from GN terminal of network and connect to (BR-W) mounting cord conductor. Use D-161488 connector.
- (4) Remove (W) handset lead from R terminal of network and connect to (W-BR) mounting cord conductor. Use D-161488 connector. (Insulate connectors separately and store out of way of moving parts.)
- (5) Connect (BL-W) mounting cord conductor to L2 of network.
- (6) Connect (W-BL) mounting cord conductor to L1 of network.
- (7) Connect (O-W) mounting cord conductor to G of network.

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- (8) Connect (G-W) mounting cord conductor to GN of network.
- (9) Connect (W-G) mounting cord conductor to R of network.
- (10) Connect ringer according to type of service required. See section on connections of 500C, D and 502C, D telephone sets.

**2.07** The 106-type loudspeaker can also be used with the 600 and 700 series telephone sets, but the connections and lead colors will be different.

**2.08** Modify loudspeaker as follows:

- (1) Remove strap between terminals 18 and 19 to disable speaker.
- (2) Connect a 145A, 3.16-ohm, 1/2-watt resistor between terminals 18 and 20.
- (3) Install D10R cord (Fig. 1).

**2.09** After completing installation, adjust chassis gain control on loudspeaker set as follows:

- (1) Use input signal comparable to normal telephone conversation.
- (2) With cover removed, turn chassis gain control completely counterclockwise to obtain minimum gain. Use KS-6854 screwdriver or equivalent.
- (3) Turn external volume control completely clockwise.
- (4) Turn chassis gain control clockwise for maximum loudness or up to a point just before crosstalk is heard. Press the receiver cap against the cheek. If the receiver has a tendency to howl under these conditions, turn chassis gain control counterclockwise until howling is eliminated. Some howling may be expected when the receiver is not held against the ear or not otherwise sealed.
- (5) Loudness of signal can now be adjusted by external volume control.

**2.10** Additional information can be found in sections on the 106-type loudspeaker sets.

## 3. REMEDIAL MEASURES FOR CUSTOMERS WHO CANNOT HEAR RINGING SIGNAL

**3.01** On all repair visits, make certain that:

- (a) Ringing apparatus is in proper adjustment.
- (b) Ringing apparatus is centrally or otherwise favorably located.
- (c) Ringing apparatus is not concealed by drapes.
- (d) Desk telephone sets are located on a hard surface so that tone is reflected from the gongs of ringer.
- (e) Ringer volume control is set to maximum loudness.

**3.02** If telephone apparatus has B-type ringer, try one of the following:

- (a) Add a 101A gong attachment using 41-type gong. See the section on maintenance of B-type ringers.
- (b) Use a set equipped with a C4A ringer. A variety of gongs producing different frequencies is available. (Table B)

**Note:** The following gongs should always be used in pairs:

54A-55A    57A-58A

55A-56A    58A-59A

56A-57A

**3.03** If customer still is unable to hear bell, provide one of the following:

● Extension telephone

● S1A tone ringer

● 64A gongs may be installed in 500-type wall set, but there is insufficient clearance in 500-type desk set. If customer has desk set, provide 687A subscriber set (64A gong may be used to replace the 54A and 55A gongs on a C4A ringer used with 687A subscriber set.

- Bell chime
- Loud ringing bell
- Auxiliary signal (see section on identification of auxiliary signals)

**Note:** Advise customer there is an additional charge for the items listed in 3.03.

**TABLE A**  
**RECOMMENDED APPARATUS FOR HEARING IMPAIRMENTS**

GROUP NUMBER	IMPAIRMENT CHARACTERIZED BY:	RECOMMENDED APPARATUS
1	No noticeable difficulty in hearing. Considered normal.	Regular apparatus.
2	Some difficulty in understanding speakers in public places such as church or theater. Unable to hear well in group conversations.	
3	Difficulty in understanding speech from a distance of 2 to 3 feet. Needs incoming speech amplifier on telephone. May be using hearing aid.	A 532- (MD) or 533-type (MD) telephone set or a G6-type handset. A bone conduction receiver used with these sets may be helpful in some cases. See section on KS-14720, List 2 headset (bone conduction receiver).
4	Extreme difficulty in understanding conversation even with hearing aid.	A 106-type loudspeaker set with a modified 500C/D telephone set. A bone conduction receiver may be used with this arrangement.
5	Unable to understand speech under any condition.	698A subscriber set, Teletypewriter, 716- or 717-type receiver.*

\* Used by assistant who repeats conversation for customer who reads lips.

**TABLE B**  
**GONGS**

GONG	NOMINAL FREQUENCY PRODUCED
54A	1280 Hz
55A	1610 Hz
56A	2025 Hz
57A	2555 Hz
58A	3220 Hz
59A	4060 Hz
64A	

*Note:* Even numbered gongs mount on movable arm of ringer. Odd numbered gongs mount on fixed gong post, except, 64A gong which mounts on both movable arm and fixed gong post of ringer.

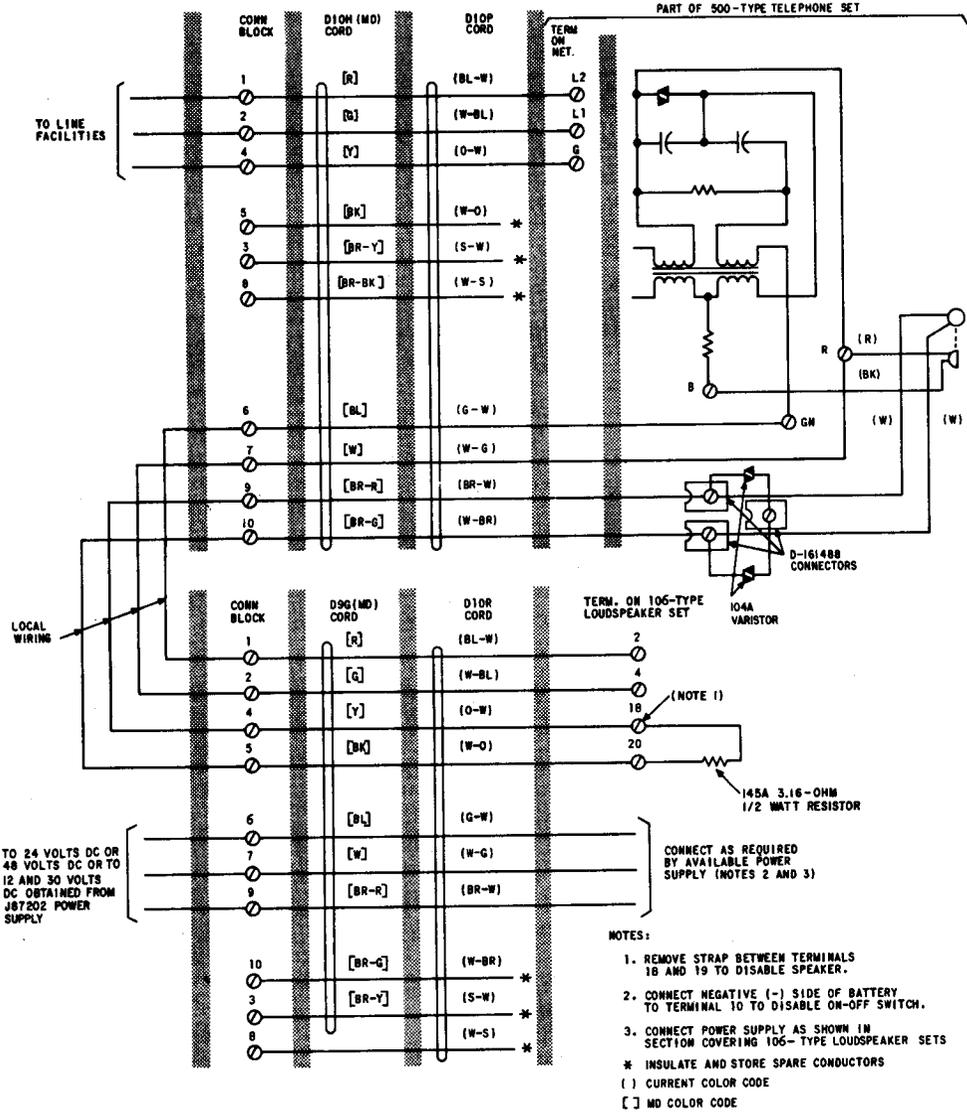


Fig. 1—Connection Diagram